

# **Canadian Energy Chronology**

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## **Preface**

### **Canadian Energy Chronology**

The Canadian Energy Chronology is a record of energy developments and policy decisions over the period 1945 through 1995. Well over 1300 entries provide an invaluable reference source and historical document, particularly as the generation of officials responsible for energy policy development over this period retires. In preserving NRCan's corporate memory, the author, Mr. Ralph Toombs, provides a new generation of policy-makers with a sense of history, policy development and insights that might otherwise have been lost.

A native of British Columbia, Mr. Toombs joined the Mineral Resources Branch of the Department of Mines and Technical Surveys – as Natural Resources Canada was then known - in the early 1950s, with the responsibility of monitoring the oil and natural gas industry. While he stayed with the Department throughout his career, he also served on the staff of the Royal Commission on Energy (Borden Commission), which was established to make recommendations on energy export policy and regulation, which resulted in, among other policy initiatives, the establishment of the National Energy Board.

Mr. Toombs subsequently served as Special Adviser to Jack Austin, the Deputy Minister of Energy, Mines and Resources – as the Department of Mines and Technical Surveys became in 1966 – and continued his duties, which included monitoring energy policy in Canada.

Upon his retirement, Mr. Toombs compiled a chronology of Canadian energy policy from 1945 through 1985. In 1998, he completed a second volume that brought the history of Canadian energy policy up to 1996, and Mr. Toombs received a special Energy Sector Merit Award in recognition of his contribution.

## THE YEAR 1945

Mineral fuels  
production minor in  
1945

In January, mineral fuels production was still under wartime controls, which by the end of the year were being lifted following termination of World War II in August. The coal industry had operated at a comparatively high level during the war, the value of output in 1944 and 1945 being \$70.4 million and \$67.6 million. The crude petroleum and natural gas industries had remained small although the first discovery had been made in 1858 in Ontario. The value of crude oil production in Canada in 1944 and 1945 was \$15.4 million and \$13.6 million. In those years, natural gas production value was \$11.4 million and \$12.5 million. Following the Leduc oil discovery in February 1947, those industries expanded rapidly and, by 1955, crude oil had an output value of \$305.6 million and natural gas, \$15.1 million. The natural gas industry began to expand rapidly in the late 1950s as major gas pipeline systems were completed.

Wartime Oils  
Limited oil supply  
project

On March 31. Wartime Oils Limited, a Crown company, completed its mission of wartime oil supply and the rights and assets were assigned to the Minister of Munitions and Supply and, in due course, to the Department of Mines and Technical Surveys and finally to the Department of Energy, Mines and Resources. The Company was incorporated on April 6, 1943 to advance capital to small independent oil companies so that they would have funds to drill on the west flank of the Turner Valley oil field, 30 miles southwest of Calgary. Oil was badly needed in Canada, which was dependent on about 70% of its supply from increasingly uncertain foreign sources. There was a particular need for aviation fuel supplies for the British Commonwealth Air Training bases in Canada. During the wartime operation of the company, 22 wells were drilled in the Turner Valley field under the Wartime Oils program, with 21 finding oil, some of which continued to produce into the 1980s. The total amount advanced for the 21 successful wells was \$3.83 million. By the time the wartime project closed in March 1945, it had produced 830,000 barrels of oil with a value of \$1.4 million. Repayment of monies advanced plus interest at 3.5% and a small royalty continued to be repaid and, by the end of 1963, a total of \$4.13 million had been returned to the Crown. Seventeen of the 21 successful wells had repaid the advance and interest and had been returned to the original owners, while continuing to pay royalties to the federal government. The program proved to be highly successful and effective in a time of wartime shortages. The drilling sites were selected on the basis of advice from the Geological Survey of Canada and, during the war period, the project was operated by the Oil Controller, a member of the Wartime Industries Control Board established to regulate essential economic sectors such as timber, steel, oil, power and metals. The program proved to be far more effective in terms of wartime oil supply than the much more costly Canol project (see note for June).

Plans for transition  
from wartime to  
peacetime atomic  
research

In 1944 plans were completed for the construction of a nuclear reactor and two chemical separation plants at Chalk River, Ontario, as part of Canada's contribution to the wartime effort in atomic energy development. With the end of World War II in August 1945, the Chalk River facilities were only partially completed. Attention was then given to the transition of the nuclear research program from a war to a peacetime orientation. The commercial possibilities of nuclear power were becoming evident and the federal government was faced with the challenge of deciding how it should proceed with the development and use of its uranium resources and with the development and application of atomic energy for peaceful purposes. A considerable research base had been built up in Canada through the country's participation with the U.S. and U.K. in wartime atomic research.

Wartime research in  
Canada leads to  
CANDU in the  
1950s

On September 5, the first nuclear reactor outside of the United States "went critical" at a joint Canada-British laboratory which had been established in Montreal at the outbreak of war. Fundamental research had been conducted independent of work in the U.S. Canada had been associated with scientific development in nuclear physics ever since Lord Rutherford began his research on radioactivity at McGill University in 1899. It was not until 1939, with the discovery in Germany that the atom of a particular isotope of uranium could be split into two approximately equal parts, that the transformation of mass into energy through fission began to

assume practical implications. In 1940, information on atomic energy, as well as on the war research projects, was exchanged by the U.S., U.K., and Canada. This led to the establishment of a laboratory at the University of Montreal under the direction of the National Research Council for the further investigation of the atomic energy problem, with scientists recruited from Canada, the U.K. and other allied countries. In 1943, it appeared that a new way to manufacture and separate fissionable material should be studied on a pilot plant scale and it was agreed that Canada should undertake this project. The design for the pilot plant was developed in the Montreal laboratories and the plant built at Chalk River, Ontario. The plant was approaching completion at the end of the war and, accordingly, Canada was in the fortunate position of having research facilities to carry forward the work in atomic energy, which later led to the development of the CANDU power reactor system in the 1950s.

Coal supply from Canadian mines in the mid-1940's

The coal production from Nova Scotia, augmented by a relatively small tonnage from New Brunswick, provided prior to 1940 not only for the requirements of the railways of the area, the steel industry, and the domestic market, but also for much of the fuel requirements of Quebec and, to a lesser degree, Ontario. During World War II, expansion of industry in the Maritimes led to an almost complete cessation of the movement of coal into Quebec and Ontario from the Maritimes. The record at the end of December 1945 showed that Nova Scotia coal had not been able to regain its former central Canada markets. Shipments of Alberta coal into Ontario ceased in 1942 but were resumed in October 1944 because of the fuel shortage in that province and they continued through to 1950. In 1945, Canada produced 16.5 million short tons of coal, with Nova Scotia accounting for 30% and Alberta for 48% of the country's total output. British Columbia and Saskatchewan accounted for most of the remainder, with a small amount coming from New Brunswick.

Natural gas development prospects promising for synthetic oil products

The official government review of the natural gas industry reporting on developments in 1945 through to December recorded a number of successful drilling operations in Alberta, Saskatchewan and Ontario. In contrast with the lack of progress in oil resource development, there was considerable optimism that the reserves of natural gas that were being built up in Alberta would be a potential source of supply "for industries which may be established to process natural gas for the production of gasoline and other by-products the time appears to be approaching when gasoline will be synthesized from natural gas at costs competitive with those for producing gasoline from crude oil". Plans for producing oil products from natural gas, and from coal, were soon dropped after the February 1947 Leduc oil discovery.

oil industry in decline

The official government review of the crude petroleum industry reporting on developments in 1945 through to December recorded the lowest production since 1939 and "inconclusive and disappointing results" in oil exploration. Alberta contributed nearly 94% of the small Canadian production of 8.5 million barrels and 87% of this total came from the Turner Valley field, near Calgary, which was in decline after 31 years of production. The search for new fields to supplement the declining yield from Turner Valley, and the old fields of Ontario which had first been developed in 1858, was not proving successful. The only encouraging development was the successful completion of the first commercial oil well in Saskatchewan in April, followed by five other wells later in the year, all in the Lloydminster heavy oil area on the Saskatchewan-Alberta border and adjacent to a producing area on the Alberta side. This 120 API crude was being used as fuel by the Canadian National Railways. Following the Leduc oil discovery in 1947, oil resource development proceeded rapidly and, by 1955, the annual crude oil production of 129.4 million barrels was over 15 times the 1945 level.

## THE YEAR 1946

Nuclear safeguards,  
UN AEC report,  
with Canada's  
participation

In January, the General Assembly of the United Nations created an Atomic Energy Commission (AEC) composed of representatives of the five countries represented in the Security Council (U.S., U.K., U.S.S.R., France and China), along with Canada and six other non-permanent members. Canada was included as a permanent member of the new international Commission as a result of its wartime participation in the development of atomic energy. The Commission was directed by the General Assembly to prepare specific proposals for the exchange of scientific information on peaceful ends; the control of atomic energy to ensure its use only for peaceful purposes; elimination of atomic weapons; and effective safeguards by way of inspection and other means against the hazards of violations and evasions. In September 1946, a subcommittee of the Atomic Energy Commission produced the world's first report on the international application of nuclear safeguards, which was eventually accepted as a unanimous report by the Commission. While Canada has maintained a policy of not manufacturing atomic bombs, the UN Atomic Energy Commission failed to accomplish its goal as the U.K. and the U.S.S.R., along with the U.S., soon took up the production of atomic weapons, followed by France in 1960, the Peoples' Republic of China in 1964, and India in 1974.

Emergency Coal  
Production Board  
abolished after the  
war

The Emergency Coal Production Board, which had been constituted under the Coal Administrator by Order in Council P.C. 10674 of November 23, 1942, was abolished in April 1946, by Order in Council P.C. 1684 of April 30, 1946. It had been responsible for maintaining coal production, stimulating new production, closing inefficient mines, modernizing the coal industry, maintaining a labour supply for the mines, providing assistance to financially troubled mines, and removing all regulations which impeded maximum production in a time of war.

Atomic Energy  
Control Act and  
Board

An Act relating to the development and control of atomic energy, cited as the Atomic Energy Control Act, was passed by Parliament, received Royal Assent on August 31, and was proclaimed on October 12, 1946 (Geo. VI, c. 37). The Act established the Atomic Energy Control Board with a mandate as set out in section 8:

8. The Board may,

- a) undertake or cause to be undertaken researches and investigations with respect to atomic energy;
- b) with the approval of the Governor in Council, utilize, cause to be utilized and prepare for the utilization of atomic energy;
- c) with the approval of the Governor in Council, acquire or cause to be acquired by purchase, lease, requisition or expropriation, prescribed substances and any mines, deposits or claims of prescribed substances and patent rights relating to atomic energy and any works or property for production or preparation for production of, or for research or investigation with respect to, atomic energy;
- d) make rules for regulating its proceedings and the performance of its functions;
- e) notwithstanding the Civil Service Act or any other statute or law appoint and employ such professional, scientific, technical and other officers and employees as the Board deems necessary for the purposes of this Act;
- f) with the approval of the Committee, fix the tenure of appointment, the duties and, subject to the approval of the Governor in Council, the remuneration of officers and employees appointed or employed by the Board;
- g) with the approval of the Committee, disseminate or provide for the dissemination of information relating to atomic energy to such extent and in such manner as the Board may deem to be in the public interest;
- h) with the approval of the Governor in Council, licence or otherwise make available or sell or otherwise dispose of discoveries, inventions and improvements in processes, apparatus or machines, patent rights and letters patent of Canada or foreign countries acquired under this Act and collect royalties and fees thereon and payments therefor; and

- i) without limiting the generality of any other provision of this Act, establish through the Honorary Advisory Council for Industrial and Scientific Research as defined in the Research Council Act, or otherwise, scholarships and grants in aid for research and investigations with respect to atomic energy, or for the education or training of persons to qualify them to engage in such research and investigations. 1946, c. 37, s. 8.

The preamble of the 1946 Statute, carried forward in the revision of 1952, notes that: "it is essential in the national interest to make provision for the control and supervision of the development, application and use of atomic energy, and to enable Canada to participate effectively in measures of international control of atomic energy". Section 9 of the Act describes regulations that the Board may make in carrying out its mandate. The three functions of the Board's responsibilities during its early operations related to regulations, mining, and research.

Atomic Energy Control Board - relations with other agencies

When the Atomic Energy Control Board was established in October 1946, it made use of technical staffs in existing government agencies. As an agent for the Board, the National Research Council continued to investigate the peaceful uses of atomic energy and for this purpose established extensive facilities at Chalk River, Ontario. A separate Crown company, Atomic Energy of Canada Limited, was formed in 1952 to operate these facilities (see note for October 1952). The Mines Branch of the Department of Mines and Technical Survey (now Energy, Mines and Resources) continued research on the concentration of uranium ores and the extraction of uranium. The Geological Survey of Canada continued research on the mineralogy and geology of radioactive occurrences, made geological maps of favourable areas, and compiled confidential data on uranium and thorium resources for the Board.

Wartime controls on coal production abolished

In 1946, the wartime controls on coal production were abolished (see October 1947 note on the Dominion Fuel Board, Coal Administrator and Coal Controller). The Dominion Fuel Board was reconstituted under the direction of the Minister of Reconstruction and Supply in December 1946. In 1947, the Fuel Board was reorganized as the Dominion Coal Board, which continued in operation until 1970.

Chalk River nuclear research project established (NRX and ZEEP) - reports to the AECB until 1954

Effective December 1, 1946, the Atomic Energy Control Board (AECB), under provisions of the Atomic Energy Control Act, assumed responsibility for the control and administration of the research facilities at Chalk River. A decision had been taken in April 1944 to establish facilities at Chalk River and construction was underway in August 1945 when the war ended. Work was proceeding on a large heavy water-cooled research reactor, National Research Experimental reactor (NRX), which went into operation in July 1947, and a smaller experimental reactor, Zero Energy Experimental Pile (ZEEP), and two small-scale separation plants. The complex was to have been operated by Defence Industries Limited but the responsibility was taken over by the National Research Council (NRC) in February 1947. The Atomic Energy Control Board continued administrative control of the Chalk River facilities until 1954 but exerted very little control and direction. Chalk River was removed from operational control of NRC in 1952 when Atomic Energy of Canada Limited (AECL) was formed as a Crown company. In 1954, with the passing of amendments to the Atomic Energy Control Act, AECL began reporting directly to the Minister responsible for the AECB, Eldorado Mining and Refining and AECL. This provided for the separation of control, through AECB, from the operational responsibilities for atomic energy, through AECL (see notes for October 1952 and June 1954).

Royal Commission on Coal 1946 (Carroll Commission)

The Report of the Royal Commission on Coal, 1946 was submitted to the federal government in December following an inquiry concerned with a situation in which coal, as a fuel was dominant and the competitive supplying of Canadian requirements was the primary issue. The Commission, often referred to as the Carroll Commission after its chairman, was established by Order in Council P.C. 7756 of October 12, 1944 to inquire into all aspects of the supply and use of coal in Canada. Its 663-page report included a major study of coal reserves and chapters on the history, production, processing, transportation, and marketing and use of coal and its by-

products, and on government support of the industry dating from the last century. The 1946 Report recommended a continuance of government assistance to coal production. Almost continuously since 1879, there had been tariffs against imported coal, which assisted Nova Scotia coal to develop a market in the St. Lawrence Valley, and western coal to develop and maintain its market as far east as Winnipeg. Further support, which was initiated in 1928, took the form of transportation subventions, designed to equalize laid-down costs of Canadian coal with U.S. coal and thereby encourage the marketing of domestic coal in central Canada. During World War II, the Emergency Coal Production Board provided substantial amounts of assistance to Canadian mines as production subsidies. The 1946 Report recommended a resumption of the pre-war transportation subventions and maintenance of a 75 cents per ton import duty as the means of extending assistance in the post-War II period. The subventions were to be determined in terms of the relationship to the cost per ton of the imported coal that would otherwise be used in Ontario. The Commission recommended that the Dominion Fuel Board, comprised of members of the Civil Service be replaced by a Statutory Board with a full-time chairman to keep Canada's energy requirements under continuous review and to advise upon and administer transportation subventions. The Dominion Coal Board was established for these purposes in 1947 to replace the Dominion Fuel Board, which had operated since 1922 (see Dominion Fuel Board note - October 1947).

The oil situation  
immediately prior to  
the Leduc discovery

Analyses of the petroleum and energy situation in Canada completed in December showed that, in 1946, petroleum provided 16% of Canada's industrial energy, as against 51% by coal, 30% by hydroelectric power, and 3% by natural gas. In that year, Canada depended upon outside sources to supply close to 90% of its crude oil requirements. The U.S. was the source of 60% of the country's crude oil imports while 33% came from Venezuela and the remainder from Colombia and Trinidad. Even Alberta had to import crude oil, bringing in almost one half million barrels from Montana. The search for oil and gas had been actively continued but with very little success in finding new oil sources. In the nine years, 1938 to 1946 inclusive, about \$140 million was spent in the search for oil in Alberta, the principal drilling and exploratory work being done by Imperial Oil Limited, with no success. The fortunes of the industry changed with the Leduc oil discovery in February 1947.

## THE YEAR 1947

Leduc oil discovery leads to rapid development

On February 13, Imperial Leduc No. 1 oil well came into production at a site ' 20 miles southwest of Edmonton. Prior to this discovery, Imperial Oil Limited had drilled 133 consecutive dry holes in western Canada in the search for oil. Until the Leduc field was discovered, Canada had only two oil fields of any size - Turner Valley near Calgary and Norman Wells in the Northwest Territories with the former in rapid decline and the latter, too remote to supply any markets outside of the sparsely populated northern territories. Other discoveries quickly followed Leduc, and ten years later in 1956 Canada was producing 468,000 barrels of oil per day compared with less than 20,000 b/d at the time of the Leduc discovery. The impact of this resource development is indicated by the following growth trends:

	1946	1956
Land being explored (million acres)	20	191
Exploration & development expenditures	12 M	638 M
Oil wells drilling during year	64	2,368
Wells producing at end of year	393	9,575
Reserves (millions of barrels)	72	3,125
Production (thousand barrels/day)	20	468
Refinery Capacity (thousand b/d)	200	703
Oil pipeline mileage	435	6,050

Wartime restrictions on uranium to be removed

In a statement in the House of Commons on March 25, C.D. Howe announced as government policy that radioactive material would be controlled after it had been mined and that the Atomic Energy Control Regulations would provide this control. Orders in Council in 1943 had reserved title to radioactive minerals on Crown lands in the N.W.T. and the Yukon. Until the Atomic Energy Control Regulations were passed in April 1947, mining operations were exclusively in the hands of the government. In March 1948, wartime restrictions on private ownership of radioactive mineral deposits were rescinded (see note for March 16, 1948).

Atomic Energy Control Regulations, including export controls

Atomic Energy Control Regulations, under the Atomic Energy Control Act, as authorized by Section 9 of the Act, were issued effective April 1, 1947. The powers conferred on the Atomic Energy Control Board (AECB) by the Act and set out in the Regulations were extensive. The Act and Regulations were designed in the immediate post-war period of concern in the western world about security in relation to atomic energy. As a result, the legislation generally provided the Board with much greater powers than those of most other regulatory agencies. Most of the regulatory powers came directly under the control of the Board, with the approval of the federal government, with the exception of Orders concerned with expropriation and requisition which required prior approval by the Governor-in-Council. There were no provisions for parliamentary hearings in the Board's regulation-making and licensing functions in the 1947 Regulations, nor any specific provisions relating to health and safety. The 1947 Regulations proved acceptable until the mid-1950s when substantial revisions were needed to the Act and Regulations. However, during the period of the 1950s through to the early 1960s the AECB continued to issue export permits routinely as export sales were made through Eldorado Mining and Refining Limited. With the major policy announcement of June 3, 1965, export permits could only be approved if the AECB and the Department of External Affairs had completed negotiations, on behalf of the Government of Canada, with the importing country on matters concerned with peaceful uses of nuclear materials. In 1969, the AECB was given further responsibilities with respect to the export policy statement of June 19 in that year.

Eldorado Mining and Refining subject to Atomic Energy Control Regulations

Under the Atomic Energy Control Act, and the Atomic Energy Control Regulations as approved in April 1947, the Atomic Energy Control Board (AECB) was given powers to acquire or cause to be acquired by purchase, lease, requisition or appropriation, prescribed substances and any mines, deposits or claims of prescribed substances...". These powers, and those spelled out in detail in the Regulations gave authority to the AECB to regulate uranium mining which, at the



time the Act was passed, pertained to the only uranium mining company, Eldorado Mining and Refining Limited and its mine at Port Radium, N.W.T. However, the administration and operation of mining remained with Eldorado as a Crown company, reporting directly to the Minister also responsible for the Atomic Energy Control Act and AECB. The control of the company remained as it was during the war period and it continued to report to the Minister although the AECB could influence the activities of Eldorado through provisions of the Act and Regulations which pertain to all aspects of uranium resource development, production and supply.

Dominion Fuel  
Board, Coal  
Administrator, Coal  
Controller

The Dominion Fuel Board, which had been established by Order in Council P.C. 2381 of November 25, 1922, was reorganized as the Dominion Coal Board effective in October 1947. The primary task of the Dominion Fuel Board had been to recommend ways of reducing central Canada's dependence on American anthracite coal and to suggest methods of achieving national self-sufficiency in fuel. The Fuel Board was composed exclusively of civil servants. Among other duties, it administered assistance to the coal industry in the form of transportation subventions. This aid was designed to equalize laid-down costs of Canadian coal with U.S. coal and thereby promote the marketing of domestic coal in central Canada. In the 1930s about 1.75 million tons of Nova Scotia coal and 650,000 tons of western coal were assisted annually at a cost in each case of \$1.00 per ton, or an average annual cost to the federal treasury of about \$2.4 million. However, only about 10% of the western coal that moved under subvention reached the market in central Canada. Following the establishment of the Dominion Coal Board in 1947, that Board continued the administration of the transportation subventions. During World War II, the Emergency Coal Production Board disbursed substantial funds to coal mines as production subsidies. (see April 1946 note on that Board). During the war period, the powers duties and functions of the Dominion Fuel Board were transferred to the office of the Coal Administrator under the Department of Labour in June 1941. The Coal Administrator had been appointed under the Wartime Prices and Trade Board in October 1939 in order to encourage the export of British coal to Canada, to maintain production of Canadian solid fuels and to supervise the purchase, distribution and allocation of coal, coke and other domestic and imported fuels. Later, when fuel supplies began to slump and to affect the war effort, the office of the Coal Controller was established, effective March 1943, within the Department of Munitions and Supply, and in April 1943 the powers duties and functions of the Coal Administrator and the Dominion Fuel Board were transferred to the office of the Coal Controller for matters related to coal and coke. Matters pertaining to wood fuel control came under the direction of the Wood Fuel Controller in May 1943.

Dominion Coal  
Board

The Dominion Coal Board was established, on the recommendation of the 1946 Royal Commission on Coal, in 1947 to succeed the Dominion Fuel Board (11 Geo, VI, c 57). The new Board had seven members and its first chairman was appointed in October 1947 (P.C. 3620, October 21, 1947). The Board was given authority to review the policies of the federal government in developing and marketing Canadian coal and to advise the government on new policies. Its duties were defined as follows: to maintain adequate supplies of coal for national requirements; to aid in building a sound and healthy coal mining industry; to find steady and adequate markets for Canadian coal; to provide reasonably full employment at fair wages for miners; and to develop new equipment and methods capable of lowering production and transportation costs. Much of its time and attention was directed to the administration of transportation subsidies, and other forms of assistance, designed to equate the delivered costs of Canadian coal, particularly Nova Scotia coal, with U.S. coal in central Canada. That subvention program had been initiated by the Dominion Fuel Board in 1928, was suspended in World War II when other support measures were provided, and was resumed after the War on the recommendation of the Royal Commission on Coal, 1946. The Dominion Coal Board accordingly continued the pre-war mandate of the Dominion Fuel Board of supporting the market for Canadian coal by means of financial assistance to make coal competitive with U.S. coal and other fuels in Canada. This program continued until 1970 (see note for March 1970).

Mineral map of  
Canada -Map 900A

The first edition of Map 900A - Principal Mineral Areas of Canada related to the year ending December 1947. The map, on a generalized geological and physiographic base, shows locations of mines, oil and gas fields, pipelines, and mineral processing plants. Mineral statistics for the year are shown in tabulations on the map. Commencing in 1952, it has been issued on an annual basis (see note for March 1952).

The role of  
Eldorado Mining  
and Refining Ltd  
through to the mid-  
1960s

With the government decision in December to remove restrictions on uranium prospecting by private individuals and companies, and the government's intention to make Eldorado Mining and Refining Limited the sole purchaser of uranium, the Company entered the second phase of its operations. Eldorado had been established as a Crown company in 1944 for the purpose of securing for the Government of Canada a source of uranium. Circumstances pertaining to the establishment of the Company were unique in that mining and recovery of uranium were initiated under wartime conditions in which the critical nature of uranium as a wartime material called for special security measures in all phases of its development and production. With the lifting of uranium prospecting restrictions and the assignment of Eldorado's new role in uranium purchasing, the Company commenced a second phase of activity, which extended through to 1959. Because there had been no uranium production by 1953 under the purchasing schedule announced in March 1948, the Company was then authorized to consider special price contracts to meet particular situations of contractual arrangements with the U.S. and U.K. governments (see note for December 1953). Uranium development proceeded rapidly in the mid-1950s and in 1959 Eldorado entered a third phase of activity when it became the instrument through which existing contracts with the U.S. Atomic Energy Commission and the U.S. Atomic Energy Commission were stretched out to enable the uranium industry to weather the difficult period between termination of military-oriented contracts, initiated in the mid-1950s, and the expected increase in demand in the 1970s when many new nuclear power projects were scheduled. In addition to its mining and refining operations, Eldorado also became in 1963 the agent of the Crown in the federal government's stockpiling program, receiving and inspecting all uranium shipments and providing warehousing at Port Hope, Ontario. By the mid-1960s, Eldorado's role as a government procurement agent, assigned to it at the end of 1947, had become redundant as contracts were being completed directly between producers and purchasers in a marketing economy in contrast to the 1950s when military requirements for uranium dominated.

U.S. oil reserves  
commence decline  
as Canadian oil  
development  
proceeds

World oil reserve assessments made effective December 31 by U.S. authorities showed that in 1947 the United States had 31.6% of the world's proved oil reserves and was accounting for 64% of world oil production. By 1985, the U.S. share in total proved reserves had declined to 5% and that country was only accounting for 18% of world oil output. Those trends, and the fact that the U.S. consumed 36% of the world's oil demand in 1966 which had only declined to 26% in 1985, account for the ongoing interest of the U.S. in Canadian oil production potential following the Leduc oil discovery of 1947.

## THE YEAR 1948

<p>Uranium prospecting restrictions removed - Eldorado to be the government purchasing agent</p>	<p>In a statement in the House of Commons on March 16, C.D. Howe announced details of a new policy whereby prospecting for uranium by private individuals and companies would be encouraged by establishing a guaranteed minimum price for acceptable uranium ores. Orders-in-Council of 1943, which had reserved title to radioactive minerals on Crown lands in the N.W.T. and the Yukon, had been revoked in late 1947. The Atomic Energy Control Regulations of April 1947 had given the federal government effective control of all phases of uranium mining, thereby enabling the Regulations to be widened in scope to permit private prospecting. The new policy also set out the basis for government purchases of uranium through Eldorado Mining and Refining Limited, or other designated agency. It specified among other criteria that the purchase price would be based upon the uranium content of the ores and would be at the minimum rate of \$2.75 per pound of contained U3 O8, with all operations subject to the provisions of the Atomic Energy Control Regulations. This minimum price was guaranteed for a period of five years. The Canadian government took its decision late in 1947 on freeing up of prospecting restrictions following the establishment of the Atomic Energy Control Board in 1946 and Regulations in 1947, and following a decision by the United Nations Atomic Energy Commission in the latter part of 1947 that it would not be necessary to have any inter-national control agency to take over ownership of uranium in the ground. By 1956, as a result of the removal of restrictions on private prospecting, more than 10,000 radioactive occurrences had been discovered in Canada. All radioactive discoveries consisting of uranium or thorium to the extent of 0.05% or more were to be reported to the Atomic Energy Control Board. An exploration permit from the Board was required before the start of advanced exploration of a discovery, and a mining permit before the start of mining.</p>
<p>Uranium export arrangement with USAEC; Eldorado role</p>	<p>In March, an arrangement was made between the Canadian and United States governments whereby all Canadian uranium available for export to the U.S. would be delivered to the U.S. Atomic Energy Commission (USAEC). Late in 1947, Eldorado Mining and Refining Limited had been designated by the Government of Canada as the sole purchaser of uranium produced in Canada. The arrangement made with the U.S. in 1948 provided that Canada would reserve for its own use such quantities as might be required for its own program.</p>
<p>AECB to regulate heavy water but jurisdiction remains unclear until 1974</p>	<p>In July the Atomic Energy Control Board (AECB) authorized Cominco Ltd. to produce deuterium or heavy water at its Trail, B.C., plant and supply it to government departments in Canada or the U.S., as designated by the National Research Council or the U.S. Atomic Energy Commission. The main concern was to maintain security of supply, with very little attention being given to health and safety aspects relative to production. After Canada started heavy water production on a major scale in the late 1960s, questions remained as to AECB's jurisdiction over heavy water production plants. The 1974 amendments to the Atomic Energy Control Regulations settled the issue by defining a plant for the production of deuterium as a "nuclear facility" and therefore coming under the purview of the AECB. This clarified the 1947 Regulations, which had left some uncertainty concerning the regulation of heavy water production as a chemical plant operation with no related atomic energy significance until after the heavy water had been produced.</p>
<p>Redwater oil field discovery accelerates resource development</p>	<p>In September the Redwater oil field, 30 miles northeast of Edmonton, was discovered, increasing the impetus to exploration given by the Leduc discovery in February 1947. A number of other discoveries, in addition to these two major fields, brought about unprecedented oil and gas resource development. Large areas of Alberta were taken up either by exploration permit or production lease. A total of 250 producing oil wells were completed during 1948, and initial plans were made for construction of an oil pipeline to Regina (see note for October 1950 on the Interprovincial Pipe Line).</p>
<p>Natural gas reserves build-up in western</p>	<p>In November, an assessment of the natural gas reserves of the Prairie Provinces was published by the federal Department of Mines and Resources. This estimate of the developed natural gas</p>

Canada leads to major pipeline proposals; gas needed in Ontario

reserves of the region totaled 4.3 trillion cubic feet, exclusive of all isolated wells which had not been fully assessed. In view of the rapid build-up in gas reserves since the mid-1940s, there was increasing interest in the possibility of new market outlets by the building of long-distance transmission lines. Applications were made during the year to the federal government for charters of incorporation of several pipeline companies. Among these were three large gas pipeline proposals: one proposed a gas pipeline to Winnipeg and south to the U.S. border (Western Pipe Lines); a second planned a line from Alberta through the Crownsnest Pass to Kingsgate in B.C. and to Portland and Seattle, with branch lines to Trail and Vancouver, B.C. (Alberta Natural Gas Company); and a third was directed towards a line from the Peace River area of Alberta, through B.C. to Vancouver and south to the U.S. (later to-become the Westcoast Transmission Company line). These projects all had one element in common: export to the U.S. market in addition to serving the domestic market. While these plans were underway, Ontario experienced an acute shortage of gas in the winter of 1947-48 because of the production decline in its small fields in the southwest part of the Province. For a time some industrial plants using natural gas were closed because of the shortage.

Dominion Coal Board

In December, responsibility for the Dominion Coal Board was transferred from the Minister of Reconstruction and Supply to the Minister of Trade and Commerce (P.C. 5700, December 8, 1948). In 1951 responsibility for the Board was transferred to the Minister of Mines and Technical Surveys (P.C. 1482, March 22, 1951), and in 1966 to the new Minister of Energy, Mines and Resources (P.C. 333, February 21, 1966). The Board was abolished in 1970.

Coal demand peaks in 1948, and declines to 1961 low

The statistical record available in December showed that consumption of coal in Canada in 1948 had amounted to 43 million metric tons, the largest annual consumption in Canada's history. From that peak consumption declined to a low of 20 million tons in 1961. Consumption in the transportation sector declined from almost 12 million tons in 1948 to less than one million tons in 1961 as a result of dieselization of the railroads. The residential and commercial market declined from 12 million to 4.7 million tons in the same period due to increasing competition from oil initially and, later, from natural gas. The demand for coal in the industrial sector, for purposes other than thermal power generation, declined from 18 million to 12.5 million tons. The increase in the use of coal in electricity generating plants from the 2 million ton level in the 1950s to 10 million tons in 1968 more than offset the continuing decline in the space heating market, and accounted for the upturn from the 1961 low in domestic coal consumption to 25.5 million metric tons in 1970.

## THE YEAR 1949

Alberta Mines and Minerals Act, 1949

The basic provisions affecting Crown lands in Alberta were incorporated in the Mines and Minerals Act of 1949 which came into force on March 29 of that year and constituted a consolidation of various statutes and regulations pertaining to the administration of all mineral resources of the Province including oil and gas. Although subsequently revised a number of times, this legislation, and the various Regulations passed under it, set forth the conditions under which the right to explore for, and develop, all Crown minerals in Alberta may be acquired. The Act authorizes the Lieutenant Governor in Council to make Regulations governing the reservation of petroleum and natural gas rights which are the property of the Crown for geological and geophysical examination and for subsequent exploratory drilling and development. This legislation on the disposition of Crown oil and gas rights also provides the authority for the setting of royalty rates on oil and gas production. Much of the oil and gas legislation in other provinces was modeled after the Alberta Mines and Minerals Act.

Dinning Royal Commission report on Alta. oil and gas - priority given to Alberta and other Canadian markets over exports

In March, the Dinning Royal Commission appointed by the Alberta government in 1948, reported to the Alberta cabinet on its findings concerning the availability and disposition of the Province's oil and gas. The Commission concluded that, at that time, there were insufficient oil and gas reserves to permit export from Alberta. The report recorded the view expressed by those appearing before the Commission that the people of the Province should have prior claim on provincial gas supplies and that Canadian users should take priority over foreign purchasers when, and if, a surplus developed, a view supported by the Commission. Following receipt of the report, the Alberta government enacted in 1949 the Gas Resources Preservation Act and established the Petroleum and Natural Gas Conservation Board to regulate the removal of gas from Alberta among other responsibilities. The Gas Resources Preservation Act gave Alberta control over the disposition of its gas resources. In 1949, a number of gas pipeline proposals were being developed. In a debate on the Trans-Canada Pipe Lines bill in the House of Commons in February 1949, it was noted that the company had accepted the concept of an all-Canadian route, with its proposal making no reference to exports. This met the priority given to Canadians over export markets by the Alberta Dinning Commission.

Pipe Lines Act, 1949

In April, the Pipe Lines Act was introduced in Parliament, providing for federal control of interprovincial and international oil and gas pipelines. The legislation, which became the Pipe Lines Act, R.S.C. 1952, c. 211, required that companies proposing to transmit oil or natural gas to markets outside a producing province must be incorporated by an Act of Parliament. A pipeline project proposal would then be placed before the Board of Transport Commissioners which would examine details as to the route, adequacy of reserves and financing, and market availability before deciding on approval or rejection in accordance with the terms of the Pipe Lines Act. Shortly after the passing of the Act in 1949, three major pipeline companies were incorporated: Interprovincial Pipe Line Company, Westcoast Transmission Company, and Western Pipe Lines (which later became part of Trans-Canada Pipe Lines Limited). The passing of the Pipe Lines Act led to a number of pipeline proposals by these and other companies, and to the associated parliamentary debates concerning the extent to which Canadian oil and gas should be devoted to meeting Canada's own requirements and the extent to which exports to the United States might interfere with the objective of protecting Canadian requirements (see also March 1953 note on natural gas and oil export policy).

Alberta Gas Resources Preservation Act 1949; the first Conservation Board decision of January 1951

In July the Gas Resources Preservation Act was passed in Alberta. The Act stipulates that no gas may be removed from Alberta unless a permit is granted by the Petroleum and Natural Gas Conservation Board (now the Energy Resources Conservation Board), with the approval of the Lieutenant Governor in Council. The Board is prohibited from granting a permit covering removal of any gas from Alberta unless such gas, in the opinion of the Board, is surplus to the present and future needs of the Province. In July, the Alberta government gave its newly-constituted Petroleum and Natural Gas Conservation Board authority to hear applications for removal of gas from the province. In its interim report in January 1951 on its first gas export

hearing, the Board concluded that the available gas reserves were not much larger than the 30 years' supply of gas projected as Alberta's future needs, and it recommended that no export permits be granted. The Alberta government action in 1949 to enact the Gas Resources Preservation Act followed from its concern that outside corporate entities under federal government jurisdiction could gain primary access to Alberta's gas supplies, to the benefit of eastern Canada and export markets and the disadvantage of Alberta consumers in terms of supply security and price.

Federal Board accepts priority of Alberta position on gas removal from Provinces

On September 12, the federal Board of Transport Commissioners ruled that a company required the Alberta government's permission to remove gas from that Province before the Board would hear an application for permission to build a pipeline. It had been advised by the Premier that a surplus of gas beyond the present and future needs of the province did not exist at the time and was not likely to exist for some time to come. The Alberta government's position reflected the conclusions of the Dinning Commission which had been established by the provincial government in November 1948 and reported to the Alberta cabinet in March 1949. The Commission recommended a policy of ensuring prior claims by the people of the province on provincial gas supplies, with other Canadian users taking priority over foreign users when, and if, a surplus developed in Alberta. In accepting this recommendation, the Alberta government enacted the Gas Resources Preservation Act in 1949 and established the Petroleum and Natural Gas Conservation Board to regulate the removal of gas from the province (see note for March 1949).

Pipeline routing and export policy - key policy statement

In a statement in the House of Commons in October, the Hon. C.D. Howe, in defending the federal government's intention to terminate the Interprovincial oil pipeline at Superior, Wisconsin, rather than at Fort William, stated that the decision was based on "a definite saving in the marketing of oil by that route". A line to Superior was expected to save in construction costs and provide for oil exports to the U.S., and the eventual extension of the line south of Lake Superior along a U.S. route would keep oil transportation costs lower than via an all-Canadian route, thereby reducing the price of oil in Ontario. In his statement in the House of Commons on October 4, the Minister set out a policy concerning oil pipeline routing and markets: "In my opinion international commodities such as oil that move freely from country to country and continent to continent, should not be confined by, geography. The sensible way to market international commodities such as petroleum is to move them to markets nearest the source of supply. It is in the interests of users of petroleum to get that commodity from the cheapest sources. For eastern Canada and perhaps in the Montreal area the cheapest source is still the Caribbean or the gulf ports of the U.S. The best market for Alberta oil is that which could be made available nearest to the source of supply, and part of that market eventually may be in the United States" (see also note for March 1953).

Coal import duty removed on metallurgical coal at end of 1949 and on all coal in 1969

At the end of December, a 50 cent per ton duty on imported metallurgical coal was removed. A duty on imported coal had been maintained almost continuously since 1879 to assist the Nova Scotia coal mining industry and the Western Canada coal industry to develop their domestic market. The duty, as applied to metallurgical coal, was removed because most of this coal was being imported for use by the steel-making industry of Ontario which used little, if any, Canadian coal. Its continuing imposition would only have constituted a financial burden on Ontario steel makers with no corresponding benefit to Canada's coal producers. In 1967-68, a decision was taken to remove the import duty on the rest of the coal imports which were used for electrical generation in thermal power plants and the duty was completely eliminated on June 4, 1969. Although the import duty on metallurgical coal was removed in 1949, the Canadian Coal Equality Act was maintained to assist primarily the coal and steel industries of Nova Scotia and B.C. Support under that Act was terminated in 1970 (see note for March 1970).

Dept. of Mines and Technical Surveys established

In December, the Department of Mines and Technical Surveys was established from the previous Department of Mines and Resources. The new Department consisted of five Branches: Geological Survey of Canada, Mines Branch, Surveys and Mapping Branch, Dominion

observatories, and Geographical Branch. The details of the new organization were announced on January 18 and August 8 of 1950. Energy economic studies were to be conducted in the Mineral Resources Division of the Mines Branch, as had been the case in the predecessor Department of Mines and Resources. The Department of Mines and Technical Surveys Act was passed in December 1949 and came into force on January 20, 1950. At the same time two other Departments were established from the former Department of Mines and Resources -- the Department of Resources and Development, and the Department of Citizenship and Immigration. The Department of Mines and Technical Surveys became the Department of Energy, Mines and Resources, effective October 1, 1966

## THE YEAR 1950

Alberta oil prorationing introduced	Effective January 1, the Alberta government established a plan of proration of oil production to market demands in order to deal with the problem of an increasing oil surplus. Following the Leduc oil discovery of February 1947, oil reserves had increased quickly and, by 1949, Alberta oil fields had a capability of producing at rates in excess of the total demand of the Prairie Provinces. By 1957, over one half of Alberta's potential oil production was shut-in due to a lack of markets and one of the tasks of the Royal Commission on Energy, appointed in October 1957, was to make recommendations concerning this matter.
Maritime Coal Production Assistance Act	The Maritime Coal Production Assistance Act (13 Geo. VI, c. 29) was passed in 1949 and came into force on January 7, 1950. It followed from the recommendations of the 1946 Royal Commission on Coal which had concluded that the Cape Breton coal industry was in urgent need of mechanization and modernization to make N.S. coal competitive on world markets and to reduce the amount of transportation subventions being paid on it. The Act authorized the loaning of money to coal producers to assist them in improving their facilities and increasing the efficiency of their operations. The loans were administered by the Dominion Coal Board. The legislation was broadened in 1959 to extend its provisions to all of Canada in the form of the Coal Production Assistance Act (7-8 Eliz. II c. 39). This assistance was continued until 1970 when the Coal Production Assistance Act was revoked.
Alberta Oil and Gas Resources Conservation Act of 1950, and Conservation Board	In 1938, the Government of Alberta set up a Petroleum Gas Resources and Natural Gas Conservation Board which was given the responsibility of administering the Oil and Gas Wells Act, and the Oil and Gas Resources Conservation Act. Effective January 1950, these Acts were repealed and consolidated in a new Act known as the Oil and Gas Resources Conservation Act, 1950. The intent of this Act, and of succeeding legislation, has been to effect the conservation of the oil and gas resources of Alberta; to prevent the waste thereof; to regulate the safe drilling, production and abandonment of wells and all other operations for the production of oil or gas; and to give each owner the opportunity of obtaining a just and equitable share of the production of any pool. The Petroleum and Natural Gas Conservation Board of Alberta (now the Energy Resources Conservation Board) is constituted under the Act as a body politic and corporate. Oil and gas production and conservation legislation in other provinces was modeled to a considerable extent on the basis of the Alberta legislation.
Interprovincial oil pipeline completed to Lakehead	In October, Interprovincial Pipe Line Company completed the construction of its 1,100 mile pipeline to Superior, Wisconsin. The Company, which was incorporated by Special Act of Parliament in 1949, had planned initially to build and operate a crude oil pipeline from Edmonton to Regina. The rapid saturation of oil markets in the Prairie region and the discovery of several fields shortly after the Leduc discovery in February 1947, led to plans to extend the system beyond Regina which had been reached in June 1949. By the end of 1950, Interprovincial was delivering Alberta crude into storage at Superior for transportation by Lake Tanker to Sarnia during the shipping season.



## THE YEAR 1951

Canadian-Montana gas export project - Western Canada=s first export of natural gas was controversial

On March 13, a bill to incorporate Canadian Montana Pipe Line Company was introduced in the House of Commons. The bill proposed the construction of a natural gas pipeline from the southeastern corner of Alberta to Montana in order to supply Alberta natural gas to the Anaconda Copper Company smelter at Butte in northern Montana. After considerable debate in Parliament, the bill was passed and a special federal permit to export gas was issued by the end of 1951 covering gas deliveries for a five-year period. Although the Alberta Petroleum and Natural Gas Conservation Board had reported in January 1951 that Alberta only had 4.5 trillion cubic feet of gas reserves and had recommended that no export permits be granted until reserves increased, the Alberta government enacted a special law in 1951 allowing the removal of 23.8 billion cubic feet per annum for the Montana project, at daily rates up to 40 million cubic feet. During the debate in the House of Commons in March and April 1951 on the Canadian-Montana Pipe Line bill, opponents of the legislation argued that gas from the field could best be used for the proposed Trans-Canada pipeline to eastern Canada as well as for the Calgary market. Because the U.S. government had asked the Canadian government to ensure the availability of this gas in order to meet emergency gas requirements of the metal industries in Montana, the debate on the bill in March and April involved continental defence arrangements between Canada and the U.S. Those who opposed the bill argued in terms of the priority of domestic requirements and the danger of commitment to the U.S. market at the expense of Canadian needs, particularly in relation to plans to deliver Alberta gas to eastern Canada. The project was approved during the course of the Korean War, which had started in July 1950 (and ended in July 1953), and was the first significant gas export. As noted in the March 1957 note on the Royal Commission on Canada's Economic Prospects, the Commission was critical of the export price approved by the federal government for this project.

Canada's first major uranium mine

In March, Eldorado Mining and Refining Limited announced production plans for its Ace deposit in the Beaverlodge region north of Lake Athabasca in northwestern Saskatchewan. Uranium occurrences in this region had been discovered in 1944 and some preliminary development work had been done by Eldorado. The company also acquired a large block of mining claims in the vicinity of the Box gold mine which had operated in the period 1939-1942. With the lifting of restrictions on private prospecting late in 1947, radioactive occurrences were discovered, with the most attractive prospects being in the Beaverlodge region and in the N.W.T. between Great Bear Lake and Great Slave Lake. However, none yielded results as favourable as those obtained at Eldorado's Ace property where extensive tonnages were indicated. At the same time, research was underway in the Mines Branch of the Department of Mines and Technical Surveys (now EMR) in Ottawa to develop a uranium recovery process that would make the Ace Lake uranium material economic to recover. Following the announcement of production plans in 1951, Eldorado proceeded actively to prepare its mine for production which also included the construction of a leaching plant. Production began in 1953 at 500 tons a day, with the plant being later enlarged to 2000 tons per day capacity. This was Canada's first uranium mine, Eldorado's Great Bear Lake mine in the 1930s and in the war period having been primarily worked for radium and its silver content.

Trans Mountain Oil Pipe Line Company incorporated

Trans Mountain Oil Pipe Line Company was incorporated by Special Act of Parliament in April to transport crude oil from Edmonton to Vancouver for the supply of refineries at that centre and also, by means of spur line, to supply U.S. refineries in the Puget Sound area, a few miles south of the international boundary. The Vancouver refineries were obtaining their crude oil from offshore sources, mostly by tanker from California, and more than half of the petroleum product demand of British Columbia was being met by product imports. The States of Washington and Oregon were also dependent on imports and, for defence reasons related to the Korean crisis, the U.S. government was concerned that refineries being constructed in the Puget Sound area should be supplied from a source which did not involve ocean transportation. These factors, together with the continued development of oil reserves in Alberta and the success of Canadian oil industry in obtaining financial support from various oil companies in the U.S. interested in

refining Alberta crude oil in the Puget Sound area, led to the incorporation of Trans Mountain. The pipeline system was completed in 1953 (see note for December 1951 and October 1953).

Trans-Canada Pipe Lines Ltd. incorporated - enters into competition with Western Pipe Lines - merger in 1954

In April, Trans-Canada Pipe Lines Limited was incorporated by Special Act of Parliament, the company's intention being to build an all-Canadian pipeline eastward from Alberta across northern Ontario to deliver natural gas to Toronto and Montreal. It became a strong competitor for Alberta gas of Western Pipe Lines Limited, which had been incorporated in April 1949 by Special Act of Parliament. Western Pipe Lines planned to construct a gas pipeline to Winnipeg and south to an export point at Emerson on the Manitoba border, and in February 1950, it applied to the Alberta Petroleum and Natural Gas Conservation Board for the right to export gas over a period of 30 years. In January 1951, the Board concluded that there was not at that time, sufficient proven gas reserves to meet Alberta's future needs. Western Pipe Lines was backed by four Canadian financial and utility groups and had a gas sales contract with Northern Natural Gas Company to sell gas in Minnesota and other mid-west States. Trans-Canada, then a subsidiary of Canadian Delhi, a branch company of Texas natural gas interests, was part of the first group to explore exclusively for gas in western Canada and, in addition, Trans-Canada by 1953 had spent twice as much as Western Pipe Lines on pipeline feasibility, and market studies. In January 1954, the two rival groups - Western Pipe Lines and Trans-Canada agreed to merge (see note for January 1954).

Sarnia basing point sets oil prices

When shipments of Alberta crude first reached Ontario refineries in April 1951, wellhead prices of these crudes dropped as much as 44 cents per barrel in order to compete with U.S. crudes delivered to Sarnia. This refinery centre then became known as the "basing point" for wellhead prices in western Canada. This pricing system continued until 1959 (see note for March 1959).

Trans Mountain oil pipeline proposal supported by U.S. government

In its report of December, the U.S. Petroleum Administration for Defence referred to the warning given by the National Petroleum Council in November 1950 of the need for adequate production and transportation facilities to ensure timely supply of needed petroleum products in all parts of U.S. industry. As a result, the Petroleum Administration for Defence (PAD) undertook a study in 1951 of probable future demand, estimated future refinery capacity, and estimated future producibility of crude oil and natural gas liquids. These three significant benchmarks were studied in terms of the five PAD Districts in the U.S. so that the transport facilities required to provide an integrated flow could be outlined. In its examination of District V, covering the Pacific Coast States, the PAD also examined the petroleum supply and demand situation in western Canada, particularly in relation to the potential of Alberta oil fields to supply the oil needs of British Columbia and of the adjacent Pacific Coast States of Washington and Oregon. The major considerations were the defence needs of the U.S. Pacific Northwest during the Korean crisis and the desirability of making available to this region as much producible crude oil from the Western Hemisphere as possible. The report concluded that: "No practical means of accomplishing these desired defence considerations other than an Alberta-Puget Sound pipeline is apparent. The crude oil pipeline from Alberta to the Puget Sound area is recommended, therefore, along with the construction of increased refining capacity. The Petroleum Administration for Defence should assist in acquisition of steel to this end". This led to approvals in Canada and the United States for the construction of the 719-mile Trans Mountain oil Pipe Line system from Edmonton to Vancouver, with a spur line to Ferndale, Washington. Construction was started in March 1952 and the line to Vancouver was completed in October 1953, and to Ferndale early in 1954.

## THE YEAR 1952

Mineral map of  
Canada - Map 900A

In March, a new mineral map of Canada was issued by the Department of Mines and Technical Surveys, bringing up to date the information shown on a map issued in 1947. Since 1952, this map, Map 900A Mineral Map of Canada, has been issued on an annual basis and receives wide distribution. The 1952 and subsequent editions show in colours the main geological divisions of the country. Also shown are the locations of the principal metallic and non-metallic mineral properties, the coal properties, the oil and natural gas fields, and the pipelines. Additional information includes statistics on mineral production, and small-scale insert maps showing the locations of smelters and refineries and principal producing areas of various minerals. Indexes of mines and oil and gas fields, by province, are recorded on the margins of the map.

Saskatchewan oil  
and gas legislation

On April 4, the Oil and Gas Conservation Act of Saskatchewan was passed to be followed by the Oil and Gas Well Regulations in February 1953. This Act and the Regulations, which have been amended to meet changing circumstances, replaced in the early 1950s the former inadequate oil legislation. Legislation comparable to the Alberta Mines and Minerals Act was incorporated in the Saskatchewan Mineral Resources Act which provides for the disposition of oil and gas rights. In 1953 the Premier of Saskatchewan stated that the policy for the development of oil and gas resources in the Province was based upon a recognition of two principles: "it is necessary to secure to the people of the Province a fair return from the production of petroleum of which the people are the true owners, by means of Crown reserves in all parts of Saskatchewan and in the form of royalties upon the petroleum that is produced; and the Province will stand by all agreements it enters into and it has no intention of either expropriating or socializing the oil industry".

Westcoast  
Transmission gets  
access to Alberta  
gas

On June 16, the Alberta government issued a permit to Westcoast Transmission Company, allowing the Company to remove gas from the Peace River area of Alberta for its proposed pipeline to Vancouver and to an export point on the B.C.-Washington border. The Alberta government had concluded that the gas in the northwest part of the province, but not that in the southern part, was surplus to the requirements of the Province. The decision in effect deprived Westcoast's two competitors from a source of gas in Alberta. Both Prairie Gas and Alberta Natural Gas had proposed to supply the U.S. Pacific Northwest and the Vancouver area with Alberta gas delivered in pipelines originating in southern Alberta and proceeding via a U.S. route to the Portland and Seattle areas and then north to Vancouver. The fact that both of those proposals would have involved main lines south from Alberta to the international boundary, and an American routing to the west coast, had led to considerable debate in Parliament in October and November 1949 when the two groups applied for a Special Act of Incorporation. The Westcoast Transmission Company bill received Parliamentary approval, and the project was later approved by the Board of Transport Commissioners, and by the federal government in December 1953 and in June 1955, because its route would ensure priority of service to Canadian communities.

U. S. crude oil  
import tariff

With the coming into force of the United States and Venezuela Agreement on October 11, the U.S. import tariff on oil of 25 degrees API gravity or less was lowered to 5 1/4 cents, and for oil of 25 degrees A.P.I. gravity or above the rate was set at 10 2 cents per barrel. Prior to that time, 10 2 cents per barrel was paid on all oil moving into the U.S. up to a volume equal to 5 per cent of U.S. domestic refinery runs during the preceding year, and a rate of 21 cents on crude and fuel oil imported beyond that limit. The agreement, which also applied to Canadian crude oil imports into the U.S., was important in view of plans of Canadian producers to move crude oil into the Pacific Northwest States on completion of the Trans Mountain Pipeline in 1953. There has been no tariff on crude oil imported into Canada.

AECL established -  
takes over Chalk  
River project for

Atomic Energy of Canada Limited (AECL) was formally incorporated as a Crown Corporation on October 23, following its incorporation as a company by letters patent, dated February 14, 1952. An agreement, effective April 1, 1952, was made for the transfer of the Chalk River

nuclear power and  
radio- isotopes  
R&D

project from the Atomic Energy Control Board (AECB) to AECL, but still reporting to AECB. The 1954 amendments to the Atomic Energy Control Act changed the reporting relationship for AECL from AECB directly to the Minister (see note for June 1954). The objectives of the AECL program included the development of economic nuclear power in order that it would be available for use in Canada in those regions where a new source of energy would be required to supplement existing conventional sources. The AECL mandate also called for it to carry out the development of nuclear power in a manner which would provide for the most effective participation of the electric utilities and the manufacturers. It was further directed to endeavour to expand the market, both domestic and foreign, for Canadian uranium. It had the important research-related responsibility of producing and marketing radioisotopes for use in industry, medicine and research, and of developing new uses for these radioisotopes. In 1952, cobalt-60 therapy treatment for cancer was first introduced into Canadian hospitals, and there was great interest in using radioisotopes and related equipment in many areas of research, industry, and medicine. The Commercial Products Division of AECL was established in 1952 to market radioisotopes and to develop new uses for them.

Canadian Petroleum  
Association

At a meeting of the Western Canada Petroleum Association on December 9, it was decided that the name of the organization should be changed to the Canadian Petroleum Association (CPA) and a new constitution was adopted. At the same time bylaws were passed establishing separate divisions in Alberta, Saskatchewan, and British Columbia, to be responsible for affairs of a provincial nature. An Ottawa office was also opened, and a Pipeline Division later formed to be responsible for matters affecting the pipeline segment of the industry. An extensive committee system evolved over the years to conduct and prepare background material for most Association activities. The CPA is one of Canada's oldest trade organizations. In 1927, as field development progressed in the Turner Valley field, discovered in 1914 near Calgary, the Alberta Oil Operations' Association was established to assist the small oil industry with many unique and complex problems. In 1929 the organization was enlarged to form the Oil and Gas Association of Alberta involving all branches of the industry. In 1936 the Petroleum Producers' Association was formed to investigate the marketing of a large pool of crude oil which had been discovered in Turney Valley and, in 1938, the two Alberta groups merged to become the Alberta Petroleum Association which was renamed the Western Canada Petroleum Association in 1947, the year of the Leduc oil discovery. As the Canadian Petroleum Association, it became a national trade association in 1952. At that time, it merged with the Saskatchewan Operators Association. The Canadian Petroleum Association established an information office in Ottawa in 1958, and regional offices in Victoria in 1960, in St. John's in 1981, and in Halifax in 1983. Its committee system is organized in terms of several committee groupings related to exploration, natural gas policy, oil policy, production, resource economics, public affairs and socioeconomic matters, and pipeline matters.

NRX reactor  
accident

In December, the NRX (Nuclear Research Experimental) reactor was put out of commission for 14 months as a result of a major accident caused by operational and equipment failures. The incident provided practical experience on how to prevent reactor accidents from happening in the future, priority being given to the quality of safety devices rather than to their number. Later, in 1956, the Reactor Safety Advisory Committee was established and other safety and health measures were implemented (see note for August 1956). The NRX had begun operations in the summer of 1947.

## THE YEAR 1953

Uranium  
resourcerapid  
development in the  
1950s, and  
subsequent decline

The Crown company Eldorado Mining and Refining Limited announced production plans for its Beaverlodge property in the Lake Athabasca region of northern Saskatchewan in March 1951. Production began at Canada's first uranium mine in 1953 and the mine and leaching plant were later enlarged to mine and process 2,000 tons of uranium ore a day. The first major private mine development was planned in 1953 when Gunnar Gold Mines Limited announced in January its intention to proceed with a mining operation in the same area. Its mine went into production in 1955. The next major development was in the Blind River district of Ontario where a major discovery had been made 1948. The Pronto mine was brought into production in 1955 and, several other deposits were explored. In 1957, the Elliot Lake (Blind River) district became Canada's main uranium camp. By the end 1956, four large private uranium mines, with their own plants, were producing: one at Beaverlodge, two near Blind River, and one near Bancroft, Ontario. A number of other smaller mines were being brought into production, chiefly in the Beaverlodge and Elliot Lake areas. By 1962, about \$1.7 billion worth of contracts for uranium had been signed. Because of the rapid development of uranium resources in the mid-1950s, resulting in 19 mines with treatment plants and a number of small operations in 1958, uranium was no longer in short supply, and the federal government had announced that applications for sales contracts would not be accepted after March 31, 1956. By the end of that year, uranium prospecting began to decline (see note for November 1959). Uranium production activities peaked in 1958, with 19 mines producing uranium concentrates from individual treatment plants and 7 other mines shipping ores to those plants. By the end of 1960, only 11 mines were in operation and by the end of 1965, only 3. It was not until 1975 that a new mine was brought into production.

AECL design of  
NPD leads to  
CANDU

In a House of Commons debate of February 17, 1953, the Minister of Trade and Commerce (C.D. Howe) indicated the government's intention to encourage the development of atomic power in Canada for energy supply purposes. Later in the year Atomic Energy of Canada Limited (AECL) began a reactor feasibility study to determine general specifications for a small or prototype power reactor. At this point, AECL saw its role as one of a research and development agency, with Canadian industry being responsible for the design of nuclear reactors and their construction. When AECL's feasibility study was completed in 1954, a team consisting of AECL, Ontario Hydro and Canadian General Electric Limited then proceeded with the final design and construction of a prototype reactor called NPD (Nuclear Power Demonstration). After considerable design change, the NPD was completed and had start-up in 1962. The final design concept contained all of the basic features of the subsequent CANDU series of reactors which became unique among the world's power reactor types, being fueled by natural uranium, moderated and cooled by heavy water, equipped with a horizontal pressure-tube arrangement, and could be refueled while on power.

Natural gas and oil  
export policy  
statements, 1953

On March 13, the Hon. C.D. Howe announced in the House of Commons (Debates, March 13, 1953, pp. 2928-9): "the policy that guides the export of electricity since 1907 applies within reason to the export of natural gas". Accordingly, authority would only be given for the export of natural gas to the extent that the federal government was convinced that "there can be no economic use, present or future, for that gas within Canada". The federal government exercised control over the exportation of natural gas under the Electricity and Fluid Exportation Act of 1907 which was revised to the Exportation of Power and Fluids and Importation of Gas Act in 1955. In 1959 that legislation was replaced by the National Energy Board Act. With respect to petroleum, the Minister stated that Canada's policy should have two components: "to move petroleum from the source of production to refineries within economic distance in the cheapest possible way"; and "to arrange for markets for that portion of Canadian output that cannot be economically used in Canadian refineries in the market that offers the highest return to the producer". The oil policy was consistent with the decisions that had been taken a few years earlier with respect to the Interprovincial pipeline to Sarnia and was a restatement of a government policy announcement in October 1949 concerning the Superior, Wisconsin terminus

location of the Interprovincial pipeline. Economies of scale were being achieved through the provision of exports to the nearest available market and American routing. With respect to the Westcoast Transmission decision, which might appear to be in contravention of the 1953 gas policy statement, the Minister noted that export permission was given in 1952 because of gas shortages in the U.S. Pacific Northwest and the insufficient demand in the Vancouver market which made the area in the U.S. a logical market for Westcoast's Peace River gas. Furthermore, there appeared to be substantial reserves to meet the needs of B.C. after guaranteeing a substantial export of gas to the U.S.

Haines - Fairbanks  
oil products pipeline

A Canada/U.S. agreement of June 30 provided for the construction of a 625-mile, 8-inch diameter oil products pipeline from Haines to Fairbanks, Alaska, over a 293-mile Canadian route in B.C. and the Yukon. It was planned primarily for defence reasons related to the Korean War and was completed in late 1954. British Columbia facilitated the transfer of land, for the right-of-way, to the Canadian government by an order in council of May 2, 1953, and administration and control was shortly thereafter transferred by Canada to the U.S., subject to the conditions stipulated by the B.C. government in the Order in Council. Subsequent agreements in 1960 and 1962 conveyed certain facilities to the Canadian government, and provided for the addition of new pumping stations. The 1953 Agreement was to last 20 years until June 1973 when either signatory could terminate it unilaterally following consideration by the Permanent Joint Board on Defence (PJBD). Due to serious deterioration of the pipeline, much of the line being above ground, the U.S. announced at a PJBD meeting in 1971 that it would discontinue use of this oil products transportation facility. After intermittent negotiation in the 1970s, concerning possible operation of the line by a Canadian company and concerning control of the right-of-way under such a circumstance, the June 1953 agreement was finally terminated on January 12, 1980. Like the Canol pipeline, built in World War II to deliver crude oil from the Norman Wells, N.W.T. field to a refinery in Whitehorse, the Haines-Fairbanks pipeline was only used for a very short period in the transportation service for which it was constructed but both projects involved extensive Canada/U.S. planning and cooperation.

Trans Mountain Oil  
Pipe Line system  
completed - later  
expanded

The Trans Mountain Oil Pipe Line Company commenced construction of its 719-mile, 14-inch pipeline in February 1952 and, after a halt in construction in the winter of 1952-53, completed the system in October 1953 at a cost of \$93 million. A spur line to Ferndale, Washington, to supply newly-constructed refineries in the Puget Sound area, was completed in 1954. Constructed across the mountainous Cordilleran Region, the pipeline was considered at that time one of the most difficult construction projects ever attempted in the pipeline industry. The initial capacity of the system was 120,000 barrels per day. In expanding into the west coast market, no reduction in wellhead prices in Alberta was involved. With wellhead prices continuing to be based on competition at Sarnia with potential crude oil imports from the U.S. Midwest (Illinois) to that refinery centre, Alberta crude had a price advantage in Vancouver, and also in the Puget Sound area, even after paying the U.S. import tariff of 10 2 cents per barrel. With growth of this Puget Sound market particularly at the time of Suez Canal crisis in late 1956 and early 1957, Trans Mountain continued to expand its system which, by the end of 1957, had a throughout capacity of 250,000 barrels per day. The four major oil companies with refineries in Vancouver were the major shareholders in Trans Mountain at that time.

Pipe Lines Act 1953  
amendment

In an amendment of December 16 to the Pipe Lines Act, Parliament closed a loophole in the legislation by adding a definition of "extra-provincial pipe line" and a new section prohibiting any person other than a Special Act company from constructing or operating an extra-provincial pipeline. By this amendment, Parliament asserted strict control over all interprovincial and international pipelines. The National Energy Board Act of 1959 replaced the Pipe Lines Act of 1949, as amended, and the Exportation of Power and Fluids and Importation of Gas Act of 1907, as amended. Like its predecessors, the NEB Act provided that only Special Act companies would be permitted to construct or operate extra-provincial pipelines, although Section 79 permitted certain provincial legislation to apply to the undertaking of Special Act companies.

Board of Transport Commissioners authority	In December, the House of Commons gave approval to a bill granting the Board of Transport Commissioners complete jurisdiction over location, construction, and operation of interprovincial and international oil and gas pipelines in Canada. This followed amendment of the Pipe Lines Act on December 16.
Interprovincial oil pipeline completed to Sarnia, later extended to Toronto	In December, Interprovincial Pipe Line Company (IPL) completes its system to Sarnia, Ontario, by a 643-mile extension from Superior, Wisconsin, to provide for a pipeline system from Edmonton to Sarnia over a 1,765-mile route. The 1953 project included the longest underwater crossing ever undertaken, two pipelines, 20 inches in diameter, being pulled across the 21,000 foot width of the Mackinac Straits. The section east of Superior replaced shipment by tanker. Interprovincial's U.S. subsidiary, Lakehead Pipe Line Company Inc., operates the 969-mile section of the system in the United States. At the end of 1953, Interprovincial had a capacity of 200,000 barrels a day out of Edmonton, the tariff to Sarnia being 64 cents per barrel. Crude oil delivery into Sarnia commenced on January 8, 1954. A further extension was made to Port Credit, near Toronto, in 1957. The initial construction and each subsequent stage of expansion of the Interprovincial system over a 1930-mile route were based on the assumption by the major oil companies that the competitive position of Canadian crudes in the new market would not deteriorate. Financial risks were involved and in the original financing of the Interprovincial Pipe Line Company, Imperial Oil Limited undertook sufficient throughput obligations through two agreements dated October 1, 1949 to service the funded debt of IPL. Commitments were also made to certain refining companies concerning delivered prices.
Alberta declares gas surplus for eastern pipeline	In December, the Alberta government announced that Alberta had available for eastern export approximately three and one-half trillion cubic feet of deliverable surplus gas, and it anticipated that this surplus would increase to some five trillion cubic feet by the time a pipeline could be constructed, provided the incentive necessary to stimulate continued gas resource development was maintained. This led to the merger in January 1954 of the two companies that had been incorporated to transmit natural gas eastward from Alberta, and to intense activity to finance a pipeline over an all-Canadian route to central Canada, with an export component south from the Manitoba border.
Special price contracts for uranium development	On December 10, arrangements were entered into with the U.S. Atomic Energy commission whereby it agreed to purchase any uranium that Eldorado Mining and Refining Ltd. might purchase from Canadian producers under terms of special price contracts. The first such special price purchase arrangement was made by Eldorado with Gunnar Mines Ltd. which went into production in the Lake Athabasca area of Saskatchewan in 1955. As a result of this special price incentive, development of lower grade deposits was accelerated, rather than high grade pitchblende deposits similar to the Great Bear Lake mine that had operated during World War II. By 1956, uranium was no longer in short supply (see note for March (1956)).

## THE YEAR 1954

CANDU system development

In January, Atomic Energy of Canada Limited (AECL), a federal Crown company, and Ontario Hydro commenced joint feasibility studies towards the development of the Canada-Deuterium-Uranium (CANDU) nuclear reactor system. The system is cooled and moderated by heavy water (deuterium oxide) and fueled by natural uranium. In the CANDU reactor, pressurized heavy water coolant, in a circuit separate from the "moderator", is pumped over the fuel bundles removing the heat released in the fission reaction. This heat is then transported to heat exchangers and boilers, and is used to produce steam which turns the turbine generator to produce electricity. The NPD (demonstration power reactor) Generating Station at Rolphton, Ontario, became operational in 1962; the Douglas Point Station at Tiverton in late 1966; the four units of the Pickering Station A in the period 1971-73; the four units of Bruce A at Tiverton in 1976-79; the Gentilly 2 Nuclear Power Station at Gentilly, Quebec in 1982; the Point Lepreau Station at Point Lepreau, N.B., in 1982; the four units of the Pickering B Station in 1982-84; the four units of Bruce B scheduled for the mid to late 1980s; and the four units of the Darlington Station at Bowmanville, Ontario, scheduled for the late 1980s and early 1990s (see also note for October 1952 and CANDU references). The evolution and development of the CANDU reactor system produced a technology suited to Canada's industrial structure, resource base, and accumulated expertise. Over this period of development, AECL has taken responsibility for the design and overall project management of CANDU reactors, and also for reactor sales abroad and for heavy water production. Ontario Hydro and public utilities in Quebec and New Brunswick have assumed project management responsibility for reactors constructed in their respective provinces. Private industry has had the role of manufacturing components and providing engineering services for reactors designed by AECL and built for provincial utilities.

Alberta Gas Trunk Line Company established as the provincial gas gathering system

Effective January 1, Alberta Gas Trunk Line Company (AGTL) was established by the Alberta government as the sole provincial gas gathering pipeline system. The company was incorporated with voting shares almost entirely limited to producers and distributors of gas within Alberta. Membership on its board of directors was representative of these two classes of shareholders, along with two directors chosen by the provincial government and one by the gas exporters. The Alberta government thereby kept jurisdiction over gas gathering pipelines within the province. There had been concern within Alberta that federally incorporated pipelines would extend their gathering lines across the Province's borders into its major gas fields and that this could undermine Alberta's emphasis on local priority with regard to supply and price. In the fall of 1954, AGTL was unable to supply a schedule of tariffs for Trans-Canada, making it impossible for that company to arrange purchase contracts at that time with major gas producers. Pipeline companies planning to transport Alberta gas to eastern Canada or to export markets could only take delivery of that gas from AGTL at a point on the Alberta border.

Trans-Canada - Western Pipelines merger prepares way for all-Canadian pipeline route

The Trans-Canada gas pipeline project had been under study since 1950 by the two predecessors of Trans-Canada Pipe Lines Limited. In that year Trans-Canada and Western Pipe Lines Limited placed applications before the Petroleum and Natural Gas Conservation Board of Alberta for permission to remove natural gas from the Province. Late in 1953, that Board declared a surplus of gas for use outside of Alberta. In January 1954, the two companies agreed to amalgamate after having spent considerable amounts in the previous three years on feasibility studies. Trans-Canada had been proposing an all-Canadian route to Toronto and Montreal; Western was planning to build a pipeline to Winnipeg and south to Minneapolis, to be followed in a second phase by a route to central, Canada, via the U.S. As a condition to making the gas available, the Alberta government required that suitable markets be obtained to enable the payment of fair and equitable prices to producers, and at the same time ensure that the proposed line could be successfully financed. The March 1953 federal government policy statement had specified that gas could be exported to the extent that it was surplus to present and future Canadian requirements. However, when the Trans-Canada incorporation bill was approved in 1951, a rider was attached stating that the main pipeline or lines were to be located entirely



within Canada. On the basis of these various requirements, promoters of the two companies as merged into Trans-Canada Pipe Lines Limited in 1954, proceeded to endeavour to finance the project following the intense rivalry between them of the previous three years. In May 1954 the new company received authorization from Alberta to remove 500 million cubic feet of gas per day from the province and the federal government promised to permit export of 200 million cubic feet per day at Emerson, Manitoba.

Trans-Canada gas market in Toronto protected by legislation

By the spring of 1954, while plans were still being developed to build a pipeline from Alberta to central Canada, the energy requirements of Ontario were increasing at an unprecedented rate. In March, Consumers' Gas Company, which had served the Toronto area with manufactured gas since 1848, considered it necessary to secure a supply of natural gas. Being uncertain of when and on what terms it might be able to purchase Alberta gas, it contracted to buy gas from the southern U.S. and to have the supplies transferred to Canada via the facilities of Tennessee Gas Transmission Company. The federal government concluded, however, that the loss to the Canadian suppliers of the Toronto market would make the construction of the proposed Trans-Canada line to bring gas from Alberta to Ontario and Quebec impracticable. Until the Electricity and Fluid Exportation Act could be changed (see June 1955 note), the federal government employed the Navigable Waters Protection Act to forestall any move to construct a pipeline across the Niagara River to bring in U.S. gas via the Tennessee Transmission system. In 1955, the government introduced an amendment to the 1907 Electricity and Fluid Exportation Act to make imports of gas subject to licence. This enabled the government under the new Exportation of Power and Fluids and Importation of Gas Act to control gas imports. Consumers' Gas was advised that a long-term import licence, which would in effect close the Toronto market to Alberta gas, could not be contemplated but arrangements were made for the importation of gas under a short-term contract pending delivery of Canadian gas from Alberta. A 76-mile pipeline from a point on the Canada-U.S. border near Lewiston, N.Y. to Toronto was completed late in 1954 to provide for importation of gas under the short-term contract.

Trans-Canada receives authority to remove Alberta gas

On May 14, a permit was issued by the Government of Alberta authorizing Trans-Canada Pipe Lines to include in its plans the old Western Pipe Lines scheme for exporting gas to the United States at Emerson, Manitoba. A proviso stipulated that Trans-Canada submit evidence before the end of 1954 that it could finance the project, that construction would start by June 1, 1955, and that first removal of gas from Alberta would begin by December 31, 1955. The permit provided for the removal of a total of 4.35 trillion cubic feet of gas from Alberta, of which Trans-Canada planned to export 1.33 trillion cubic feet to the U.S. The permit covered a 27-year period.

Westcoast Transmission proposal to export gas to U.S. rejected by FPC

After incorporation in 1949, Westcoast Transmission Company had commenced preparations for the construction of a gas pipeline from the Peace River area of northeastern B.C. and northwestern Alberta through British Columbia to Vancouver with a line south to the international boundary to link with pipeline systems serving the Pacific Northwest States of Washington and Oregon. The Company's U.S. affiliate had placed an application in June 1952 before the U.S. Federal Power Commission to import gas from the Westcoast Transmission system and, after lengthy hearings, this application was turned down in June 1954. Instead, approval was given by the FPC to a proposal to transmit gas into the Pacific Northwest States from New Mexico (see notes on Westcoast for June and November 1955).

Atomic Energy Control Act amendments - decline in AECB authority in mid-1950s

In June, amendments to the Atomic Energy Control Act were introduced in the House of Commons. In a statement on June 2, the Minister responsible for the Atomic Energy Control Board (C.D. Howe) expressed the hope that the controls then in effect concerning atomic energy in Canada would be removed within two or three years. The amendments passed at that time provided for the separation of administrative control from operational responsibilities for atomic energy in Canada. They also made provision for Atomic Energy of Canada Limited (AECL) which had been created in 1952 and was reporting to the AECB, to report directly to the Minister effective April 1, 1954. This meant that the Board had no direct involvement with either of the

two major operational entities in Canada's nuclear industry - Eldorado Mining and Refining Limited concerned with uranium mining and processing, and AECL concerned with research. Eldorado's reporting responsibilities were transferred by the same amendments. The AECB was therefore left with considerably reduced powers, having no major input into either of the Crown companies. This came at a time when atomic energy in Canada was on the threshold of a period of significant growth, requiring well-planned and adequately administered control.

Trans-Canada receives Board of Transport Commissioners authority to construct a line across Canada but fails to finance it in 1954-55

On July 24, the Board of Transport Commissioners issued an order granting Trans-Canada Pipe Lines Limited the right to construct a 2250-mile pipeline to Ontario and Quebec markets, subject to consideration of using the northern Ontario clay belt route instead of the CPR route and subject to completion of financing arrangements by December 31, 1954. However, by the end of the year, no supply or marketing contracts had been obtained and the Company had not been able to arrange for financing. Trans-Canada in January 1955 asked the federal government for an undertaking to meet any payments due for the following few years on the first mortgage bonds to the extent that the Company was unable to provide funds out of its depreciation and net earnings. This request was rejected and the Company then entered negotiations with the Bank of Canada for a loan from the Industrial Development Bank. After lengthy negotiations, the Bank of Canada in March 1955 agreed to participate in the financing on the basis of a commitment of \$60 million in convertible debentures and \$5 million in common (voting) shares. However, Canadian Gulf refused to sign a gas supply contract, essential to the financing, if the federal government through the Bank of Canada held common shares which would give it potential control of Trans-Canada. On March 23, 1955, the government announced it had turned down the Trans-Canada request for a bond guarantee. The Company concluded it could not start construction in 1955.

Nuclear non-proliferation - declassification of secret information, maintenance of security

In October, the Seventh Declassification Conference involving the U.S., U.K., and Canada was held following a series of conferences which had been initiated in November 1947 to develop a common declassification policy for nuclear information that had been held secret during the Second World War to prevent proliferation of nuclear weapons information. Following the war it became evident that the U.S., U.K. and Canada should be prepared to declassify nuclear information relative to nuclear weapons in order to assist programs for the development of peaceful uses of atomic energy in other countries. Declassification guides were prepared and adopted and, following the 1954 Conference, much information concerning raw material production, reactor design and construction, health precautions and medical biological research was declassified and published for the First Conference on the Peaceful Uses of Atomic Energy held in Geneva in 1955. In the period following the war, security concerned with the protection of nuclear plants and nuclear materials was closely related to secrecy of information. Security arrangements developed over the years have been specially designed to prevent theft of strategic nuclear materials, and to protect all other related facilities not having such materials in a manner comparable to industrial property protection as practiced in Canada.

Saskatchewan oil field development in the 1950s

The record at the end of December showed that a number of light oil discoveries had been made in Saskatchewan in 1954 in the southeastern corner of the Province. Medium gravity crude oil had been discovered in southwest Saskatchewan in the early 1950s and, in 1954, the South Saskatchewan Pipe Line Company constructed a 153-mile pipeline from the Swift Current area to Regina for the purpose of transporting medium gravity crude from southwest Saskatchewan fields to the Interprovincial Pipeline for trans-shipment to St. Paul, Minnesota. An integrated production, transportation and refinery operation was thereby established to serve the St. Paul area where refinery construction was designed to use the medium gravity, high sulphur crude oil of southwest Saskatchewan. In 1956 the Westspur pipeline from the light gravity fields of southeast Saskatchewan to the Interprovincial Pipeline system was constructed, providing an increasing market in eastern Canada and the U.S. mid-west for this oil. With transportation facilities established for the oil fields developed in Saskatchewan following the Leduc, Alberta oil discovery in 1947, Saskatchewan's oil production increased rapidly but never exceeded about 15% of the Canada total, with Alberta continuing to account for well over 80% of the country's

production.

## THE YEAR 1955

Atomic Energy  
Agreement B  
Canada-U.S.

An Agreement for Cooperation Concerning Civil Uses of Atomic Energy between the Government of Canada and the Government of the United States was signed on June 15. The two countries agreed to assist each other in the achievement of the objectives of their respective atomic energy programs to the extent such assistance would be relevant to current and projected programs. It was expressly understood that the design, fabrication, disposition, or utilization of atomic weapons would be outside the scope of the Agreement. The Agreement was amended by the Agreements of June 26, 1956, June 11, 1960, and May 25, 1962, and supplemented by the Mutual Defence Purposes Agreement of May 22, 1959, and the Exchange of Notes of January 28 and 30, 1969, March 18 and 25, 1976, and November 15, 1977.

Exportation of  
Power and Fluids  
and Importation of  
Gas Act

The Exportation of Power and Fluids and Importation of Gas Act was proclaimed on June 20, replacing the Electricity and Fluid Exportation Act as enacted in 1907. The revised Act provided specifically for the control of gas imports at a time when attempts were being made to promote an all-Canadian gas Pipeline from Alberta to central Canada (see note for March 1954). The new Act also removed a provision in the previous Act which gave authority to impose export duties on gas, oil and other fluids, retaining only the right to place an export duty on exports of electric power.

Westcoast  
Transmission  
Company gets  
federal approval to  
export gas

On June 27, Westcoast Transmission Company Limited received federal government approval to export natural gas from Canada for a period of 20 years at a rate not to exceed 125 billion cubic feet in any 12-month period. The approval was given on the basis of a contract signed on December 11, 1954 with Pacific Northwest Pipeline Corporation and El Paso Natural Gas Company providing for the sale of natural gas by Westcoast to Pacific Northwest at the B.C.-U.S. border for 22 cents per thousand cubic feet. Westcoast had been incorporated by Special Act of the Parliament of Canada in 1949. Westcoast obtained a permit in June 1952 from the Alberta Petroleum and Natural Gas Conservation Board to remove gas from that Province and federal export approval in December 1953, and had also signed purchase contracts with gas producers in the B.C. Peace River. An essential part of the Westcoast Pipeline project from the Peace River area of northwestern Alberta and northeastern B.C. to the B.C. lower mainland was the exportation of natural gas to the U.S. On June 18, 1954, following hearings before the U.S. Federal Power Commission which had been initiated in June 1952, the FPC denied Westcoast's U.S. affiliate an import permit, and a permit was granted to Pacific Northwest which proposed to transmit gas into Pacific Northwest States from New Mexico. On December 11, 1954, Westcoast signed the contract with Pacific Northwest at the price of 22 cents noted above. Westcoast then got Canadian government approval in the form of a new export license to replace the one received in December 1953. This June 27, 1955 export licence granted by the Minister of Trade and Commerce, on the recommendation of the Board of Transport Commissioners, included approval of the 22-cent export price which became controversial because there was criticism that the Westcoast price of 32 cents in the Vancouver area was in effect subsidizing the export to the U.S. (See note for November 1955, the first two notes on the Royal Commission on Energy for October 1958 and the second note on the Commission for July 1959). The gas exported by Westcoast was to be used in the Pacific Northwest system in Washington and Oregon; and also by El Paso for delivery into the distribution system of Pacific Gas and Electric Company in San Francisco, California.

Northern Ontario  
Pipeline Crown  
Corporation  
proposal for Trans-  
Canada project

In August, Trans-Canada agreed in principle to a federal government proposal that in order to complete financing arrangements for an all-Canadian route, a Crown corporation, (Northern Ontario Pipeline Crown corporation), would be established to construct the uneconomic portion of the line. This was considered to be the section between the Manitoba border and Kapuskasing, Ontario, which would cost about \$118 million a little over one-third of the total sum needed for the whole Pipeline enterprise. It seemed likely that the rest of the line across the Prairies and from central Ontario to Montreal could be financed privately. This would also accommodate the Trans-Canada Tennessee exchange proposal, approved by the Canadian

government in September 1955, whereby Trans-Canada would take delivery of 200 million cubic feet of gas daily at Niagara from Tennessee while delivering the same amount to the U.S. company at Emerson on the Manitoba border. The gas delivered to Trans-Canada at Niagara would be used to build up the central Canada market pending completion of the Pipeline across Canada. On September 21, 1955, the Board of Transport Commissioners issued an order granting Trans-Canada leave to construct the Toronto-Montreal line and again extending the date of proof of ability to finance, this time from October 31, 1955 to April 30, 1956. The Alberta Petroleum and Natural Gas Conservation Board extended its gas removal permit to that date also. In April 1956, both dates were extended to November 1, 1956.

Trans-Canada yields control to U.S. interests to obtain pipe

On November 1 Trans-Canada Pipelines Company signed an agreement with Tennessee Gas Transmission Company and Canadian Gulf (controlled by Gulf Oil of the U.S.) whereby the two companies obtained an option on 50% of the shares of Trans-Canada's stock in exchange for an undertaking by Tennessee to place an order with U.S. Steel Inc. for \$40 million worth of large-diameter pipe. Because of the steel shortage in the United States, and the inability of Canadian steel plants to produce 34-inch pipe, the only way that pipe could be supplied in time for the 1956 construction season was to make a November 1, 1955 commitment. Trans-Canada had no resources to back such a commitment and support was not available within Canada. This yielding of control by Trans-Canada to American companies for the period of the liability became a major factor in the "Great Pipeline Debate" that developed in Parliament in May 1956. By February 1956, U.S. control had been increased to 51%, with Tennessee Transmission, Gulf Oil, and Continental Oil each holding 17%, but this control was to cease after a public offering of shares when there would be an opportunity for Canadian ownership. The federal government remained committed to an all-Canadian route for the main line, and to commencement of construction in 1956.

Westcoast Transmission Company gas Pipeline gets U.S. approval -- export sales called "bargain of the century"

In November, the Federal Power Commission in Washington gave approval to the plans of Pacific Northwest Pipeline Corporation to import natural gas from the proposed Westcoast Transmission Pipeline system in Canada. This decision permitted Westcoast to proceed with its \$162 million project of building a 650-mile 30-inch diameter gas Pipeline from the Peace River area southward through B.C. to the international boundary at Huntington to connect with the Pacific Northwest system being constructed from the San Juan area of New Mexico. The dual projects would thus link the gas reserves of the Peace River and San Juan basin areas to markets in B.C., the U.S. Pacific Northwest, California, and the Rocky Mountain States. The Westcoast Transmission-Pacific Northwest project had been turned down by the Federal Power Commission in June 1954. Subsequent negotiations leading to the November 1955 approval involved the signing of an agreement whereby Westcoast would sell Pacific Northwest 300 million cubic feet of natural gas per day at the B.C.-Washington State border, 44 miles east of Vancouver, for 20 years at 22 cents per thousand cubic feet. This became known as the "bargain of the century". Westcoast also completed an arrangement to sell gas to B.C. Power Corporation for the Vancouver area at 32 cents per thousand cubic feet, equivalent to the price being paid by utilities in Pacific Northwest States. The Westcoast Transmission Pipeline was completed in the fall of 1957. Purchase contracts with producers in the Peace River area provided for payments of 10 cents per thousand cubic feet escalating to a maximum of 12 2 cents. Considerable controversy surrounded the project with respect to its method of financing and the relationship between its export and Canadian pricing provisions. This became a major subject of the Royal Commission on Energy inquiry and its First Report of October 1958. (See also Royal Commission notes for October 1958 and July 1959).

## THE YEAR 1956

Northern Ontario Pipe Line Crown Corporation established to help finance Trans-Canada gas pipeline

On March 15, the federal government introduced a resolution in Parliament providing for the constitution of the Northern Ontario Pipe Line Crown Corporation which would construct a pipeline between the Ontario-Manitoba border and Kapuskasing, Ontario, to thereby enable the financing of the Trans-Canada gas pipeline project across Canada. Provision was included to allow Trans-Canada to lease for not more than 25 years the pipeline with option to purchase. The resolution also provided for the Corporation to borrow money totalling not more than \$130 million. A bill to enable Ontario to participate in the Northern Ontario Pipe Line Crown Corporation had been passed in the Ontario legislative on February 22, 1956 which authorized a \$35 million loan. On March 28 the Board of Transport Commissioners gave an oral judgement moving the deadline of proof for financing from April 30 to November 1, 1956. However, Trans-Canada was still unable to arrange for the financing of the western section of its pipeline and on May 8, the Hon. C.D. Howe advised the House of Commons of the government's intention to advance a loan covering up to 90% of the \$80 million cost of the construction of the western section, at an interest rate of 5% for a short period. The company was unable to complete financing and proceed with construction because the Federal Power Commission in Washington had not yet approved the importation of Canadian gas at Emerson, Manitoba. If the company failed to repay the loan by April 1, 1957, the government would take over the whole system. The government remained committed to construct the western section in 1956, with a deadline approval date of June 7.

Uranium special contract price cancelled; restrictions lifted

Early in 1956 the federal government gave notice that after March 31, applications for special price contracts in the sale of uranium to Eldorado Mining and Refining Limited would not be received because sufficient uranium reserves had been developed (see note for December 1947). At this time, restrictions on the publication of data on uranium production and related matters were lifted.

Trans-Canada line in jeopardy because of FPC gas import approval delays

In April, Trans-Canada Pipe Lines Limited advised the federal government that it had entered into contracts with its principal Canadian gas producers and consumers and complied with requirements of the Province of Alberta and the Board of Transport Commissioners but that, in the absence of approval by the U.S. Federal Power Commission (FPC) of the proposed importation of gas at Emerson, Manitoba, it could not finance its project, either by way of temporary bank advances pending public financing, or by way of permanent financing, notwithstanding the conditioned agreement of the federal government to build and lease the Northern Ontario section. This meant that Trans-Canada would be unable to commence construction in 1956 of the Western section (from Alberta to the Manitoba-Ontario border). Trans-Canada had at this time a November 1, 1955 agreement with Tennessee, under which Tennessee agreed to purchase pipe in the tight U.S. steel market and assign purchase orders to Trans-Canada within 60 days after Tennessee had notified Trans-Canada that Federal Power Commission import permits had been authorized. In order to arrange for financing of the steel purchases, it was necessary for Trans-Canada not only to be in a position to export gas at Emerson but also to have continued in existence the agreement of the federal government to build and lease the Northern section of the line, and this agreement extended only to May 1, 1956. Failure to complete the steel purchase would mean a delay until the 1958 construction season, or later, and possibly put the all-Canadian route in jeopardy.

Trans-Canada Pipeline Debate

During May and continuing through until June 7, Parliamentary business was largely concerned with Trans-Canada pipeline matters in what came to be known as the "Great Pipeline Debate", considered at the time as the most tumultuous debate in the history of the House of Commons. On May 9, the Hon. C.D. Howe announced that the proposal for a short-term government loan to Trans-Canada had been accepted by Cabinet and would be debated in Parliament. The loan would be used to finance the western section of the pipeline as Trans-Canada was unable to arrange for financing (see notes for March and April 1956). On May 10, he introduced the resolution which would allow the Northern Ontario Pipe Line Crown Corporation to make short-

term loans to Trans-Canada for the western section to Winnipeg, with the loans not to exceed \$80 million or 90% of the cost of construction, whichever was the lesser. On May 25, the Company received Board of Transport Commissioners approval to construct the western section. On May 14, the federal government gave notice in the House of Commons of its intention to impose closure on Bill 298, to provide loans to Trans-Canada, before debate on it had commenced. Closure would be invoked at each stage of the debate. At most, there were 19 days left for debate in the House and Senate before the June 7 deadline that had to be met if construction was to proceed in 1956. After tumultuous debate, particularly because the government was prepared to make a loan to what was then a U.S.-controlled company, the Bill received third reading in the House of Commons in the early morning of June 6, followed by debate in the Senate and Royal Assent on June 7. This allowed the project to proceed on schedule. A strike in the steel industry resulted in shortages of pipe and only about 230 miles of the total 575 miles had been laid by the end of the 1956 construction season but by legal recognition of the existence of "force majeure", incident to the steel strike, the obligation to meet the deadline was suspended. During 1956, Trans-Canada signed gas sales contracts with five large distributing companies in Manitoba, Ontario and Quebec.

Suez Canal crisis,  
1956

In June, Egypt announced nationalization of the Suez Canal which had been built by France in 1869 and largely run by British and French interests. When British and French air forces attacked Egyptian installations early in November, Egypt blocked the Canal entrance by scuttled ships. Subsequently, Canada proposed a UN peacekeeping force which was moved into Port Said on November 21. Although the Canal was re-opened in early 1957, the incident caused a rapid increase in oil tanker rates in 1956, and the threatened world oil supply shortage led to a surge in export demand for Canadian oil. By the latter part of 1957, international oil supply had returned to normal and Canadian oil exports were beginning to decline. The extent of shut-in capacity in the western Canada oil industry in 1957 was one factor in the federal government's decision to establish the-Royal Commission on Energy in October 1957. The 1956 Suez crisis highlighted the increasing importance of Middle East oil reserves which, at the time of the crisis, constituted two thirds of the world's oil reserves, including the USSR, compared with one third in 1946.

Atomic Energy  
Control Act - Pronto  
case upholds federal  
jurisdiction  
confirmed in 1972

The constitutionality of the Atomic Energy Control Act and the comprehensive regulations made under the Act were challenged in the Supreme Court of Ontario in Pronto Uranium Mines Limited vs. the Ontario Labour Relations Board, et al (1956) C.R. 862, where the question was whether the Ontario Labour Relations Board or the Canada Labour Relations Board had jurisdiction to certify a bargaining agent for employees of companies engaged in the mining and concentrating of uranium ore. In a judgement of August 13, 1956, which was not appealed, the judge decided in favour of the validity of the Atomic Energy Control Act and the regulations made under it. In this ruling, the judge said: "In this day it cannot be said that the control of atomic energy was merely of local or provincial concern, and in my opinion it is a matter which from its inherent nature is of concern to the nation as a whole and that the Act and the regulations are within the powers of Parliament to make laws for Peace, Order and good Government of Canada". Thus the production of the raw materials for developing atomic energy was within the legislative authority of the federal Parliament and the labour relations involved in the production of uranium were found to be within federal and not provincial law. A second case, Denison Mines Ltd. vs. the Attorney General of Canada, heard on December 18, 1972, again confirmed that Parliament had the powers to pass laws for the control of atomic energy.

AECB Advisory  
Committees -  
RSAC, ASAC,  
NREC, etc.

In August, a part-time Reactor Safety Advisory Committee (RSAC) concerned with health and safety and consisting of federal, provincial and university experts, was inaugurated by the Atomic Energy Control Board (AECB) to assess applications for reactor licences and provide advice to the Board. Early in 1957, the AECB issued a Nuclear Reactor Order requiring a Board order of approval prior to reactor construction and operation. The National Research Council (NRC) had used advisory committees in its work as far back as 1917. In 1962, the AECB also established an Accelerator Safety Advisory Committee; a Nuclear Reactors Examination

Committee in 1966; and an AECB/NRC Visiting Committee, to study the use of AECB research funds, in 1967. These and other part-time Advisory Committees continued to function until the late 1970s when a decision was taken to abolish many of them and to replace them by a small number of Advisory Groups specializing in generic areas of the Board's jurisdiction, such as radiological protection, nuclear safety and security. With the enlargement of the Board's highly qualified staff in the 1970s, it provided advice on licensing matters while the new Advisory Groups directed their attention to broader scientific and technical policy questions (see note for April 1979).

CANDU fuel bundles - research and development

In September, the Mines Branch of the Department of Mines and Technical Surveys (now EMR) published the results of its laboratory research on the use of uranium dioxide (UO<sub>2</sub>) rather than uranium metal for nuclear reactors, in a report "Factors Affecting the Sintering Properties of Uranium Dioxide for Use in Reactor Fuel Elements". Uranium dioxide powder, prepared from yellowcake (U<sub>3</sub>O<sub>8</sub>) produced in the uranium refining process, can be pressed into cylindrical pellets and sintered in hydrogen. The pellets can be ground to fine tolerances to fit into a zircalloy sheath. The oxide pellets sealed into a zircalloy tube afforded a means of avoiding design defects that would develop in the use of uranium fuel in the form of metal encased in aluminum or steel in a high-pressure, high temperature environment. Use of an alloy of zirconium as cladding for the fuel elements keeps the uranium out of contact with water, and use of uranium oxide pellets avoids the problem of swelling which uranium metal undergoes at temperatures of 12000F and higher which would rupture the cladding. Following the research on uranium dioxide in the Mines Branch (now CANMET), subsequent development of the CANDU fuel bundles containing the sintered pellets was carried out mainly in AECL's Chalk River laboratories. Canadian General Electric, Westinghouse Canada Ltd. and Combustion Engineering Ltd. have fabricated all of the fuel bundles for Canada's domestic nuclear program and much of its overseas programs.

IAEA established - nuclear safeguards introduced

In October the statute of the International Atomic Energy Agency (IAEA) was signed and came into effect in July 1957. This followed the unanimous adoption in the U.N. General Assembly in late 1954 of a resolution for the establishment of the IAEA, and subsequent negotiations leading to the objectives of seeking "to accelerate and enlarge the contribution of Atomic Energy to peace, health and prosperity throughout the world". Article III A.5 of the statute calls for the establishment and administration of safeguards to ensure that "special fissionable and other materials, devices, equipment and facilities and information made available by the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose; and to apply safeguards, at the request of parties, to any bilateral or multilateral arrangement, or at the request of a state, to any of that state's activities in the field of atomic energy". A staff of inspectors was set up by the IAEA and, by 1968, it was administering safeguard agreements with about 28 countries.

Oil production trends - oil field development

The oil production record for 1956 through to December showed that the three leading Alberta fields Pembina, Redwater, and Leduc-Woodbend - had accounted for 58% of the Province's production, with the remainder coming from 83 other fields. The Pembina field, discovered in 1953, became the largest of the Alberta fields in 1956. British Columbia's first oil field was developed during the year in the Peace River area following initial discovery in 1955. Saskatchewan's production doubled in 1956 as a result of successful oil reserve development in the southeast corner of the Province. The small oil fields of Manitoba had been developed around the town of Virden in the southwest corner of the Province. In 1956, Alberta accounted for 83.5% of Canada's crude oil production of 172 million barrels; Saskatchewan, 12%; Manitoba, 3% and the remaining 1.5% came from Ontario, B.C., the N.W.T. and New Brunswick. In 1946, the year prior to the Leduc oil discovery, the country's crude oil production amounted to 7.2 million barrels. The oil development trends noted above, and the accompanying market expansion, thus accounted for almost a 24-fold increase in production, to 171 million barrels in 1956.



## THE YEAR 1957

Trans-Canada pipeline financing completed and construction proceeds - Crown Corporation section purchased in 1963 by Trans-Canada

On January 31, Trans-Canada Pipe Lines Limited was able to show the Board of Transport Commissioners that financing the Trans-Canada gas pipeline was assured. The company had proceeded with construction of the western section on the basis of a short-term government loan (see May 1956 note). In its January 31 statement to the Board, Trans-Canada detailed the financial arrangements it had completed with Canadian and U.S. institutional and other investors totalling \$252 million. In addition, the Ontario Pipe Line Crown Corporation was scheduled to spend \$120 million on the northern Ontario section, indicating a total expenditure for the system of \$372 million. The line was completed to Winnipeg in September 1957 and to the Montreal area in October of 1958, with a lateral line from Morrisburg to Ottawa also in that year. By the end of February 1957, Trans-Canada was able to repay, with interest, the loan it had received from the Crown Corporation for the western section. The loan, with interest and related expenses, amounted to \$50.7 million. The successful financing had included active participation by small investors throughout Canada, at the time of public financing in February. Proceedings before the U.S. Federal Power Commission to permit imports of Trans-Canada gas at Emerson, Manitoba, were not completed until 1960. By 1963, Trans-Canada was able to purchase the section owned by the Northern Ontario Pipe Line Crown Corporation leaving the entire pipeline project in the hands of a viable private enterprise but subject to regulation by the National Energy Board after it was established in 1959.

Coal exports to Japan increased - assisted by transportation subventions

Canadian coal exports to Japan were resumed, effective January following a period of four years when no shipments were made. Federal government assistance in the form of an increase in the export coal subvention from \$1.00 to \$2.25 a ton, followed by further increases to \$4.50 in the period April 1959 to April 1962, resulted in export shipments in 1963 of 700,000 metric tons. By 1965-66 the subvention rate was reduced to \$2.79 following improved market prices and reduced costs. Exports were then approaching the one million ton a year level. Authority was given to continue subvention payments until March 31, 1970. In that year, exports to Japan totaled 3.7 million metric tons. Subsequently, they rose to 10.8 million tons in 1975 and remained at that general level during the remainder of the 1970s, being 10.4 million tons in 1980.

Progress towards oil self-sufficiency following the Leduc oil discovery

The record available in February, ten years after the 1947 Leduc oil discovery, revealed a rapid growth in the Canadian oil economy. Although oil demand in the intervening period increased by 3.3 times to 720,000 barrels per day, the large increase in domestic oil production enabled Canada to improve its oil self-sufficiency position from less than 10% to over 65%. The rate of growth was not as rapid in subsequent years, and Canada did not become self-sufficient in oil until 1970 (see also note for February 1947).

Diefenbaker 1957 statement on foreign investment and a national energy board

In a debate in the House of Commons on February 11, at a time when matters concerning foreign investment and control had been a focal point in proceedings of the Royal Commission on Canada's Economic Prospects (see note below for March) and in the Trans-Canada Pipeline debate (see note for May-June 1956), John Diefenbaker, then leader of the official opposition, in a speech on national development policy, criticized "not American investment in Canada but the degree to which the investment in Canada by foreign corporations was uncontrolled for the benefit of Canada", and advocated "a plan; not a planned economy but a national policy; not a policy of nationalism but one whereby Canada in the days ahead will remain an independent Canada and will not inexorably drift into economic continentalism". He had endorsed the Royal Commission on Canada's Economic Prospects recommendation for a national energy authority and, after coming to power in June 1957, his government appointed the Royal Commission on Energy to, among other matters, "make recommendations concerning the extent of authority that might best be conferred on a National Energy Board," and to enquire into a number of national energy policy matters.

Canada establishes nuclear safeguards pending the NPT and IAEA inspection

In February, the Government of Canada announced that it would be prepared to negotiate bilateral agreements with countries wishing to purchase Canadian nuclear equipment and materials. Subsequently, a draft agreement was prepared and the first country to sign it was West Germany in December 1957 followed by eight other countries by the mid-1960s. This bilateral safeguards arrangement was initiated prior to the coming into effect in July 1957 of the International Atomic Energy Agency (IAEA) statute and the eventual safeguards administration by the IAEA. After Canada's commitment to the Non-Proliferation Treaty in 1968 (the Treaty came into force on March 5, 1970), Canada increasingly relied on the effectiveness of the NPT to ensure that its signatories would use Canadian uranium and other nuclear supplies for peaceful purposes only, and during the 1970s, the IAEA took over the role of inspection and verification that Canada had initiated in 1957 under its bilateral agreements.

Royal Commission on Canada's Economic Prospects (Gordon Commission)

In March, the Royal Commission on Canada's Economic Prospects completed its report "Canadian Energy Prospects" which became the basis for the Commission's observations and recommendations concerning energy. The Commission called for the development of a comprehensive energy policy, the establishment of a national energy authority with advisory and regulatory powers, and the regulation of energy exports. The Commission expressed concern about the implications of foreign domination of the petroleum industry and recommended greater reliance on foreign capital in the form of bonds or mortgages; a minimum 20-25% Canadian ownership of companies operating in Canada; the appointment of independent Canadians to the subsidiaries' board of directors; greater use by foreign firms of Canadian engineering, professionals, and service personnel; more Canadian sourcing of supplies, materials, and equipment; and the requirement of Canadian participation in future oil and gas exploration permits and leases. The supporting study, "Canadian Energy Prospects", provided factual information concerning the changing market for energy, and explored the possibilities which further development of Canada's fuel and power resources held for the rest of the economy over the succeeding 25 years. It examined energy consumption in relation to economic growth and provided detailed assessments of supply-demand trends for each of the energy commodities in the period 1955-1980. The Commission was optimistic about the growth prospects of the oil and gas industry, but pessimistic about reducing its high level of foreign ownership which was decreasing the decision-making power of Canadian companies. It was particularly critical of the influence U.S. companies had on the setting of prices of gas exports to Montana in 1951 (see note for March 1951) and in the Westcoast Transmission export arrangement (see note for June 1955). The matter of greater Canadian content and participation received attention in the EMR policy report of 1973, "An Energy Policy for Canada" and the 1976 report "An Energy Strategy for Canada", but it was not until 1978 when the Petroleum Corporations Monitoring Act was passed that legislative initiatives were taken to monitor foreign investment and earnings in the Canadian petroleum industry. This was followed in 1980 by the National Energy Program with a number of measures directed to promoting greater Canadian participation in the energy economy.

Trans-Canada pipeline leads to government defeat in 1957 election, and to Royal Commission on Energy

On June 12, 1957, the Liberal government was defeated at the polls after 22 years in power, with events associated with the Trans-Canada project having contributed to the result of the election. In addition to pipeline developments in 1956, including the Pipeline Debate in the House of Commons in May and June, the stock options issued to Trans-Canada's chief officers, the President and the Vice President, when they were engaged in 1954, led to considerable further controversy in early 1957. The options were exercised at the time of public financing with the price rising as high as \$20 a share. The options had been given at \$8 in 1954 when the stock was worth very little. This, and related matters, became the subject of debate in the House of Commons in the weeks prior to the dissolution of Parliament and the calling of an election. After the new government assumed office, Prime Minister Diefenbaker appointed the Royal Commission on Energy on October 15, 1957 to, among other matters, look into the affairs of Trans-Canada Pipe Lines Limited and Westcoast Transmission Company Limited (see two notes for October 1958). The manner of financing the Trans-Canada gas pipeline project and the possible threat to future Canadian requirements posed by the export component of the project

were matters to be included in the Commission's review.

Atomic Energy of  
Canada Ltd. -  
progress note

Work of Atomic Energy of Canada Limited (AECL) is reported in detail in its annual reports. The report tabled in the House of Commons on October 15, 1957 provides a record of the planning and program development that had got underway since the establishment of the Crown corporation in 1952 (see AECL note for October 1952 and various CANDU notes). The development of economic nuclear power was proceeding in three areas of activity: fundamental research, applied research, and the design, construction and operation of demonstration nuclear plants. Those activities had the common objective of the development of a power reactor technology based on the use of natural uranium as a fuel and heavy water as a moderator - the technology which Canada successfully pioneered with the M reactor. In 1957, Canada had two power reactor projects underway: the design and construction of a demonstration power reactor called the NPD at Rolphton, Ontario with an output of 20,000 kilowatts, and a design study for a power reactor with an output of 200,000 kilowatts. The NPD had its start-up in 1962, and the Douglas Point Nuclear Generation Station in November 1966 with its first production of electricity on January 7, 1967. NPD was built by AECL in cooperation with Ontario Hydro and Canadian General Electric. The Douglas Point Station was undertaken as a joint venture by AECL and Ontario Hydro.

Chalk River NRU  
reactor in operation

On November 3, a new reactor to produce plutonium went into operation at Chalk River. It had been approved by an order in Council of December 20, 1950 after extensive negotiations with the U.S. and U.K. governments and planning within Canada. The new reactor was designed to produce 55 kgs of plutonium per annum which along with 5 kgs from the NRX reactor, operational in 1947, would be sold to the U.S. Atomic Energy Commission for \$171,600 per kg. to yield \$10 million in revenue per annum. The new reactor, NRU, proved very successful, and maintained Canada's lead in the field of research reactors that had begun with NRX in 1947.

Pipeline explosion  
leads to new CSA  
standards

During the testing of a final section of newly constructed pipeline in the Trans-Canada Pipe Lines system near Dryden, Ontario, on December 24, an explosion took place which resulted in a three and one half mile break in the line, the longest pipeline break in history. The damaged section was replaced and the line completed and tested to enable gas to be delivered into Port Arthur on schedule by year-end. The incident led to the development by the NEB, the Canadian Standards Association and industry of new pipeline specifications more suited to climate and terrain conditions in Canada.

Coal exports to  
Japan on a  
continuing basis

In December coal shipments to Japan for the year totalling 27,194 metric tons were completed and this marked the first year of continuing and generally increasing coal exports from western Canada to what became the country's most important coal export market. There had been a record of coal exports to Japan in 1948, 1949, 1951 and 1952. Commencing the continuing export business in 1957, the western Canada coal industry increased its sales to 10.8 million tons in 1975, remaining near that level in the remaining years of the 1970s. The first major export contract was signed in 1968 providing for the delivery of 40.8 million tons of coal to Japan over a period of 15 years. By 1975, coal exports, mostly to Japan, were accounting for almost one half of Canada's production. Technical coal missions to Japan were important factors in this trade development, the first having taken place in 1960, the second in 1972, followed by more frequent technical exchange and trade promotion visits in the 1970s and 1980s.

A 1957 perspective  
on oil industry  
growth - post-war  
boom at peak

The record through to December showed that the share of oil in the Canadian energy market in 1957 was over 50% compared with 25% in 1946, the year prior to the Leduc oil discovery. The intervening period was one of considerable growth in the Canadian oil industry, with production increasing from 20,000 barrels a day in 1946 to 505,000 barrels a day in 1957. The main stimulants to the growth of the industry were two-fold. There was a growth in the Canadian economy itself. As measured in constant 1957 dollars, the average growth in the GNP in the period 1946-1957 was 4.3% per annum. of equal importance was the penetration

achieved by oil into the total energy market in Canada and the accompanying growth in oil exports. In the domestic market, the average annual rate of petroleum demand growth was over 11%. Starting in 1954, and later responding to the Suez oil crisis of 1956, substantial volumes of Canadian crude oil and natural gas liquids (NGLS) moved into the U.S. export market, totalling about 152,600 b/d in 1957 compared with 40,600 b/d in 1955. A network of oil pipelines had been put in place and petroleum refinery capacity tripled to 762,000 b/d by 1957. The Suez crisis in 1956 created some over-expansion of the oil industry in Canada but the resolution of that crisis and the peaking out in 1957 of the resource-oriented boom of the post-war years led to a marked decline in oil industry activity. Exploration tapered off, oil exports in 1958 declined by 43% from the previous year, and there was increasing shut-in capacity in Western Canada oilfields.

## THE YEAR 1958

Atlantic Provinces  
Power Development  
Act

The Atlantic Provinces Power Development Act was assented to on January 31. The Act provided assistance in two ways: by subvention payments on the cost of Maritime coal used in power generation; and by long term loans to Maritime utilities, at interest rates equal to the rates applicable to advances to federal Crown corporations, for construction of thermal power plants and interconnecting transmission lines. The coal subvention assistance was terminated in May 1969 and the loan component in December 1969.

Uranium exports  
under U.S. and U.K.  
contracts

In a statement made in the House of Commons on February 1, the Minister of Trade and Commerce reported that since March 1948 when Eldorado Mining and Refining Limited was designated by the federal government as the sole purchaser of uranium produced in Canada, the company had entered into purchase contracts with 16 companies and had entered into matching sales contracts with a total value of \$1,425,723,000. In addition, Eldorado had entered into sales contracts covering production from its own mines, the contracts having a total value of \$211 million. The bulk of the uranium produced under these contracts was scheduled to be delivered to the United States Atomic Energy Commission (USAEC). In 1956, the United Kingdom had expressed an interest in Canadian uranium and on March 26, 1957 announcement was made of a contract between Canada and U.K. Atomic Energy Authority valued at \$115 million with deliveries to be made over a period extending to March 31, 1962. The announcement of February 1, 1958 advised that additional quantities of uranium valued at \$105 million would be sold to the U.K. in the period April 1, 1962 March 31, 1963. Further U.K. contract arrangements were announced in July 1962.

Royal Commission  
on Energy -  
Alberta's  
jurisdictional views  
on natural gas  
allocation and  
pricing

During the proceedings of the Royal Commission on Energy in the period 1958-59, a number of views were expressed concerning the jurisdiction of a province producing natural gas. In a brief presented to the Commission in April 1958, Premier Manning of Alberta expressed the following views relative to the authority of the province in natural gas market allocation, indicating that the authority of a National Energy Board should be restricted to interprovincial pipeline jurisdiction: "In the disposition of gas, our policy has been and will continue to be to ensure an adequate supply to meet the present and future requirements of Alberta before we approve export to markets outside the province. To this end, the Oil and Gas Resources Preservation Acts of 1949 and 1956 were enacted and the Oil and Gas Conservation Board is charged with the responsibility of determining the quantity of gas necessary to meet the present and future requirements of the province and to approve the export only of that gas which is surplus to those requirements. Turning to the second phase of the subject under consideration, namely, the disposition of gas which is surplus to Alberta's requirements, I already have indicated our general concurrence with the federal policy that such gas should first be available to other Canadian markets as far as geographic factors and sound, economic principles .make the supply of such markets feasible. This means, in effect, that other Canadian markets should be given priority over foreign markets but only under terms and condition which are fair and equitable to all concerned. We cannot concur in any policy that arbitrarily would restrict Alberta gas to Canadian markets at the expense of the producing companies which incur the risk and cost of development or at the expense of the people of Alberta who collectively are the owners of the gas." These and other Alberta government statements to the Royal Commission defined Alberta's position in the late 1950s that if a significantly greater return to the producer from sales of gas in an export market compared with sales in a Canadian market was indicated, the Government of Alberta would favour the export market In natural gas allocation, notwithstanding future market requirements of other areas of Canada. Furthermore, no federal authority should be empowered to regulate natural gas production, or prices at the wellhead or at the ultimate consumer level.

Law of the Sea  
Convention of 1958,

On April 13, the 1958 Geneva Convention on the Territorial Sea and Contiguous Zone was signed. This United Nations convention on the Continental Shelf was ratified by Canada

ratified in 1970

effective March 8, 1970. It provides that the coastal State "... exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting Its natural resources" (Article 2.1). The Convention defines the continental shelf as extending to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources..." (Article 1). The Convention further provides that the sovereign rights referred to in Article 2 are exclusive and "do not depend on occupation, effective or notional, or on any express proclamation". (Article 2.2, 2.3). Under the Continental Shelf Convention definition, the outer limits of national jurisdiction are dependent on the exploitability test. Because much of Canada's shelf lies at water depths considerably greater than 200 metres, the exploitability criterion of the Convention is of great importance. Canada's position has always been that the country's juridical continental shelf extends out to the continental margin, which includes the shelf proper, and the continental slope and rise beyond.

Royal Commission on Energy - Alberta position on oil pipeline to Montreal

During the proceedings of the Royal Commission on Energy, the Government of Alberta strongly supported the option of extending the Interprovincial Pipe Line to Montreal to open up further markets for western Canada crude oil and thereby solve the oilfield shut-in capacity problem in Alberta. Much of the hearing process for the Second Report of the Commission, as completed in July 1959, was concerned with this marketing issue. The views of the Premier of Alberta on the issue were expressed on a number of occasions to the Commission including a brief submitted in May 1958 when he expressed the opinion that the serious oil marketing problems then confronting the oil industry warranted pressing the federal government in terms of the following resolution: "failing a satisfactory solution to this problem (of oil shut-in capacity) within the prescribed time, it is the intention of the Government of Canada to impose import quotas on crude oil and refined products to the extent necessary to make economically available the construction and operation of a pipeline to transport crude oil from western Canada to the Montreal refining area". The marketing situation subsequently improved and the Premier did not press his proposal. In its July 1959 report the Royal Commission advised against a Montreal pipeline until the alternatives of filling out the domestic market to the Ottawa Valley line and promoting further exports had been fully tested. The Montreal pipeline was not constructed until June 1976.

Royal Commission on Energy - Saskatchewan views on pipeline jurisdiction, and subsequent federal practice

During the proceedings of the Royal Commission on Energy, there was considerable debate on the issue of pipeline jurisdiction, with the Saskatchewan government, among others, expressing considerable concern about provincial rights in view of the history of the Westspur Pipe Line Company case in which the Board of Transport Commissioners ruled on December 5, 1957 that the gathering system of this Special Act federal company could not be transferred to a pipeline company incorporated in Saskatchewan even though all of the gathering facilities connected to the interprovincial Westspur system were within the Province. In a June 1958 submission and other submissions to the Royal Commission, the Saskatchewan Minister of Natural Resources expressed views regarding the vulnerability of provincial jurisdiction over oil and gas resources in relation to the pipeline jurisdictional issue, which became a major preoccupation of the Commission in proposing powers and responsibilities for a National Energy Board. In the years following the establishment of the National Energy Board in 1959, a constitutional issue was avoided through the Board's practice of not issuing a gathering system permit to a federally-incorporated pipeline company until the provincial government concerned had been consulted as to the effect of that system on the province's oil and gas policies. In the 1960s, legal authorities expressing opinions, as recorded in such journals as the Canadian Bar Review and the Alberta Bar Review, on the role of the National Energy Board generally concluded that by the rule of paramountcy, federal jurisdiction could be extended into the field of provincial oil and gas legislation. However, even with the passing of the federal Petroleum Administration Act in June 1975, price setting and related jurisdictional issues were settled through negotiation with the provinces.

Royal Commission

The Royal Commission on Energy (Borden Commission) was established by Order in Council

on Energy (Borden  
Commission) - First  
Report 1958

P.C. 1957-1386 of October 15, 1957 to enquire into and make recommendations concerning: "the policies which will best serve the national interest in relation to the export of energy and sources of energy from Canada; the problems involved in, and the policies, which ought to be applied to, the regulation of the transmission of oil and natural gas between provinces or from Canada to another country ... the extent of authority that might best be conferred on a National Energy Board ...;" and other related matters considered necessary by the Commissioners to include in their report. In its First Report, dated October 22, the Commission made recommendations related to considerations affecting the granting of licences for the export of natural gas surplus to Canadian requirements; the regulation of oil and gas pipeline companies; and relative to the establishment of a National Energy Board. The Commission also made recommendations concerning a gas export contract signed by Westcoast Transmission Company Limited on December 11, 1954, calling for a review of that contract (220/Mcf export price) before approving any further licences for export to ensure that the aggregate of gas to be exported by Westcoast could provide for an average export price that was fair and reasonable. The First Report contained detailed recommendations concerning the establishment of a National Energy Board. It recommended that legislation be enacted to enable the Government of Canada to exercise effective control over the export from, and the import into, Canada and the movement across provincial boundaries of all energy and sources of energy. It further recommended that a National Energy Board be established by this enabling legislation as a permanent board to study and to recommend to the Governor in Council policies designed to assure the people of Canada of the best use of the energy and sources of energy in Canada (see notes for July and November 1959 relative to the Commission's Second Report and the National Energy Board).

Royal Commission  
on Energy - First  
Report  
recommendations re  
Trans-Canada and  
Westcoast  
Transmission

In its First Report to the federal government in October, the Royal Commission on Energy included the results of its examination of the Affairs of Trans-Canada Pipe Line Limited (see June 1957 and other notes on Trans-Canada). The Royal Commission exonerated the Company on all matters but one. It concluded, in relation to the fact that the two senior officials of the Company had been given management contracts assuring their salaries for five years, that "the government of Canada should have insisted, as a condition of financial assistance, that steps be taken as would preclude them from reaping large capital profits from the purchase of shares in a company by which they were employed and which was being financed, in an essential part and at a critical time, with public funds". All other aspects of the financing of the project received the approval of the Commission, including the Northern Ontario Pipe Line Crown Corporation and its relationship to Trans-Canada, as well as the terms of the loan that had been made and repaid. The Commission stated further that if the government had not acted as it did in the spring of 1956 "construction on the western section of the line by Trans-Canada would have been indefinitely delayed". The Royal Commission also reported on Westcoast Transmission Company, calling for a review of its 22 cents per thousand cubic feet gas export contract signed with Pacific Northwest Pipeline Corporation on December 11, 1954. The Commission further recommended that future regulation of the Company's domestic sales and export operations should ensure that the return on the shareholders' investment in Westcoast does not "result in Canadian consumers of natural gas contributing more than their fair, reasonable and proportionate share of the total return".

Royal Commission  
on Energy  
recommends oil  
pipeline regulation

In its First Report, released in October, the Royal Commission on Energy recommended that oil pipeline companies, subject to the jurisdiction of Parliament, should be regulated with respect to traffic, tolls or tariffs to ensure that they are just and reasonable, non-discriminatory and calculated to yield a fair rate of return on the shareholders' equity. Such regulation would be effected without the necessity for a pipeline company to be declared a common carrier. The Commission took this position because transportation charges constitute a material element of cost in crude oil supply and can materially affect the price to producers of crude and the price to consumers of refined products as well as the competitive position of Canadian crude oil in export markets. The recommendation for pipeline regulation was accepted and incorporated in

the National Energy Board Act (see NEB note for November 1959).

Trans-Canada, and  
Westcoast  
Transmission gas  
pipeline systems in  
operation

In October, Trans-Canada Pipe Lines Limited completed its gas pipeline from the Alberta border to Montreal, a distance of 2290 miles, and commenced gas deliveries to eastern markets. Westcoast Transmission Company Limited, which had completed its gas pipeline to the west coast and commenced gas deliveries late in 1957, recorded its first full year of operation in 1958. As a result of the construction of these two major pipeline systems and the related gas gathering and distribution systems, total gas pipeline mileage in Canada at the end of 1958 amounted to 27,240 miles compared with 8,060 miles at the end of 1953 when both systems were still in the planning stages.

Springhill coal mine  
disaster

A coal mine explosion at Springhill, Nova Scotia trapped 174 miners on October 23. By November 1, 100 miners were rescued but the remaining 74 died underground. This was one of the worst coal mine disasters in the history of Nova Scotia coal mining and attracted wide publicity at a time when the Province's coal industry was in serious decline.

Polar Continental  
Shelf Project  
established

The Polar Continental Shelf Project (PCSP) was established in the federal Department of Mines and Technical Surveys, effective December 1. Among the responsibilities of the organization in that Department and in the successor Department of Energy, Mines and Resources have been studies of paleoclimate and climatology of the Arctic Islands, and the modeling of glacier flow and temperatures of past and present ice sheets. The PCSP also coordinates and provides support to scientific research groups working in the Arctic Islands and the Arctic ocean. Facilities at Tuktoyaktuk in the Mackenzie Delta and at Resolute Bay on Cornwallis Island provide logistical support between mid-February and October each year. Aircraft, equipment, communications and base camp support are provided to research groups carrying out studies in a wide variety of disciplines ranging from archeology to zoology. The PCSP programs have served to extend Canada's sovereignty in the High Arctic, one of the original objectives of the Project when it was established in 1958. The announcement of the formation of the PCSP included the following statement: "The world today is standing on the threshold of the Arctic era. By fixing its sights on Arctic research, Canada will take its rightful place among the nations whose interest lies in the north polar regions". The PCSP has provided important scientific and logistical support services for oil and gas exploration in the High Arctic.



## THE YEAR 1959

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|---|---|
| Columbia River Treaty - principles to be applied                                    | On January 29, the governments of Canada and the U.S. sent identical letters to the International Joint Commission (IJC) asking it to report its recommendations concerning the principles to be applied in determining benefits which would result from cooperative use of storage of waters and electrical interconnection within the Columbia River system, and in determining apportionment between the two countries of such benefits, more particularly in regard to electrical generation and flood control. Very little had taken place with respect to negotiations on the joint development of Columbia River power since March 1944 when the Columbia River Reference, proposed by the U.S. and agreed to by Canada, was transmitted to the IJC. This Reference called for studies of the entire Columbia River basin to "determine whether a greater use than is now being made of the waters of the Columbia River system would be feasible and advantageous".   |
| Columbia River Engineering Board report on plans for development                    | On March 1, the International Joint Commission (IJC) received a report prepared by the International Columbia River Engineering Board entitled "Water Resources of the Columbia River Basin". This report presented three plans of development of almost equal merit. The report received wide distribution but the IJC did not act on the March 1944 Reference (see January 1959 note) at this time, but reported later in the year (see note for December)  |
| Pricing method changed from Sarnia basing point to overseas crude oil prices        | In March, oil field prices in western Canada were reduced in response to reductions that had taken place in February in Venezuelan and Middle East crude oil prices. This was the first occasion in the experience of the Canadian industry when field prices were reduced in direct response to changes in the prices of overseas crude as distinct from that of United States crude. Previously, field prices had been set in terms of a netback from Sarnia, with the laid-down competitive price in that Ontario refinery centre being determined by the calculated price of Illinois crude delivered to Sarnia. The March 1959 Alberta oil field reduction to \$2.42 per barrel from the previous price of \$2.56, as set in April 1958 in terms of Illinois prices, marked a distinct break in the historic price relationship between Canadian and U.S. crudes. The price of Canadian crude henceforth became associated with and dependent upon the price at which overseas crude or product, or Montreal-based products, might be laid down in the Toronto area. The change from the Sarnia basing point meant that the oil producing industry became more subject than before to the forces of international competition. |
| Oil sands - proposed nuclear mining device  | In April, a 9-man technical committee was appointed by the Minister of Mines and Technical Surveys to inquire into the feasibility of using nuclear energy for oil recovery from the Athabasca oil sands of northeastern Alberta. The committee considered a proposal by Richfield Oil Corporation whereby a nuclear device would be detonated at a depth of about 1200 feet in an oil sands lease held by the company. The oil sands cover an area of about 17,000 square miles and contain an estimated 300 billion barrels of oil but only about 2 per cent of the sands are exposed to the surface. The bulk of this oil resource is covered by an overburden and cannot be readily exploited by known mining methods. Although a controlled nuclear explosion was considered to have some possibilities in preparing underground oil sands deposits for recovery, the federal government decided against the use of a nuclear procedure because of its commitment to international safeguards controls.  |
| National energy policy - views in 1959 as to need for more effective administration | Following the release in October 1958 of the First Report of the Royal Commission on Energy and during its proceedings leading to its Second Report in July 1959, there was considerable debate on various occasions in Parliament concerning the need for a national energy policy to deal with the country's energy resources in the best national interest. Representative of those deliberations were debates in the House of Commons in May 1959. While there was a range of views as to the extent of government involvement required, there was a general consensus that there was need of more effective administrative machinery to manage the country's energy resources. There was considerable agreement on the need for more coordination of energy policy initiatives although some difference in views as to whether there should be a division of   |

energy authority, with policy making and related advisory functions being separate and distinct from regulatory functions. When the National Energy Board was established in late 1959 with extensive regulatory responsibilities it was also given policy advisory responsibilities. In 1966 when the Department of Energy, Mines and Resources was given the government's primary energy policy coordination function in support of the Minister, the National Energy Board energy advisory function was retained.

U.S. overland quota exemption for Canadian oil exports - some restriction remains

Effective June 1, crude oil, unfinished oils and petroleum products entering the U.S. by pipeline, motor carrier or rail were exempt from quotas in accordance with U.S. Presidential Proclamation of April 30, 1959, as amended. Canada was thereby exempted from the system of mandatory oil import controls, which had become effective on March 11, because most of its exports to the U.S. were transported by pipeline. During the period July 1957 to May 1959 when Canadian crude oil exports were subject initially to voluntary import controls and, for a short period, to mandatory controls, exports from Canada declined to the extent that, by April 1959, when the exemption by U.S. Presidential Proclamation was announced, they were no higher than the level which had been reached in late 1955, just before the Suez crisis threatened world oil supply. While the exemption which became effective in June 1959 removed formal import limitations on Canadian crude, it still had to gain entry to the U.S. market by establishing itself as a preferred source of supply to the individual U.S. importer over competing oils. Even where Canadian oil had a cost advantage over U.S. domestic supplies, there remained the concern of refiner-importers about the effect of Canadian crude imports upon the opportunity to bring in cheaper overseas supplies because every barrel of "excepted" Canadian crude would mean loss in a U.S. refiner's quota for low-cost foreign oil in the U.S. system which restricted imports to 8 per cent of demand. Early in 1963, a further U.S. barrier was implemented (see note for January 1963).

AECL and Ontario Hydro proceed with Douglas Point reactor, followed by Pickering and Bruce in a continuing building program

In June, the federal government authorized Atomic Energy of Canada Limited (AECL) to begin construction of a large nuclear power reactor capable of producing 200 megawatts electric (MWe), without waiting for completion of its design and development phase, or for the NPD station (see note for February 1953) to go into operation. The decision to proceed was based on the confidence in the design and in the NPD design experience, and on the success of the fuel development program at Chalk River. It was also realized that a full-scale plant would have to be built and operated before real costs of large stations could be known. The new station was completed at Douglas Point, Ontario in collaboration with Ontario Hydro and went into operation in 1966. With start-up of the NPD reactor in 1962, AECL started work on the Pickering A Station, with 4-500 MWe units, which became operational in the period 1971-73 as the largest nuclear power station in the world. With Pickering underway, the Bruce A Station consisting of 4-750 MWe units was designed and constructed at a location near Pickering, at Tiverton, Ontario, and it went operational in 1976. Other CANDU units followed, raising the total in operation or under construction in 1980 to 25 power reactors, 18 years after completion of the first Station in 1962.

AECB's increasing responsibilities re. health and safety in late 1950s

On July 16, the Minister responsible for the Atomic Energy Control Board (AECB) identified, in a statement in the House of Commons, new and increasing responsibilities for the Board in health and safety matters. This came five years after a government prediction of the decline of AECB's responsibilities. In the interim, its duties relating to prospecting and mining and security matters had lessened as much of the information relating to the peaceful uses of atomic energy had become declassified. However, responsibilities concerning health and safety had increased, partly because of the greater use of radioisotopes in industry and medicine, but mostly because of the nuclear reactor projects outside Chalk River.

Royal Commission on Energy (Borden Commission) - Second Report 1959

The Second Report of the Royal Commission on Energy was submitted to the Government in July. The Commission, which directed its principal attention in this report to oil matters, concluded that Canada had ample proven reserves of crude oil to meet domestic requirements and to permit a substantial increase in the volume of exports. Because the productive capacity of

the oil industry in Western Canada had reached 990,000 b/d in 1958, and actual production was less than half of this amount, and because of the loss of some exports to the U.S., there was a desire on the part of certain producers and of the Government of Alberta to secure the only remaining large domestic market not being served by Canadian crude, the Montreal refinery area. Consideration of the pros and cons of linking this market to Western Canada crude became the main subject of the hearings before the Commission in 1958 and of its Second Report which was completed in July 1959. The Commission recommended a continuation of crude oil exports, without licence, and the filling out of the domestic market by replacing with domestic oil the petroleum products, manufactured in Montreal from imported crude, that were moving into the Ontario market. The Commission further recommended that if it became necessary to implement this national policy by regulatory measures, then imports of crude oil should be made subject to licence. The report also called for action on the part of the oil industry to enlarge its export markets in the U.S. The Commissioners recommended against the construction at that time of an oil pipeline to transport Canadian crude oil to the Montreal refinery area and that, before any such action was taken, an opportunity be given to the oil industry to demonstrate that it could find markets elsewhere in Canada and in the U.S. to sustain a healthy and vigorous Canadian oil industry with an incentive for further exploration and development.

Royal Commission on Energy - First and Second Reports - principal impacts

The Royal Commission on Energy (Borden Commission) completed its work with the publication of its Second Report in July. From that report, and its First Report of October 1958, several principal recommendations had an impact on energy developments in the 1960s and beyond. These recommendations included the rejection of the proposal to extend the oil pipeline east of Toronto to Montreal pending testing of the option of filling out the domestic market as far east as the Ottawa Valley and promoting oil exports to the U.S. The Commission's recommendations also led to the procedure of active surveillance of oil and gas exports as to quantity and price, and overall regulation of the oil and gas industry through the National Energy Board which it recommended be established. The Commission's inquiry into irregularities concerning the financing and operation of certain gas pipelines served to point to the need for more effective regulation of interprovincial and international pipelines. The procedures thus adopted followed through into the 1970s when various northern and other pipeline proposals were considered as a means of reducing Canada's dependence on foreign energy supplies. The emphasis given to oil marketing issues in the Commission's Second Report pointed to the problems which arise between the integrated oil companies and the independent oil producers, and between international oil companies and a country which places a priority on developing its own resources. The Commission's hearings on the Montreal pipeline proposal served as a focus on the most intense debate on oil marketing issues to that time. It was not until June 1976 that the pipeline extension was eventually completed, security of supply being the main objective.

European Atomic Energy Community - Peaceful Uses of Atomic Energy

An Agreement between the Government of Canada and the European Atomic Energy Community (EURATOM) for Cooperation in the Peaceful Uses of Atomic Energy was signed on October 6. This Agreement was updated in an exchange of letters on January 16, 1978, specifying that no material, subject to the Agreement as amended, may be used for the manufacture of any nuclear weapon or for any other military use of nuclear energy, or for the manufacture of any other nuclear explosive device. The 1978 undertaking and other provisions of the Agreement were to be verified in Canada by the International Atomic Energy Agency (IAEA), and in the Community by EURATOM and the IAEA in accordance with the agreements concluded between EURATOM, its Member States, and the IAEA (see also note for January 1978 and other nuclear safeguards notes).

National Energy Board Act, 1959

Legislation to establish the National Energy Board (NEB) was introduced in the House of Commons in May and, after extensive debate, was passed by Parliament, and received Royal Assent on July 18. By proclamation, the National Energy Board Act came into force on November 2 (R.S., c.N-6). The legislation provided for the transfer from the Board of Transport Commissioners to the NEB of virtually all authority with respect to pipelines, the regulatory

powers conferred on the NEB being very similar to those that had been exercised under the Pipe Lines Act by the Board of Transport Commissioners, and under the Exportation of Power and Fluids and Importation of Gas Act by the Minister of Trade and Commerce. Accordingly, those two Acts were repealed. Those powers included authority to licence imports of natural gas and export of gas and electricity, and the issuance of certificates of public convenience and necessity covering the construction and operation of interprovincial and international pipelines and of international power lines. By enacting the HEB Act, Parliament asserted regulatory jurisdiction at the federal level over oil and gas pipelines and international power lines together with jurisdiction over the export and import of gas and the export of electric power. When the Act was passed, the NEB was not authorized to control by licencing either the export or import of oil but the Act did authorize the Governor-in-Council by proclamation to extend to oil the export and import provisions of the Act and this was done in relation to oil exports in 1973. New authorities and responsibilities given the NEB related to the independent status as a court of record, the requirement that it conduct public hearings on all major issues coming before it, the restriction imposed on the government in acting on matters that did not have the prior approval of the NEB, and the advisory role it was expected to fulfill with respect to a broad range of energy matters. In addition, the new legislation empowered the NEB to regulate tolls and tariffs of all new pipelines that came under federal jurisdiction. It was also to assume that responsibility for federal pipelines in operation before it was established but this was not formalized until 1969. The federal government retained the power over the issuance of certificates for the construction of facilities and of licences for such purposes as the export of gas and electricity. As part of its overall responsibilities, the NEB is required to keep under review the outlook for Canadian energy supply and demand.

Uranium export contracts terminated by United States - stretch-out plan initiated

On November 6, the Minister of Trade and Commerce announces that the federal government had approved new agreements made by Eldorado Mining and Refining Limited with the United States Atomic Energy Commission (USAEC) and the United Kingdom Atomic Energy Authority (UKAEA), designed to strengthen the position of the Canadian uranium industry during the following six years of retrenchment. The new agreements were completed in advance of the termination of the existing firm contracts which had made possible the rapid expansion of the Canadian uranium industry in the mid-1950s. Essentially all of Canada's uranium resource base into the 1960s had been developed in the 1950s to supply uranium for the military purpose of the United States and the United Kingdom, with 90% of the exports going to the USAEC. Markets and prices were guaranteed for uranium, and exploration was at a high level in that decade. In November 1959, the USAEC announced that it would not take up its options to purchase additional uranium. Stretch-out of existing contracts was negotiated with the USAEC and also with the UKAEA, as detailed in the November 6 announcement. Arrangements were made to transfer undelivered quantities of uranium between companies which were in production which, together with advance payments, were designed to help producers during a period of possible severe disruption throughout the industry, and allow for planning for the post-contract period beginning in 1962-63. Both the U.S. and U.K. governments had agreed to the transfer of contract quantities between Canadian producers and to make advance payments on Canadian uranium which could be delivered beginning in 1962. The Special Price Contracts with the USAEC terminated in the period March 31, 1962 to March 31, 1963, and the USAEC was not prepared to take up options running to December 31, 1966 because of extensive discoveries of uranium in the U.S. However, the U.S. agreed to negotiate the stretch-out plan in recognition of the important role Canadian producers had played in meeting the urgent requirements of the U.S. when uranium was scarce in the 1950s. Under the stretch-out plan, deliveries of uranium to the USAEC and the UKAEA were scheduled at 9,718 tons Of U308 in 1961, declining to 1,100 tons in 1966.

Columbia River Treaty - IJC report on benefit principles

On December 29, the International Joint Commission submitted its report to the U.S. and Canadian governments, in response to their January 1959 request. The report was entitled "Principles for Determining and Apportioning Benefits from Cooperative Use of Storage Waters and Electrical Interconnection within the Columbia River System". This document became the

principles

basis for negotiations between the two countries, commencing in February 1960, and leading to the Columbia River Treaty in January 1961 and eventual ratification in September 1964.

World and Canadian oil surplus in the late-1950s

Viewed in December, the situation in the Canadian oil industry was one of considerable retrenchment associated with a world oil surplus, and extensive shut-in capacity in the Western Canada oil industry. The ratio of production to production potential in Alberta was only 39% in 1958 compared with 70% in 1954. Notwithstanding the overland oil import exemption granted Canadian oil by the Presidential Proclamation of April 30, 1959, a world surplus of major proportions had given rise to an intensification of U.S. import restrictions and resulted in a weakening of world oil prices. Saudi Arabian light crude oil had declined to the \$2.00 (U.S.) per barrel range. In the period 1947-57, world oil reserves had increased from 53.5 to 240.6 billion barrels, with the Middle East accounting for 80% of the increase. Owing to the development of this surplus, U.S. companies with large reserves in the Middle East were encountering increasing difficulties in holding and expanding markets for oil produced from their overseas holdings and, consequently, their efforts to use oil from those sources in their own, or affiliate, refineries in the U.S. was at the expense of Canadian oil export opportunities. While the international companies held a large proportion of the oil reserves in Western Canada as well, that oil tended to be less attractive financially since, under Alberta prorationing, U.S. refiners using Canadian crude were required to purchase oil produced by other companies as well as from their own holdings which was not the case with their Middle East holdings. The weakness of product prices in the U.S. in the late 1950s tended to further increase the competition, and the demand for cheap overseas crude. The effect of these adverse factors impacted on the Canadian oil industry and its exports, and contributed considerably to the environment in which the Royal Commission on Energy (Borden Commission) made its findings in 1959, and in which the Canadian government made its decisions leading to the National Oil Policy in February 1961.

Uranium production peaks in 1959

The production record available at the end of December showed that Canada produced 15,892 short tons of U308 in 1959 valued at \$331.1 million. In that peak year, prior to the rapid decline in uranium sales, uranium ranked fourth in Canada's exports following newsprint, wheat and timber. By 1968, uranium production had declined to a low of 3,701 tons, following which there was a slow recovery to 7,150 tons by 1980. In 1959, the Elliot Lake mining Camp of Ontario, which had commenced development following the initial discovery in 1949, accounted for almost 75% of Canada's total uranium output. Most of the remainder came from the Beaverlodge (Uranium City) area of northern Saskatchewan. At the height of activity in 1959, there were 23 uranium mines in operation. This number declined to 20 by the end of the year, to 11 by the end of 1960 and 3 at the end of 1964.

Legislation re. the acquisition of petroleum - and natural gas rights in Canada continues to evolve

In the course of the rapid development of the oil and gas industry in Canada in the late 1940s and during the 1950s, each province and the territories established legislation for the disposition and administration of oil and gas rights within their jurisdictions. As viewed at the end of the 1950s, in December 1959, there were many common elements in all of this legislation but also some differences as a result of different approaches being taken by the various governments. In all provinces and in the territories, disposition of Crown lands was being governed by a Mines Act, or similar legislation. For Canada lands, disposition was under the authority of the Territorial Lands Act, and the Regulations under that Act had the most extensive authority of any set of regulations then in force. In contrast, delegation was least extensive in British Columbia with most of the authority being retained within the Mines Act. Legislation in Canada relating to the acquisition of petroleum and natural gas rights was being administered in terms of two groupings: that concerned with the reservation or the permit stage, and that of the lease stages. Among the provincial and federal jurisdictions, there were variations in the reservation or permit stage as to area, number of permits allowed, permit term, fees, deposits, rentals, work obligations, credits, and grouping provisions. For leases, there were differences with respect to lease areas, credits, rentals., lease terms, work obligations and royalties. The legislation continued to evolve in the 1960s and 1970s to most changing circumstances, particularly for

Canada lands as activity increased in the North and offshore in the 1970s leading to the passing of the Canada Oil and Gas Act in December 1981.

## THE YEAR 1960

National Energy Board's first hearing - gas export approval, and later hearings in 1965 and 1966

Following its establishment in late 1959, the National Energy Board commenced its first hearing early in January 1960. This was an omnibus gas exports hearing on six applications for licences to export natural gas and four applications for certificates authorizing the construction of related gas pipeline facilities. In total, the applications proposed the export over 20 to 25 years of about 6.8 exajoules (6.5 trillion cubic feet) of gas. The NEB concluded that there were adequate reserves for the proposed exports but did not recommend one of the six applications (Niagara Gas) because the proposed export price did not meet the test set out in the NEB Act of being "Just and reasonable in the public interest". The government approved the NEB export recommendations on April 1. The application by Niagara Gas Transmission was approved later in the year when the company completed an upward revision of the export price. Following the major gas export approval in 1960, the NEB approved four new gas export licences in 1965 and three more in 1966, the latter involving shipments through the new Great Lakes Transmission System that Trans-Canada Pipelines Limited proposed to build through the U.S. from Emerson, Manitoba, to Sarnia, Ontario. The Great Lakes system was completed in late 1968 after Trans-Canada undertook to ensure that more than 50 per cent of all domestic deliveries of gas destined for Ontario and Quebec would be transported through the northern line in Canada. This proportion was increased to 60% in 1976.

Whiteshell Nuclear Research Establishment, AECL

On January 19, the federal government announced that the Whiteshell Nuclear Research Establishment would be built by Atomic Energy of Canada Limited at a site on the Winnipeg River, 96 km northeast of Winnipeg. One of its first studies was to involve heavy water moderated reactors. In 1962, a contract to build an engineering test reactor at Whiteshell was awarded to Canadian General Electric Company. The reactor, known as WR-1, went into operation in the mid-1960s. It provided facilities for large-scale testing of fuel rods, heat transfer systems and components for organic-cooled, heavy water moderated power reactors.

Coal industry - support: federal measures to March 1960

As recorded in the Report of the Royal Commission on Coal (1960), federal monies expended to March 31, 1960 in support of the Canadian coal industry aggregated \$203 million. Those expenditures were authorized in terms of the following provisions. A. Those expenditures which directly encouraged the use of Canadian coal were authorized by the following: the Canadian Coal Equality Act, 1930; certain Government Directives Concerning Coal issued in the period March 8, 1955 to March 31, 1960; Springhill colliery Assistance Order, 1957; the Domestic Fuel Act, 1927 (expired June 30, 1932); Atlantic Provinces Power Development Act, 1958; Dominion Fuel Board, 1922-1941; Dominion Coal Board established in 1948; various orders in Council; and the Coal Production Assistance Act. B. Expenditures in the form of production subsidies, grants, special allowance and wage equalization payments were made during World War II to encourage the use of Canadian coal. C. Expenditures which indirectly encouraged the use of Canadian coal included services of the Lignite Utilization Board, 1917-1923; Geological Survey of Canada and Mines Branch research services, Department of Mines and Technical Surveys; and loans for capital expansion under the Atlantic Provinces Power Development Act, 1958.

Coal industry support-federal expenditures to March 1960

An analysis was made by the Royal Commission on Coal (1960) of total monies spent by the federal government in support of and in assistance to the Canadian coal industry. As set out in the Commission's report, these expenditures totaled \$203 million to March 31, 1960. The largest component of the expenditures related to coal transportation subventions - \$135 million, as paid in the period 1928 to March 31, 1960. However, some \$327 million was spent on coal transportation subventions by the time the program was terminated in 1970, with 63 per cent of that amount being spent in the 1960s (see note for March 1970). In the expenditure account to March 31, 1960, wartime production subsidies and related outlays totaled \$44.3 million. An amount of \$7.2 million was spent on research and surveys, and about \$15 million on various coal bounties and other subsidies. Additional to the \$203 million of expenditures to 1960, loans made to coal companies aggregated close to \$20 million up to March 31, 1960.

Atomic Energy  
Control Regulations -  
health and safety -  
1960, 1961 and  
1978

The Atomic Energy Control Regulations were revised effective April 13, 1960, with one major enabling power being removed and another added. The Atomic Energy Control Board (AECB) could no longer requisition prescribed substances and related patent rights nor expropriate mines or works or property for the production of atomic energy. However, the Board was provided with the authority to control the health and safety of workers in the nuclear industry, a matter which had been left primarily to provincial governments. The need for the new authority had been demonstrated in the lack of interest by the provinces; in the Pronto case which had questioned the validity of provincial regulations (see note for August 1956); and in the fact that the AECB could launch a successful prosecution under Section 19 of the 1954 Atomic Energy Control Act whereas there was doubt that the provinces could. In 1961, detailed health and safety regulations were considered and adopted, with the provinces satisfied to have the federal government administer them because of a lack of provincial legislation and appropriate organizations. The 1960 Regulations remained essentially unchanged until 1974 when, effective June 4, a new set was issued which defined a "nuclear facility" subject to the Regulations to include a nuclear reactor or accelerator, an enrichment or separation plant, a heavy water plant or a waste disposal plant. Great emphasis was placed on the licensing procedures for these facilities and on the powers of inspectors appointed by the AECB. In 1978, the Regulations were further changed, effective January 16, to more clearly include uranium and thorium mines and mills, and radon daughters were added to the list of prescribed substances. Radon daughters had been determined by the Ham commission in its report of 1976 to be a probable cause of cancer deaths among Ontario uranium miners (see note for June 1976).

Canada Oil and Gas  
Regulations -  
Canadian  
participation  
provisions

In April, the Canadian participation provisions were introduced in the Canada Oil and Gas Land Regulations. These provisions were incorporated in Regulations Respecting the Administration and Disposition of oil and Gas Belonging to Her Majesty in Right of Canada under all Lands Forming Part of Canada but not within any Province (P.C. 1960-474 of April 13, 1960). Section 32 of the Regulations states as follows:

32.(1) Upon application to the Minister a permittee shall be granted an oil and gas lease.

An oil and gas lease shall be granted for twenty-one years.

A lease shall not be granted under this section

1. to a person unless the Minister is satisfied that he is a Canadian citizen and that he will be the beneficial owner of the interest to be granted;
2. to a corporation incorporated outside of Canada; or
3. to a corporation, unless the Minister is satisfied
  1. that at least 50% of the issued shares of the corporation is beneficially owned by persons who are Canadian citizens; or
  2. that the shares of the corporation are listed on a recognized Canadian stock exchange and that Canadians will have an opportunity of participating in the financing and ownership of the corporation.

While not applying to the pre-production stage, no oil or other minerals could be produced for sale except under authority of a lease. Canadian participation provisions concerning production licences were incorporated in the Canada Oil and Gas Act which was debated in Parliament in 1981 and received Royal Assent on December 18, 1981.

Arctic sovereignty

In a memorandum prepared for Cabinet, dated June 27, the Minister of Northern Affairs and National Resources reviewed matters relative to Canadian sovereignty over the Arctic Archipelago, cited various authorities concerning the basis for Canada's claim to sovereignty, and concluded that Canada had made so many displays of effective sovereignty in so many respects, and for so long a period, as to establish its title to all of the islands in the Arctic Archipelago upon the doctrine of effective occupation in conformity with International Law. In presenting evidence of international recognition of that claim, he referred to the fact that the



U.S.A. at various times had acknowledged Canada's Arctic sovereignty including a -recent request to the Canadian Government for permission for two U.S. submarines to enter Canadian territorial waters in the Arctic Archipelago".

Uranium contamination mine waters - AECB controls in force by mid-1970s

During a debate in the House of Commons on July 7, of the contamination of natural waters with radium as a result of uranium mining operations was noted in the context of the procedure under the Atomic Energy Control Act whereby mining permits were issued but mine safety remained a provincial responsibility. In 1964, the Ontario Water Resources Commission published a report showing that radioactive concentrations in the Elliot Lake uranium mining region were high enough to create environmental problems. Reduced levels of mining operations throughout the 1960s and into the 1970s prevented the contamination problem from becoming severe. By the mid-1970s, when uranium mining operations again began to increase, the Atomic Energy Control Board had developed principles for the management of mine wastes and had acquired a staff to ensure compliance with new pollution control standards.

Royal Commission on Coal, 1960 (Rand commission)

In August, the Royal Commission on Coal (1960) which had been established by P.C. 1959-1293 of October 6, 1959 reported to the Government of Canada. The Royal Commission often referred to as the Rand Commission after the Commissioner, The Honourable I.C. Rand, Q.C., had been asked to inquire into and make recommendations upon certain matters pertaining to the Canadian coal industry. These matters concerned the markets for coal; the steps that could be taken to reduce the costs of coal production and distribution; the steps that the coal producing industry could take to secure as large a market as possible for Canadian coal and to place and maintain the industry on an economic basis; the measures that could be adapted by governments to support the economic production, distribution and sale of Canadian coal; and any other related matters. The Commissioner made recommendations concerning the coal production subsidy, setting out specific limitations including a provision that within the ton-year limit for the subsidy, coal production in Cape Breton of the Dominion Steel and Coal Corporation available for subsidization was to be reduced to not more than three million tons. Considerable emphasis was given in the recommendations to the importance of developing alternative economic activity in Cape Breton Island as coal mining was being phased down, as well as to measures for improving the efficiency of the coal mining industry and thereby reducing the cost of subsidization. One of the recommendations led to the reconstruction of the Fortress of Louisbourg as an historic site and an important tourist attraction for Cape Breton. In the course of its work, the Commission held public hearings in eight cities across Canada in all coal-producing provinces and the two major coal-consuming provinces during the period February-April 1960.

Canadian Nuclear Association

The Canadian Nuclear Association (CNA) was established in September 1960 for the purpose of promoting the orderly and sound development of nuclear energy for peaceful uses in Canada and abroad. The membership of the Association includes electrical utilities, manufacturers, consultants, government departments, financial and educational institutions, and labour organizations interested in the use of nuclear energy for electrical power generation as well as medical and industrial uses of radioisotopes. Much of the work of the Association is conducted through Standing Committees which address specific topics such as: codes, standards and practices, economic development, education and manpower, international affairs, legislative and public affairs, safety and environment, and technology. The CNA through its various committees participates in a number of public inquiries. Included in its special studies was one submitted to the Prime Minister in September 1978 entitled "Economic Impact of the Nuclear Industry in Canada".

OPEC established

The Organization of Petroleum Exporting Countries (OPEC) was established in Baghdad on September 10, as an intergovernmental group to study posted oil prices. Its five founding members were Saudi Arabia, Venezuela, Iran, Kuwait, and Iraq, subsequently joined by Qatar, Indonesia, and Libya. After its headquarters moved to Vienna in 1966, OPEC's main activity

became one of issuing proclamations declaring "solidarity" with the escalating demands of Libya and Algeria who joined in 1969. The Tehran Agreement of 1971 was to be a five-year accord that would freeze oil prices following a modest rise in the posted price to \$2.18 a barrel but it only lasted a few months, with each country insisting it had sovereignty over its oil concessions and soon the oil company consortiums were nationalized. Renewed war in the Middle East in 1973 led to rapid price increases, rising to a price close to \$12.00 (U.S.) by January 1, 1974 (see note for January 1974).

Coal production and demand declines following Leduc 1947 oil discovery - gradually increases in the 1960s

The discovery of oil in major quantities in Alberta in the late 1940s resulted in a marked and continuing decline in coal use in the Canadian energy market as oil production increased. As a result of dieselization of the railways, coal as a percentage of total fuel used in railway locomotives declined from 95.4% in 1947 to 3.1% in 1960. The consumption of coal in domestic and building heating in 1960 was one-third the 1947 level. Total consumption of coal in the year 1960, as recorded in December, was 23.2 million short tons, about one half the 1947 level. This decline in coal use took place in a period (1947-1960) when energy demand in Canada doubled. Coal production reached its lowest level since 1906 in 1962 at 10.3 million short tons, declining from a peak of 19.1 million tons in 1949 and 1950. Coal production increased slowly in the 1960s to 16.6 million tons in 1970 mostly as a result of some growth in the domestic thermal power market for coal and the development of an export market, but major production growth did not take place until the 1970s when export increases accounted for most of the coal production increase to 27.7 million tons by 1975. Following a record low of 22 million tons in domestic consumption in 1961 based on domestic coal production and imports, domestic demand remained in the range of 25 to 28 million tons from the mid-1960s to mid-1970s and then increased to 41 million short tons in 1980.

NEB gas export approvals lead to increased gas field and pipeline activity

By December, the U.S. Federal Power Commission had approved most of the gas import applications that followed from the approval earlier in the year by the National Energy Board of five gas export applications, and this led to the initiation of several gas pipeline construction programs in 1960. The largest of these was the Alberta-California gas pipeline over a 1,376-mile route from the Whitecourt field in northwestern Alberta to San Francisco. This system was completed in December 1961. In August 1960, Trans-Canada Pipe Lines Limited commenced gas exports to the United States through a branch line to Emerson on the Manitoba-U.S. border. By the end of 1960 there were 58 gas processing plants in western Canada gas fields designed to remove propane, butane, natural gasoline and hydrogen sulphide from natural gas prior to its delivery into pipeline systems. Natural gas production in Canada in 1960 totaled 523 billion cubic feet, valued at \$52 million, with Alberta accounting for 73.4%; B.C., 16.4%; Saskatchewan, 6.9%; and Ontario, 3.3%.

Eldorado Mining and Refining Ltd - exploration restricted

Effective December, a federal government decision was taken restricting Eldorado Mining and Refining Limited's exploration activities to the immediate area of its mine located on the north shore of Lake Athabasca. This decision was taken at a time when the Company's Port Radium mine on Great Bear Lake was nearing the point of ore exhaustion and it was planning a large scale exploration program for other minerals in the Arctic region with the objective of extending the life of its Port Radium based activities. As a result of the exploration restriction, the Company entered a new era of considerably curtailed operation in contrast to the 1950s when it had followed the course of exploration normal to mining companies and which had resulted in the acquisition and development of its mine at Beaverlodge on the north shore of Lake Athabasca. In restricting the Company's operations to that immediate area, the federal government was responding to the views of the mining industry that Eldorado, as a Crown company, had no right to enter the field of exploration in competition with private enterprise. The exploration restriction was lifted in January 1974.

## THE YEAR 1961

Nuclear reactor exports to India - later ended in 1974

On January 16, an NRX-type research reactor (CIRUS) officially commenced operations in India. The reactor was a gift in 1956 from Canada to India under terms of the Colombo Plan. On November 15, 1963, Canada and India agreed to cooperate in the building of a CANDU-type nuclear power station at Rana Pratrap Sagar, India, under specific safeguards agreements. This 200 MWe power reactor (RAPP-I) commenced operations in 1972. The sale of a second reactor (RAPP-II) in 1966 led to a similar agreement in December of that year. In December 1971 the bilateral Canada-India agreements on RAPP-I and RAPP-II were renegotiated to trilateral Canada-India-IAEA agreements, with verification of the safeguards being assumed by the International Atomic Energy Agency. On May 22, 1974, the Canadian government suspended the shipment of all nuclear equipment and material to India after India detonated on May 18 a nuclear device underground using Canadian materials. The Canadian government followed the May 1974 embargo with an announcement in the House of Commons on May 14, 1976 that there would be no further nuclear cooperation with India. That country had become a member of the nuclear weapons club using a nuclear facility provided by Canada in good faith. This event led to the formulation of more stringent non-proliferation specifications by Canada in 1974 (see note for December 1974).

Columbia River Treaty signed - later ratified in Sept. 1964

On January 17, the governments of Canada and the United States signed the Columbia River Treaty. The history of the Treaty dates back to 1944 when the International Joint Commission (IJC), at the request of the two governments, undertook investigations to determine whether further development of the water resources of the Columbia River basin would be practical and advantageous to both countries. An Engineering Board set up by the Commission submitted a report in March 1959, which indicated that there were a number of sites in Canada suitable for the construction of large storage reservoirs that could be used to regulate the Columbia River for storage and power development purposes. In January 1959, the two governments had also asked the IJC to make a special report as to how benefits produced in the U.S. from storage products upstream in Canada might be shared by the two countries. Negotiations between the two governments on the selection of the best possible sites for storage dams, and the apportionment of the benefits to be derived from them, began in February 1960 and terminated with the January 17, 1961 signing of the Columbia River Treaty but it was not until January 1964 that a Protocol modifying and clarifying the Treaty was approved, with the Treaty finally being ratified in September 1964.

National Oil Policy, 1961

On February 1, the Minister of Trade and Commerce announces in the House of Commons a national oil policy "to achieve target levels of production of oil, including natural gas liquids, which will be set from time to time, and which will be designed to reach approximately 800,000 barrels a day in 1963. This objective for 1963 can be achieved by the industry on an economically sound basis, and will be approximately as high as the figure which would be achieved if the Montreal pipeline were to be constructed". This target, and intermediate targets, were to be "reached by increased use of Canadian oil in domestic markets west of the Ottawa Valley, and by some expansion of export sales largely in existing markets which can be reached through established Pipelines". Refinery capacity was to be increased in Ontario so that by 1963 capacity would be sufficient to enable the Ontario market, west of the Ottawa Valley, to be supplied substantially from Canadian crudes. The government program for expanded production of oil was to be met on a voluntary basis, but importers of crude oil and petroleum products were required to report their imports monthly from January 1, 1961, in order to permit the National Energy Board to continue to assess the oil market situation. If voluntary efforts were not producing the results anticipated, the federal government would take whatever steps were required to ensure the success of its policy, including proclamation of Section 87 of the National Energy Board Act which provides for the regulation of imports and exports of oil. The government believed that the increase of exports, which was integral to the program, was wholly consistent with the growth of sales of Canadian oil contemplated when exemption from

U.S. oil import control was established (see June 1959 note). The specific 1963 production objective of 800,000 barrels per day was reached, and by 1966 one million barrels per day were being produced. The general objective of maximizing Canadian oil production remained as an overall policy guideline until December 1973 when a new oil policy was announced.

Royal Commission on Coal, 1960 - government committee report on recommendations

Following the presentation to the federal government of the Report of the Royal Commission on Coal in August 1960, an Interdepartmental Committee examined the recommendations and reported to the Minister of Mines and Technical Surveys on MI 25, 1961 on the matter of subsidies. While agreeing with the Royal Commission Report that the coal problem was largely social in character, the Committee recommended a more resolute approach to the objective of reducing the production of the coal industry to an economic level. Specifically, the Committee suggested the immediate ending of transportation subsidies and adopting a per ton subsidy payable directly to the producing companies which would be reduced yearly. Equally resolute planning and action was recommended for the rehabilitation of the 4,500 workers who would be released from mining operations in achieving a self-sustaining level of production. However, transportation subventions were not terminated until 1970 (see note for March 1970). In 1962, the Interdepartmental Committee made recommendations, relative to the Royal Commission Report, on coal research (see note for October 1962).

Canada Oil and Gas Land Regulations

The Canada oil and Gas Land Regulations implemented, by P.C. 1961-797 of June 6, 1961, and amended by P.C. 1963-408 and P.C. 1964-1614 were made under the Territorial Lands Act and the Public Lands Grants Act. The Regulations applied to Canada lands, defined as all lands owned by the Crown in the right of Canada not within any province, including both the Yukon and the Northwest Territories. Under this legislation, mineral rights were issued by the Department of Indian Affairs and Northern Development in the form of exploratory licences, exploratory permits, and oil and gas leases. When the Department of Energy, Mines and Resources was established in 1966, authority to administer Canada lands south of the 60th Parallel of Latitude was passed to that Department. Under the 1961 Regulations, the granting of oil and gas production licences in the lease stage was restricted to Canadian-owned firms or foreign-controlled companies in which Canadian would have an opportunity to invest. However, there were few restrictions on who could hold exploration permits.

Oil and Gas Land Order No. 1 - Canada Oil and Gas Land Regulations

In the Canada Oil and Gas Land Regulations approved by the Governor in Council on June 6, 1961, Section 58 provided that the Minister of Northern Affairs and National Resources could determine, by Order, the terms and conditions for an oil and gas lease of lands which reverted to the Crown when a permittee selected his leases. The Regulations were originally designed to encourage industry operators to carry out exploration programs in Canada's frontier regions in the Arctic and offshore. At the time of their promulgation, it was necessary to offer fairly generous terms and conditions, since the frontier regions were environmentally hostile for operations, geological prospectivity was unknown, competition for international exploration funds was intense, and oil and gas was a glut on the market. Under the 1961 Regulations, the Minister was authorized to dispose of the corridor acreage between the sections leased in a permit area when a permittee converted to lease. The public auctions were intended to provide a means by which the Crown could increase its revenues through disposition of its share of the evaluated properties. A potential drawback of the public sales was the breaking up of the productive unit among competing owners. In 1961, the modified checkerboard system was supplemented by Land Order 1-1961, in effect from 1961 to 1970, which enabled the permittee, upon conversion from permit to lease, to regain the corridor acreage from the Crown and thereby avoid disposition of the surrendered sections to third parties. As a result, the permittee could acquire the whole of the productive area and any discovered reserves could be developed as a unit, considered to be a more efficient arrangement than the pooling and unitization that would be required when there was more than one competing owner. This system became known as the "unitary development concept". As recorded in April, June and December 1970 items, Land Order 1-1961 was revoked pending review of the Canada Oil and Gas Land

Regulations in the light of new oil and gas activities in the North and in the offshore.

U.S. natural gas  
markets opened by  
Alberta to  
California line and  
Trans-Canada  
lateral

In December, the 1368-mile gas pipeline from Alberta to California was completed at a cost of \$300 million. In addition, more than 200 miles of new lateral lines were completed in Alberta to supply the system. The trunk line consists of 351 miles of line in Alberta, a 107-mile section cutting across the southeast corner of B.C. to an export point near Kingsgate, and 910 miles of trunk line in the U.S. to San Francisco. The system was designed to transmit 1,200 million cubic feet of gas per day. This new pipeline system opened up a major market in the U.S. for Canadian natural gas. At the same time, considerable amounts of Canadian natural gas were moving to U.S. markets through the spur line from Winnipeg to Emerson, Manitoba from the Trans-Canada pipeline, with 1961 being the first year of operation. The large volumes of gas exports that developed in the early 1960s followed from the National Energy Board export approvals of 1960. Exports increased from 109.8 million cubic feet in 1960 to 404.7 billion in 1965 and 780.2 billion in 1970. Before completion of any of the major domestic and export pipelines in 1955, gas exports in that year totaled only 11 billion cubic feet.

## THE YEAR 1962

CANDU - NPD  
Generating Station  
start-up

Canada's first nuclear-electric development was the 20,000-kw Nuclear Power Demonstration (NPD) station which went into service in April at Rolphton, Ontario. Later, this CANDU-PHW (Canada-Deuterium-Uranium, Pressurized Heavy Water reactor) was classified at an electric power output of 25 MW(e). Operation of this station demonstrated the soundness of its design and established confidence in the Canadian type of nuclear power reactor - CANDU. It was followed by Canada's first full-scale nuclear power station at Douglas Point, Ontario, on the eastern shore of Lake Huron, which went into operation in 1966 with a single 200 MW(e) unit. This was followed by the Pickering Generating Station A on the shore of Lake Ontario, a few miles east of Toronto with start-up in 1971 and designed for four 500 MW(e) units (see also notes for January 1954, December 1978, and other CANDU notes).

Uranium exports  
under new U.K.  
contract but  
production decline  
continues

On June 30 the Minister of Trade and Commerce announced that an export contract had been signed under which Eldorado Mining and Refining would sell 12,000 short tons of uranium to the United Kingdom Atomic Energy Authority (UKAEA) over a period extending until early 1971. This would have the effect of extending the period of operations of the remaining Canadian uranium producers by almost 17 months at the contractual delivery rate in effect on June 1, 1961. The basic price was \$5.03 per pound of uranium, with provision for price escalation in the event of increases in basic cost levels over the period of the contract. As part of the effort to keep the Canadian uranium mining industry in operation following the termination by the U.S. of its purchase contracts (see November 1959 note), the new U.K. purchase was divided among mines in proportion to their contracted rates of delivery as of July 1, 1961. This contract was additional to two small contracts signed with the UKAEA in the mid-1950s. Despite this additional sale, and the uranium stockpile programs (see July 1963 note), uranium production continued to decline, to a low of 3,701 tons Of U308 in 1968, from the peak of 15,892 tons in 1959.

Oil sands - initial  
approval given to  
GCOS

On October 2, the Government of Alberta approved a proposal by Great Canadian Oil Sands Limited (GCOS) to develop an oil sands project in the Fort McMurray area of Alberta to produce synthetic oil from the oil sands at a rate of 31,500 barrels per day. GCOS had been formed by a group of businessmen in 1953 and, in 1958, had signed a contract with Sun Oil Company Limited, a wholly-owned subsidiary of Sun Oil Company of Philadelphia, giving GCOS the right to mine and process oil sands from a lease held by Sun. In addition, Sun agreed to purchase 75% of the crude oil produced, with the remainder being contracted for sale to Canadian Oil Companies Limited, a company later acquired by Shell Canada Limited. GCOS had made its first application to the Alberta Oil and Gas Conservation Board in 1960, and, in 1963, following the October 1962 approval, submitted a revised application at 45,000 barrels per day capacity which was approved in April 1964. On the basis of this approval, GCOS proceeded to develop its project for the production stage which was reached in September 1967.

Royal Commission  
on Coal, 1960 -  
government report  
on  
recommendations

Following the presentation to the federal government of the Report of the Royal Commission on Coal in August 1960, an Interdepartmental Committee examined the recommendations and reported to the Minister of Mines and Technical in Surveys in May 1961 on subsidies, and in October 1962 on research. With regard to the benefits to be derived from further research, the Committee found it difficult to foresee a final solution in research to the problems of the Canadian coal industry during the following few years. A long-term comprehensive research program would be desirable, but the Committee concluded that the amelioration of the problems facing the coal industry rested on more direct and urgent schemes than the increases in competitive ability that might be effected by engineering research. The Committee did recommend four proposals for research but also recommended economic studies on the greater use of coal within the Atlantic Provinces. As in the case of the May 1961 report of the Interdepartmental Committee on the recommendations of the 1960 Royal Commission on Coal,

the Committee's October 1962 report contains detailed analyses of the Commission's recommendations.

Quebec Hydro power development, following 1962 nationalization

In November, the Government of Quebec announced its nationalization of privately owned power utilities in the Province and, by the end of the 1960s, had most of those companies as well as a number of electric cooperatives and municipal systems incorporated into the Quebec Hydro-Electric Commission. In 1960, the Quebec government had announced that new hydroelectric sites would no longer be made available to private interests for development, and following the 1962 policy initiatives, Quebec entered a period in the 1960s of extensive hydroelectric development on the Manicouagan and Outardes Rivers. The Manic 5 plant with an installed capacity of 1,322,400 kW in four units was completed in the early 1970s at a site 125 miles from the mouth of the Manicouagan River. The Manic 2 plant with an installed capacity of 1,015,200 kW was completed with eight units by 1967 at a site 11 miles from the mouth of the River. The Manic I plant near the mouth of the River was completed with three units and a capacity of 184,400 kW in 1967. The Manic 3 plant, 50 miles from the mouth of the River, was completed in the late 1970s with a capacity of 1,176,000 kW in six units. In addition, two plants with an aggregate capacity of 1.4 million kW were completed on the Outardes River by 1969. In 1965, the first of three 735-kV lines, extending from Manicouagan-Outardes to Montreal, was completed. This was the highest transmission voltage in service in the world at that time. The first James Bay hydro studies were conducted in 1964, and the first power plant went into operation, at the LG 2 site, in October 1979 (see note for October 1979).

NPD in operation - AECB's licensing procedure established

By December, the NPD (Nuclear Power Demonstration) reactor, which had been initially planned in 1953, was in operation at Rolphton, Ontario. In addition, the Douglas Point Station was under construction, and planning was underway for the Pickering A station near Toronto. By this time, the procedural method by which a licence could be provided was being well established by the Atomic Energy Control Board (AECB) to ensure that all relevant safety factors would be assessed before an operating licence was issued. Three stages in the approval process were identified: the approval of the proposed site; construction approval; and an operating licence. The site approval process now involves an environmental impact study and a public information program. The construction approval process places major emphasis on health and safety. An operating licence is only issued after the Atomic Energy Control Board is satisfied with reactor performance, first at low-power levels and then at full-power levels. Licences are issued by the AECB for a limited period of time, with the licensee being required to apply for renewal before the end of the period of the existing licence.

Peace River power development

On December 21, the Comptroller of Water Rights of British Columbia issued a licence to the B.C. Hydro and Power Authority permitting the construction of the Peace River storage dam, powerhouse and associated works. The project had initially been announced by the B.C. government in October 1957 but did not go into the active planning stage until the B.C. government acquired the B.C. Electric Company and the Peace River Power Development Company in August 1961. The Peace River is the largest tributary of the Mackenzie River system. The large hydroelectric power potential of the Peace River in B.C. had first been investigated by the Peace River Power Development Company. After that company's interests were acquired by the B.C. government, they were merged with the holdings of the B.C. Electric Company to form the B.C. Hydro and Power Authority in March 1962. The dam and power project on the Peace River near Hudson Hope in northeastern B.C. was completed in 1968, with an installed capacity of 1,135,000 kW. Two 500 kV transmission lines, almost 600 miles long, were completed in early 1969 and 1971 to the Vancouver and lower mainland area of the Province. At the end of the 1960s, this \$780 million project was accounting for over 30 per cent of B.C. Hydro's installed electrical generating capacity.

Mines Branch research on new

When demands for Canadian uranium declined, attention was directed to possible non-nuclear uses. In 1960, research commenced in the Mines Branch (now CANMET) of the Department

uses for uranium  
and on ore  
processing

of Mines and Technical Surveys (now EMR) on the possibility of alloying uranium with ferrous metals to produce a better steel or ferro alloy. This appeared promising because uranium has properties similar to molybdenum and tungsten. A report on research work done to December 1962 on uranium as an alloying element in steel, showed that uranium, when added in small amounts, was found to improve the high-temperature properties of steel. Research done on non-ferrous alloys, such as brass, also demonstrated improved quality through the addition of small amounts of uranium. Aside from this specialized end-use research, the Mines Branch had in the 1950s and into the 1960s conducted laboratory investigations on recovery and beneficiation procedures for the processing of uranium ores including flotation procedures in mills and the use of a new technique of bacterial leaching of uranium from ore by the circulation of mine water through broken ore in mines.



## THE YEAR 1963

- U.S. oil import restrictions tightened Effective January 1, U.S. oil import allowables which had been set at 8 per cent of domestic demand in 1959, with Canada being exempted, were changed to 12.2 per cent of U.S. estimated production for all areas east of the Rocky Mountain, with Canadian oil imports being part of the 12.2 per cent import allowable. This put Canadian oil in competition with overseas oil for the available market. U.S. policy at that time towards Canadian oil was influenced by the U.S. Administration's desire to provide a growing market for overseas oil. In effect, Canada administered an informal restraint on its oil exports to the U.S. as from 1963.
- Nelson River power - Initial studies On February 18, an Agreement was entered into by the governments of Canada and Manitoba under which the federal government undertook to share equally with-Manitoba the cost of investigating the feasibility of developing the hydroelectric potential of the Nelson River. Under the terms of this Agreement, the Nelson River Programming Board was set up to administer the Agreement, and the Nelson River Administrative Committee was established to direct and supervise all studies. Manitoba represented to Canada that the Nelson River had a power potential of the order of 4 million kilowatts of firm power, approximately 2 million kilowatts of which would be surplus to Manitoba's requirements for a considerable period and that, if any part of this potential was to be made available at economic rates in the near future, it must be developed for large markets outside Manitoba to take advantage of economies of scale in which long distance transmission of electric energy would play a vital role. Manitoba proposed a series of studies to be completed by March 1964 on the feasibility of Nelson power development and the federal government agreed to pay 50 per cent of the cost of the studies, up to a total of \$500,000, later increased to \$650,000.
- Prime Minister's announcement on first uranium stockpile On June 26, Prime Minister L. B. Pearson announced arrangements for stockpiling uranium as a short-term measure to maintain employment in the Ontario Elliot Lake and Bancroft uranium mining areas (see following note for July). The program was to operate from July 1, 1963 to June 30, 1964 to keep the mines in production until alternative sources of employment could be developed. The view at that time was that, while the eventual prospects for a revival in world demand for uranium were good, the revival would not be fast enough or large enough to justify a full stockpiling program meantime because the stocks accumulated would be of such size that they could exert a depressing influence on the price of uranium for many years. Extended stockpiling would not be in the national interest. Notwithstanding this June 1963 position, a second stockpiling was operated in the period July 1, 1965 - June 30, 1970 and a third in the period 1971-74.
- Uranium stockpiles On July 1, the federal government implemented its first uranium stockpiling program. The Canadian uranium industry had risen rapidly to prominence in the 1950s based on contracts with the United States and, to a lesser extent, with Britain. These contracts contained option clauses to purchase additional quantities of uranium but in late 1959, Canada's peak production year, the purchasers decide they would not exercise their options. There followed a period of fairly rapid decline, tempered somewhat by the institution of a uranium delivery "stretch-out" program, related to both U.S. and British contracts. Arrangements were also made to permit the transfer of contract commitments between companies. As a result, the less economic operations ceased production and transferred their contract commitments. Denison Mines Limited, one of the two principal remaining operators, had completed its contracts by mid-1963 and was faced with mine closure. In order to alleviate the serious problem of its closure in the Elliot Lake area of Ontario, the Canadian government introduced the first uranium stockpiling program which operated from July 1, 1963 to June 30, 1964. Denison and the other Elliot Lake producer, Rio Algom Mines Limited, were each given contracts to deliver uranium to stockpile. Faraday Uranium Mines Limited in the Bancroft, Ontario area was also given a contract. In 1965, following the collapse of Denison's contract with France, the Canadian government instituted the second stockpile which was authorized for the period July 1, 1965 - June 30, 1970, with all

previous uranium producers being entitled to sell limited quantities to the federal government at a base price of \$4.90 a pound with annual escalation (see notes for July 1965, December 1970, August 1973 and other notes under this heading). The first stockpile consisted of 5.4 million pounds Of U308 and the second accumulated 13.9 million pounds Of U308.

#### National Power Policy

On October 8, the Minister of Trade and Commerce announces in the House of Commons a national power policy. The policy placed particular emphasis on:

"the desirability of Canada taking fullest advantage of the evolutionary changes that have taken place in the nature of the power industry, including technological improvements in generating and transmission facilities, and the reduced costs of power associated with these;  
 "the provision of abundant supplies of electrical energy to consumers throughout Canada at the lowest possible cost to encourage and accelerate economic development and growth;  
 "the need for Canada to have a flexible export policy which, *inter alia*, would permit the export of large blocks of power to the United States for a relatively long period of years to assist in the immediate development of certain large-scale Canadian power projects, particularly undeveloped hydro resources which might not be viable in the near future unless provision were made for the marketing in the United States of a significant portion of their output; and  
 "the strengthening of our balance of payments position through the export of power surplus to our own needs."

The statement noted that the National Energy Board is required to certify that power to be exported does not exceed the surplus remaining after due allowance has been made for reasonably foreseeable requirements for use in Canada, and that the export price is just and reasonable in the public interest. Export licences, issued by the NEB with the approval of the Governor-in-Council, must not be for a term in excess of 25 years. The statement describes the changes in the power industry which had taken place since 1907 when the Electricity and Fluid Exportation Act came into force and limited the term of an export licence to one year. By the 1960s it was unusual for a large utility to be dependent on one source of power supply and, consequently, an export sale could be terminated without hardship in the export market if the power was required in the domestic market. The new policy with its provision for up to 25-year export permits was designed to encourage the development of large low-cost power sources and the distribution of related benefits as widely as possible through interconnection between power systems within Canada; and to encourage power exports and interconnections between Canadian and U.S. power systems where such would induce early development of Canadian power sources.

#### Trans-Northern Products Pipeline

Effective October, the Trans-Northern Products Pipeline, which was constructed in the early 1950s to transport petroleum products from the Montreal refinery area to Toronto, was reversed for the Kingston-Toronto section so that petroleum products could be delivered from Toronto refineries to eastern Ontario. This was in keeping with the National Oil Policy, announced in February 1961, which was directed to the supply of all areas west of the Ottawa Valley line with products produced from Canadian crude oil, thereby replacing products produced in Canada from foreign crude and products imported from other countries. Trans-Northern was incorporated by Special Act of Parliament in 1949, being an interprovincial pipeline.

#### Glance Bay heavy water plant started, followed by second U.S. plant at Port Hawkesbury

In December, the federal government awarded a contract to Deuterium of Canada Limited for the construction of a heavy water plant at Glance Bay, Nova Scotia. The government guaranteed the purchase of 1000 tonnes of heavy water over a period of five years at a price of \$20.50 per pound. After many construction delays and ultimate acquisition of the property by Atomic Energy of Canada Limited, the plant went into production in 1976, with full production not achieved until 1979 at 400 tonnes per year. Contract for the second Nova Scotia heavy water plant was awarded to Canadian General Electric Company in December 1965 for construction of a 400 tonnes per year plant at Port Hawkesbury, N.S. This plant was completed in 1971 and

it operated for a number of years at 60% of design capacity.

Uranium industry -  
its rise and decline

The production record available in December showed that uranium deliveries were only 8,141 short tons of U308 in 1963, little more than one-half of the output of 15,892 tons in the peak year, 1959. The continuing poor prospects had led to the government decision to establish a stockpile program as a temporary measure in an endeavour to keep the industry alive (see note for July 1963). The history of the industry had been characterized by a rapid build-up in resource potential and production to the peak year of output in 1959 followed by a rapid decline. In 1950 exploration for uranium by the general public and private mining companies had just begun. By 1955 all of the important discoveries were either being mined or were being prepared for mining. Production in that year amounted to 1300 tons of U308. By 1959, a total of 23 mines were in operation and shipments totaled 15,892 tons valued at \$333 million. With the announcement in 1959 by the United States that it would not exercise its option to buy additional uranium from Canada, and in order to avoid a collapse of the industry when the contracts expired in 1962 and 1963, the government, through Eldorado Mining and Refining Limited, negotiated a stretch-out of delivery of uranium that was already under contract. At the end of 1963, there were only six mines in operation. The stockpile program was implemented during the year in order to maintain employment in two mining communities for a slightly longer period in the hope of finding alternative employment for the miners.

## THE YEAR 1964

Columbia River Treaty protocol leading to ratification	<p>On January 22, Canada and the United States approved a Protocol modifying and clarifying the 1961 Columbia River Treaty. Although the U.S. Senate had adopted a resolution approving the Treaty as signed in January 1961, ratification did not take place in Canada. Following the Hyannis Port meetings between President Kennedy and Prime Minister Pearson in the spring of 1963, formal negotiations resumed between the two countries. At the same time, meetings were held between the governments of Canada and British Columbia resulting in a main agreement being signed on July 8, 1963, and a supplementary agreement on January 13, 1964. These agreements outlined the respective responsibilities of the two governments in Canada in the development of the Columbia River. Following approval of the Protocol on January 22, 1964, the treaty and Protocol were submitted to the Canadian Parliament in March 1964, and the House of Commons and the Senate voted in favour in June 1964. An-agreement under which a group of U.S. utilities would purchase Canada's share of the downstream power benefits for a 30-year period was signed by the Columbia Storage Power Exchange and the British Columbia Hydro Power Authority on August 13, 1964. Sale of the bond issue on August 26 to finance the purchase cleared the way for ratification of the Treaty by Canada and the U.S. on September 16, 1964.</p>
Oil Sands - GCOS approved - other projects deferred	<p>On April 10, the revised application by Great Canadian oil Sands Limited (now Suncor) to construct a 45,000 barrel per day plant in the Athabasca oil sands area was approved by the Alberta Oil and Gas Conservation Board. The Company had received a permit in October 1962 to construct a plant to operate at a rate of 31,500 barrels a day but in 1963 had applied to the Board to produce at a revised rate of 45,000 b/d. Although this project was approved, the Board deferred applications by Cities Service Athabasca, Inc. and Shell Canada Limited on the grounds that such large-volume production would disrupt the conventional oil industry in Alberta. The GCOS plant went into production in September 1967, by which time Sun Oil Company of Philadelphia had invested a quarter of a billion dollars.</p>
Nelson River power-studies continued	<p>A second Agreement, signed by the federal and Manitoba governments on May 27, extended the Nelson River power feasibility studies initiated by the Agreement of February 18, 1963. The new Agreement provided for a continuation of the feasibility work until March 1966 at an estimated cost of \$3 million, with the federal government financing one-half of the cost, the balance being shared by the Manitoba government and Manitoba Hydro. The Nelson River Programming Board submitted an interim report "Nelson River Investigations" in December 1965 and a final report in February 1967. In its interim report, the Board developed a plan for a minimum power development of 855,000 kilowatts on the Nelson River. This was called "Phase I Development" and included the following components: the Kettle Power Site; diversion of substantial flows from the Churchill River Basin into the Nelson River at Split Lake; regulation of Lake Winnipeg by means of control work at the outlet of the Lake; and high voltage transmission facilities to transmit power to southern Manitoba. The Programming Board recommended the Phase I development as the minimum that would be economic in terms of Manitoba's power requirements while facilitating an advantageous export of power. In addition, Phase I would bring about important indirect benefits with significant spin-off effects to Manitoba and Canada in total. The Programming Board's December 1965 recommendation became the basis for the February 15, 1966 Agreement between Canada and Manitoba pertaining to the development of Nelson River hydroelectric power and the July 12, 1967 Agreement pertaining to the transmission facilities. The Programming Board's final report, dated February 1967, updated the interim report cost estimates, and concluded that the ultimate capacity of the Nelson River and the associated diversions of the Churchill River would be about 6,000 megawatts.</p>
Columbia River Treaty - Canadian	<p>The Canadian Entitlement Purchase Agreement of the Columbia River Treaty was signed on August 13, 1964. Under terms of that agreement, Canada's share of downstream power benefits</p>

Entitlement Purchase Agreement	<p>resulting from the first 30 years of scheduled operation of each of the storage projects was sold to a group of electric utilities in the United States known as the Columbia Storage and Power Exchange. The Columbia River Treaty had been signed on January 17, 1961 and was ratified by the United States Senate in March of that year. Ratification was delayed in Canada and further negotiations between the two countries resulted in formal agreement, by an exchange of notes on January 22, 1964, to a Protocol to the Treaty and to an Attachment Relating to Terms of Sale. The Treaty and related documents were approved by the Canadian Parliament in June 1964, followed by the Canadian Entitlement Purchase Agreement with the U.S. in August, and the formal ratification of the Treaty and Protocol on September 16, 1964. The sum of \$253.9 million (U.S.) was delivered to Canadian representatives as payment in advance for the Canadian entitlement to downstream power benefits during the period of the Purchase Agreement.</p>
Columbia River Treaty ratified - related benefits	<p>Ratification of the Columbia River Treaty on September 16, 1964 by Canada and the United States made provision for payments for flood control totalling \$64 million (U.S. funds) by the U.S. government to Canada as the Treaty storage dams were completed in Canada. Treaty dams at Mica Creek, on the northernmost part of the Columbia River, at the outlet of the Lower Arrow Lake near Castlegar, and on the Duncan River, a northern tributary to Kootenay Lake, were designed to control seasonal fluctuations of the Columbia's flow, thereby reducing flood hazards and increasing the power potential in both Canada and the U.S. The construction of these storage projects was to be the first step in a series of developments planned for the Columbia River basin in Canada, with the Mica dam to ultimately produce 2,600 MW of power. Other projects located downstream from Mica in Canada and on the Kootenay River would raise the total potential resulting from the Treaty to more than 6 million kilowatts. In payment for the downstream power benefits as sold to the Columbia Storage and Power Exchange, a group of power entities in the U.S., for a period of 30 years, the Government of Canada received the sum of \$253,929,534 (U.S.). The Canadian dollar equivalent, \$273,291,666, was paid to the B.C. government under terms of the Agreement between Canada and B.C., dated July 8, 1963. B.C., in turn, undertook to use these funds for the construction of the three storage dams on the Columbia River: Duncan, completed in July 1967; Arrow, completed in October 1968; and Mica, completed in March 1973.</p>
Oil and gas reserves rapid increase and pipeline expansion	<p>Assessments made, effective December, showed that the 1964 additions to natural gas and oil reserves were the largest annual additions in the history of the industry in Canada. Natural gas reserves increased by 17.4% in the year to 43.4 trillion cubic feet, equivalent to 31 years of supply at the 1964 rate of production. Oil reserves increased by 26% to 7 billion barrels, including natural gas liquids. Indicative of the amount of growth in the industry, oil pipeline mileage at the end of 1964 was close to 12,000 miles, mostly for crude oil transportation but including 1,300 miles for natural gas liquids and 900 miles for refined petroleum products. The average price of crude oil in Alberta fields was \$2.46 a barrel, a 10% decline from \$2.73 in 1950. Gas pipeline mileage totaled 41,000 miles, including gathering, transmission and distribution lines. Prior to the Leduc oil discovery in 1947, the pipeline system in Canada consisted mainly of a few hundred miles of small diameter gas pipelines in Alberta and the Portland, Maine to Montreal oil pipeline.</p>
Syncrude oil sands project	<p>Syncrude Canada Limited was incorporated on December 18. One of the original participants, Cities Service Ltd., had submitted an application to the Alberta Oil and Gas Conservation Board in 1961. In 1968, Syncrude revised the application to provide for an 80,000 barrel per day plant to produce synthetic crude from the oil sands. Subsequent amendments led to approval by the Board in December 1971 of a plant designed to produce 125,000 barrels a day. The project was rescued through federal, Alberta and Ontario government participation in 1975. (See note for February 1975). The project was completed and went into production in August 1978.</p>
Canada-U.S.	<p>By December, a major international electric power interconnection, that had been under</p>

electric power  
connections -  
related benefits

construction during the year, was completed and was in operation between power systems in British Columbia and Washington, the interconnection having a line capacity of 300 megawatts. This project had been preceded by nine other electric power interconnections between Canada and the United States, the first being completed in 1915. The largest were the 800 megawatt interconnections between Ontario and Michigan completed in 1959, and between Ontario and New York in 1960. In the period 1968-1979, 13 more international power lines were constructed between the two countries, with the largest being the 500 megawatt lines between B.C. and Washington in 1968, between B.C. and Washington in 1973, between Ontario and Michigan in 1973, and between Manitoba and Minnesota in 1977. The construction of international power lines continued in the 1980s. Power line systems connecting electrical utilities on either side of the international boundary have enabled Canada to export surplus energy. They have also enabled utilities of the two countries to participate in the many advantages that accrue from being associated with major power pools, including emergency support in the event of power failure. The National Power Policy, announced in October 1963 was an important factor in encouraging international power lines with the U.S. The interconnection completed in 1964 was the first power line constructed following that major policy announcement.

## THE YEAR 1965

Energy production in the mid-1960s compared with 1950

Growth and change in the energy economy in the period 1965 - 1980, inclusive, can be viewed from a level of activity, measured in terms of production, that had been established in the mid-1960s following many major events of previous years dating, in particular, from the Leduc, Alberta, oil discovery of 1947. The year 1965 started from a statistical base, as measured in January, consisting of the output of the several energy commodities in the previous year. In 1964, crude oil production averaged 752,000 barrels a day, up almost 10-fold from the 1950 level of 79,500 b/d. Natural gas output in 1964 was 1.3 trillion cubic feet, over 15 times greater than the 84.8 billion cubic feet of 1950. Coal production declined from the all-time high (until 1972) of 19.1 million short tons in 1950 to the all-time low (since 1909) of 10.3 million tons in 1962. Then the downward trend was reversed and in 1964 coal production amounted to 11.3 million tons, a figure to be doubled in the following 10 years. Uranium oxide production (U3O8), which had only reached the 1000-ton level in the mid-1950s suddenly increased to a peak of 15,892 tons in 1959 and then began a rapid decline to 7,285 tons in 1964, a decline that continued until the latter part of the decade. Electricity generation in 1950 totaled 55 billion kWh; by 1964 it had increased to 140 kWh and would double in the following 10 years.

Northern Alberta oil discovery

The discovery of oil in February at Rainbow Lake in the northwestern corner of Alberta was a major event in the Western Canada oil industry, being the first large discovery in several years. A number of other oil discoveries were made in the same region during 1965 and 1966. The changes then being made in the Alberta proration marketing system favoured high productivity oil reservoirs such as the Rainbow Lake discovery. Canada's liquid hydrocarbon reserves at the end of 1965 totaled 7.7 billion barrels, without taking full account of the Rainbow Lake discovery. That, and other discoveries, raised the reserves total by the end of 1966 to 9 billion barrels, a 24-year supply at the 1966 rate of production. The build-up in oil reserves in the mid-1960s was leading to new efforts to develop larger export outlets in the restricted U.S. market.

Overland exemption for Canada in the U.S. Mandatory Oil Import Program

On March 26 the Government of Canada, in an Aide *Memoire* to the U.S. Government, reiterated that it attached the highest importance to the continuance of the overland exemption in relation to oil trade. The overland exemption from the U.S. Mandatory Oil Import Program had been set out in Presidential Proclamation 3279 of March 10, 1959, as amended by Proclamation 3290 of April 30, 1959. At various occasions in the 1960s, the Canadian Government expressed the view that the reasons which prompted the establishment of the exemption for Canadian oil in 1959 remained valid. It continued to be the policy of the Canadian Government to ensure through a reasonable expansion of oil exports, that sales of oil made their proper contribution to Canadian external trade and balance of payments position, particularly in the circumstances of the 1960s when there was a large U.S. surplus in the balance of current payments with Canada. Allowable Canadian oil imports were arranged from time to time on a voluntary restraint basis within the framework of the overland exemption, but throughout the 1960s available Canadian oil exports were generally greater than the imports permitted within the framework of the exemption, the U.S. Government being under pressure from its own domestic industry and from Venezuela for greater markets. However, until 1967, Canadian imports were officially exempt from the U.S. oil import quota which, for Districts I to IV, was 12.2% of estimated U.S. production, with Canadian oil being considered part of U.S. supply in District V (Pacific states).

The Cape Breton coal problem

In April, the federal government initiated a study, by an industrial consultant W.R. Donald, of the Cape Breton coal problem. The Report of the Royal Commission on Coal, prepared in 1960, had clearly defined the problem facing the Cape Breton coal community. The situation continued to deteriorate in the period 1960-65, with the mines being unable to operate without the infusion of massive amounts of capital, along with continuing heavy subsidies. The issue

came to a head early in 1965 when Dominion Steel and Coal Corporation indicated that it wished to withdraw completely from its coal-mining in Cape Breton and offered to sell its coal interests to the federal government. The study initiated in the spring of 1965 was completed in 1966 and a report was tabled in Parliament in October of that year.

Supreme Court reference on West coast offshore

In April, the question of the jurisdiction and ownership of west coast offshore resources was referred to the Supreme Court of Canada. Development of offshore resources had been a subject of federal-provincial discussions for many years. The reference to the Supreme Court was made after considerable federal-provincial consultation. The Prime Minister in July promised that equitable arrangements would be negotiated once the legal situation was clear. (See note for November 1967 on the Court's findings).

Peaceful uses a prerequisite to uranium export approval

On June 3, the Prime Minister announced a policy concerning conditions applicable to the granting of uranium export permits and concerning a uranium stockpiling program. The policy specified that export permits would be given with respect to sales of uranium covered by contracts only if the uranium was to be used for peaceful purposes. Before giving its approval, the federal government would require an agreement with the government of the importing country to ensure, with appropriate verification and control, that the uranium was to be used for peaceful purposes only. Canada had been a member of the International Atomic Energy Agency since its inception, and it had become a fundamental part of the country's general policy to work internationally to avoid the proliferation of nuclear weapons.

Measures designed to promote exports of uranium

Regarding the commercial aspects of the Prime Minister's June 3 announcements, two principles were applied that were designed to facilitate uranium exports and to ensure that the requirements of both export and domestic consumers were met in an orderly way. First, Canada was prepared to authorize forward commitments by Canadian producers to supply reactors which were already in operation, under construction, or committed for construction in other countries for the average anticipated life of each reactor, generally calculated for amortization purposes to be 30 years. Second, and in addition, the federal government was prepared to authorize the export for periods of up to five years of reasonable quantities of uranium for the accumulation of stocks in the importing country. In order to avoid any reduction in the existing level of employment and production in the Canadian uranium industry, the new policy also provided for government purchases of uranium for stockpiling to the extent that current sales proved insufficient to achieve this objective during the following five years. Purchases were to be made at a price of \$4.90 per pound of uranium oxide (U3O8), and were limited to the amount necessary to maintain an appropriate minimum level of employment and production for companies which had previously produced uranium.

The uranium stockpiling program designed to keep the industry viable

Effective July 1, the federal government commenced its second stockpile purchase program. The quantities to be purchased would ensure that the industry would operate at roughly the 1965 rate for the succeeding five years, July 1, 1965 - June 30, 1970, thereby to provide a nucleus of operations that would allow for more orderly expansion than had occurred in the 1950s. Any outside additional sales reduced the delivery commitments to the federal government by an amount equal to such sales. The two principal producers began making deliveries during the second half of 1965 under terms of the new stockpiling program. The increase in nuclear plant construction contracts in a number of countries was the basis for the very optimistic forecasts of future uranium requirements being made at this time, leading to belief that the drop in uranium production from the 1959 peak of 15,892 tons to 4,307 tons in 1965 marked the end of the decline. The first uranium stockpile was operative from July 1, 1963 to June 30, 1964. Purchases totaled 2680 tons Of U3O8, costing \$24.4 million.

Bay of Fundy tidal power study decision

On September 23, the Prime Minister announced that a detailed and comprehensive study of tidal power sites in the Bay of Fundy would be undertaken. Results of surveys at several locations in 1964 and 1965, and the recent developments in turbine and construction



technology, had led to the decision to undertake feasibility studies to determine the possibilities of harnessing the energy contained in the daily movements of tides in the Bay of Fundy where tides up to 52 feet occur. The Bay of Fundy had been investigated 50 years previously but engineering and transmission difficulties proved to be too great. Following preliminary work, the Atlantic Tidal Power Programming Board was established in August 1966 and detailed studies commenced of the physical and economic potential of developing electric power from the tides and transmitting it to markets in Canada and the U.S.

Financial  
commitment to  
Cape Breton

Pending completion of study of the Cape Breton coal problem, and a decision as to the region's future, the federal government in October gave an undertaking to provide financial assistance for the rehabilitation of existing mines and in the opening up of a new mine at Langan. However, the money was not allocated until the end of 1966 when steps were taken to establish a Crown Corporation to determine how best the financial assistance could be used in the interests of the region.

1965 electric  
power blackout -  
subsequent  
preventive  
measures

On November 9, a major electric power blackout started in Canada and spread to New York and the New England States. Some three days were required to restore electric service throughout the large region that had been subjected to virtually complete electric service interruption. Following this incident, the National Energy Board undertook a study to determine the causes of the failure and means of preventing a recurrence. As a result of this study and extensive studies in the U.S., a system of voluntary regional reliability councils was set up to reduce the possibility of blackouts in one power system cascading into other systems through major interconnections. The NEB and the U.S. Department of Energy continue to be represented by observers at the meetings of the North America Electric Reliability Council, which coordinates the activities of the regions of the continent. Emergency support rendered in either direction across the Canada-U.S. border has proven to be of great value, as was the case in January 1972 when a winter storm caused the loss of two 500 kV supply lines in the Rocky Mountains. A major interruption in the B.C. system was avoided only because of the immediate support rendered by the U.S. members of the Northwest Power Pool. In the reverse direction, Ontario Hydro and Hydro-Québec have several times provided emergency power in the State of New York.

Uranium stockpile  
sales

In November, a uranium stockpile disposal procedure was adopted whereby whenever commitments by Canadian industry to the stockpile for any period indicated an annual level of 6000 tons, commitments from the stockpile would be permitted in the order of 25% of the growth which developed above that level, with the precise share of market growth to be determined in the light of market conditions prevailing at the time. Whenever possible, normal trade channels were to be used for sales from the stockpile and sales would generally be made at prevailing market prices.

Announcement re:  
establishment of  
Energy and  
Resources  
department

On December 17, the Prime Minister publicly announced a major reorganization of responsibilities in the federal government. This announcement stated the Government's intention of establishing a new Department of Energy and Resources, bringing under the aegis of one Minister, as many as possible of the energy and resource functions of the federal government.

Transfer of  
responsibilities

On December 22, P.C. Order 1965-2284 was issued under the authority of the Public Service Rearrangement and Transfer of Duties Act, providing for the following changes:

- The Transfer of the Water Resources Branch and Resource Development Branch from the Department of Northern Affairs and National Resources to the Department of Mines and Technical Surveys (which became the Department of Energy, Mines and Resources, effective October 1, 1966);
- The Transfer of the responsibility from the Minister of Northern Affairs and

National Resources to the Minister of Mines and Technical Surveys the following Acts and sections of Acts: Atlantic Provinces Power Development Act; Dominion Water Power Act; Canada Water Conservation Assistance Act; International River Improvements Act; and certain paragraphs of the Northern Affairs Act which provided for the transfer of that Department's responsibility for water and resource conservation and development.

- The Transfer of duties, powers and functions from the minister of Trade and Commerce to the Minister of Mines and Technical Surveys under the National Energy Board Act; Northern Ontario Pipe Line Crown Corporation Act; Canadian Coal Equality Act; Atomic Energy Control Act and thus Eldorado Mining and Refining Limited.
- Pursuant to the Financial Administration Act, P.C. order 1965-2284 also designated the Minister of Mines and Technical Surveys as the appropriate Minister in respect to the National Energy Board; Northern Ontario Pipe Line Crown Corporation; Eldorado Mining and Refining Limited; Eldorado Aviation Limited; Atomic Energy Control Board; and Atomic Energy of Canada Limited.

The 1965 energy statistical picture

Statistics available at the end of December showed that the production value of mineral fuels (oil, gas and coal) and uranium in 1965 totaled \$1.15 billion, equivalent to 31% of Canada's total mineral production in 1965. In 1947, the year of the Leduc oil discovery which led to development of the Western Canada oil and gas industry, the comparable percentage was 17%. By 1980, the mineral fuels and uranium were accounting for 59% of the value of Canada's mineral production. Crude petroleum continued as the lead mineral in production value from 1953.

Oil and gas discoveries to 1965

With the discovery of the Rainbow oil field in 1965, the record available at the end of December showed that, since the Leduc oil discovery in Alberta in 1947, which marked the start of the present-day oil and gas industry, some 40 major oil and gas discoveries had been made in Canada. Most of them were in Alberta, with 4 in B.C., 3 in Saskatchewan, and 1 in Manitoba. These were fields with at least 100 million barrels of oil reserves or 750 billion cubic feet of gas reserves. Of the 40 discoveries, 15 were gas and the rest, oil. Most of these discoveries were made in the 1950s. By the mid-1960s the discovery rate had slowed but the Rainbow oil discovery in northern Alberta, where the first major discovery was made in 1955, led to considerable exploration attention in that region.

## THE YEAR 1966

Water policy responsibilities	Effective January 1, the Water Resources Branch and the Resource Development Branch were transferred from the Department of Northern Affairs and National Resources to the Department of Mines and Technical Surveys (MTS) by order in Council P.C. 1965-2284 of December 22 1965, pursuant to the Public Service Rearrangement and Transfer of Duties Act. In June 1971, the units having responsibilities relating to water research, management and conservation, were transferred to the Department of the Environment from the Department of Energy, Mines and Resources (formerly Mines and Technical Surveys) when the Government Organization Act 1970, 1970-71 c. 42 became effective.
Organization study for the Department of Energy, Mines and Resources	In January, following discussion between the Deputy Minister of Mines and Technical Surveys and the Civil Service Commission, an organization study was initiated to provide assistance in determining how the Minister would best take advantage of the new arrangement of energy agencies in his portfolio and what relationship should exist between the various boards and agencies and the new Department of Energy, Mines and Resources when established later in the year. The study was directed to the form of advisory assistance required by the Minister for the efficient administration of the agencies in his ministerial portfolio and, in particular, the roles of the Minister and the Deputy Minister, in respect to such advisory assistance. The study was also to make recommendations concerning the top structure of the Department and the division of labour which would be most appropriate and organizationally sound to meet the Department's objectives. The study defined three major energy roles for the Department: advice to the Minister concerning all aspects of energy sources and energy requirements, and all plans and policies for any specific energy source, in a total energy context of all energy sources; coordination and the prevention of contradictory and overlapping plans and policies; and the development and recommending of national plans and policies for energy in the context of Canada's national energy sources and requirements. The Civil Service Commission study was completed in December, 1966 and reported on the water policy function as well as energy policy. The report recommended establishment of an Energy Policy Group headed by an Assistant Deputy Minister, who was appointed in June 1967. It recommended that the Policy Group should have four senior advisers: oil and gas, electrical, uranium and coal.
Offshore mineral rights jurisdiction	In February, preparations were being finalized for a Reference to the Supreme Court of Canada on offshore mineral rights relative to the west coast of Canada. At the same time, plans were being made to open negotiations with France to establish an acceptable line of demarcation between areas of Canadian and of French jurisdiction over submerged lands in the region of St. Pierre and Miquelon on the east coast.
Nelson River hydro development agreement	In February, discussions commenced between the federal and Manitoba governments regarding possible federal participation in Phase I of the Nelson River hydro development. This led to the Canada-Manitoba Nelson Transmission Line Agreement, dated February 15, 1966, between the federal and Manitoba governments whereby the federal government would construct the initial phases of the 550-mile Nelson River transmission system between the Nelson River generating site at Kettle Rapids and the southern Manitoba system near Winnipeg, place them in service and lease them to Manitoba. Manitoba was to repay the \$170 million cost over a period of 50 years at 5 5/8% interest. Years later, in March 1977, an agreement was signed for the provision of loans to assist in the development of regional interconnections and for further assistance in relation to the Nelson River transmission system. The February 15, 1966 Agreement followed Agreements of February 18, 1963 and May 27, 1964 under which the federal government undertook to share equally with Manitoba the cost of investigating the feasibility of developing the hydroelectric potential of the Nelson River.
Energy policy coordination role	In a letter of March 3 to the Minister of Mines and Technical Surveys, the Prime Minister stated that it had been decided that the Minister (who became the Minister of Energy, Mines and

- for new EMR Resources, effective October 1, 1966) was to head a Department (EMR) which would be the agency of energy policy development and coordination and that he would, in addition to the Department, have responsibility for the National Energy Board, Atomic Energy of Canada Limited, Atomic Energy Control Board, Eldorado Nuclear Limited, and the Dominion Coal Board. This decision had been taken because it had become increasingly apparent that the interrelationship of questions in the energy field made it quite undesirable to have activities dispersed among a number of departments and agencies as had been the case in the past. It was understood that the Minister was to rely on the Deputy Minister of EMR to provide the necessary energy policy coordination relative to the Agencies and the Department reporting to the Minister. Accordingly, the Government Organization Bill (see June) was being drafted in such a way as to indicate that EMR would have the responsibility for coordinating advice provided to the Minister in the energy field but the agencies would continue to be advisers within the terms of their legislation. The mandate given to the new Department was very broad, covering energy in all of its forms, to ensure that national developmental policies were related in the most effective and economic fashion to Canadian needs.
- Government Organization Act, 1966 re. EMR On June 16 the Government Organization Act, 1966 received Royal Assent, making provision for a number of new Departments, including the Department of Energy, Mines and Resources (EMR). Section 29 of the Government Organization Act specifies that the duties, powers and functions of the Minister of EMR relate to energy, mines and minerals, water and other resources; explosives; and technical surveys within the meaning of the Resources and Technical Surveys Act (MTS). The title and section 1 of that Act were repealed and "An Act respecting resources and technical surveys" substituted for it. This Act was further amended in support of the EMR Act to spell out the responsibilities of the Minister "for coordinating, promoting and recommending national policies and programs with respect to energy, mines and minerals, water and other resources". These responsibilities are defined in Section 8A of the Mines and Technical Survey Act and relate to Section 19 of the EMR Act. (see October below).
- Great Canadian Oil Sands project In June the pipeline to Edmonton from the Great Canadian oil Sands Limited plant was completed. The \$240 million bituminous sands project in the oil sands area north of Fort McMurray was nearing completion and scheduled to begin commercial production late in 1967, with the synthetic crude being delivered to Edmonton refineries for further processing. The plant was designed to produce 45,000 barrels a day
- Cape Breton heavy water plant In June, Canadian General Electric Company Limited' announced that it would build a 400-ton-a-year heavy water production plant at Point Tupper near Hawkesbury on Cape Breton Island. The \$65 million plant was scheduled to supply heavy water to AECL on the basis of a contract for delivery of 5000 tons of heavy water over 12.5 years at an average price of \$16.15 a pound beginning in 1969. In September AECL was authorized to purchase additional heavy water from Deuterium of Canada Limited when its Glace Bay plant came into production, scheduled for 1967. The outlook for heavy water sales appeared promising with two Canadian reactors under construction in India and Pakistan, one in operation at Rolphton, Ontario, a second at Douglas Point going into production in January 1967, a third under construction at Pickering, Ontario, and a fourth planned for Gentilly, Quebec.
- Nuclear safeguards In July, Canada made known to the U.S. its willingness to support the application of safeguards to all transfers of nuclear materials and equipment for peaceful purposes, in keeping with its policy of supporting the incorporation of an effective safeguards article in a non-proliferation treaty. Canada was active in negotiations that led to the Non-Proliferation Treaty (NPT) of 1968, ratified in March 1970. The NPT, with 128 participants, was drafted essentially as a bargain among the three major nuclear powers (the U.S., the Soviet Union, and the U.K.), and the non-nuclear countries whereby the latter agreed not to acquire nuclear weapons in exchange for the former negotiating a halt in the nuclear arms race and then pursuing nuclear disarmament.

The role of the federal government relative to the development and regulation of energy	Subsequent to a Cabinet decision of July calling for consideration of possible changes in the B.N.A. Act, a number of studies were undertaken on specific questions of the Constitution. A Sub-Committee on Economic Powers included in the subject matter to be examined in its study of the financial and economic powers granted in the Constitution to the federal government, an inquiry into the role of the federal government with respect to the development and regulation of energy for domestic use or export. The Department of Energy, Mines and Resources undertook this study, in cooperation with the National Energy Board, the Atomic Energy Control Board and the Department of Trade and Commerce. The study was completed at the end of 1967.
A CANDU for Quebec	In July , in the context of an agreement between Atomic Energy of Canada Limited and Quebec Hydro Electric Commission for construction and operation of a nuclear power station in Quebec, AECL was authorized to proceed immediately with the detailed design and construction in Quebec of a 25 megawatt CANDU-BLW nuclear station. Hydro-Quebec was to operate the station at AECL's expense and buy power from it at a rate consistent with the formula used in the Ontario Hydro/AECL Douglas Point Agreement. When the station had demonstrated its reliability and suitability, in an estimated 3 or 4 years, Hydro-Quebec would purchase it from AECL on terms to be negotiated.
Tidal power studies	On August 12, an agreement providing for an investigation of the tidal power potential of the Bay of Fundy and setting up the Atlantic Tidal Power Programming Board was signed by Canada, New Brunswick and Nova Scotia. The agreement contemplated a two-year study, at a cost of \$1.5 million, to determine the feasibility of developing tidal power at sites in the Bay of Fundy. Early in 1968, a review and evaluation of the work done to that time showed that in order to provide the best possible basis for a decision on the technical and economic feasibility of tidal power development in the Bay of Fundy, additional studies would be required and, on December 10, 1968, an agreement was signed by the three governments amending the original agreements to extend the period of study to June 30, 1969, and authorizing an additional \$1 million to complete the studies. A report submitted to the three governments in March 1970 concluded that the economic development of tidal power was "not feasible under prevailing circumstances". As recorded in the note for February 1972, this led to further studies.
Federal approval for TransCanada Pipelines U.S. loop	In October, after lengthy debate, TransCanada Pipelines Limited received final approval from the Canadian government for a projected 36-inch diameter pipeline, to be built in cooperation with a United States company, across the northern United States from Emerson, Manitoba to Sarnia, Ontario, with construction of the line to be carried out by a new subsidiary, Great Lakes Gas Transmission Company Limited. Approval of the project was contingent upon guarantees by TransCanada regarding volumes of gas to be transported in Canada, and eventual looping of the original northern Ontario section of the TransCanada system. The northern Ontario section must always carry at least 50% of TransCanada's gas deliveries to eastern Canada. At that time, however, the project was encountering major opposition in hearings before the U.S. Federal Power Commission (FPC), illustrative of the continuing series of issues and problems arising when major decisions were being called for in Canada-U.S. energy relations. The FPC approved the project in June 1967.
EMR established	Effective October 1, the Department of Energy, Mines and Resources was established by the proclamation of the Department of Energy, Mines and Resources Act. R.S.C. 1970, c. E6. The Government Organization Act 1966, 1966-67, c.25, s.31 amended the Department of Mines and Technical Surveys Act by changing its short title to "Resources and Technical Surveys Act". The Government Organization 1966, s. 41 changed the name "Department of Mines and Technical Surveys" to "Department of Energy, Mines and Resources" in all Acts, or portions of Acts in which the former appeared.
Plans announced for EMR's new	On October 19 the Minister of Energy, Mines and Resources (Honourable Jean-Luc Pepin) announced organization plans for his new Department which incorporated major energy and

policy functions	water policy responsibilities. The Department, successor to the Department of Mines and Technical Surveys, consisted of four groups under the direction of the Deputy Minister (C.H. Isbister): research, mineral development, water management, and energy development, each headed by an Assistant Deputy Minister. The establishment of EMR implemented the Prime Minister's (L.B. Pearson) announcement of December 1965 and the enabling legislation proclaimed on October 1, 1966. In making his announcement, the Minister stated that "the purpose of this change was to place within a single structure as many of the resource and energy functions of the federal government as is practical and desirable, and to coordinate the activities of the several government departments and agencies directly or indirectly involved in these fields." In outlining the new responsibilities for EMR, the Minister noted that "the Assistant Deputy Minister-Energy would serve as adviser on overall plans and policies relating to energy sources and requirements, and would assist the government in taking steps in the field of energy that would benefit the national economy."
TransCanada Pipeline keeps commitment to Canadian routes	In October an agreement between TransCanada Pipelines Limited and the federal government was reached whereby the company undertook to meet at least 50% of Eastern Canada's gas requirements through deliveries via the northern all-Canadian route. It was also agreed that this percentage would increase to 60% by the year 1976. Hence, TransCanada would continue to enlarge the carrying capacity of its northern line either along its present route or possibly via other routes thereby making gas available to additional communities. This undertaking was in fulfillment of the commitment noted above in the October item on TransCanada's U.S. expansion.
CANDU sales initiatives	During 1966 a number of initiatives were being taken towards the sale of CANDU reactors, heavy water and uranium to other countries. In October negotiations were underway with Britain concerning safeguards to be applied to new contracts for the future sale of uranium from Canada to Britain. At the same time, Finland was being assured of the availability of heavy water and uranium from Canada in relation to a proposed CANDU reactor sale to that country, subject to the necessary safeguards and within the framework of announced policy. Negotiations were also underway regarding a possible sale of a CANDU nuclear power station to Yugoslavia and to several other countries.
Donald report on Cape Breton coal problem	In October, the report by J.R. Donald on the Cape Breton coal problem was tabled in the House of Commons. The Report of the Royal Commission on Coal, prepared in 1960, had described the plight then facing the Cape Breton coal mining communities and the situation had continued to deteriorate in the 1960s. In the period 1960-65, the mines reached a stage where they could no longer operate without the infusion of massive amounts of capital, along with continuation of heavy subsidies. Operating costs rose sharply and the competition of other fuels became more acute. The Donald study, initiated in April 1965, recommended that during the following 15 years the subsidies supporting uneconomic coal production should be shifted to other forms of industrial development and economic activity in Cape Breton. To achieve this, Dr. Donald recommended the formation of two Crown corporations, one being responsible for the rehabilitation of the DOSCO coal mines at reduced levels of production and the other being charged with the simultaneous stimulation and development of the regional economy. (See Cape Breton note for December 1966).
Improved uranium market prospects	In December Ontario Hydro announced uranium purchase contracts with Canadian uranium producers, covering its uranium supply to the end of 1983, involving total deliveries of 7,600 tons of U308. This contract and the completion of the 8,000 tons Of U308 contract with the U.K. Atomic Energy Authority, marked the beginning of apparently improved prospects for Canadian uranium producers.
The first proposal for a Chicago	On December 22, the Presidents of the four largest oil companies in Canada and of Interprovincial Pipe Line Company presented a brief to the Minister of EMR, and other senior

"Loop" on the  
Interprovincial  
Pipe Line System

Ministers, seeking the support of the federal government to facilitate the construction of a loop line of Interprovincial's Lakehead system through Chicago to the Detroit and Sarnia areas. The company officials noted that the existing facilities of Interprovincial were fully used and that the greatly increased demand in the U.S. markets occurring in 1967 would be followed by further increases in 1968. This would be the time for Interprovincial to make the additional investment necessary to loop through Chicago, rather than enlarging the existing Lakehead system, and thereby gain an entry for Canadian crude into the large refining area of Chicago. This new line would also provide some insurance of market protection which would likely be needed when the U.S. completed the planned Capline from the southern U.S. to Chicago in 1969. The companies were prepared to proceed with the Chicago "Loop" if clearances could be effected with U.S. authorities. They needed such assurances in view of the possibility that the U.S. government might otherwise introduce more restrictive measures into its Oil Import Control Program which would invalidate investments Interprovincial would have made in new pipeline facilities to Chicago. This proposal by the oil companies then became the subject of detailed study by the federal government and negotiation with the U.S. government.

A new plan for  
Cape Breton to  
involve a cutback  
in coal mining and  
new economic  
activities

On December 29, the Prime Minister issued a policy statement on Cape Breton coal, advising that the federal and Nova Scotia governments had reached an agreement on basic points of policy concerning the future of the Cape Breton coal industry and economy. Assured of the participation of the Nova Scotia government, the federal government was prepared to ask Parliament to establish a Crown Corporation to acquire, reorganize and manage the coal mining interests of the Dominion Steel and Coal Corporation (DOSCO), and simultaneously to help promote and finance the development of modern industry on Cape Breton Island. For those purposes, the federal government was prepared to make a capital contribution of \$45 million for the rehabilitation and operation of the mines (about \$25 million) and for the development of new industry (about \$20 million). In place of the existing system of providing subsidies to a private corporation on its individual coal sales, the federal government would request Parliament to provide funds to the Crown Corporation to enable it to mine and market its coal to best advantage. The rationalization of the Mines, and related cut-back in production to about 2 million tons a year, was to be related to the success in the introduction of new industries. The initiatives announced at this time followed a special study by an independent consultant (J.R. Donald) of the Cape Breton coal problem, commissioned in April 1965, with recommendations being presented to the federal government in October 1966. The Donald report recommended that investment in uneconomic coal production in Cape Breton be shifted during the subsequent 15 years to other forms of industrial development and economic activity in the region, and that this transfer of emphasis be supported out of an estimated \$400 million which the coal mining industry in Nova Scotia might otherwise require in the form of federal subventions over this period.

First continental  
shelf drilling east  
coast

The first deep drilling program on Canada's continental shelf was carried out on the Grand Banks, off the east coast, in 1966. By December one well had been drilled 100 miles offshore and a second, 175 miles offshore. This was followed in 1967 with a deep exploratory well in the Sable Island area.

Uranium outlook  
affected by U.S.  
enrichment  
embargo

At the end of December, uranium production statistics for 1966 showed that Canadian uranium production totalled 3,822 tons of uranium oxide (U308) in the year. Annual production had declined continuously since the peak year of 1959, when 15,892 tons were produced. There was a conviction in 1966 in Canada, and in other countries, that the uranium industry was on the verge of entering a new period of development. Early in the year it was predicted that nuclear plant capacity by 1980 in the non-communist world would increase to about 225,000 MWe and that uranium production would be required at an annual rate of 65,000 tons Of U308 to provide the fuel necessary to support that capacity. Because many nuclear power plant plans were cancelled or delayed in the 1970s actual production in the non-communist world in 1980 was only 39,000 tons Of U308, little more than one-half the 1966 forecast. However, 1966 was a

promising year for the Canadian uranium industry, with the announcement of two significant commercial contracts. In August a contract was negotiated with the U.K. Atomic Energy Authority for the sale of 8000 tons of U308 (increased in May 1967 to 10,000 tons), to be delivered over the period 1973 - 1980. In December, contract negotiations with Ontario Hydro were announced for a total of 7,600 tons of U308 to be delivered over the period to 1983. Market growth continued in 1967 based on four additional contracts, with Japanese and West German utilities. However, in December the United States Atomic Energy Commission officially imposed an embargo on delivery to USAEC enrichment plants of uranium of foreign origin where the enriched material was intended for use in domestic nuclear facilities. This embargo had been informally imposed since August 1964. It was not until late 1974 that the USAEC announced that the embargo would be lifted in stages, which would not start until 1977. This had a negative impact on Canadian uranium marketing in the 1970s.



## THE YEAR 1967

First nuclear power - Douglas Point	Canada's first full-scale nuclear power station produced its first electricity on January 7. The 200-MWe Douglas Point Nuclear Power Station, on the east shore of Lake Huron, commenced production of electricity at about 6 mills per kilowatt hour. Preceding Douglas Point was the 20,000 kw Nuclear Power Demonstration Plant (NPD) which began service in 1962 at Rolphton, Ontario. About at this time, Canada completed financing arrangements with India, allowing it to go ahead with its second Canadian nuclear power reactor while another Canadian nuclear plant was under construction in Pakistan.
Chicago "loop" on IPL proposed	In January, it was decided to undertake technical discussions with the U.S. on the proposal to construct a "loop" pipeline from the Interprovincial Pipe Line system through Chicago to enlarge the system's capacity to deliver western Canadian crude oil to Eastern Canada as well as to the export market.
Nelson River power development	In January, authorization was given, subject to formal agreement with Manitoba and authorization of funds by Parliament, for a federal investment of approximately \$170 million in transmission facilities associated with Phase I of the Nelson River Power Development Project in Manitoba. The Agreement with Manitoba was signed in July 1967.
Quebec natural gas market	In March, the Quebec Natural Gas Corporation became a subsidiary of Northern and Central Gas Company which greatly increased its ability to expand natural gas services to Quebec as the province's sole distributor. Western Canada natural gas had become a contributing energy source in Quebec since it was first introduced in 1958, but was only accounting for 3.5% of the province's energy supply. This merger provided a base for a more significant energy supply role.
Pickering nuclear plant expansion	In April, the Atomic Energy Control Board granted construction permits for two additional 540-MWe units at Ontario's Pickering site. Construction of the first two units was well underway, with completion scheduled for 1970 and 1971. At the same time, construction was proceeding on Quebec Hydro's 250-MWe nuclear station at Gentilly
First heavy water plant	Canada's first heavy water production plant, at Glace Bay, Nova Scotia, was officially opened in May. A second heavy water production plant was being constructed at Point Tupper on the Strait of Canso. Both plants were scheduled to produce 400 tons of heavy water a year but long delays were encountered
Coal subventions in Western Canada	In May, Coleman Collieries qualified for subventions of a maximum of \$1.3 million in 1967-68, declining to \$1.0 million in 1970-71 and terminating in 1971-72. Subventions were to cease as soon as shipments to Japan by Coleman reached 1 million long tons per annum, or total shipments from the East Kootenay area reached 2 million long tons, whichever occurred first. At this time, it was decided that no subventions would be given to any coal company not then being subsidized. The coal subvention program was terminated in 1970.
Cape Breton Development Corporation established	In June the Premier of Nova Scotia signed an agreement with the federal government on the establishment of a Crown Corporation to acquire the interests of the major coal producer (DOSCO) in the Sydney coalfield and to promote the development of industry in Cape Breton Island. Steps were taken to proceed with a bill in Parliament to establish the Corporation. In July, the Minister of EMR was named the Minister responsible for the Corporation -the Cape Breton Development Corporation. This initiative to establish a Crown Corporation was taken following a detailed study of the Cape Breton coal problem in 1966 by J.R. Donald and his report to the federal government. In place of the existing system of providing subsidies to a private corporation on the marketing of coal, funds were to be provided to the new Crown Corporation to enable it to mine and market coal to best advantage and to relate the retrenchment of mines to the success of

the introduction of new industries in a restructuring of the Cape Breton economy.

ADM-Energy  
appointed in EMR

In June, an Assistant Deputy Minister for Energy was appointed in the Department of Energy, Mines and Resources (DM). This appointment followed from the Government Organization Act, 1966, which, among other matters, established the Department of Energy, Mines and Resources, with energy policy responsibilities. As head of the new energy group in EMR, the Assistant Deputy Minister, Energy, was given the responsibility to advise on the development of energy policies on a national level. His group, later established as a Sector, was given policy coordination responsibilities relative to oil, gas, coal, hydroelectricity, nuclear power and all other sources of energy, in the context of domestic and international trends and developments.

Second trans-  
Canada gas line to  
Eastern Canada,  
via U.S.A.

In June, the U.S. Federal Power Commission approved the construction in the United States of the Great Lakes Gas Transmission Company Limited pipeline project from Emerson, Manitoba to Sarnia, Ontario. This provided additional gas transmission capacity in the TransCanada PipeLine system, as previously approved by the NEB, for delivery to Eastern Canada markets and for the export market. The new line provided capacity additional to that of the main line along a northern Ontario route, as built in the latter part of the 1950s.

Nelson River  
transmission  
system rental  
agreement

On July 12, the federal government signed an undertaking with Manitoba to construct and own a high voltage direct current transmission system from the new Kettle Rapids power site on the Nelson River to Winnipeg. Twin lines, to be leased by Manitoba Hydro, were designed to carry direct current over the system with an initial capacity of 1000 megawatts and completion by the end of 1971. This would form part of phase one in the development of the Nelson River's power potential of some 5,000 MW. Atomic Energy of Canada Ltd. was responsible for construction of the transmission system, which would have an ultimate capacity of 3000 MW. Under the agreement signed at this time, the federal government was to recover its \$170 million investment plus interest at 5 5/8% over a period of 30 years.

Columbia River  
Treaty Dam

The first completed project of the Columbia River Treaty, the Duncan Dam in B.C., was placed in service on July 31. The construction contract had been awarded in October 1964.

Report on long  
distance  
transmission and a  
national  
transmission  
network

In July the Federal-Provincial Working Committee submitted its report to the Federal-Provincial Ministerial Committee on Long Distance Transmission, under the title of "Regional and National Electric Transmission Systems for Canada-Stage II Assessment". The Working Committee had been established in March 1962. Following preliminary assessments in Stage I and completion of a report in January 1964, the Committee proceeded with Stage II involving detailed analyses of technical and economic factors related to long distance transmission interconnections leading possibly to a national power network. The Stage II assessment concluded that the indicated benefits of a national power network were marginal and did not warrant a further major study at that time (1967). However, it was recommended that the Working Committee be retained to consider steps which could be taken towards stronger regional ties which could ultimately lead to a national power network, and to reassess at appropriate intervals the case for reviewing the benefits of national transmission network.

"Chicago Loop"  
on the IPL system

In August, the Minister of EMR was authorized to conclude with U.S. authorities an agreement on principles concerned with the looping through Chicago of the facilities of Interprovincial Pipe Lines Limited -- the "Chicago Loop".

First oil sands  
production

In September, the \$230 million Great Canadian Oil Sands project in the Fort McMurray area of northern Alberta went into production after four years of development work. This project provided the first access to Canada's huge oil sands resources. The design capacity was 45,000 b/d of synthetic crude oil.

Canada-U.S. in agreement on restraint of oil exports	In September, Canada and the United States reached agreement on crude oil deliveries from Canada into U.S. Districts I to IV in the context of the plan to construct the "Chicago Loop" of the Interprovincial Pipe Line system. The agreement took the form of a Note, in which Canada undertook to ensure, short of imposing formal export controls, that exports of refinery feedstock would not exceed 280,000 b/d in 1968 with increments of 26,000 b/d annually through 1971 into Districts I to IV, and no sales would be made in the Chicago area prior to 1970. Between 1962 and 1965, Canadian oil exports to Districts I to IV were voluntarily restrained in order to assist achievement of U.S. policy objectives in respect of its oil import program. Canada had received an overland exemption from the U.S. Mandatory Oil Import Program in 1959. The administration of restraint was managed by the NEB in cooperation with industry on both sides of the border. There were no export targets for 1966 and 1967 because of supply bottlenecks in the U.S. oil industry; Canadian crude made good the deficiencies.
Negotiation of the "Chicago Loop"	Late in 1966, the Canadian oil industry proposed that the, "Chicago Loop", a loop of the existing Lakehead oil pipeline of the Interprovincial Pipe Line system between Superior and Sarnia, be routed via the Chicago refining complex. This would preserve the market for Canadian oil in the U.S. Midwest, which would otherwise be lost if instead new pipelines were built from Louisiana. The agreement reached in September, 1967 regarding the undertaking on Canada's part to restrain its oil exports followed extensive negotiations which commenced early in 1967 concerning the terms on which construction of the "Chicago Loop" would proceed. The U.S. wanted an undertaking that its markets would not be flooded while Canada needed the assurance that it could reasonably expect a certain minimum throughput to export markets in the early years of the Chicago line. The 280,000 b/d agreement represented the compromise reached at the time. The following six years saw major changes in oil supply/demand relations on both sides of the border, leading to oil export controls by Canada in 1973 because of too great a U.S. demand for Canadian crude oil, and the relaxation of U.S. import controls.
Westcoast 224 gas export contract	In September, Westcoast Transmission Company Limited was proceeding with an application to export further supplies of natural gas to the Pacific Northwest area of the United States. Its application included pricing arrangements designed to correct the situation created by the original contract signed with Pacific Northwest Pipeline Corporation in December 1954 for 300 million cubic feet of gas a day over a period of 20 years at a border price of 220 per thousand cubic feet. This contract became known as "the bargain of the century". At the same time, Westcoast was selling gas to the distributor in the Vancouver area at 320/Mcf. However, without the export contract the Westcoast gas pipeline from northeastern B.C. gas fields could not have been built, a classic example of the importance of the export market in providing sufficient market volumes for the start-up of new resource development projects.
Jurisdiction over uranium exploration and mining	In September, a resolution was approved at the Provincial Mines Ministers' Conference requesting the federal government to restore jurisdiction to the provinces in respect to uranium and thorium, except in matters of international sales and exports. The issue of jurisdiction and control related to authority under the Atomic Energy Control Act to administer exploration and mining permits because of the military strategic importance of these minerals. The issue continued to be unresolved.
DOSCO steel plant abandoned by Hawker Siddeley	In October, following announcement by the Hawker Siddeley Group Limited that it intended to close its DOSCO steel plant at Sydney, Nova Scotia, study of the prospects for continued steel production at Sydney was considered by the federal government in the context of the primary responsibility of the provincial government and of the obligations of the company. An offer was made to the Nova Scotia government to assist it in a study of the economic viability of the plant.
Dominion Coal Board dissolution	In October, the federal government approved in principle the dissolution of the Dominion Coal Board and the absorption of its residual functions within the appropriate department or agency.

Repeal of the Northern Ontario Pipe Line Crown Corporation Act	In November, a bill was prepared for introduction in the Senate to provide for the dissolution of the Northern Ontario Pipe Line Crown Corporation which had been formed in 1956, with the enactment of the Northern Ontario Pipe Line Crown Corporation Act, to assist in the completion of TransCanada PipeLine system for the delivery of Alberta natural gas to the Ontario market.
Supreme Court opinion on B.C. offshore	In November, the Supreme Court of Canada provided an authoritative clarification of the legal position with respect to the areas off the west coast of Canada lying outside the harbours, bays and estuaries which were regarded as inland waters at the time British Columbia entered Confederation. The Court opinion was that the federal government is entitled to proprietary and other rights in those areas offshore from historic boundaries of the province, which were generally defined as the ordinary low-water mark. The Supreme Court thus confirmed the view previously held by law officers of the Crown that all rights held or acquired by Canada in submerged lands lying outside the boundaries of any province accrue to Canada as a whole.
Guidelines for uranium export sales	In November, following a general review of uranium policy, new guidelines were being developed which would provide the degree of control necessary in an expected period of greatly increased demand for Canada's uranium resources. The guidelines proposed for a new uranium policy statement, further to the Prime Minister's statement of June 3, 1965, were directed to the allocation of uranium exports to foreign countries under a system of increased scrutiny and control, the maintenance of adequate reserves and production capability to meet foreseeable domestic requirements, provision for review of proposed export contracts and for export controls, and assurance that Canadian uranium and thorium would be used only for peaceful purposes. In June 1969, a statement was issued by the Minister of EMR covering these and other policy matters relative to future sales of uranium to other countries.
Uranium reserves	In December, an estimate of world uranium reserves was published jointly by the European Nuclear Energy Agency and the International Atomic Energy Agency. The study showed that Canada, South Africa, and the United States controlled almost 85% of the 700,000 tons of uranium oxide (U308) as reasonably assured reserves available in the non-communist world, and recoverable at prices up to \$10(US) a pound Of U308.
Preparations to terminate Dominion Coal Board	In December, preparations to terminate the Dominion Coal Board were commenced, with approval to draft legislation to repeal the Coal Production Assistance Act and the Coal Equality Act which would then become part of the legislation to terminate the Board.
Rationalization of the Minto, N.B. coalfield	A decision was made in December to have the Minister of Energy, Mines and Resources negotiate with the Government of New Brunswick whereby the federal government would grant N.B. up to \$20 million in return for which the province would assume responsibility for coal subventions which would have been payable in respect of coal mined in the Minto area of New Brunswick. The payment was to commence on April 1, 1968, with four equal annual amounts thereafter. This financial assistance was also to be directed to the phasing-out of coal production in the Minto-Chapman coalfields and to new industrial development in that area. (In March 1968, the amount of the grant was set at \$19.6 million, instead of \$20 million.)
1967 Middle East petroleum emergency and other Suez Canal crises	By December, the flow of oil to world markets had been restored following the cutback resultant from the Middle East petroleum emergency earlier in the year when the Suez Canal was closed, the Trans-Arabian pipeline and other Middle East pipelines were cut off and some crude oil production was interrupted. This emergency marked the first time when both production and transportation facilities were closed down. The 1951 crisis had resulted only in the loss of Iranian crude; the Suez Crisis of 1956-57 had closed the Suez Canal and some pipelines. The emergency of 1967 was largely overcome by the end of the year and, while the Suez remained closed until 1975, production was restored and the oil was moved around the southern tip of Africa by the new supertankers that were just coming into use. As in the earlier crises, the major increment in oil

supply originated in the United States, a situation, however, that did not apply in the oil crises of 1973-74 and 1979.

Panarctic Oils Ltd.

In December, the federal government announced plans for joint exploration programs in the Arctic Islands with 20 oil and mining companies. This partnership led to the formation of Panarctic Oils Limited, with 45% federal government participation. The government undertook to make a \$9 million grant to Panarctic over a three-year period for a \$20 million exploration program. In return for this grant, the government received a 45 per cent equity in Panarctic and thereby became a major stockholder in the venture. Exploration permits for the Arctic Islands were first issued in 1960, after the federal government established its Canada Oil and Gas Land Regulations, and the first exploration well was spudded in September 1961 on Melville Island and completed in April 1962. The first gas discovery was made in mid-1969 and the first oil discovery in the Arctic Islands region was made in 1972, both by Panarctic.

Crude oil  
production

By the end of December, crude oil production in Canada for the year 1967 had averaged 1.04 million barrels a day, the first year in which the average daily output had exceeded one million barrels

## THE YEAR 1968

Cape Breton financial assistance	In January, the federal government decided to provide temporary assistance to Nova Scotia in relation to the Sydney Steel Plant, but not beyond April 30, 1968, and it would not assist Nova Scotia financially in acquiring the assets of the Sydney Steel Plant from DOSCO. However, other forms of assistance were under consideration including a deferment for two years of Nova Scotia's obligation to provide \$10 million to the Cape Breton Development Corporation for industrial development. A grant of up to \$2 million to help offset operating losses of the Sydney plant in the period April 1968 to April 1969 was also being proposed. Assistance was provided for a study to determine the viability of the Sydney Steel Works.
IPL "Chicago Loop" approved	In January, Interprovincial Pipe Line (IPL) was given approval by the United States government to construct border-crossing facilities to its new Lakehead Pipeline facilities which would run south of Lake Michigan rather than along its established route across the Straits of Mackinac. The company then proceeded to construct a 34-inch line from Superior, Wisconsin to Chicago where it connected with other systems to reach the original Interprovincial line to Sarnia. This became known as the "Chicago Loop". It raised the IPL capacity entering the United States to 820,000 barrels a day from the 1967 level of 536,000 b/d, thereby strengthening the Canadian oil industry's link with the U.S. market as well as providing increased delivery capacity to eastern Canada.
Uranium sales to Japan and Germany	In February, Canadian government approval was given for the completion of a contract for Canadian uranium between Denison Mines and Japanese interests, with the uranium to be shipped under the Japanese-Canadian Safeguard Agreement. In March, approval was given in respect of export contracts between Eldorado Mining and Refining Limited and Rio Algom Mines Limited and Japanese interests. In April, approval was given for completion of a uranium export contract between Eldorado Mining and Refining Limited and German interests for the sale of up to 1000 tons of U308 over a 12-year period from January 1, 1968. Early 1968 was a period of considerably improved prospects for the Canadian uranium industry after continuous decline since the loss of U.S. markets early in the decade.
Westcoast 224 gas export contract	In February, the NEB approved a revised gas export contract between Westcoast Transmission and El Paso Natural Gas which improved the 22-cent per Mcf contract signed in 1954.
Western Canada Coal export contracts	In February, Crows Nest Industries Limited sold its coal operation in southeastern B.C. to Kaiser Resources Ltd. and that company completed a contract for the export of 45 million tons of coking coal to Japanese steel companies over a period of 15 years beginning in 1970. This export sale, along with export contracts signed by Luscar Ltd. in April and McIntyre Coal Mines Ltd. in December with Japanese purchasers, marked 1968 as a turning point in the history of the Western Canada coal industry. As a result of these, and other export contracts, coal exports increased from 1.4 million short tons in 1968 to 8 million tons in 1971.
Syncrude oilsands decision	In February, the Alberta government raised oil production limits for Athabasca oil sands production from 45,000 barrels a day to 150,000 b/d. As a result of this, and incentives available at the federal level, Syncrude Canada Ltd. reapplied to the Alberta oil and Gas Conservation Board for a permit to build an oil sands plant near Fort McMurray with a capacity of 80,000 b/d of synthetic oil and specialty products. The company agreed not to start up the plant until 1972-73 in order to avoid preempting the U.S. market held by Alberta crude oil producers. Time was also needed to assess the potential impact that future Prudhoe Bay oil would have on the U.S. market. The Alaska oil discovery had created uncertainty regarding future export opportunities for oil sands and heavy oil operations as well as for traditional oil producers.
DEVCO acquires Cape Breton coal	Following the establishment of the Cape Breton Development Corporation (DEVCO) in 1967 (a federal Crown corporation), negotiations led to an agreement, effective March 31, 1968, whereby

mines	DEVCO acquired the coal mines and related interests of Dominion Steel and Coal Corporation Ltd. (DOSCO) in Cape Breton while, at the same time, the Nova Scotia government assumed complete responsibility for assistance to independent coal mines in Nova Scotia. DEVCO also had the broad objectives of helping to promote and finance development of industry in Cape Breton while phasing down the coal mining operations, thereby to re-structure the Island's economic base.
40 years of federal support for Cape Breton coal	The takeover of the Sydney, Cape Breton, collieries by DEVCO, effective March 31, marked the end of a 40-year period in which Cape Breton coal mines had been supported by transportation subventions. Over that period, total subvention for the marketing of coal from these mines amounted to \$238.6 million on a subvented volume of 58.7 million tons. Such additional forms of aid as payments under the Canadian Coal Equality Act and the Atlantic Provinces Power Development Act, together with wartime expenditures on grants and subsidies during the period 1940-45, raised total assistance to the order of \$300 million. This did not include the benefits accruing under the Maritime Freight Rates Act or from federal support of R&D related to coal resources.
Final federal grant for N.B. coal	In March, under terms of a federal-provincial agreement, the New Brunswick government assumed responsibility for rationalization of coal mines in the Minto area 35 miles east of Fredericton, in return for a federal grant of \$19.6 million payable over a 4-year period. It was understood that this would release the federal government from any future responsibility with respect to subsidization of the New Brunswick coal industry. Part of the federal grant was to be used to encourage the development of new industry in the Minto area. Federal subsidies had been rising rapidly and totalled \$2.4 million in 1967-68.
Eldorado's hexafluoride plant	In May, Eldorado Mining and Refining Limited, a federal Crown company, decided to proceed with the construction at its Port Hope plant of refining facilities to produce uranium hexafluoride (UF <sub>6</sub> ), with production scheduled to commence in 1970 at 2500 tons per annum. This provided for the upgrading of some of Canada's uranium production prior to export.
Nuclear plant export promotion	In May, AECL was given authority to embark on a vigorous nuclear power plant export sales effort, with responsibility for all aspects of marketing and, where required, acting as prime contractor on nuclear power generating stations.
Roberts Bank coal terminal	The National Harbours Board was authorized in August by the federal government to implement its Memorandum of Understanding with Kaiser Coal Limited regarding the operation of bulk terminal facilities at Roberts Bank, near Vancouver. The terminal facilities were to be operated in a nondiscriminatory and competitive manner, and to be available at all times to other coal shippers on the same basis as for Kaiser.
Western Canada coal subsidies to be phased out by 1971	In September, the Minister of Finance announced that the federal government had provided over \$25 million in subsidies in the previous nine years in order to maintain a viable coal industry in Western Canada. For the year ending March 31, 1968, subsidies totalled \$3.17 million. The government had decided that, with the good progress in development of coal markets in Japan, the industry had expanded to the point where subsidies would no longer be available after 1971 for the Western Canada coal industry.
Peace River power development	In September, the Portage Mountain hydroelectric development on the Peace River (W.A.C. Bennett Dam and the associated Gordon M. Shrum Generation Station) produced its first commercial power. The project, located on the Peace River near Hudson Hope in northeastern B.C., had initially been announced by the B.C. government in October 1957. Little progress was made until the B.C. government acquired the privately owned B.C. Electric Company and the Peace River Power Development Company in August 1961. The project then proceeded under the direction of the B.C. Hydro and Power Authority, a consolidation of the B.C. Electric Company

and the B.C. Power Commission, the latter being the utility which supplied power in the other areas of the province. The project delivers power to the lower mainland and Vancouver over 600 miles of 500 Kv transmission lines.

Gas export increases	In October, Alberta and Southern Gas Co. Ltd. received approval to increase its gas exports to the United States by an additional 200 million cubic feet a day. Westcoast Transmission Company Ltd. had received a similar approval in February. The outlook for natural gas at the end of 1968 was decidedly expansionary based on the development of new sources of supply and strong domestic and export demand.
Improved outlook for uranium	in October, Rio Algom Mines Limited announced that it would spend \$26 million in the Elliot Lake area reactivating its mining operations, a sign of improved prospects for the uranium industry which had been in a state of decline since losing its U.S. markets early in the decade. Exploration activity in Canada in 1968 exceeded levels reached in the peak years of the 1950s, a further sign of improved prospects. The export contracts signed with Japanese purchasers by Rio Algom and Eldorado earlier in the year had given promise of new market growth
Review of the NOP required	In October, the federal government concluded that an overall assessment of the oil marketing situation, both domestic and export, was required following eight years of operation of the national oil policy (NOP), as defined and initiated in 1961. There had been recent high rates of growth in oil exports to the United States which had raised concerns in that country. At the same time, there was increasing pressure from oil imports, via eastern Canada, in the Ontario market which had been reserved for Western Canada crude oil by means of a voluntary program under terms of the NOP since 1961. A decision was taken in October to examine the impact upon the NOP of the developing export and import situation.
Columbia River Treaty dam	The Arrow Lakes dam was completed and became operational under the Columbia River Treaty on October 10, 1968. On that date Canada received \$52.1 million (U.S.) from the United States for flood control benefits under terms of the Treaty. Construction on the Arrow project had commenced in the spring of 1965.
Douglas Point heavy water plant - Bruce A	In October, AECL was authorized to construct heavy water production facilities at Douglas Point, Ontario, with a capacity of 400 tons per year and at an estimated cost of \$65 million. Before proceeding, assurance was to be obtained from Ontario Hydro that it would proceed with four 750 MWe nuclear reactors at that site and that heavy water would be purchased by Ontario Hydro from the AECL heavy water production plant.
offshore negotiations	In November, the federal government decided to give consideration to various forms of pooling of all offshore revenues with the provinces. The purpose was to determine an equitable and acceptable basis upon which the provincial share of the national pool could be subdivided among individual provinces, having in mind the national asset principle and allowing for special recognition of the claims of the coastal provinces.
Financing of CANDU sales to Romania	In December, the Export Credits Insurance Corporation was authorized to negotiate financing up to Cdn \$65 million to cover the sale to Romania of nuclear plant equipment and services, including heavy water and fuel, for a 300 MWe nuclear power plant and fuel fabrication facilities. The terms were not to exceed 20 years, including a 5-year grace period and an interest rate of 6% per annum. AECL was authorized to continue active negotiations with Romanian interests. Work on the Cernavoda project commenced in the early 1980s, with two 600 MW reactors scheduled for completion by 1990.
Federal offer to share offshore	On December 2, the Prime Minister announced in the House of Commons a plan for sharing of offshore revenues. Provinces would receive half of the revenues accruing from offshore mineral



resource revenues	resources located seaward of "mineral resource administration lines" established off provincial coasts. Landward of these lines, adjacent provinces would receive all of the mineral resource revenues. The question of the basis upon which the provincial share of revenues would be divided was left open to suggestions by the provinces. The federal position, based on the Supreme court decision of November 1967 on the British Columbia offshore reference, was that the federal government is entitled to the proprietary and other rights in areas offshore from historic boundaries. The proposed administration lines provided a means of defining provincial areas of jurisdiction, rather than using the low-water mark.
Task Force on Northern Oil Development established	In December, the Task Force on Northern Oil Development was announced in the House of Commons. Its purpose was to keep the federal government advised on all matters relative to northern oil development and to make recommendations thereto. With the discovery of oil at Prudhoe Bay, Alaska, as announced in July, exploration activity in Canada's far north was greatly expanded. It soon became apparent that the federal government would be faced with many policy questions relative to northern oil and gas activity. The Task Force was established to provide advice on these questions. The Task Force was chaired by the Deputy Minister of EMR and had senior representation from that Department and the Departments of Indian Affairs and Northern Development, Environment, and Transport, and the National Energy Board. It reported to Cabinet over the signatures of the Ministers of those Departments. The Task Force became the focal point in the succeeding years, into the mid-1970s, for government study and policy recommendations on all matters relative to northern oil and gas development and related pipeline planning. It operated through five committees: Pipeline Engineering, Transportation, Environmental-Social, Marketing, and Economic Impact.
Proposed Yukon River power development	During the 1960s a number of studies were undertaken to assess the hydroelectric power potential of the Northwest Territories and the Yukon. In 1968 special consideration was being given to potential developments of the Upper Yukon River and a power market study was initiated under terms of notes exchanged between Canada and the U.S. in December. Among the alternatives under consideration was a major system plan involving 17 projects, with the system having an annual firm energy potential of 37.7 billion kwh. However, preliminary assessments concluded that development of the Upper Yukon would have significant environmental effects on downstream developments of the river in Alaska, particularly in relation to the proposed Ramparts Dam scheme which the U.S. government had concluded was not the most desirable means of promoting the development of the Alaskan economy.- The Upper Yukon proposals did not go ahead and the Yukon's main hydroelectric power sources continued to be the Northern Canada Power Commission's power developments near Whitehorse on the Yukon River and near Mayo on the Mayo River.

## THE YEAR 1969

- Canada-U.S. offshore boundary disputes
- In January a decision was taken to initiate negotiations as soon as possible with the U.S. for the purpose of delimiting offshore boundaries in the Juan de Fuca Strait on the West Coast and the Gulf of Maine region on the East Coast, with consideration also to be given to the Beaufort Sea region. The equidistance principle was to apply, as set out in the Convention on the Continental Shelf. Canada was not in favour of suspension of exploration activities in the northern half of the Georges Bank, pending agreement on the boundary line.
- Subventions on coal exports - Western Canada
- In February it was decided to approve the application of Canmore Mines Limited for subvention aid on coal exports to Japan for 1966-69, 1969-70, and 1970-71. The average rate of subvention was \$2.16 per short ton, and the total subvention approval for this period was \$2.2 million. This aid had been instrumental in getting a market established for Canadian coal in Japan.
- Douglas Point heavy water plant - Bruce A
- Atomic Energy of Canada Limited (AECL) was authorized in February to construct heavy water production facilities at Douglas Point, Ontario, in cooperation with Ontario Hydro, with the plant to have a production capacity of 800 tons per year, double that of a previous authorization
- U.S. plans for Alaska crude oil
- In the United States, plans were announced in March to move Alaskan oil to U.S. markets via a trans-Alaska pipeline and by tanker down the West Coast. At the same time, plans of U.S. oil companies to test the Northwest Passage route through Arctic waters with the tanker "Manhattan" in the summer of 1969 were evidences of the interest in trying to get Alaska oil to the major markets of the Atlantic seaboard. Assessment of transportation and marketing plans thus became of paramount importance to Canada's Task Force in Northern Oil Development. Findings relative to new patterns of North American supply would assist in Canadian oil policy planning.
- NEB report on NOP
- In February, the National Energy Board (NEB) completed a review of the national oil policy in relation to the marketing situation. It concluded that the Canadian oil industry, and the economy in general, had benefited over the period of eight years since the national oil policy (HOP) was implemented in 1961. However, in 1969, as in 1961, the basic problems and uncertainties confronting the industry related primarily to markets rather than to the adequacy of the resource base, or to the environments in which oil was being explored for and produced. Marketing problems had arisen because known oil resources were relatively high cost and landlocked. Preferential access to the more proximate and larger markets of the U.S. was conditioned by U.S. national and inter-national political considerations. The immediate problem in regard to export markets in early 1969 related to the very high rate of growth in Canadian exports in the immediate past. This was causing concern in the U.S.. Accordingly, the NEB recommended that Canadian export policy should be directed towards avoidance of situations where Canadian goals directly confronted U.S. policy objectives while seeking optimum conjunction of Canadian and U.S. objectives. At the same time, the voluntary program of restricting the domestic market west of the Ottawa Valley to Canadian crude was becoming more difficult to maintain because of the pressure of cheaper foreign imports. In view of these export and domestic developments, Canadian oil policy was undergoing a more fundamental and far-reaching re-appraisal than at any time since 1961 at a time when the U.S. was reassessing its oil import program. This was also the time when the Prudhoe Bay, Alaska, oil discovery, and the possibility of similar finds in the Canadian North and offshore, were raising the prospect of fundamental change in the pattern of North American supply.
- Oil exports to the U.S.A.
- Bilateral energy discussions between Canada and the U.S. in 1969 centered largely on the issue of Canada's growing oil exports to the U.S. and that country's insistence that they should not exceed the limit of 306,000 barrels a day in 1969, as agreed to in 1967, even though conditions had changed and there was increasing U.S. company demand for Canadian oil. The U.S. position was made clear in bilateral discussions in April which followed a meeting in March between the Prime Minister and the President. Later in the year, in August, in a Note to the U.S. Department of State,

Canada reviewed the history of energy relations between the two countries and emphasized the Canadian view that both countries had an interest in further development of trade in oil between them and that this could strengthen the security of U.S. supplies. This view was put forward at a time when the U.S. Cabinet Task Force on Oil Import Control was reviewing factors relevant to the U.S. oil import program.

First report of Task Force on Northern Oil Development

In April, the Task Force on Northern Oil Development, which had been established in December 1968, submitted a progress report to the federal government. Based on this report, the responsible Ministers (EMR, Indian Affairs and Northern Development and Transport) made a number of recommendations, including the following:

that steps be taken to formalize Canada's participation in the marine feasibility trials of the U.S. tanker "Manhattan";

that the federal government cooperate with industry in research relative to northern oil and gas pipelines, including on-site tests of pipeline construction and operating procedures in permafrost areas;

that the Task Force give consideration to other types of federal government participation that might be warranted in relation to northern pipeline and marine transport operations should it be demonstrated that it would be in the national interest to establish such transportation routes;

that, in view of the rapidly developing events following the discovery of oil in 1968 at Prudhoe Bay, Alaska, and the generally acknowledged oil potential of northern Canada, the Canadian Government prepare to extend effective occupation of its Arctic Islands and channels through a build-up in research and services relative to resource development, transportation and communications to not only help to accelerate northern development but also to contribute significantly to Canada's claim to Arctic sovereignty.

Offshore negotiations

In April, a decision was taken to initiate federal-provincial discussions on offshore mineral rights as soon as possible, with emphasis initially on making the federal position clear.

Atlantic Provinces Power Development Act assistance terminated

By Cabinet Decision of May 8, coal subvention payments under the Atlantic Provinces Power Development Act (APPD Act) were to be terminated. The Act was assented to in January 1958 and since then had provided for subvention payments on the cost of maritime coal used in power generation in the provinces of New Brunswick, Nova Scotia and Newfoundland. The other provision of the Act was terminated in December 1969. Under that provision, long term loans were made available to provincial utilities at Crown corporation rates. While the Act assisted in the development of electric utility systems in the Atlantic Provinces, it only applied to thermal power generation and was limited to provincial publicly owned utilities. In place of this assistance, support was to be provided to projects of major significance to regional power systems through programs of the Department of Regional Economic Expansion. Coal subventions paid under the APPD Act totalled \$21.8 million and loans granted totalled \$218 million (see note for November).

Coal export subventions - western Canada

In May, a decision was taken to increase subvention aid on coal exports to Japan in 1969-70 by the amount required to export the 58,400 tons left unshipped from 1968-69. The companies assisted were Coleman Collieries Limited, Kaiser Resources Limited, and Canmore Mines Limited. Subvention aid for these additional shipments was in the range of \$2.20-\$2.44 per short ton but was terminated in 1971.

oil policy review in Canada

In May a study of oil policy alternatives open to the federal government was initiated in the context of possible U.S. policies. Plans were made to discuss policy alternatives with the Premier of Alberta, and with the integrated oil companies, because of the need to lower the price of oil in Ontario to reduce the pressure of foreign oil on the Ottawa Valley line. Plans were also made for discussions with the U.S. on the impact of its oil policy on Canada when U.S. long-term policy was established following the review it had underway.

Oil and Gas Production and Conservation Act	The Oil and Gas Production and Conservation Act was enacted by the federal government in June. It applies to oil and gas resources on all federal lands. The Act, as passed in 1969, was amended in June 1970 to give more comprehensive control, particularly with regard to safety and environmental control in offshore drilling.
Dominion Coal Board terminated	A decision was taken in June to terminate the appointment of existing Members of the Dominion Coal Board and to appoint a new Board consisting of EMR officials. The effective date of the change in membership was July 1. The Board was subsequently disbanded in May 1970.
Uranium export policy	On June 19, the Minister of EMR announced policy in detail with respect to future sales of uranium to other countries, further to the policy announcement of June 1965 which had provided for export sales under safeguards to ensure that uranium was used only for peaceful purposes. The new statement noted that significant changes had taken place since 1965 in the world uranium market, with a growing world requirement in relation to available supply and a demand for long-term contracts. At the same time, it was hoped that the recent signature by many countries of the Non-proliferation Treaty would curtail the spread of nuclear armaments. The June 1969 announcement specified that all contracts covering the export of uranium or thorium would be examined and approved by the appropriate federal agency before any application for an export permit was considered. This would cover all aspects and implications of a contract, such as nuclear safeguards, the relationship between contracting parties, reserves, rate of exploitation, domestic requirements, domestic processing facilities, and selling and pricing policy. Approval would not normally be given to contracts of more than 10 years' duration unless provision was made for renegotiation of price. Once an export contract was approved, export permits could be issued annually provided that the conditions of the contract had been maintained. Approval of an export contract would only be granted for the supply of uranium and thorium for peaceful purposes to customers in countries with which Canada had completed a safeguards agreement, or following the coming into effect of the Non-proliferation Treaty, with customers which had concluded the necessary safeguards agreement with the International Atomic Energy Agency.
Coal import tariffs removed	In June, tariffs on coal imports were removed. As early as 1870, Canadian domestic coal had been protected by import duties and until the late 1960s tariffs had been maintained almost continuously. A duty drawback of 99% of the tariff had been given on coal used for manufacture of certain products, and applied to about half of all Canadian imports of coal. In accordance with a GATT agreement, coal tariffs had been scheduled to be progressively reduced, and eliminated by 1972. As a result of GATT negotiations, tariff removal was accelerated. There have been no quantitative restrictions on coal imports.
First Arctic Islands gas discovery	The first gas discovery in the Arctic Islands was reported in July at Drake Point on Melville Island. The well blew out of control until finally capped in September 1970. The first oil discovery on the Mackenzie Delta was made in 1970, and in the Arctic Islands in 1972.
U.S. embargo on uranium	In August the federal government sent a note to the U.S. government urging it to remove as quickly as possible its embargo on the enrichment of foreign uranium for domestic consumption. Canada considered that the United States prohibition of the enrichment of foreign uranium for domestic sale was a contravention of the provisions of the General Agreement on Tariffs and Trade (GATT). Since the U.S. embargo on enrichment of foreign uranium for domestic use became effective in August 1964, Canada had been denied access to over half of the free world's uranium market. In 1969 Canada's uranium industry was operating at about one-quarter of its 1959 peak production level.
Manhattan voyage through the Northwest Passage	In August, the tanker S.S. Manhattan commenced its voyage through the Northwest Passage to determine whether Prudhoe Bay, Alaska, crude oil could be shipped by tanker via that route to the Atlantic seaboard, some 4,500 miles away. The Manhattan was accompanied by the Canadian Coast Guard Ship "John A. Macdonald", which was Canada's largest icebreaker then in service.

Canada also provided information on ice conditions through airborne remote sensing equipment, and other support services. Although the 1969 voyage was completed successfully, and a further test of the economic feasibility of the route was conducted in 1970, it was decided to transport Prudhoe Bay crude oil by pipeline across Alaska to a port on the southern coast rather than to attempt to establish a commercial route through the Northwest Passage.

Arctic  
sovereignty re.  
voyage of the  
Manhattan

In September the federal government made plans to introduce legislation in the next session of Parliament to claim a territorial sea of 12 miles, measured from straight baselines, in the Canadian Arctic. In relation to the voyage of the S.S. Manhattan through the Canadian Arctic, this would have the effect of allowing the Canadian government to control the use of the Northwest Passage through the Arctic. Subsequently, this matter was dealt with in the Speech from the Throne and in related debate. The 1969 voyage had focused considerable attention on the Arctic sovereignty issue and in 1970 Parliament passed the Arctic Waters Pollution Prevention Act as a basis for confirming Canada's sovereignty in the North. The Act was proclaimed in August 1972.

Nelson River  
power  
development

The Manitoba government announced on September 15 that it would not proceed with the diversion of the Churchill River for hydroelectric development purposes, as called for in the February 15, 1966 Nelson River Agreement, because of the flood threat to 600 Indian families in the Southern Indian Lake area. As this change in plans would not affect the terms of payment by Manitoba for the transmission facilities to be constructed by the federal government from the Kettle Rapids power site to Winnipeg, the Manitoba decision did not impact on the 1966 Agreement.

AECL research  
facility for  
Taiwan

In October, Atomic Energy of Canada Limited (AECL) was authorized to complete the contract entered into with Taiwan on September 15 for the supply of a research facility. Approval was also given to a proposed draft agreement between the International Atomic Energy Agency and the Government of the Republic of China concerning the application of safeguards to the Taiwan research facility.

Coal subventions  
for U.S. and N.B.  
ended

Coal subventions under the Atlantic Provinces Power Development Act, for Nova Scotia and New Brunswick, were terminated effective November 30, 1969, based on a decision taken by the federal government in May. In lieu of continued subvention payments, it was planned to pay special adjustment assistance, in the amount of up to \$3.1 million to Nova Scotia and up to \$1.5 million to New Brunswick on or before April 1, 1970. However, New Brunswick would not be eligible to receive this payment in the event it accepted a previously authorized grant of \$4 million to assist in the construction of an interconnection facility between the Quebec and New Brunswick power systems.

Export and  
domestic market  
constraints on  
Western Canada  
crude oil  
producers

Canada/U.S. oil discussions had been ongoing in 1968 and 1969, and in November following an appraisal of progress it was decided that they should continue with the Canadian side emphasizing the security of oil supplied to the U.S. from Western Canada, the possibilities for cooperation with regard to a Mackenzie Valley pipeline, the U.S. interest in its substantial investment in the Canadian oil industry, and mutual interests regarding natural gas, coal and other forms of energy. These and other initiatives were to be taken in endeavouring to reach an understanding with the U.S. regarding adequate access for Western Canadian crude oil to the U.S. market, having regard to the U.S. concern about the dependence of Eastern Canada on offshore oil supplies and the related potential threat to U.S. supply from Western Canada. At the same time, in view of restricted access to U.S. markets, oil producers in Western Canada were pressing for greater markets in Eastern Canada despite the fact that they could not compete in the market they did serve in Ontario without the protection provided in that market through the National Oil Policy.

CPA views on  
gas export  
restrictions

In a submission to the National Energy Board in November, 1, at the time the Board was hearing applications for gas export permits, the Canadian Petroleum Association set out views concerning gas exports that represented the general position of the oil and gas industry. The Association

reiterated its position, as it had a number of times previously including in a submission to the NEB in 1965, that the industry could best compete for markets under conditions of least restraint and that contract interference can only impair the effectiveness of the market place which is the best forum for allocation of supply and demand. "if at this juncture in the history of Canada's gas industry, when gas export demand is buoyant, we choose to forego this market at the expense of over-protectionist policies, the U.S. which is now sorely in need of this energy source (gas) may be forced to seek other alternatives. We must avoid this risk". (As recorded in a note of August 1970, the NEB denied, for the first time, authorization for additional gas exports for reasons of inadequate surplus to protect future Canadian requirements).

NACOP  
established

A National Advisory Committee on Petroleum (NACOP) was announced on December 4, 1969 by the Minister of EMR following extensive deliberations within the federal government and consultations with the Canadian Petroleum Association. Members of the Committee, appointed in January 1970, were representatives of petroleum marketing and refining, as well as of the exploration, production and transportation sectors of the petroleum industry. They were to serve in their individual capacities and not as delegates of their representative organizations or companies. The Committee was established to enable the Minister to consult in the fullest degree possible with the industry on oil and gas matters. It continued in operation until the late 1970s.

Western Canada  
coal industry  
export growth

In December, it was apparent that the previous two years had seen a remarkable turn of events in the Canadian and world coal industries. Mining companies in all coal resource countries were striving to bring in new coal mines or renovate old mines to meet the growing demand for coal by thermal electric and iron and steel industries. Based on contracts with the Japanese steel industry, exports to Japan from Canada were scheduled to be about 5 million long tons in 1970, 11 million tons in 1972 and at least 14 million tons in 1975. At the same time, there was concern about the continuity of coal supply to Ontario from the U.S., and Ontario coke producers were beginning to examine the possibility of using coking coal from Western Canada, with a test shipment of 200,000 tons being planned for 1970.

Uranium market  
resistance

Following the optimism in 1968 regarding the future of the Canadian uranium industry, an assessment made in December of developments in 1969 showed that there had been only limited success in negotiating additional contracts. Delays in nuclear plant construction were being experienced in several countries. These delays, and escalations in capital costs for nuclear plants, had forced some utilities to switch to conventional thermal plants, based on coal.

Upper Churchill  
power  
development and  
65-year contract  
with Hydro-  
Quebec

By December, a contract had been completed between Churchill Falls (Labrador) Corporation and Hydro-Quebec providing for sales of hydroelectric power, valued at about \$5 billion, to the Quebec utility over a period of 65 years (a 40-year contract with a 25-year renewable option). There was no provision for escalation in operating and maintenance costs, the contract specifying 2.6-3.6 mills/kWh, dropping to 2.0 mills in the year 2016. Construction of the Upper Churchill Falls power project had been initiated in July 1967 on the basis of a letter of intent signed in 1966. British Newfoundland Corporation Limited (Brinco) had initially received exclusive power rights on all undeveloped rivers in Newfoundland and Labrador and in 1958 established Churchill Falls (Labrador) Corp. to develop the Upper Churchill Falls power site. The 65-year contract remained controversial into the 1980s.

## THE YEAR 1970

Ban on West Coast oil exploration	On January 12, the Minister of EMR announced that no further exploration for oil or natural gas would be undertaken in the Strait of Georgia on the West Coast. All Canada Oil and Gas Permits in the Strait were relinquished, covering 675,000 acres; they had been issued 6 years previously to Gulf oil, which subsequently had formed a partnership with Canadian Pacific Oil and Gas to explore the area. The decision was taken by the federal government in the context of environmental concerns about possible pollution in an important fishing and recreational area.
Task Force on Northern Oil Development report	On January 26, the Task Force on Northern Oil Development, which had been established in December 1968, submitted to Ministers a second progress report. Recommendations, approved by Ministers, called for departments and agencies concerned with northern resource development and the marketing of oil to prepare schedules of increased activities that would be pursued in the event that commercial decisions regarding northern transportation were indicated. This would enable the government to move ahead more quickly, when commercial decisions were made, with the programs that would be required to strengthen and maintain Canada's position of sovereignty and control in the North and to ensure the optimum development of its northern oil and gas resources. In its progress report, the Task Force on Northern Oil Development reported on marine feasibility of the Northwest Passage as an oil transportation route, with particular reference to the Manhattan tanker trials; pipeline feasibility, with particular reference to pipelines from Prudhoe Bay across Canada to U.S. markets; research programs to support marine and land exploration, production and transportation; and on the market outlook in the context of North America oil and gas supply and demand trends
Canada-U.S. oil relations	In January, the federal government was taking the position in Canada-U.S. oil relations that it would refrain from presenting specific proposals with regard to acceptable levels of Canadian oil exports. This was a time of concern in the U.S. about increasing Canadian oil imports and of bilateral discussions as to the effectiveness of Canada's voluntary system of oil export controls.
Canada-U.S. energy relations	Following Canada-U.S. oil discussions in February, the federal government decided that it would be prepared to ensure that oil exports did not exceed the average rate of 440,000 barrels a day for the period March 1 December 31, 1970 for Districts I-IV, provided that the U.S. would undertake to negotiate during that period a substantial increase in the rate of delivery for the following calendar year. At the same time, Canada would be prepared to discuss possible arrangements for freer trade in natural gas, uranium, coal and electricity. Later in the month, when it became evident that the U.S. had decided to impose quotas on the imports of Canadian oil for the remainder of 1970 and to impose mandatory controls at a level much below that proposed by Canada, the Canadian government decided to express strong regret to the U.S. government, and publicly, concerning the U.S. decision.
Canada-U.S. oil relations - U. S. Presidential Proclamation	On March 10, a U.S. Presidential Proclamation was issued to restrict the flow of Canadian oil into U.S. markets. The 1967 arrangement between the U.S. and Canadian governments had stipulated a Canadian oil import level of 330,000 barrels a day for 1970. As a result-of strong U.S. market demand for oil in Districts I to IV, the actual level of imports into those Districts, all areas east of the Rockies, averaged about 560,000 bbd in the first quarter of 1970. This was 230,000 bbls above the limit the Canadian government, in 1967, had agreed to ensure, short of imposing formal export controls. Nearly 90,000 b/d of the increase went to the Chicago market which had just become accessible as a result of completion of the 'Chicago Loop' of the Interprovincial-Lakehead Pipeline
NOP problems	At the same time in March as Canada was facing restrictions in the U.S. oil market, there were increasing pressures on the National Oil Policy Ottawa Valley line, as established in 1961. This was due to an increasing in-flow of petroleum products into Ontario from Quebec and the Atlantic Provinces where refinery expansion had been encouraged by provincial and federal incentive programs while there had been a fall-off in Ontario refinery expansion because of the relatively

high cost of western Canada crude in that province. These Canada-U.S. and domestic trends had increasingly involved the federal government in oil market allocation and negotiation in pursuing the objectives of the NOP.

Loans for CANDU sales	In March the government decided to authorize the Export Development Corporation to make a loan of up to \$110 million to any one of the governments of Romania, Mexico, Brazil or Australia to finance the sale of a 600 MWe CANDU reactor system, including heavy water and initial fuel, with terms to provide for repayment of the loan in 25 years and interest at 6%.
Foreign ownership restrictions for uranium	In March 1970, the government decided that certain criteria would apply with respect to foreign ownership in the Canadian uranium industry including, in the case of individual foreign ownership, a maximum holding of 10% of the outstanding shares of any existing uranium company; and, in the case of aggregate foreign ownership, a maximum holding of 33% of the outstanding shares of any existing company. The Prime Minister announced the new ownership provisions in the House of Commons on March 2 and stated that, if necessary, legislation would be introduced to stop the sale of the control block in Denison Mines Limited by resident Canadian owners to a foreign buyer.
Implementation of ownership restrictions in the uranium industry	On March 19, the Minister of EMR informed the House of Commons, pursuant to the Prime Minister's statement of March 2 on new uranium ownership provisions, that limitation of the extent of uranium producing enterprises in Canada by non-residents was being implemented because of the special importance of the industry in relation to the national interest, as reflected in the Atomic Energy Control Act and a number of statements of general policy, the most recent of which was made on June 19, 1969. In commenting on the ownership limitations, referred to above, he noted that there would be no limit to ownership of enterprises engaged in exploration, but when exploration led to the discovery of a commercially exploitable uranium ore body, the foreign ownership of the company bringing it into production would be limited to 33 %. The new regulations were effective March 2, 1970, the date of the Prime Minister's announcement, but they were not to be retroactive in relation to mines existing on that date. As clarified in May, companies were to have six years - until March 2, 1976 - to establish to the satisfaction of the AECB that they had a commercially viable deposit on the mineral rights under exploration on March 2, 1970. Among other stipulations: where foreign holdings amounted to 50% or more, such holdings could be retained but any transfer of them would have to be to Canadians only, down to a 33% aggregate foreign ownership limit. Where existing foreign holdings were below 50%, their transfer to other foreign investors was to be permitted.
Non-Proliferation Treaty	On March 5, the Treaty on the Non-Proliferation of Nuclear Weapons came into force. This international Treaty had been signed by Canada on July 23, 1968 and ratified on January 8, 1969. The initial signing of the Treaty had taken place in London, Washington and Moscow on July 1, 1968. By 1970, 40 countries had ratified it. With the coming into force of the UPT, the work begun by the U.N. Atomic Energy Commission in January 1946 was partially completed. The twin concepts of increasing the use of nuclear energy for peaceful purposes while also preventing the proliferation of nuclear weapons to other countries were now accompanied by a treaty but any nation could withdraw from the NPT on the three months notice. The only enforcement power against a violation of the UPT would be the uncertain authority of public opinion supported by the equally uncertain imposition of sanctions. The explosion of a nuclear device by India in May 1974 following India's commitment to IAEA in 1971, and many commitments to Canada, illustrated the vulnerability of international control.
Fundy tidal report	In March, a Federal-Provincial Board submitted to the Nova Scotia, New Brunswick and federal governments the report resulting from a three-year, \$2.5 million study of the possibilities of developing power from the tides of the Bay of Fundy. The report concluded that the economic development of tidal power was "not feasible under prevailing circumstances". However, the study board recommended additional studies where there were significant changes in such important factors as interest rates, construction and generation technology, and the pollution problems and



cost of conventional sources of generation. The Board's report was tabled in the House of Commons on March 20, 1970.

Support of Hydro Quebec Research Institute

In March the federal-government decided to support the Hydro Quebec Research Institute by a loan of \$17.5 million and to make annual grants of \$325,000 to the Quebec Hydro Electric Commission for a period of 10 years, commencing in 1971-72 (see July note).

Coal Subvention Program and related support programs terminated

The Coal Subvention Program was terminated on March 31, except for a special one-year extension for two Alberta mines allowing them time to complete mine and market development plans to achieve economic independence. The program had been initiated in 1928 and during the 42 years of its life, approximately 327 million of federal subvention aid had been issued, 70% of this aid going to Cape Breton mines. The annual payments had increased considerably in the 1960s, and 63% of the total 42-year aid was paid out in that decade. The program was discontinued because the coal industry of western Canada had become viable through various federal initiatives in response to marketing opportunities in Japan and, for the Maritime provinces coal industry, alternative arrangements had been made for coal industry rationalization and assistance with the related social problem. The Canadian Coal Equality Act of 1930, the Maritime Coal Production Assistance Act of 1949 as amended to the Coal Production Assistance Act of 1959, and the Dominion Coal Board Act of 1947 were all revoked in 1970 along with the termination of the Coal Subvention Program. This marked the commencement of a new era of coal policy determination in Canada with emphasis on the optimum use of coal resources in conjunction with other energy sources and with emphasis on the most effective contribution of each to the economy.

Dominion Coal Board Act, Canadian Coal Equality Act, Coal Production Assistance Act revoked

With the termination of the Coal Subvention Program in March, two other major support programs were also terminated. The Canadian Coal Equality Act had been enacted in 1930 to provide assistance for bituminous coal mined in Canada and converted into coke for the manufacture of iron and steel in Canada. Although the Act was not revoked until 1970, payments had been discontinued by Cabinet decision in 1968. A total of \$10 million was paid under this legislation, the main beneficiary being the steel plant and coal industry at Sydney, N.S. The Act had very little potential for benefiting western Canada coal as freight rates were too high to allow western coal to be used in Ontario steel plants. The Maritime Coal Production Act of 1949 was amended in 1959 to the Coal Production Assistance Act, the basic objective of this legislation being to promote the modernization of the coal industry, improve productivity and lower costs. The total amount authorized, for loans, was \$20 million as a non-revolving fund. A total of 31 loans were made involving a loan amount of \$16.5 million, two thirds to Maritime companies and one third to western Canada companies. The Dominion Coal Board administered these and other coal support programs including the coal subvention program. The Dominion Coal Board Act, and the functions of the Dominion Coal Board, ended with the proclamation on May 1, 1970 of the Dominion Coal Board Dissolution Act. Assistance under the Atlantic Provinces Power Development Act was terminated in May 1969.

Canadian criticism of U.S. oil import policy

In an address to a U.S. audience in April, the Minister of EMR expressed a commonly held Canadian view that the unilateral decision on the part of the U.S. to cut back imports of Canadian oil was a mistake, and of harm to both countries. He took the position at that time that Canada had existing and potential oil resources well beyond the need of Canadians in the present or foreseeable future. The U.S. unilateral cutback was not conducive to achievement of trading arrangements which would be good for both countries. (Three years later, the U.S. removed its oil import restrictions and Canada implemented oil export controls).

The sovereignty issue in Arctic waters

In April, the Arctic Waters Pollution Prevention Bill was introduced in Parliament. With the increasing activity in Arctic waters, the federal government had become concerned about the threat of oil pollution, a concern that had been heightened with the 1969 and 1970 test voyages through the Northwest Passage of the American tanker, Manhattan. In a public address on April 15, the

Prime Minister stressed the importance of this anti-pollution legislation and strongly defended the Canadian position that the Northwest Passage was not an "international strait", but an extension of the Canadian mainland. There was no similarity between the area comprising the Canadian Arctic archipelago, frozen much of the year, and the water and island areas in tropical archipelagos. The Beaufort Sea was not a "high sea". Canadian sovereignty extended over the entire area and, therefore, Canada had the responsibility of providing-legislative preventive measures for control of pollution. The U.S. had taken the position during the 1969 and 1970 test trials of the Manhattan that the tanker was moving through international waters. The Arctic Waters Pollution Prevention Act was approved by Parliament in 1970 but not proclaimed until August 1972.

Oil and Gas Land Order No 1-1961 withdrawn

In April, Land Order 1-1961 was withdrawn. As a consequence, the modified checkerboard system established by the Canada Oil and Gas Land Regulations of 1961 was returned. The Land Order, in effect from 1961 to 1970, enabled the permittee, upon conversion from permit to lease, to regain the corridor acreage from the Crown and thereby avoid disposition of the surrendered sections to third parties. Under this system, known as the "unitary development concept", the permittee could acquire the whole of the production area, and any reserves discovered could be developed as a unit under a single operator (see June note).

AEC Regulations on foreign participation in uranium development

In May a decision was taken to develop Regulations under the Atomic Energy Control Act, in order to implement the policy announced in March with regard to non-resident ownership in the Canadian uranium industry and to provide for such other circumstances as undivided interests and participation by foreign governments and also circumstances in which companies had undertaken commitments with regard to foreign participation prior to March 2.

NEB Act export-import licensing provision proclaimed

In May the licensing provision of Part VI of the Natural Energy Board Act was proclaimed. The power to control exports and imports of oil was embodied in Part VI of the NEB Act which came into effect in 1959, subject to later proclamation. Although proclamation was made in May 1970, the attendant regulations excluded oil other than imported gasoline. It was not until March 1, 1973 that amendments to regulations under Part VI were approved, which brought into full effect the licensing of export of crude oil and equivalent hydrocarbons, with export control of products being made effective in June of that year.

Administration of foreign ownership producers of uranium

On May 5, the Minister of EMR issued a statement further clarifying the matter of foreign ownership in the Canadian uranium industry, pending the establishment of Regulations under the Atomic Energy Control Act. Companies that were certified by the Atomic Energy Control Board as being actively engaged in uranium exploration on or before March 2, 1970 were given 6 years until March 2, 1976, to demonstrate that they had a commercially viable deposit of uranium ore, but did not have to be in production by that date. Such companies would be treated in the same manner as that applicable to companies in production and would be able to retain holdings existing on March 2. However, any sale of such holdings would have to be to Canadian residents until the 33% foreign ownership level was reached.

Tension in Canada-U.S. energy relations

An address by the Minister of EMR on May 12, to a meeting of U.S. government and oil industry officials in Denver, Colorado, directed attention to U.S. restrictions on Canadian oil exports. It also had reference to the issue of foreign ownership and control in the oil industry in Canada and to a new Canadian nationalism and sense of identity. The strong criticism the speech drew in the United States was symptomatic of the difficult energy relations between the two countries in the early 1970's because of the rapidly changing oil supply and pricing conditions of that period. What Canada was seeking in relation to the U.S. oil market was a realistic trading arrangement which would ensure access on a normal commercial basis *vis-à-vis* U.S. oil. In that context, the Canadian government deeply regretted the imposition by the U.S. of quantitative restrictions. There was some indication that the U.S. government would continue to restrict Canadian oil imports until Canada ceased its reliance in Quebec and the Maritimes on "insecure" sources of offshore supply. However, 70% of that supply came from Venezuela which the U.S. Administration, for its own

supply, classified as a secure source. In addition to the uncertainty about the U.S. market, Canada's other major uncertainty related to the timing of frontier development. These two factors gave rise to the major difficulties involved in reaching conclusions regarding any changes in the country's oil policy in the early 1970s.

Federal-Provincial Nelson River Review Committee-first Annual Report

On June 15, the Federal-Provincial Nelson River Review Committee submitted its first Annual Report, dated March 31, 1970, to the federal and Manitoba governments, in accordance with the Provision of Paragraph 26 of the February 15, 1966 Agreement between Canada and Manitoba pertaining to the development of hydroelectric power on the Nelson River and transmission of that power to southern Manitoba. The report describes events that led to the Agreement, the nature of the undertakings by Canada and Manitoba, and construction to March 31, 1970. These Annual Reports provide a full record of the implementation of the Agreement and of the progress made each year.

Oil and Gas Land Order No. 1-1961 Ministers' statement

On June 4, the Minister of EMR and the Minister of Indian Affairs and Northern Development made a public statement regarding the withdrawal in April 1970 of Oil and Gas Land Order No. 1-1961 to confirm that there was no intention of eliminating the important concept of unitary development of oil and gas discoveries that formed the basis of the withdrawn Land Order. The Land Order was withdrawn during the course of a review of the Canada Oil and Gas Land Regulations so that terms and conditions of leases issued under the Land Order could be reviewed and modified in the light of the new oil and gas activities in the North and in the offshore. This drew a strong reaction from the oil industry. Industry was assured that changes in the Canada oil and Gas Land Regulations would not retroactively deprive permittees of rights vested under existing permits. However, it was probable that operational requirements and administrative procedures would be altered. Under Land Order No. 1, companies could acquire 50% of a permit area, on a checker-board basis, and convert it to lease. They could also select, from the corridor acreage by paying a basic royalty of 10% and an additional royalty as low as 5% in the Arctic Islands and somewhat higher rates further south. It was essentially the corridor acreage provision that was rescinded on the basis that it was too much of a giveaway

Manhattan tanker trials

In June the second voyage of the U.S. tanker Manhattan was completed through the Northwest Passage to continue the work commenced in 1969 of testing the feasibility of transporting crude oil from Prudhoe Bay, Alaska, to the Atlantic. A ship of 300,000 tons dead weight capacity was considered to be technically feasible but the economics were never satisfactorily demonstrated and eventually a trans-Alaska oil pipeline was built instead of trying to use the marine route. The Manhattan trials raised sovereignty and environmental concerns in Canada.

Roberts Bank coal terminal

The Roberts Bank port was officially opened on June 15. A report had been submitted to the B.C. government in September 1966 recommending a port development at Roberts Bank, primarily for the trans-shipment of coal. A survey made in 1966 had indicated possible increases in B.C. coal sales contracts with Japanese buyers of from less than one million tons annually at that time to 8 million tons by 1970. In October 1967, the federal government took over that portion of the port beyond the low water mark, proceeded to dredge berthing space for ships drawing over 60 feet of water, and to construct a quay and coal assembly area. The port involves unit train operation in which trains over a mile long are emptied without the need for uncoupling cars.

Offshore negotiations - resource administration lines

In July, it was decided that EMR should continue to explore with provincial governments the feasibility of federal-provincial cooperative administrative arrangements concerning both the offshore areas landward of resource administration lines and seaward of the lines, provided that for areas seaward of the lines, the right of the federal government to make final decisions on policy and administration would be made clear. Studies were to be commenced on various alternatives for revenue sharing with and between provinces.

Canada-U.S. oil

In July the government decided to pursue vigorous efforts to attain improved access to U.S.

relations

markets for oil but would not enter into arrangements with the U.S. involving a degree of continental integration which could impair Canadian control over the exploration, development and use for maximum Canadian advantage of the country's energy resources. In addition, Canada would withhold its consent to the export of such quantities of natural gas as would diminish its bargaining power represented by the U.S. need for Canadian gas. These positions were to be maintained pending completion of a comprehensive review of the National Oil Policy, including a detailed evaluation of Canadian options such as serving eastern Canada and possibly European markets by the extension of pipeline systems or the construction of a new pipeline system. At this time, there was increasing pressure to open up the Montreal market to western Canada crude oil as a result of the U.S. Presidential Task Force on Oil Import Control recommendation calling for curtailment of foreign oil imports, including those from Canada. The Task Force had reported to the President in February 1970.

Hydro-Quebec  
Institute of  
Research - federal  
support

On July 6, the federal and Quebec governments and the Quebec Hydro Electric commission announced the signing of an agreement whereby the federal government undertook to give financial support to the new \$35 million Hydro-Quebec Institute of Research (IREQ). The federal contribution took the form of a \$17.5 million loan, and annual grants of \$325,000 over ten years. The Institute, situated at Boucherville, Quebec, consists of three components: a General Research Laboratory, a High Voltage Laboratory, and a High Power Laboratory. The Institute was designed particularly for the testing of equipment at the higher transmission voltages and power levels needed for the future expansion of Canadian electrical utility systems. It provided testing capability not previously available in North America. In order to ensure that the Institute would make maximum contribution to the research problems and testing requirements of the Canadian electrical utilities and the Canadian electrical manufacturing industry, the agreement provided for a federal-provincial review board as well as an advisory technical committee, representing the federal government, the electrical utilities and the electrical manufacturers. While significant pioneering work had been done in Canada in the development of extra-voltage facilities as an essential part of major power developments - Peace River in B.C., Nelson River in Manitoba, Manicouagan in Quebec, and Churchill Falls in Labrador - further research was needed to keep Canada in the forefront of this highly technical industry. Prior to entering into the agreement with Quebec, the federal government had received assurances from the other provinces that there would be need for Canadian facilities of the type proposed by Hydro-Quebec and that they would be prepared to use the research facilities proposed for the Institute. The federal loan and annual grants have been administered by EMR. Loan advances were made over a period of five years, 1970 to 1974, while the loan is being repaid over 25 years, commencing in the mid-1970s.

Northern oil and  
Gas Pipeline  
Guidelines

On August 13, the Minister of EMR and the Minister of Indian Affairs and Northern Development announced Canadian government guidelines for construction and operation of northern oil and gas pipelines. The guidelines, prepared by the Task Force on Northern Oil Development, established six basic principles which have been widely recognized and accepted. The principles relate to a "corridor" within which pipelines are to be located; common carrier or contract carrier service; the jurisdiction of the Parliament of Canada, with regulation in accordance with the National Energy Board Act; means by which Canadians will have substantial opportunities for participating in the financing, engineering, construction, ownership and management of northern pipelines; preservation of the ecology and environment, and the protection of the rights of northern residents; and the training and employment of residents of the north, both during the construction phase and for the operation of the pipeline. In order that the federal government and industry would be fully aware of the geotechnical and environmental impact of oil and gas pipeline construction and operation on the North, various government agencies had commenced relevant scientific and technical studies and tests on a priority basis. Particular attention was directed towards terrain conditions along probable routes for the pipeline corridor in view of the presence of permafrost and muskeg. Interest in northern oil increased considerably in 1970 with the first oil discovery in the Mackenzie Delta region.

Gas export application denied by NEB	In August the National Energy Board, after holding hearings on several gas export applications, denied for the first time full authorization for additional exports for reasons of inadequate surplus. It had found that the gas surplus available for export, after taking account of future Canadian needs and existing export permits, was 6.4 trillion cubic feet whereas the applicants had requested export permits covering 8.9 tcf. The application of Consolidated National Gas Limited was denied and the licence terms of three other applicants were shortened. In examining the justness and reasonableness of the export prices, the NEB continued to apply the three tests, first used in its 1967 decision: cost recovery; the export price not to be lower than comparable Canadian prices; and the export price in the U.S. market area not to be materially less than the cost of indigenous energy. Regulations amended in 1970 under Part VI of the NEB Act made it a condition of each gas export licence that the price be subject to NEB review.
Control of foreign ownership of uranium properties	On September 1, the Minister of EMR announced that, while the government had proposed to bring in to force regulations under the Atomic Energy Control Act with respect to the control of foreign ownership of Canadian uranium properties and facilities, as announced in March, it was now concluded that legislation rather than regulations would be required. Accordingly, legislation was under preparation. Because of this delay, the government decided to deal immediately with a case involving an obligation under a binding legal agreement that was in force prior to March 2, 1970 relative to the transfer of a beneficial interest in a uranium property and also with a case concerning a transfer from a foreign owner of an interest in uranium properties that was in process on March 2.
Canada-U.S. oil relations	In September, following another in a series of Canada-U.S. oil discussions, the federal government decided that, in preparation for the November 23 Joint Canada-U.S. Ministerial Committee on Trade and Economic Affairs, three possible courses of action should be explored: unrestricted access for Canadian oil in U.S. markets, after a phasing-in period; an agreed arrangement for progressively increasing, but limited, access for Canadian oil for a period of possibly 3 to 5 years; or continuation of the existing system of unilateral decisions by the U.S. on a year-to-year quota basis.
Proposal for an energy policy study	In October, the Department of Energy, Mines and Resources completed an energy policy study proposal, subsequently approved by Ministers, for a report to be prepared on "An Energy Policy for Canada". This led to a two-volume report under that title which was published in mid-1973. In the context of 1970 energy developments, the purpose of the study was seen as the need: to analyze the energy industries in Canada in terms of supply and demand concepts and the related technological, economic, and environmental factors; to assess pertinent federal and provincial government policies; to identify problems; and to make planning and programming proposals that would lead to the coordinated development of a national energy policy designed to meet the nation's future energy needs as effectively as possible. The objectives of energy policy, as defined in 1970, related to the achievement of optimum energy use; national security; resource adequacy; quality of the environment; reconciliation of federal-provincial conflicts; the equitable sharing of revenue benefits; and social considerations concerned with regional development, and with the development of management, financial and technical skills in the energy industries and in the industries involved in forward and backward linkages.
Quebec - N.B. HVDC electrical intertie	In October, the cornerstone for the world's largest direct current converter station was laid at Eel River in northern New Brunswick on the Quebec border. The converter was designed to allow the Hydro-Quebec Power Commission and the New Brunswick Power Commission to exchange large amounts of power. The new terminal was to be used in particular to transfer some 320,000 kilowatts of power from the Churchill Falls generating station in Labrador through the Hydro-Quebec power system into the New Brunswick power system. The interconnection was constructed of Canadian manufactured HVDC Thyristor equipment.
Canada-U.S.	In a November 23 meeting of the Joint Canada-U.S. Ministerial Committee on Trade and

Ministerial Committee on Trade - oil relations	Economic Affairs, Canada maintained that its role in ensuring North American security of oil supply could best be performed through greater development of its production potential rather than through a formula setting export levels in terms of spare capacity in oilfields and pipelines. It also indicated a readiness to consider pipeline applications from corporations for the transportation of oil and natural gas from Alaska over Canadian territory to continental U.S. markets.
EMR's policy coordination role	In November the Prime Minister re-affirmed the energy policy coordination role of the Department of Energy, Mines and Resources, noting that the need to develop a coordinated approach to energy policy was one of the major factors behind the decision to establish the Department in 1966. He welcomed the Minister's initiative in getting a major review of energy policy under way.
Joint venture uranium stockpile	On December 23 the Minister of EMR and Denison Mines Limited announced agreement in principle of a joint venture uranium stockpile program, designed to ensure the basic economic security of the Elliot Lake community in which Denison was a major employer. The Government of Canada had supported the mining industry in Elliot Lake since 1963 with stockpile programs in which the Government had been the outright purchaser of \$100 million of uranium concentrates. The first uranium stockpile was operative from July 1, 1963 to June 30, 1964, and the second from July 1, 1965 to June 30, 1970. The uranium was stored with Eldorado Nuclear Limited at Port Hope. On July 24, 1970 the Government announced that at the end of 1970 it would cease stockpiling for its own account but would offer financial assistance to uranium producers which would keep government assistance at the minimum required for the continuation of mining programs. Denison had sales agreements for normal operations from 1975 to 1984 but its contracts for 1971-1974 were insufficient to keep it in operation and, in the absence of markets for some 6.5 million pounds of U308 of new production, it would have had to close down. The joint venture stockpile agreement announced in December 1970 represented a 75-25 federal-Denison commitment to purchase 6.5 million pounds of uranium concentrates at \$6.00 per pound to thereby carry the Elliot Lake community and Denison through the critical 1971 to 1974 years (see June 1971 note re authorization of the agreement).
Coal subvention aid to end - Western Canada	In December the federal government decided to refuse the request of Coleman Collieries Limited for subvention aid on coal for export beyond the limit set in a Cabinet Decision of May 11, 1967, as amended in November 1969. The limit of subvention aid was to be reached when total shipments from the East Kootenay area totalled 2 million tons, a level that was reached in mid-November 1970.
Land Order No.1 to be replaced	In December, the federal government decided to issue a new Oil and Gas Land Order pursuant to the Canada Oil and Gas Land Regulations, retaining the unitary-development policy underlying revoked Oil and Gas Land Order No.1-1961. The rate of additional royalty on the lease acreage involved, the reversionary acreage, was to be standardized on a sliding scale based upon volume of production, with an annual rental of \$2.00 per acre.
Canada Oil and Gas Regulations amendments	In December, the proposed amendments to the Canada Oil and Gas Regulations reached a stage at which they were to be made available to the Canadian Petroleum Association and the Independent Petroleum Association of Canada for discussion with officials of EMR and Indian Affairs and Northern Development. The Associations were advised at that time that, as a matter of policy, the proposed amendments re. royalty, fees, deposits and term would not apply to existing permits or leases, but that consideration might in the future be given to ways of increasing Canadian participation in those resources
Oil supply in balance with demand	Records available in December showed that liquid hydrocarbon production in Canada equalled domestic demand in 1970, for the first time in the history of the industry. Domestic demand for oil averaged 1.47 million barrels a day; production of crude oil and equivalent averaged 1.48 million b/d.

Energy price trends, 1961-1970

A review of energy price levels in December in relation to price trends since 1961 showed that No.2 furnace oil in Toronto only increased by 15.4% over the period 1961-1970, from 18.10 to 20.9i per gallon. Natural gas delivered to Toronto actually declined in price by 9.4%, from \$1.28 per Mcf to \$1.16. The price of coal, as delivered to Ontario Hydro, increased by 28.2%, from \$8.30 per ton to \$10.6.

Problems for energy policy consideration

A review in December, as energy policy work proceeded, indicated a number of problems and energy policy needs in the energy economy relative to each of the principal energy commodities. For coal, there was a need for an export policy relative to Western Canada coal exports and an import policy relative to Ontario's dependence on coal imports. There was also a need for continuing scrutiny of the phasing-out operations of Nova Scotia and New Brunswick coal fields to ensure that the cost to the economy of those operations was minimized. Oil problems related to eastern Canada and U.S. markets and to bilateral oil relations; the required taxation and other incentives for continuing resource development, particularly in the north; offshore jurisdictional questions; and the issue of foreign ownership and control. Natural gas problems included the question of how a northern gas pipeline should be financed, and also the supply and pricing questions for domestic and export markets. Uranium problems related to foreign ownership, the future of Eldorado Nuclear Ltd., the uranium stockpile issue, declining world markets, and the fate of the Elliot Lake mining community. Financial, technological and environmental restrictions were putting constraints on growth and expansion of the electric power industry, while in some parts of Canada the industry continued to be dependent on imported fuel.

## THE YEAR 1971

Energy policy pilot study	<p>A pilot study, completed in January, for a report on an Energy Policy for Canada preparatory to production of that report (see June item), identified a number of matters common to all energy sources requiring attention in energy policy formulation, as perceived at the start of the 1970s:</p> <ul style="list-style-type: none"> <li>- the need to respond to the fast-growing demand for energy while, at the same time, protecting the environment;</li> <li>- the question of how much oil and gas could be spared for the insatiable U.S. market, and the concern about the related impact of rapidly rising export demand on the price structure and on the supply and price of energy in the domestic market;</li> <li>- the group of concerns as to the appropriate role of government in relation to the energy industries in matters of jurisdiction and federal-provincial relations, state participation in various phases of energy production and use, and the role of the state in assuring security of supply;</li> <li>- broad policies establishing the climate for industrial enterprise, and including policies as to foreign ownership, monetary and exchange policy and its effect upon the availability of investment capital, taxation policy, and policies affecting prices and incomes.</li> </ul> <p>In proceeding with the energy report there was a recognition of the fact that any development of energy policy must be supported not only on economic grounds but on the even less measurable grounds of nationalism and public perception</p>
Panarctic capitalization	<p>In January, a decision was taken to commit the government to the purchase of 2.6 million preferred shares of Panarctic Oils Ltd., representing an increase in the authorized capital of the company, at a cost not to exceed \$11.7 million. This signified a continuation of the government's commitment to Arctic Islands exploration.</p>
Canada/USSR Exchange Agreement	<p>In accordance with the Canada-USSR Exchange Agreement in Science and Technology, signed in January, Canada and the Soviet Union embarked on a technical exchange arrangement relative to oil and gas, and electrical energy. This led to exchange visits of experts concerned with technological development and the possibility of commercial transactions involving the sale of machinery and equipment. The two countries continued to participate in this exchange until the late 1970s when East-West relations cooled as a result of the Afghanistan invasion.</p>
Coal subventions payments ended	<p>In March, federal subvention aid to the coal industry for the marketing of coal was terminated. Except for two Alberta coal companies which had a special one-year extension, the subvention program had been terminated in March 1970. Initiated in 1928, total payments over the intervening period amounted to \$327.4 million, of which \$274.5 was paid with respect to Nova Scotia coal production. The subventions over the years had remained relatively low until the 1960s when a sharp escalation occurred because of the competition facing coal in eastern Canada from imported oil at low prices. In western Canada, the subventions were also ended because of the market that had been developed for metallurgical coal in Japan, and the rising demand of electric utility plants in the Prairie provinces for sub-bituminous and lignite coals. Payments made following this date were prior commitments which were met as the program was phased out.</p>
Northern pipeline debates in House of Commons	<p>Following the announcement on August 13, 1970 of Northern oil and Gas Pipeline Guidelines, there were many references in the House of Commons to northern pipeline proposals, and to the terms and conditions under which a pipeline project, particularly one transporting Alaskan oil or gas across Canada, could proceed. Included in the House of Commons debates was an Opposition Day debate of March 12, 1971 in which the Ministers of Energy, Mines and Resources, and Indian and Northern Development, reviewed the work that was being done in preparation for a pipeline application and set out the environmental, native rights, Canadian ownership and other</p>



requirements that would have to be met as a prerequisite to pipeline approval.

Canadian Govt. -  
Prudhoe Bay oil  
company pipeline  
discussion

A meeting was held on March 24 between federal government representatives -- the Minister of EMR and the Minister of Indian Affairs and Northern Development -- and officials of oil companies engaged in Prudhoe Bay, Alaska, oil development, to discuss possible interest in constructing a pipeline across northern Canada to take delivery of Prudhoe Bay oil as well as oil from northern Canada. The proposed trans-Alaska oil pipeline had received setbacks in obtaining authorization from U.S. authorities while the Canadian government had been interested for several years in the possibilities of pipeline transportation for oil and gas from the Canadian Arctic. While no decisions were taken at the meeting, the discussion revealed a strong preference on the part of the U.S. oil companies to proceed via the trans-Alaska route if they could get the necessary authorizations. In any event, the companies had planned to proceed on a joint venture basis whereas a route across Canada would involve a commitment to the common carrier concept. The U.S. companies had not seen a way to reconcile such a Canadian requirement with the financial and ownership structure, through a joint venture, which they felt necessary to meet their own tax and operational requirements. Eventually, the U.S. oil companies obtained U.S. government approval, but even after this meeting there was very little further U.S. consideration of a Canadian route for an oil pipeline from Alaska although the Canadian government continued to indicate an interest and to invite applications (see November item).

Foreign  
ownership  
legislation for the  
uranium industry

In April, a decision was taken to prepare legislation governing foreign ownership in the Canadian uranium industry which would set out the principal control measures and provide for regulations for the detailed application of the measures. Recognition would be given to formal commitments between foreign governments or their agents and Canadian uranium enterprises that had been in force prior to March 2, 1970 but in all other cases foreign governments would not be permitted a direct interest in Canadian uranium producing operations. A foreign government would be permitted to have a financial or other interest in a corporation that owned not more than 10 percent of the issued and outstanding voting shares of a Canadian uranium company, provided the corporation in which the foreign government had an interest was listed on a Canadian stock exchange. There would be a 10 percent limit on individual non-resident ownership.

Northern pipeline  
studies

In May a decision was taken to accelerate Northern Pipeline environmental, scientific and technical investigations, and funds of up to \$3.1 million were allocated for this work. If the work proceeded satisfactorily, the program was to continue for three additional years at a level not exceeding \$5 million per year.

Standing  
Committee study  
of petroleum

In May, the Standing Committee on Natural Resources and Public Works was authorized to undertake a study of the oil and gas industry in Canada, with particular reference to the ecological implications of various modes of transporting oil and gas.

Continental  
energy policy

In an address given on May 19, the Minister of Energy, Mines and Resources stated: "I believe that there is no place in Canadian-U.S. energy relations for trading arrangements amounting to long-term commitments, too far in advance of our ability to predict their consequences to the Canadian economy and, therefore, to continental relations. Who could have predicted the events which have occurred in the last two or three years? Almost none of the prophets were right in their forecast as to oil prices, security questions, or rates of resource development. We are not against the export of these resources when they are clearly in excess of our own requirements -- particularly where the export today can benefit the Canadians of today -- and, at the same time, help generate the discovery of more resources for the Canadians of tomorrow."

Uranium  
stockpiling -  
UCAN

In June, the Minister of Energy, Mines and Resources was authorized to enter into a joint uranium stockpiling agreement with Denison Mines Ltd. Authority was given to proceed with preparations for the incorporation of Uranium Canada Limited (UCAN), a Crown Corporation, under Section 10 of the Atomic Energy Control Act, to be party to the joint stockpile agreement and to represent the

Government of Canada's interests in the acquisition and disposal of the joint stockpiles. Under the agreement with Denison, which had been approved in principle in December 1970, the federal government undertook to contribute up to \$29.5 million to the program which provided for deliveries of up to 6,467,000 pounds of uranium oxide to the stockpile from Denison's Elliot Lake mine over a 4-year period commencing on January 1, 1971.

An Energy Policy for Canada

In June, on Cabinet approval, preparation of an energy policy study commenced, in terms of a Pilot Study proposal of January 1971, with the following areas to be reviewed in an order of priority commencing with security of supply followed by market allocation, ownership and control, government participation, environmental concerns, financing and balance of payments, government incentives, further processing, R&D, and rate of energy resource development. This detailed review of energy policy was to be coordinated by EMR, with participation by the National Energy Board and the Departments of Finance, Consumer and Corporate Affairs, National Revenue, and the Privy Council office. The study was completed and published as a two-volume report in mid-1973 entitled "An Energy Policy for Canada".

Offshore negotiations

In July, it was decided to explore with the governments of Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland alternative methods of sharing offshore revenues that were more generous to the provinces than the existing 50/50 percent offer. The maximum extent of such a formula would be one that would provide 20 percent to be distributed among all four provinces 50 percent to be given to the province off whose coast the revenue was derived, and 30 percent to be retained by the federal government

Glace Bay heavy water plant

In July, a decision was made to authorize Atomic Energy of Canada Limited to assume responsibility for the rehabilitation of the heavy water plant at Glace Bay, Nova Scotia. The Minister of EMR was authorized to negotiate terms of an agreement with Deuterium of Canada Limited covering the rehabilitation of the plant. The terms were to include provision for recovery of the federal investment over a period of not more than 16 years. In September, it was further decided that in the event no firm competent to operate the plant was available, under terms acceptable to AECL, then it should be authorized to operate the plant as though it were an AECL facility.

Canada-Manitoba Study Agreement: Lake Winnipeg and the Churchill and Nelson Rivers

On August 24, the Government of Canada and the Government of Manitoba signed an Agreement, further to a 1966 Agreement, to undertake studies to determine the effects that regulation of Lake Winnipeg, diversion from the Churchill River and development of the hydroelectric potential of the Churchill River diversion route would likely have on other water and related resource uses, and to make recommendations for enhancing the overall benefits with due consideration for the protection of the environment. This major study was completed in 1975 and became the basis for future power development planning in northern Manitoba. The Federal-Provincial Agreement that had been signed in February 1966, provided for the construction by Manitoba of a power station at Kettle Rapids on the Nelson River and for diversion of waters from the Churchill River by means of a control dam at the outlet of Southern Lake. The federal government's commitment was limited to the construction of transmission facilities. Manitoba's decision to undertake the diversion followed an extensive period of investigation by the Federal-Provincial Nelson River Programming Board. That Board found that a development program including the Churchill River Diversion represented the minimum development that could be considered economical in terms of Manitoba's power requirements and yet compatible with an eventual full development of the hydro potential of the area.

Tanker transport of Alaskan oil - environmental concerns

The great concern of the Canadian government regarding proposals to transport oil by tanker from Alaska to the Puget Sound area, through coastal waters adjacent to Canada, was made known to the U.S. Government on a number of occasions in 1971, including an *Aide-Memoire* of August 18. Accompanying that document was a study entitled "The Environmental Consequences of the Proposed Oil Transport between Valdez and Cherry Point", which concluded that a major oil spill

arising from large tanker operations would have disastrous effects for the environment and ecology in the Canadian, as well as U.S., coastal area, that a great deal of the damage would be beyond capacity to prevent or repair, and that much of the damage would be of a nature not measurable in any economic terms

Cape Breton coal subsidy	In October, provision was made for an amount of \$6.98 million to be included in 1971-72 supplementing estimates for increased operating losses of the Coal Division of the Cape Breton Development Corporation in calendar 1971. An additional amount of \$2.75 million was made available to the Sydney Steel Corporation to cover its obligations.
Safeguards agreement	In November, a decision was taken to authorize Canada's representative to the International Atomic Energy Agency (IAEA) to sign the Canada/IAEA draft safeguards agreement
NEB denies gas export applications	In November, the National Energy Board concluded that Canada's gas requirements, including existing export commitments, exceeded available Canadian reserves by 1.1 trillion cubic feet and, in the light of that supply deficit, three applications to export additional volumes of gas to the U.S. totalling 2.6 trillion cubic feet were denied. This was the first occasion in which all export requests had been turned down. The decision in August 1970 had denied one export application and reduced the licensed terms of three other applications. The overall reduction then was from 9 trillion cubic feet to 6.3 tcf. The Alberta government objected to the November decision, believing that the NEB's estimates of expected future requirements were unrealistically high
Canada-U.S. relations on northern pipeline	On November 19, the Minister of Indian Affairs and Northern Development, in a statement in the House of Commons, set out the government's position on a northern pipeline and it was decided shortly after to transmit a note to the U.S. State Department to convey formally the Canadian position with regard to an alternative Canadian pipeline route to the proposed trans-Alaska route. In his statement, the Minister advised of the continuing interest and willingness of the Government of Canada to examine and discuss any proposals relating to the transport of Alaskan petroleum resources through Canada to U.S. markets. He noted that the northern pipeline guidelines, announced on August 13, 1970, made it clear that, in principle, oil and gas pipelines were acceptable to the Government of Canada but on conditions stated in the guidelines. He further indicated that studies relative to environmental protection were sufficiently completed to permit the examination of any pipeline application the government might receive.
uranium mine legislation	In December it was decided not to introduce a bill entitled "An Act Respecting Uranium and Thorium Mines" during the current session, but that consultations should be conducted with interested mining and exploration companies, using the provisions of the draft bill as a basis. Further action on the bill would await the result of those consultations.
Uranium Canada Limited (UCAN)	Uranium Canada's first annual report was for the period ended December 31, 1971. The Crown company (UCAN) was incorporated on June 21 of that year. Its creation reflected the continued interest which the federal government had had in uranium matters since the inception of the Canadian uranium industry in the early 1940s. The earlier industry was faced with problems of achieving production quickly to meet an almost insatiable demand for uranium in a short time. The industry in 1971, and for most of the previous decade, had been faced with the problem of maintaining an operating core to be able to take advantage of the expected opportunities of the future. The federal government had a prominent role in maintaining that core through two successive stockpiling programs over the period 1963-1970 and by way of a joint venture stockpiling program established for the period 1971-1974 (see notes for December 1970 and June 1971). UCAN was established to hold title to the Crown's share of the joint venture uranium stockpile and sale of this uranium. UCAN was also authorized to act as sales agent for the general government uranium stockpiles purchased in the 1963-1970 period.

Canada Development Corporation	The Canada Development Corporation (CDC) was established in December to encourage greater Canadian participation in industry, including the oil and gas industry.
U.S. oil import restrictions crumble	By the end of December, the records for 1971 showed that the average daily exports of Canadian crude oil to the U.S. were 540,000 barrels. The quota, set by Presidential Proclamation, was continually being changed by the U.S. Administration because of accelerating demand for Canadian crude oil in the U.S. The quota for 1971, as set at the end of 1970, had been 450,000 barrels a day. In terms of an agreement reached in 1967 to restrain Canadian crude exports, the 1971 average should not have been greater than 358,000 barrels a day. By the end of 1972 there were virtually no import restrictions on Canadian crude entering the U.S. market, and by March 1973 Canada had to implement export controls because of the rapid draw-down on developed oil reserves in Western Canada.
Coal export market trends	Coal export records available in December showed that exports of coal in 1971 totalled 6.6 million tons compared with 1 million tons in 1969 and amounts in the order of 700,000 tons for several years prior to 1969. Notwithstanding this considerable increase, forecasts made in 1968 and 1969 had predicted rapid increases in exports to the level of 14 million tons by 1972 and over 26 million tons by 1975, with some predictions as high as 40 million tons for that year. These predictions of the late 1960s had been made on the basis of an expected continuing and increasing world deficit of coking coal. By 1972, when exports appeared to be levelling and remained at the 9-10 million ton per annum level for a period, it had become apparent that the expectations of a few years previously had been highly over-optimistic. The Japanese market, the main export market for Western Canada coal, had been in recession since early 1971. Coal companies were also experiencing heavy losses because of over-optimism as to cost performance when export contracts in the late 1960s had been signed. However, the coal industry remained optimistic for the longer-term and, in 1971-72 was predicting that exports would rise to the 20 million ton level by 1980.
Extensions to the Nelson River transmission system	In December, expansion of the electrical transmission system connecting Manitoba's hydroelectric power sites to transmission the Winnipeg area was announced in a joint federal-Manitoba system statement. Under a 1966 agreement between Manitoba and the federal government, a high voltage direct current transmission (HVDC) system was being built by the federal government to be repaid by Manitoba over a 50-year period. It was agreed that Canada would complete its obligation by the purchase of a fourth module of AC/DC converter equipment at an installed cost of \$30 million for service in 1974. This addition was to be purchased from the supplier of the first three modules of mercury arc converter equipment, English Electric Company. The Government of Canada at this time indicated its willingness to discuss a new agreement covering the fifth and sixth equipment modules to increase the D.C. system capacity to 1600 KW, and reiterated its intention of continuing to evaluate the application of solid state thyristor valve equipment because there were Canadian manufacturers wishing to establish domestic capability in the design, application and manufacture of this type of converter equipment for power transmission purposes.

## THE YEAR 1972

Uranium pricing	In January, international consideration was being given to the possible improvement of the market price for uranium, through a meeting of Canadian, French and Australian officials but with no commitment to proceed beyond the discussion stage. A meeting of uranium producers, called by URANEX of France, was scheduled for February, with representation from Canada by an official of Eldorado Nuclear Limited. Discussions continued in March.
Northern pipeline studies	In February, approval was given on the proposed 1972-73 program of northern pipeline environmental, scientific and technical investigations, subject only to review and acceptance of the progress report on the first year's program, 1971-72. A \$15-million program had been approved in principle for this program to extend over 3 or 4 years.
Fundy tidal studies	The Tidal Power Review Board was established on February 29, and announced in the House of Commons on March 1, to reassess the economic feasibility of developing power from the tides of the Bay of Fundy. The Atlantic Tidal Power Programming Board had been set up in 1966. Its report of March 1970, following a 3-year study at a cost of \$2.5 million, concluded that the economic development of tidal power was "not feasible under prevailing circumstances". The Tidal Power Review Board was established to review the earlier report and to identify areas significant to the earlier conclusions which should be re-examined in the light of current and projected conditions. Discussions involving New Brunswick, Nova Scotia and the federal government had proceeded during 1971, with the provinces taking the initiative in endeavouring to get a new study underway.
IAEA Agreement on safeguards	An agreement between the Government of Canada and the International Atomic Energy Agency (IAEA) for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons was signed on February 21.
CANDU proposals for N.B. and Quebec	In March, a federal decision was made to negotiate with the Government of New Brunswick matters relative to a possible agreement on construction of one or two 600 MWe CANDU reactors in that province, while also discussing with Quebec the possibility of supplying a 600 MWe reactor and how it might fit into Quebec's general plans for power development. In June, it was decided to enter into negotiations with Quebec on the supply of such a reactor.
Uranium mining industry legislation	In April, the Minister of Energy, Mines and Resources made a statement setting out the reasons for delay in bringing forward legislation in 1972 dealing with the uranium mining industry, as had been planned in 1970. The delay had occurred because the Government was assessing broad policies with respect to questions relating to domestic control of the national economic environment and wished to review proposed legislation for the uranium sector in the context of a larger set of policy objectives. In addition, there had been less immediate need for this legislation because of a decrease in exploration activity due to declining prices.
Northern pipeline environmental - social studies	On April 18, the Minister of EMR tabled in the House of Commons a listing with descriptions, of the types of environmental, technological, and economic studies being pursued by various government departments and agencies in 1972, under direction of the Task Force on Northern Oil Development. The studies were part of the three-year Northern Pipelines Environmental-Social Program, budgeted at \$15 million, in preparation for the examination and assessment of any applications made for the construction and operation of pipelines to transport northern oil and gas to southern markets. Thirty base line studies were in progress relative to pipeline design, wildlife, fish, water quality, terrain conditions, permafrost, land disturbances, oil spills, and socioeconomic impact.
Canada-U.S. oil	In April, the federal government decided that, in the next meeting of Canada and U.S. officials on

relations	<p>the subject of oil security of supply and related matters, Canada's position would be made clear that it continued to object to U.S. quota restrictions on Canadian oil, and was not prepared to pay for lifting those restrictions. At the same time, it would be noted that access to U.S. oil markets was no longer the principal objective and that such access might require export control in a few years unless substantial discoveries were made in frontier exploration areas. However, the Canadian government was interested in working towards implementation of bilateral solutions to the security problem and, accordingly, Canada would be prepared to discuss with the U.S. informal arrangements to alleviate any shortages that might be caused by international supply interruptions. Canadian oil deliveries to the western U.S. could be increased in return for assistance the U.S. might be able to provide in eastern markets.</p>
Canadian pipeline route for Alaska oil	<p>In May, the Minister of Energy, Mines and Resources wrote to the U.S. Secretary of the Interior, further to a meeting in March, to set out the advantages of a Canadian pipeline route for Alaska crude oil, in terms of security of oil supply considerations, particularly for supply to the U.S. mid-continent area. An overland route would also avoid the environmental threat associated with tanker shipments along the West Coast. Environmental hazards would arise if the U.S. proceeded with plans for a trans-Alaska oil pipeline and tanker transportation to West Coast U.S. markets. Given the preparatory work that the federal government and industry had been doing in the Mackenzie Valley, the Minister had concluded that regulatory and governmental consideration could be commenced by the end of 1972 of an application to construct an oil pipeline overland from Alaska and, consequently, such an application could proceed as soon as a trans-Alaska application. However, plans remained uncertain, and controversy continued in both Canada and the U.S. over the related continental policy issue.</p>
West Coast tanker traffic concerns	<p>A unanimous vote in the House of Commons on May 15 supported a motion declaring that the movement of oil by tanker along the coast of British Columbia, from Alaska to Puget Sound in the State of Washington, was inimical to Canadian interests. Canada had been encouraging the U.S. to consider an overland route instead of a trans-Alaska and West Coast tanker route for Prudhoe Bay crude but there were strong indications that the U.S. government and the oil companies preferred the latter route.</p>
Energy policy study	<p>In May the government gave further approval of a detailed study of a federal energy policy, using a framework developed by the Minister of EMR relating the policy to the broad objectives of economic growth and quality of life. It was also related to the concerns of employment, industrial and resource development, trade, Canadian ownership and control, and the environment. Policy constraints of resource adequacy, regional impact, inflation, capital and balance of payments were to be considered as well. The study proceeded and was published in mid-1973. (See notes for October 1970, January and June 1971, and June 1973).</p>
A perspective on the oil and gas situation in mid-1972 - need for resource policy	<p>A perspective on the oil and gas resource situation was provided in a Petroleum Society meeting in May in Calgary when concern was expressed about the very low discovery rate while, at the same time, Alberta was proposing to tax oil reserves, the federal government was removing the depletion allowance for developed oil reserves, and environmentalists were increasing their demands. Expectations were high relative to Mackenzie Delta exploration but not for the Arctic Islands because of difficulties foreseen in natural gas transportation. There was considerable optimism about east coast exploration prospects and for the oil sands, but with a wait-and-see attitude. A generally expressed view was that Canada needed to have well-designed resource development and export policies to ensure maximum benefits to the nation as demand grew for its energy resources in the course of the fully-expected energy shortage, particularly in the U.S. A principal concern centered on how Canada's frontier resources, including the oil sands, should be developed, at what cost and how the roles and revenue sharing positions of industry, provincial governments, and the federal government should be determined for these new ventures.</p>
Forecast of \$5/bbl	<p>At a meeting of the U.S. Independent Oil Producers Association in May, a senior official of the</p>

oil by 1980	U.S. State Department predicted that the international oil price which was then at the \$2.50 barrel level would increase to \$5 by 1980. In view of the fact that the world price had been \$2.00 or less for over 20 years, this was considered to be a very bold forecast. The federal government based 1980 forecasts in its report "An Energy Policy for Canada", published in June 1973, on the \$5 a barrel projection. As a result of OPEC price and embargo initiatives in 1973 the price rose to \$5 by the end of 1973 and was \$11.25 by the end of 1974. Further price increases occurred in the 1970s and early 1980s to raise the price to \$32 by the end of 1980 and to the peak level of \$34 at the end of 1981 (all in \$U.S.).
Heavy water production	A review of the heavy water supply situation by AECL in June showed that despite a slow start, a substantial heavy-water production was being realized in Canada, although it was expected to continue to be in short supply through 1974. The plant at Port Hawkesbury had been producing in 1972 at about 60% of design capacity after some delay relative to the scheduled start-up date of late 1969. The continuing delay in bringing into production the heavy water plant at Glace Bay, N.S. which had been scheduled for 1966, coupled with Ontario Hydro's large nuclear power commitment and AECL's assessment of prospects for its nuclear power marketing operations overseas, had led to the construction of the Bruce heavy water plant for production by the end of 1972. With production in 1973 from the Bruce and Port Hawkesbury plants forecast at 530 metric tons, AECL in mid-1972 had concluded that commitment of another heavy-water plant within 12 to 18 months was necessary because production from the Bruce, Hawkesbury and Glace Bay plants would be insufficient to meet expected domestic and export demand by the end of 1970s. In May 1985 a decision was taken to close the Port Hawkesbury and Glace Bay plants because of insufficient markets.
Expanded northern pipeline guidelines	In June, the federal government approved a set of expanded guidelines for northern pipelines further to the guidelines announced in August 1970. The expanded guidelines provided for greater detail on an initial pipeline corridor through the northern Yukon and up the Mackenzie Valley, or from the Arctic Coast; a comprehensive listing of environmental concerns that an applicant must respond to in some detail; and a more inclusive elaboration of social guidelines that would give high priority to the employment of native people and would encourage the participation of northern firms on pipeline work opportunities. The expanded guidelines were to be issued immediately as an expression of the government's current views on what such guidelines should contain, subject to review with Indian groups and others directly concerned, with the intention of bringing the final version of the guidelines into force by December 1, 1972. Documentation made available when the expanded guidelines were issued on June 28 provided an extensive overview of government policy on northern oil and gas development and of government programs in support of that development, including construction of the Mackenzie Highway which the Prime Minister had announced in May.
Task Force on Northern Oil Development	In July, the Task Force on Northern oil Development was instructed, while proceeding with consultations relative to the recently-announced Expanded Guidelines for Northern Pipelines, to also continue discussions with industry on matters relative to route selection for northern gas and oil pipelines. Various methods of financing a gas pipeline development, including the terminable lease concept, and the terms and conditions for a pipeline right-of-way were also to be given further study in the light of advice to be provided by the National Advisory Committee on Northern Pipeline Financing.
National Advisory Committee on Northern Pipeline Financing	In July, a plan to establish a National Advisory Committee on Northern Pipeline Financing was announced, Its mandate was to present financing plans for a maximum of equity ownership to be offered to Canadian investors, with financial control being retained by Canadians. Appointment to the Committee was to be from senior personnel in the banking and investment dealers communities, with representation also from the consulting economists, university and private engineering consulting communities (see March 1973 note).

offshore negotiations	In July, it was decided that the federal government should continue without change its position on offshore resource development regarding jurisdiction, administration and revenue sharing, but, at the same time, continue discussions with the Atlantic provinces, and with preparations for a meeting on August 23 at the First Ministers' level for the purpose of reviewing respective positions. A decision was also taken to begin work on a Reference to the Supreme Court of Canada on questions of ownership and jurisdiction with respect to mineral rights off the East Coast, so that draft terms of the Reference could be considered should the need arise.
Arctic Waters Pollution Prevention Act proclaimed	The Arctic Waters Pollution Prevention Act came into force August 2 upon proclamation on that date. The Act applies to all Arctic waters in the region of the Arctic islands, including Lancaster Sound, Barrow Strait, Viscount Melville Sound and McLure Strait which might be considered as parts of a 'Northwest Passage'. Authority is given in the legislation to seize a ship and its cargo whenever there are reasonable grounds to suspect that any provision of the Act or the regulations concerning pollution control have been violated. The definition of the application of the Act includes all waters of the region, "the natural resources of whose subjacent submarine areas Her Majesty in the right of Canada has the right to dispose of or exploit, whether the waters so described or such adjacent waters are in frozen or liquid state". The legislation is accordingly an assertion of Canada's jurisdiction over the entire Arctic Islands region including the straits, sounds and channels among them, and between them and the mainland of northern Canada.
Offshore negotiations - east coast	In August, the Prime Minister and the Premiers of the east coast provinces agreed to set aside questions of jurisdiction and ownership and to try to reach an agreement on the practical matters of administration and revenue sharing of offshore resources. In an address in May, the Premier of Nova Scotia had spoken of his government's great expectations for a vast new economic development based on oil and gas development in the Nova Scotia offshore.
Initiatives to stabilize uranium market	In August, the Minister of Energy, Mines and Resources issued a Directive to the Atomic Energy Control Board covering such aspects as minimum selling prices and volumes of sales to export markets. This was done in order to help to stabilize the uranium marketing situation at that time and to promote the development of the Canadian uranium industry. It followed from the June 1969 statement in which the government announced a uranium policy providing for the examination of all contracts covering the export of uranium and thorium to ensure that terms and conditions of such contracts would be in the national interest. The 1972 directive to the Atomic Energy Control Board took the form of the following amendment to Atomic Energy Control Regulations, as published in the Canada Gazette on August 23, 1972: "Section 201 of the Atomic Energy Control Regulations is amended by adding thereto the following subsection: "A permit to export prescribed substances shall not be granted unless the Board is satisfied that the prices stipulated for, and the quantities of, the prescribed substance proposed to be exported meet such criteria, if any, respecting price levels and quantities as may specified in the public interest in a direction given to the Board by the Minister."
Oil and gas resource assessments	Pursuant to an announcement by the Minister of EMR in September that the Department of Energy, Mines and Resources would undertake a long-term assessment of Canada's oil and gas resources, data collection and preliminary analyses got underway.
CANDU for Argentina	In November, Atomic Energy of Canada Limited received government approval to enter into a contract for the supply of a 600 MWe CANDU nuclear steam supply system in the amount of up to Cdn \$130 million to the Argentina government. This approval was conditional upon completion of agreements concerning safeguards and transfer of technology
NEB forecast of oil shortage and need for export controls	A National Energy Board staff report on "Potential Limitations of Canadian Petroleum Supplies", completed in December, concluded that Canada could no longer ensure future Canadian oil requirements if exports continued at expected levels. At the time of this study, the NEB forecast that the export market for Canadian petroleum could grow from 940,000 barrels a day in 1972 to



1.7 million b/d in 1985 while the domestic market, west of the Ottawa Valley, would increase from 750,000 b/d to 1.2 million b/d, for a total of 2.9 million b/d in 1985. The export estimate for 1985 assumed an export allowable in terms of the NEB export control formula; without such a control, the potential export demand would be 2.5 million b/d as early as 1978. Accordingly, the Board concluded that production from all domestic sources would not be able to supply the potential export and domestic market demand after 1973 and that, aside from exports, the declining Western Provinces' conventional maximum production rate would be unable to supply the domestic market by 1986. To meet domestic needs and allow for exports, under the NEB export formula, the Board was counting on Mackenzie Delta oil and significant amounts of oil sands and heavy oil by 1980. On the basis of this 1972 assessment, the Board recommended oil export controls in 1973.

AECB research grants program

In December the Atomic Energy Control Board took a decision to commence support of mission-oriented research investigations as part of its research grants program which it had operated since 1947 in the field of nuclear research. The 1954 revision to the Atomic Energy Control Act noted that the Board may establish, through the National Research Council, scholarships and grants in aid for research with respect to atomic energy. The role of NRC in advising the AECB on awards to universities was formalized in 1967. Until 1972, all AECB funding was for research projects, usually for nuclear physics research. In that year, it was decided to direct grants to research related to the Board's objectives in health, safety and safeguards. By 1976, it had abandoned academic research and was directing all of its funding to mission-oriented research to ensure that it received the independent advice and supporting information needed to carry out its regulatory functions with a minimum reliance on the facilities or information generated by those being regulated.

The threshold of great change

The 1972 NEB analysis, released in December as noted above, and the 1973 decision to impose oil export controls illustrate the extent of the change in the Canada-U.S. oil trade situation in the early 1970s from that of most of the 1960s when Canada was constantly endeavouring to increase its oil exports to the U.S. against the barriers of that country's import control system. The 1972 analysis, in the light of subsequent international and domestic developments, also illustrates the unpredictability of energy supply and demand trends. The largely unexpected international and domestic events relative to the oil industry in the period December 1972 to December 1973/January 1974 brought greater change in the Canadian energy economy than had been experienced at any time since the Leduc oil discovery of 1947 and the events that quickly followed from it. As a result of much higher international prices caused by the OPEC price actions of 1973-74, and the energy conservation initiatives and depressed economic conditions that followed from the sudden 4-fold OPEC price increase, oil demand in the period 1972-1980 increased by an annual average of only 2% in contrast with the NEB assumption of 4%. Actual oil exports in 1980 were little more than one half of the Board's lowest estimate of permissible exports in 1980 and one quarter of its maximum estimate, the latter having been based on an expected supply of 600,000 b/d of Mackenzie Delta oil in 1980 which never occurred for various geological, socioeconomic, and environmental reasons.

## THE YEAR 1973

- Combines investigation of oil pricing
- In February, an investigation of the oil industry was initiated by the Director of the Combines Investigation Branch, Department of Consumer and Corporate Affairs, as a result of a formal complaint filed with the Department by members of the Consumers Association of Canada. The complaint was made under section 7 of the Combines Investigation Act with reference to certain pricing and marketing practices in the petroleum industry in the period 1958-73. This investigation was continued throughout the 1970s and the Director of Combines Investigation submitted his report to the Restrictive Trade Practices Commission on February 27, 1981 under the title of "The State of Competition in the Petroleum Industry". This, in turn, led to a public examination of the findings and the calling of witnesses by the Commission. Its report was released on May 16, 1986. The Commission found no evidence of collusion in any sector of the petroleum industry.
- Northern pipeline studies
- Cabinet approval was given in February to continue through 1973-74 the program of northern pipeline environmental-social, scientific and technical investigations. The Government's environmental-social program called for the publication, as they became available of 121 reports on all phases of environmental and social concern as related to northern pipelines.
- Crude oil export controls Canada - U.S. oil relations
- On March 1, crude oil export controls were established. Export control was implemented through the granting of licences by the National Energy Board under terms of Section 25 as amended, of the Part VI Regulations of the HEB Act. Immediately after, in April, the President of the United States suspended direct control over the quantity of crude oil and refined products which could be imported, and all tariffs on imported crude oil and products were also removed. Thus the bilateral situation of the 1960s was reversed from one of U.S. import controls determining the amount of crude oil that could enter that country to the new situation in which Canadian export control determined the amount of Canada's crude that would be permitted to move into U.S. markets, being surplus to reasonably foreseeable requirements for use in Canada.
- Canadian oil export restraints in the U.S. 1962-1972
- In his appearance before the House of Commons Committee on National Resources and Public Works, on March 1, the chairman of the National Energy Board put on record the recent history of market development for western Canadian oil and noted the Board's concern over the lack of new oil discoveries, which had contributed to the decision to institute oil export control. Growth in the Ontario oil market for Western crude was small on an annual basis after the, objectives for the domestic market under the National Oil Policy of 1961 had been essentially met in the mid-1960s. From 1962 until late 1972, growth of Canadian oil sales in the U.S. market had generally been constrained by U.S. policies, initially reflected in informal understandings relating to acceptable rates of export for semi-annual and, later, annual periods. In September 1967, Canada entered into arrangements covering the period 1968-71 which were associated with U.S. permission to "loop" the Interprovincial-Lakehead pipeline system from Superior, Wisconsin to Sarnia, Ontario, via Chicago. In March 1970, before the 1967 arrangements expired, Canadian oil was brought under U.S. mandatory import control. This control became the basic determinant of production rates achievable by Western Canada producers. However, it did not serve as a constraint because of the rapidly growing U.S. demand for Canadian crude in the early 1970s.
- Canadian oil export control
- Further to the above-noted review of the oil marketing record, leading to Canada's export control decision in March 1973, there were two occasions in which the marketing conditions outlined did not hold. From late 1966 until August 1968, oil transportation difficulties in the U.S., and in mid-1967 the exigencies of the Suez crisis, resulted in a relaxation of U.S. market restraints and Canadian exports moved into that market effectively unrestrained, limited only by the capacity of Canadian pipelines. In early 1973, the U.S. was again facing oil supply difficulties related to declining indigenous production and a tight overseas supply situation, and, accordingly, U.S. import restraints were relaxed. Again, Canadian pipeline capacity became a constraint following a very large growth in exports. In March 1973, exports averaged about 825,000 b/d compared with 576,000 b/d a year earlier. The increase itself was equal to total exports via the Interprovincial

Pipeline system six years previously. inasmuch as the industry had found much less oil than it had produced in the 3-year period, 1970-1972, a system of export controls was considered essential in the national interest of protecting future supplies for the domestic market.

National Advisory committee on Northern Pipeline Financing	In March, the Minister of Energy, Mines and Resources established, in accordance with a plan announced in July 1972, a National Advisory Committee on Northern Pipeline Financing, and named 12 members from the financial community and 3 federal government members, to advise on the financial and economic impact of northern pipeline development. The Committee met three times in 1973, completed several studies and a set of financing guidelines, but did not continue its work following the announcement of the Berger Commission in March 1974 when pipeline companies planning applications phased out programs pending results of the inquiry.
Mackenzie Highway	The federal government in March approved the construction schedule for the Mackenzie Highway involving estimated expenditures of \$22.8 million in 1973/74 and probable completion to Inuvik by 1977/78. The Highway construction was being scheduled to offer maximum benefits, to proposed pipeline construction which was assumed to commence by the winter of 1976/77. The plan to proceed with construction of the Mackenzie Highway had been announced by the Prime Minister in May 1972.
Columbia River dam - Mica	The Columbia River Treaty Mica Dam became operational in March. Construction contracts had been awarded in September 1967.
Report on energy policy	In April, the report "An Energy Policy for Canada" was being finalized, preparatory to publication in the mid-year. The approach at this stage was to take a neutral stand on major issues, such as a national petroleum company, on which government policy had not yet been established.
Product export controls	Canada established petroleum product exports controls in June following the implementation of crude oil export controls in March. Shipment of most forms of petroleum to export markets thereby became subject to NEB licenses because of the recent large increases in exports in the face of declining producibility in Western Canada oil fields. Controls on heavy fuel oils, propane and butanes became effective in October, to complete the control system.
"An Energy Policy for Canada"	In June, the Minister of Energy, Mines and Resources released the 2-volume report "An Energy Policy for Canada" - Phase I. The purpose of the report was "to define more clearly the national framework into which provincial studies fit, to identify choices which must be made within the federal jurisdiction, and to provide a basis for choice by the Government and people of Canada". This was the first major energy policy analysis since the reports in the 1950s by the Royal Commission on Canada's Economic Prospects and The Royal Commission on Energy. It had been intended by the federal government to use the report as a vehicle for consultation with members of the public and provincial governments, and on the basis of the information in the report on the existing status of the energy economy and the various options for the future, to then proceed with Phase II to decide how, and with what instruments, existing energy policies should be altered. The dramatic turn of events in the international oil economy made it necessary for the government to deal with new challenges on an immediate basis. While many major decisions were made in the next two or three years, the federal government did not proceed with another full-scale energy policy planning study until 1976 when the report "An Energy Strategy for Canada - Policies for Self-Reliance" was produced (see April 1976 note).
New heavy water plant	In June, it was decided that Atomic Energy of Canada Limited should be authorized to build a new heavy water production plant with an output of 500 tons per annum at a site in Canada to be approved after consideration of alternatives. In November Gentilly, Quebec was the site chosen. During 1973, work on an analytical study of the Canadian nuclear program was underway with emphasis on nuclear energy in the context of an overall energy strategy, the demand prospects for CANDU reactors and related heavy water requirements, and the economic impact of foreign and

domestic sales of CANDU reactors.

Joint  
Transportation  
Development  
Program - N.E.  
British Columbia

In July, the federal government approved in principle the agreement negotiated with British Columbia concerning a program of joint rail and port development in northern B.C., subject to certain conditions. The two governments had agreed that the program would contain specified principles and provisions relative to rail development, port development and the related infrastructure. The railway program was to be concerned with extensions of the B.C. Railway and the Canadian National Railways in northern B.C. The port development program was to relate mainly to the National Harbour at Prince Rupert. The related infrastructure program would ensure that necessary related transportation infrastructure including roads, airports, air facilities and air services was provided in a manner complementary to overall regional development. This agreement subsequently became directly relevant to northeastern B.C. coal development which proceeded during the latter part of the 1970s.

Uranium  
enrichment

Because the federal government had received several inquiries concerning its attitude towards the construction of uranium enrichment facilities in Canada by private industry, a statement was issued in August indicating that the government was prepared to negotiate intergovernmental agreements ensuring the protection of foreign classified technology licensed to industry in Canada for a uranium enrichment plant, if such a plant was shown to be in the national interest and if the terms were acceptable to the government. Factors which the government would consider in assessing a proposal included the optimum use of Canadian energy resources and the extent to which Canadians would participate in the financing, engineering, construction, operation, supply of materials and equipment, ownership and management of the facility.

Stockpile sale of  
U308 to Japan

In August, the federal government, through Uranium Canada sold 1000 short tons of uranium oxide (U308) to Japan from the government-owned stockpile and from the government-Denison joint venture stockpile, with delivery to take place over the period 1977-81. From 1963-70, the government built up an uranium stockpile of nearly 10,000 tons to maintain a basic production within the uranium industry in order to stabilize dependent mining commodities. Additional purchases of up to 6.5 million pounds in the period 1971-74 were involved in the government-Denison joint stockpile.

Provincial views  
of the federal role  
in a national  
energy policy

In a Conference of Premiers held in August there was debate on the lack of national energy policy although there was praise from the Premier of Alberta for the recently-issued report "An Energy Policy for Canada Phase I", as a good base document from which policy options could be extracted. The Premier of Ontario emphasized Ontario's needs for cheaper oil, gas and coal. The exchanges among Premiers demonstrated a broad range of views as to the role and authority of the federal government in establishing a national energy policy. This debate came at a time a few months prior to the Middle East oil crisis when international oil prices were greatly increased. The period in the mid-1970s that followed was one of considerable controversy in Canada as to the federal government's energy policy role, particularly in matters of oil pricing.

1970-1973 crude  
oil price changes  
in Canada

After a long period of price stability during the 1960s, western Canada crude oil prices increased by 25 cents a barrel in December 1970. As the international oil price structure changed, there was a further 10-cent increase in November 1972; 20 cents in January 1973; 25 cents in May; and 40 cents in August, at which time light gravity crude oil posted prices were in the order of \$4.00 a barrel.

Price restraint  
program

On September 4, the Prime Minister announced in the House of Commons a program of voluntary price restraint. With regard to energy, the oil industry was asked "to refrain from making further price increases affecting Canadian consumers before January 30, 1974." This program applied to gasoline and heating oils.

Oil price guidelines	On September 13, the Minister of Energy, mines and Resources issued a statement on the guidelines, relating to the Prime Minister's request of September 4, for oil price restraint. The price restraint guidelines applied to crude oil and the main petroleum products. The Minister advised of the government's intention of monitoring all factors relating to the "freeze". He also advised of his intention to seek authority from Parliament to enable the establishment of a control mechanism whereby higher prices in the U.S. market would not automatically increase oil prices in Canada. An export tax and an oil marketing board were under consideration.
An export tax on oil	On September 21, a Ways and Means statement gave notice of the federal government's intention to amend the Excise Tax Act to provide that, effective October 1, 1973, a tax would be imposed and collected on each barrel of crude oil exported from Canada to recover from the exporter any amount by which the export price exceeded the domestic price. Subsequently, the amount of the tax set for October and November was 40 cents a barrel, and \$1.90 for December to ensure that Canadian oil exports were priced at the full competitive market even though a price restraint program was being maintained for the domestic market to the benefit of Canadian consumers. At this time, it was not planned to extend the voluntary price freeze on Canadian crude oil, announced in September, beyond the end of January 1974 but, after that time, to base it on the average price of international crude oil landed in Montreal. The intention was to ensure that the domestic price of crude oil maintained a close relationship to the international price and also to the need to ensure the timely development of Canadian energy resources, while at the same time ensuring that prices to consumers were kept at the lowest level possible consistent with the adequacy of current and future supplies of oil and gas in Canada.
Technical Advisory Committee formed	On October 19, the day following the announcement by the Arab oil exporting countries of a cut in oil production of 5 percent to be followed by an additional 5 percent reduction each month and an embargo on oil exports to the U.S. and Holland, the Minister of Energy Mines and Resources met with oil company presidents to review the overseas oil supply situation. One outcome of that meeting was the formation of a Technical Advisory Committee (TAC) on Petroleum Supply and Demand, to advise the government on oil supply developments during the emergency.
Emergency Supply Contingency Planning Committee	On October 20, an Energy Supply Contingency Planning Committee was set up to examine the options open to the federal government relative to energy supply and demand, and to recommend a form of graduated response in terms of events which would restrict supplies of oil available to Canada. It was estimated that Arab action would result in a cutback of about 10 percent of Canada's foreign oil imports, resulting in a shortage of home heating fuel of 4 to 5 million barrels in the winter of 1973-74.
Oil supply emergency preparations	In November a decision was taken on a voluntary plan to conserve energy and on the preparation of a mandatory allocation system for use if required in 1974. This decision was taken at the time when an Arab oil embargo had been put into effect and there was strong upward pressure on oil prices. In view of this development, a number of emergency measures were under consideration, to increase the supply of oil, including: an increase in Alberta oil production; the feasibility of moving crude oil to Montreal via Vancouver, the Panama Canal and Portland, Maine, and the feasibility of transporting increased quantities of oil by the interprovincial PipeLine system to Toronto and by rail to Montreal after freeze-up of the St. Lawrence Seaway; changes in refinery procedures to maximize middle distillate yields; and purchase on federal government account of such quantities of middle distillates as were on option to Canadian companies, from offshore sources, for use in government buildings in cases where companies would not exercise their options.
Romanian fuel oil purchase	On November 5, Governor-in-Council authority was given to the Department of Supply and Services (DSS) to purchase oil from overseas sources. The Energy Supply Contingency Planning Committee had been advised of the availability of 1.5 million barrels of heating oil from Romania and Caribbean sources. This could not be imported by companies because of its very high cost in

relation to frozen Canadian selling prices but, in view of a new estimate of a projected shortage of 9 million barrels of go. 2 heating oil, DSS announced on November 9 that it would arrange for the purchase of heating oil supplies from the Romanian and Caribbean sources. At the time, the government was under criticism for not moving more quickly to ensure adequate supplies of heating oil for the 1973/74 winter. In the spring of 1974, 5 months later, when it turned out that not all of the supplies of this expensive oil were needed, the government was criticized for its costly expenditures. The event illustrates the extent of national concern at a time of possible energy shortage. However, such events are soon forgotten in times of energy surplus, and the security of supply issue has remained a difficult challenge in energy policy formulation.

East-West oil price issue in Canada

On November 22, the Prime Minister spoke to the nation on national T.V. to provide a background to the serious oil supply problem facing all countries and to describe measures being implemented to protect Canadian consumers. He noted the oil price changes since the 1960s when the National Oil Policy (NOP) provided for the supply of western Canada oil as far east as the Ottawa Valley while cheaper oil imports were used in Quebec and the Atlantic Provinces. That price situation was now reversed but in the period of the 1960s, under the NOP, consumers in Ontario and to the west had paid at least \$500 million more than they would have paid for foreign oil imports in order to help Alberta develop its oil industry. This became an issue in the mid-1970s, when under price restraint, Alberta oil producers complained they were not able to sell at world price levels while Ontario consumers argued that their support of the Alberta oil industry in the 1960s, when U.S. import policies curtailed Canadian export growth, warranted western cooperation in the 1970s in a time of price escalation and supply uncertainty,

Energy emergency measures

In a detailed statement to Parliament of November 26, the Minister of Energy, Mines and Resources reviewed the steps that had been taken to protect Canadian oil consumers in the coming winter, including emergency oil shipments from the West Coast via ship through the Panama Canal to Montreal. He also explained actions taken by the federal government to reduce energy consumption in federal facilities and asked industry and the public to adopt the voluntary conservation guidelines that the government had developed for building heating, power usage and transportation. He further advised of the government's intention to introduce legislation for an Energy Supplies Allocation Board having the authority to make allocation directives to ensure equitable distribution of all petroleum products to wholesalers.

U.S. decision against a Mackenzie Valley oil pipeline for Alaska oil

In November, the U.S. Administration and U.S. oil companies took a final decision to transport Prudhoe Bay crude oil via a trans-Alaska pipeline route and by tanker down the Pacific Coast to Puget sound and California ports. At that time, immediate interest in a Canadian oil pipeline, via the Mackenzie Valley, declined but the Canadian government continued its efforts to dissuade the U.S. government from the plan to ship Alaska crude to refineries on Puget Sound, via the Juan de Fuca Strait because of the environmental hazards. Notwithstanding these efforts, the U.S. government proceeded with the plan in the mid-1970s. The trans-Alaska oil pipeline was scheduled to go into operation late in 1977, over 9 years after the Prudhoe Bay discovery. Feasibility studies for an oil pipeline to transport Prudhoe Bay oil and Mackenzie Delta oil up the Mackenzie Valley had been initiated in 1968 immediately after the Alaska discovery. A group of major oil companies operating in Canada formed a study group called Mackenzie Valley Pipe Line Research Limited and it carried out extensive pipeline research at Inuvik and along the proposed route to determine whether an oil pipeline through permafrost areas would be technically and economically feasible. This study was completed in 1972 and it concluded that a large diameter pipeline could be constructed to take delivery of Prudhoe Bay and Mackenzie Delta oil for transportation to U.S. and Canadian markets but the U.S. government and oil companies decided on the trans-Alaska route. The trans-Alaska Pipeline Bill was signed by the U.S. President on November 16, 1973 and pipeline construction permits were issued in January 1974.

Energy Supplies Allocation Board

The bill to establish an Energy Supplies Allocation Board was introduced in the House of Commons on December 3 and, after extensive debate, was given Royal assent on January 14, 1974.

Upon ratification by Parliament of the declaration of a national emergency caused by energy shortages, the government could authorize the establishment of a program for the mandatory allocation of petroleum products, and also a system of documentary rationing in the event mandatory allocation failed.

A new national oil policy

On December 6, the Prime Minister made a major statement in the House of Commons on a new national oil policy. The new policy was defined as being concerned with the creation of a national market for Canadian oil; a pricing mechanism to provide sufficient incentives for the development of oil resources; measures to ensure that any escalation in returns and revenue as a result of any higher prices would be used in a manner conducive to security and self-sufficiency; the establishment of a publicly-owned Canadian petroleum company principally to expedite exploration and development; the early completion of an oil pipeline to serve Montreal and as required more eastern points; and intensification of research on oil sands technology to permit their full and rapid development. It was further decided to extend the freeze of the prices of domestically-produced oil until the end of the winter. The statement of a new national oil policy ended the NOP of 1961 which had established a market for Canadian crude as far east as the Ottawa Valley.

oil export tax legislation

On December 14, a bill to provide for the imposition of an oil export charge was introduced in the House of Commons. During the debate it was agreed to extend the oil export tax through February and March, 1974 at \$6.40 a barrel. The level had been 40 cents in October and November, \$1.90 in December 1973, and \$2.20 in January 1974. The bill received Royal Assent on January 14, 1974. The proceeds of the oil export tax up to January 31, 1974 were shared on a 50/50 basis with the provinces. Decision on the proceeds of the export charge was to be determined on the basis of the outcome of the First Ministers' Conference in January 1974.

Offshore negotiations

In December the government concluded that a proposal of the Premier of Newfoundland for the solution to the East Coast mineral rights situation was unacceptable and could not be used as a basis for future discussions. The federal government believed that administration and ultimate decision-making authority regarding offshore mineral resources must remain essentially federal in view of the many factors and responsibilities involved of a national character, including: uniform and efficient management, standardized policies of resource management, optimum conservation practices, control of export arrangements, establishment of Canadian criminal and civil law in the 'Offshore, and negotiations and agreements with foreign States. At the same time, the federal government stood ready to continue negotiations with the four Atlantic Provinces and Quebec.

A national petroleum company

In December, the government reached a decision in principle on the establishment of a national petroleum company which could engage in the following activities: explore for conventional oil and gas in Canada; make investments to develop Canada's oil and gas resources and, in particular, to accelerate the development of the oil sands in those parts of the deposit not exploitable with existing technology; operate as a state buying agency for foreign oil and oil products; and possibly engage in refining and marketing of petroleum and petroleum products.

Oil sands research

A federal decision was taken in December to allocate \$40 million for a research and development program in the Alberta oil sands over the following five years.

West Coast tanker concerns

Consideration was given during 1973 to the hazards of potential tanker traffic along the West Coast from Alaska to Puget Sound refineries in the U.S., and in December it was decided to propose to the U.S. the formulation of a West Coast Environmental Protection Agreement to provide for tanker traffic management, oil spill clean-up, compensation and liability, and research.

Alberta Petroleum Marketing

In December, the Alberta government passed the Petroleum Marketing Act which made provision for the establishment of the Petroleum Marketing Commission, a Crown company, designed to give the Province powers to set oil prices within Alberta and to strengthen ownership and control

Commission	of its oil resources.
Mackenzie Valley pipeline inquiry	In December, the federal government announced its willingness to process an application for a gas pipeline right-of-way through the Mackenzie River Valley immediately upon its receipt, and also announced its intention to establish a Commission of Inquiry, under the Territorial Lands Act, to assess the regional socioeconomic and environmental implications of such a pipeline (see March 1974 note on the Berger inquiry).
Come-By-Chance petroleum refinery Newfoundland	The petroleum refinery of Newfoundland Refining Company Limited went into production in December following an elaborate opening ceremony on October 10. Construction had started in 1970, after a number of delays and, by the time the refinery was completed, costs had risen to \$250 million. The original cost estimate was \$165 million, with the plant initially scheduled to be completed in 1968. From the start of operations, the refinery did not produce the quantity and quality of refined petroleum products expected and, with ever-increasing financial problems, it was shut down in March 1976 after going into receivership. The plant was mothballed pending a possibly successful effort to re-open it. British and Japanese credit agencies and banks had supplied the majority of the financing for this failed project. In the late 1970s, Canada-Canada took over the management of the property, but all attempts in the 1970s and into the mid-1980s to rehabilitate the project failed. The promoter of the project, John Shaheen of New York, had made very little financial commitment to this large 100,000 barrel per day refinery.
Nelson River power	Stage 1 of the Nelson River Transmission System, pursuant to the Canada-Manitoba 1966 Agreement, went into service on December 31, 1973.



## THE YEAR 1974

OPEC oil price increases	On January 1, the price of OPEC crude oil was close to \$12.00 (US) a barrel, compared with \$2.00 in late 1970. International crude oil prices had commenced to increase in 1971 as a result of OPEC members having signed the Tripoli Agreement in April of that year. This was followed by the Geneva Agreement of January 1972 (along with the Geneva II Agreement of June 1973 to provide for revaluation of prices relative to the dollar); and the Participation Agreement of December 1972. As a result of these price agreements and other actions, there was a six-fold increase in the three-year period but with the larger part of that increase occurring in the change that took place on January 1, 1974. A rise in tanker freight rates in this period also significantly increased the delivered price of crude oil to world markets. With the outbreak of the Arab-Israeli war on October 6, 1973, some of the OPEC producers raised their oil prices by 70%. Arab countries also instituted oil production curtailments, followed by selective embargoes, directed chiefly at the U.S. and Holland.
Electrical energy research	In January, the federal government decided to offer financial support to a cooperative research program by electric utilities, as proposed by the Canadian Electrical Association, with the initial grant not to exceed \$425,000 and based on a matching electric utility allocation of \$1 million. Future contributions would be contingent on satisfactory on-going program performance.
Nuclear station financing	In January, a government decision was taken to provide for federal participation in the financing of an initial nuclear power station for a provincial utility by way of loans at Crown Corporation borrowing rates in the amount of half the cost (see January 22 note).
Electrical interconnection financing	In January, the government decided to indicate its willingness to participate in electric power systems interconnections studies, and in the construction of facilities to permit regional interchanges of electrical energy. Federal government participation would consist of 50 percent of the costs of studies, and loans for amounts of up to 50 percent of the capital cost of regional interconnection systems (see January 22 note).
Task Force on R&D	In January, a government decision was taken to establish a Task Force on Energy R&D, reporting to the Minister of E14R to develop, implement and review a coordinated federal energy R&D program. The Department of EMR was given authority to establish an office of Energy R&D (OERD) to serve as a Secretariat to the Task Force and its Committees, and as a central focus for energy R&D in the federal government. The Task Force was subsequently established as the Panel on Energy Research and Development (PERD). It is a federal interdepartmental committee of Assistant Deputy Ministers. PERD's program is divided into seven Tasks: Task 1 - Energy Conservation; Task 2 Oil Sands, Heavy Oil and Coal; Task 3 - Fusion; Task 4 - Renewable Energy; Task 5 - Alternative Liquids Fuels; Task 6 - Oil, Gas and Electricity; and Task 7 - Coordination (see May 1975 note).
Oil Import Compensation	The Oil Import Compensation Program became effective on January 1 to provide for a single crude oil price across Canada, subject only to transportation and quality differences, in order to lessen the impact on consumers of rapidly-escalating world oil prices. A Cabinet Decision of March 7 provided the authority to implement the program, effective January 1. Until the Petroleum Administration Act was passed on June 19, 1975, this major program operated under the following authorities: the Imported Oil and Petroleum Products Compensation Regulations (SOR/74-232) of April 9, 1974 for the period January 1 March 31, 1974; a series of five special warrants pursuant to Section 23 of the Financial Administration Act for the period April 1 - October 31, 1974 when Parliament was not sitting; and the Oil Import Compensation Regulation of November 5, 1974 (SOR/74-627) and of March 12, 1975 (SOR/75-140) for the two periods through to June 19, 1975.
Coast to Coast	On January 16, the Minister of Energy, Mines and Resources announced a policy of an all-

Pipelines	Canadian, coast-to-coast pipeline network to develop self-reliance in oil and to further economic development throughout the country. Details on the proposed extension of the Interprovincial Pipeline to Montreal were also made known. The existing pipeline through Sarnia should be extended to Montreal as soon as possible, be reversible, and have an initial capacity to transport 250,000 barrels per day with a possibility for an increase to 500,000 barrels per day
First Ministers' Conference on Energy - oil pricing, electrical interconnections, uranium	A First Ministers' Conference on Energy was held on January 22. In addition to discussing the matter of an oil price increase, this was also the occasion on which the federal government announced programs of assistance to encourage the expansion of electrical energy production based on nuclear energy and the interconnection of provincial utilities to ensure greater efficiency and security. A policy statement was made concerning the protection of uranium reserves for the domestic market, further processing requirements, stockpile use, and uranium exploration. It was agreed to continue the freeze on petroleum product prices until April, both east and west of the Ottawa Valley line. First Ministers endorsed the single oil price policy.
Eldorado Nuclear exploration program	In January, the Minister of EMR announced that the Crown company Eldorado Nuclear Limited would be provided with funds to finance an exploration program in Canada. The company was to continue its mining and marketing role, with the expectation that it would be expanded should the exploration program prove to be successful.
Office of Energy Conservation	An Office of Energy Conservation was established within the Department of Energy, Mines and Resources in January to develop and recommend a program of energy conservation and to play a coordinating role among all institutions and authorities having responsibilities relative to energy conservation.
Arctic Gas Pipeline	In February it was decided by the federal government that scientific, technical and social investigations related to the possible construction of an Arctic gas pipeline should be accelerated.
Oil price increase to \$6.50	The First Ministers' Conference on Energy was reconvened on March 27 and an agreement was reached on an oil price increase to \$6.50 a barrel from \$3.80, effective April 1. The \$6.50 price level was to be maintained until June 30, 1975. It was also agreed to finance the higher cost of foreign oil imported into eastern Canada through revenues generated from an oil export charge collected by the federal government. The Prime Minister reported on the details of the agreement in a statement in the House of Commons on March 29, 1974. The Export Charge was increased to \$4.00 per barrel, effective April 1, and remained at that level until June 1 when it was increased to \$5.20. It replaced the Oil Export Tax.
Berger inquiry announced	In March, Mr. Justice T.R. Berger was asked by the Government of Canada to inquire into, and report upon, the terms and conditions for a right-of-way that may be granted for a natural gas pipeline to cross the Northwest Territories and the Yukon. For this purpose, he was appointed head of the Mackenzie Valley Pipeline Inquiry Commission. At that time, companies that had been conducting feasibility studies relative to pipeline construction for the transportation of Arctic gas to southern markets phased out their programs pending the result of Commission's inquiry. Canadian Arctic Gas Pipeline Limited had filed an application in March to construct a gas pipeline along the Mackenzie Valley from the Arctic coast.
Speech from the Throne	In the Speech from the Throne, presented on February 27 and debated in March, considerable attention was given to the international oil crisis and to the measures the federal government had taken to deal with the impact on the Canadian economy of greatly increased international oil prices. The government was endeavouring, in cooperation with the provinces, to ensure that the difficult transition to higher oil and energy-costs occurred in an orderly way so as to not cause unnecessary disruptions in economic activity, employment and prices.

Oil Import Cost Compensation Program	A Cabinet decision of March 7 provided authority for the Minister of Energy, Mines and Resources to implement an Oil Import Cost Compensation Program designed to offset the recent increases in overseas host government take and host government participation by OPEC. The unit cost of the program was not to exceed \$6.50 a barrel in the first half of 1974. The duration of the program was to be determined by the federal government's policy as to oil price levels in Canada in relation to prices prevailing on the world market. Payments to refiners and others who imported crude oil and petroleum products became effective for oil shipped on, or after, January 1, 1974. A Cabinet Decision of March 21 provided details for the administration of the Program and specified that the Energy Supplies Allocation Board would be responsible for monitoring prices and costs, and adjudicating appeals.
Heavy water plants in N.S.	In March, a decision was taken to complete the rehabilitation of the heavy water production plant at Glace Bay, N.S.. Negotiations were to take place with Canadian General Electric to determine the price of purchase of its Port Hawkesbury heavy water plant.
International uranium marketing arrangement	In March, the federal government approved in principle, subject to further consideration by Ministers, the terms of the uranium marketing arrangement agreed to among international producers at Johannesburg in January 1974 whereby the quota period for uranium marketing would be extended to 1981-83.
Petroleum Administration Act	In the debate on Second Reading in April of Bill C-18, the Petroleum Administration Act (PAA), the Minister of EMR noted that this new legislation provided support for three policy principles: that the price of oil should move upward to encourage exploration and development of oil and gas resources; that about one-half of Canadian crude oil production, that is exported, should be sold at the opportunity price in U.S. markets; and that the proceeds from such sales in the U.S. at a price higher than the domestic Canadian price should be employed to reduce the exposure of consumers in eastern Canada who would otherwise have to pay full international prices. This also provided for a single basic crude oil price to all Canadians except for transportation differentials. Part I of the PAA was designed to deal with petroleum export charges, Parts II and III with domestic oil price restraint, and Part IV with petroleum import cost compensation. Bill C-18 died on the Order Paper when the government was defeated in May 1974 and the price, export and import provisions of the bill were operated on a voluntary basis pending the re-introduction of a bill for the PAA. However, Petroleum Products Compensation Program Guidelines were approved by Treasury Board on June 13. The PAA, as Bill C-32, was introduced in October 1974 and received Royal Assent in June 1975, but from April 1, 1974 throughout the 1970s the price of domestic oil was established by informal agreement between the federal government and the oil producing provinces.
Tax base erosion	In May the Minister of Finance introduced a budget that included a number of measures to deal with the erosion of the federal tax base that had occurred as a result of action in March by the Alberta government to increase its oil royalty rate to 65 percent of the price in excess of \$3.50 per barrel, with a comparable increase in the natural gas royalty. These federal measures included non-deductibility of provincial royalties in computing federal income taxes. The federal budget was not implemented at that time as the government was defeated; however, some of the May budget measures were reintroduced in the budget in November following the election of a majority Liberal government in July.
Gentilly heavy water plant	In May a decision was taken to fund the amount of \$361.8 million for construction and start up of the heavy water plant (La Prade) near Gentilly, Quebec, the loan to be repaid by AECL out of revenue from the plant over a period of 20 years commencing in 1981
P.E.I. electrical cable	In May, it was decided to provide federal financial contributions for an electrical interconnection between P.E.I. and the mainland through construction of an interconnection cable and associated land line facilities, with federal assistance being a maximum of 75 percent of the total cost of the

cable project, to a maximum of \$12 million.

N.B. nuclear  
plant at Point  
Lepreau

In May, the federal government decided to provide loans to cover 50 percent of the total cost of a 600 MWe CANDU nuclear power plant in New Brunswick, subject to the New Brunswick Electric Power Corporation meeting certain prerequisites. This offer was in accordance with federal policy, announced at the First Ministers' Conference on Energy in January 1974, providing for financial support of the first nuclear unit in any province.

The Alberta oil  
royalty and  
federal tax  
controversy

In June the Premier of Alberta advised the Prime Minister that the proposed federal tax measures introduced in the May budget, particularly insofar as they would affect petroleum production with its base in Alberta, would seriously jeopardize the Canadian petroleum industry and related employment. One matter at issue was the proposal to cancel the tax provision whereby provincial royalties in the past could be deducted in computing a taxpayer's income. Alberta had also in September and October 1973, and in January 1974, registered strong objection to the imposition of the federal export tax on crude oil. For its part, Alberta had on December 14, 1973 eliminated any maximum ratio of gross royalty on oil production from Alberta Crown leases, and passed another Act to establish the Alberta Petroleum Marketing Commission. The Alberta Premier had advised the Prime Minister in March 1974 that the Alberta Government considered royalty revenues from depleting natural resources as capital receipts for assets sold and the plan was to place 50-75% of any incremental royalties in a capital trust fund rather than into the general revenue account of the Provincial Government. The Premier further announced the province's intention to increase its royalty on oil production by an average of 65% of the incremental revenues of any price increase over the existing average price of \$3.50 per barrel, with the result that the average royalty rate was increased from 22% to 40% of gross production. This allowed the Alberta government to take about 40% of the gross production as royalty in kind through the Alberta Petroleum Marketing Commission, as of April 1, 1974. The extent of the royalty increase was of great concern to the federal government - hence the budget provision of May 1974, confirmed in the November budget, with modifications by both governments in November and December (see notes for those months).

Uranium  
Resource  
Appraisal Group

The Uranium Resources Appraisal Group (URAG) was established within EMR to undertake annual assessments of Canada's uranium resources, and to assign a domestic reserve allocation to Canadian producers. Its first report was released in June. Subsequent reports produced on an annual basis were widely recognized, nationally and internationally, as authoritative assessments of Canada's uranium reserves and resources.

Canada-U.S. Oil  
Spills  
Contingency Plan

In June, the Canadian and U.S. governments signed the Canada-U.S. oil Spills Contingency Plan directed to measures relating to contingency planning for oil spills; vessel traffic management; environmental research; and the principles of liability and compensation relative to West Coast oil tanker traffic. In view of the decision taken by the U.S. government in November 1973 to transport Prudhoe Bay oil to market via a trans-Alaska pipeline and oil tankers, efforts were being made to lessen the hazards associated with oil tanker movements near the B.C. and Washington coasts.

Pipeline  
Application  
Assessment  
Group report -  
Mackenzie  
Valley

In July, the federal government's Pipeline Application Assessment Group completed an analysis of an application made in March by Canadian Arctic Gas Pipeline Limited (CAGPL) to construct a pipeline to transport natural gas from Alaska and the Mackenzie Delta to southern markets. The Assessment Group had been assembled by the government to make a primary assessment of the application for use by government departments and agencies concerned with the application, the National Energy Board in its hearings of the application, and by the Berger inquiry which had been established in March. The Assessment Group's analysis included a list of Requests for Supplementary Information which was submitted to CAGPL. These requests were for information which would assist the NEB and the Berger inquiry in matters relative to the social, environmental and economic impact of the proposed gas pipeline. The Pipeline Application Assessment Group also prepared a major report on the results of its studies and appraisals of social and environmental

matters that would require attention in the construction of a pipeline in the Mackenzie Valley region. The report "Mackenzie Valley Pipeline Assessment" was published in November 1974.

Uranium export policy	A new uranium export policy was announced by the Minister of EHR in September. It provides for protection of uranium reserves for the domestic market. Further processing requirements were defined. A new stockpile use policy was also announced.
Gas export price	In September following the report submitted by the NEB recommending that the export price of natural gas be based on its commodity value in the related export market area, the federal government established a uniform border price of \$1(U.S.) per Mcf., representing a 40 percent increase. (By September 1977 the price had increased in several steps to \$2.16). The increase in the border price flowed back to producers but it did not constitute an increase in the wellhead price as the federal government did not wish to increase the domestic price.
Columbia River Treaty - tenth anniversary	On September 16, the tenth anniversary of the signing of the Columbia River Treaty, several reviews and papers on the history and progress of the Treaty were published. They reviewed events leading up to the Treaty and the payment of \$273.3 million (Cdn) by U.S. utilities for downstream power in return for which B.C. agreed to build three dams - Mica, Duncan and Arrow - on the Columbia River and to operate them in such a way, as to produce optimum power and flood control benefits in Canada and the U.S. Notwithstanding the impact of inflation on the cost of the Treaty storage projects, and the related controversy this had created in Canada, proponents of the program on the occasion of the tenth anniversary concluded that: "if the power and flood control program set out in the Columbia River Treaty and related agreements was better than any comparable alternative in 1964, as it clearly was, its comparative value is even greater ten years later."
Upper Churchill power project completed - dispute with Quebec follows	in September, the Upper Churchill Falls power project was completed at a cost of \$1 billion and capable of producing 5,225,000 kW of power, one of the largest civil engineering projects in the world. In May 1974, the Premier of Newfoundland announced his government's decision to acquire the Churchill Falls (Labrador) Corporation in order to ensure that the main beneficiaries of this and any subsequent hydroelectric power developments in the Province would be its residents. In May 1976, the Premier wrote to the Premier of Quebec, further to discussions concerning Newfoundland's access to power from Churchill Falls which had been largely committed to Hydro-Québec by a 1969 contract. Newfoundland had concluded it could not proceed with development of the Lower Churchill, at Gull Island, and urgently needed a new source of power for the Island of Newfoundland. The Newfoundland Premier advised of his government's intention of seeking clarification of its legal rights in the courts, an intention that was recorded in the Newfoundland House of Assembly on June 1, 1976. Newfoundland was demanding that its recapture of power from the output of the Upper Churchill was to be at the same price being paid by Hydro-Quebec Falls (Labrador) Corp. in terms of the 1969 contract (see also notes for December 1969 and December 1980).
Speech from the Throne	In the Speech from the Throne on September 30, reference was made to the importance, in dealing with inflation, to increasing the supply of energy through various measures including the regulation of oil and gas prices in a manner which would encourage the necessary exploration and development in Canada.
Quebec position on oil and gas prices	Following the decision early in 1974, to extend the Interprovincial Pipeline to Montreal, plans commenced for completion of the line by 1976. However, in October the Quebec government took the position that oil delivered to Montreal should not be at a higher price than deliveries to Ontario. At that time, the Quebec government was looking for increased deliveries of natural gas, believing that there were distinct advantages in replacing electric power loads, by natural gas supply. Cost escalation in the James Bay hydroelectric project had become a matter of concern. For a desired build-up of its petrochemical industry, Quebec wanted both oil and gas supplies delivered to

Montreal at Ontario prices.

Petro-Canada

A bill to establish Petro-Canada was introduced in Parliament on October 3. It received Parliamentary approval, and subsequently Royal Assent was obtained in July 1975.

NEB recommends oil export reduction to avoid shortage

In November, the Minister of EMR announced the October Findings of the National Energy Board with respect to the exportation of oil and the federal government's decision to accept the Board's findings that steps should be taken to reduce exports of oil with the view to providing additional protection for Canadian oil requirements. The NEB had warned that Canadian oil resources, as then known, were inadequate to meet future Canadian requirements and, accordingly, it recommended that exports be phased out. Canadian requirements included an allocation of 250,000 barrels a day to the Montreal market as soon as the IPL extension was completed. The expectation in 1974 was that there would be a resurgence in production as the frontier areas and the oil sands opened in the 1980s. The challenge for the intervening years was to maintain a high degree of self-sufficiency. The export limit in 1975 would be 800,000 b/d, and 550,000 b/d in 1976.

Royalties non-deductible in new budget

In November the federal government brought down a budget, reintroducing some of the measures of the May budget in revised form. Royalties, taxes and other like payments to provincial governments were made non-deductible for income tax purposes. The replacement of automatic depletion by earned depletion was accelerated from January 1977 to May 1974, with the maximum depletion being reduced from one third to one quarter of production expenditures. Other changes included reduction in the allowable rate of claiming development expenditures to 30 percent from the previous 100 percent but exploration write-offs remained at 100 percent. While the corporation income tax on resource profits was increased from 46 to 50 percent, a special abatement from federal tax, together with a provincial abatement of 10 percent, reduced the not rate of tax from petroleum profits from 36 to 30 percent in 1974, 28 percent in 1975, and 25 percent thereafter.

International Energy Agency (IEA)

Throughout 1974, Canada participated in international preparations leading to an "Agreement on an International Energy Program (IEP)" and establishment of the International Energy Agency (IEA). The Agreement was signed in November. The objective of the IEP was designed to promote secure oil supplies on reasonable and equitable terms; to take common effective measures to meet oil supply emergencies; to provide cooperative relations with the oil producing countries and with other oil consuming countries; to play a more active role in relation to the oil industry; and to reduce dependence of IEA members on imported oil by undertaking long-term cooperative measures. IEA was the industrialized countries' response to the Arab oil embargo of 1973-74 and the rapid rise in oil prices imposed by OPEC

Petroleum Administration Act debate

Bill C-32 Petroleum Administration Act (PAA) was introduced on October 24 and debated in November and December. The predecessor Bill C-18 had died on the Order Paper when the government was defeated in May. Bill C-32 was an Act to impose a charge on the export of crude oil and certain petroleum products, to provide compensation for certain petroleum costs and to regulate the price of Canadian crude oil and natural gas in interprovincial and export trade. Debate on this bill included a broad-ranging review of oil and gas developments since the OPEC price and embargo initiatives of late 1973, and of the steps the federal government had taken to try to deal with the impact on the Canadian economy of those initiatives. There were also references to the confrontations, as between the federal and provincial governments, on oil tax and revenue matters that had characterized 1974, and to the cutback in oil industry activity in Western Canada that had resulted from the uncertainties during the year relating to prices, taxes and incentives. A number of drilling rigs were moved south to the U.S. at this time in the expectation of finding better operating conditions, but a number of them returned to Canada within a year or two. Debate on Bill C-32 continued in 1975. It was approved by Parliament, and Royal Assent was given on June 26, 1975.

Energy Supplies Allocation Board (ESAB)	Order-in-Council P.C. 1974-2419 of November 5, 1974 made Regulations Providing for Compensation to Certain Refiners and Importers of Crude Oil and Petroleum Products for Consumption in Canada. Also under these Regulations, the Energy Supplies Allocation Board became the responsible agency for the Oil Import Compensation Program, this function was returned to EMR in July 1976
Tax revision	In an address of December - 9 to a meeting of Federal-Provincial Ministers of Finance, the federal Minister of Finance reviewed the issue of taxation of resource industries which had been so dominant during the year and set out the federal case for having taken action on the November budget to prevent any further eroding of the tax base through the provincial royalty systems.
Uranium and Nuclear Policy - safeguards	In December, the Minister of EMR announced more stringent safeguards in respect of the sale abroad of Canadian nuclear technology, facilities, and material. Earlier in the year, in September, the Minister had announced criteria which would apply to provide for an orderly growth of the uranium industry while protecting the needs of domestic nuclear programs. These criteria included the setting aside of sufficient reserves of uranium for domestic use to enable each nuclear power reactor operating, committed for construction or planned for operation 10 years into the future, to operate at an average annual capacity factor of 80 percent for 30 years from the start of the period, or in the case of reactors which were not in operation, for 30 years from their in-service dates. The upgrading of safeguards policy announced in December called for binding assurances, from the importing country, covering peaceful uses of Canadian-supplied nuclear equipment and materials for their lifetime in accordance with IAEA safeguards; and binding recognition of Canada's right of prior consent over re-transfers, reprocessing, and enrichment of Canadian-origin nuclear materials. The stringent safeguards announced in the government's policy statement of December 20, followed upon the Indian nuclear explosion of May 1974 using a nuclear facility provided by Canada in good faith, and the new safeguards requirements, left no doubt that they were of paramount concern to the Canadian Government.
Canada-U.S. pipeline treaty concept	In December, Canada and U.S. had preliminary discussions on the possibility of a pipeline treaty which would be based on two main premises: continuity of supply and non-interference with the oil or gas of one country passing through the other country to market destinations in ,the country of origin, and the concept of non-discrimination as to pipeline tariffs and other costs of operation. Consideration of a pipeline treaty came about as a result of an inability of either country to make progress towards the construction of a northern gas pipeline for Prudhoe Bay gas or Mackenzie Delta gas.
Northern gas pipeline backgrounder - CAGPL, Maple Leaf, El Paso	In the early 1970s interest began to rise in the possibilities of constructing a natural gas pipeline to take delivery of Prudhoe Bay gas and Mackenzie Delta gas for delivery to southern markets. Two competing projects carried out considerable research and then, at the urging of the Canadian government, they combined into the project, Canadian Arctic Gas Study Limited (CAGSL). After extensive feasibility work, that consortium of 27 companies was reconstituted as Canadian Arctic Pipeline Limited (CAGPL) and it proceeded with an application to Canadian government agencies, with its first filing being in March 1974. In mid-1974, a third project was formed, the Maple Leaf Project, sponsored by Foothills Pipeline Limited, a subsidiary of Alberta Gas Trunk Line Limited (now called Nova). This system was to take delivery of Mackenzie Delta gas for Canadian markets only. On the U.S. side, El Paso Natural Gas Limited in 1973 had launched a competing project to the Canadian Arctic Pipeline project. It was to take Prudhoe Bay gas along a route across Alaska parallel to the Trans-Alaska oil pipeline, with the gas to be transported as LNG by tanker from a southern Alaska port. At the end of 1974, none of these projects was proceeding, while the Berger inquiry had only completed its preliminary hearings preparatory to the start of formal hearings in the spring of 1975.
Northern pipeline environmental -	In December, the Environmental-Social Committee of the Task Force on Northern Oil Development completed its report on environmental and regional socioeconomic matters relative to

social studies	a northern pipeline. The 197-page report provided up-to-date information on major aspects that would be affected by a proposed pipeline and it drew conclusions regarding the nature and direction of implied effects on these aspects. The report described the natural environmental setting of the study area (Mackenzie Valley and northern Yukon), the local social and economic setting, the resource use setting, and implications of proposed northern pipelines.
Gas shortage looming	At the same time in 1974-75 that progress in gaining access to Arctic gas appeared to be stalled, National Energy Board hearings were signalling a gas shortage in the remainder of the 1970s because gas resource development in Alberta had slowed down while demand was increasing. A delay in establishing a domestic pricing policy for gas was causing delays in producer decisions while the relatively low price for gas, in contrast to rising oil prices, was generating increased demand for gas. No solution to the shortage had appeared except the availability of frontier gas and now, at the end of 1974, it too appeared doubtful
Alberta reduces royalties	In December, following the federal tax announcements, the Alberta government reduced its oil and gas royalties and announced a major program to increase exploration and development. It undertook to refund that portion of the Alberta Corporations Tax arising because of the non-deductibility of royalties in the new federal tax system; and to make other tax adjustments. It also increased drilling subsidies. Saskatchewan also introduced measures to rebate a portion of the increased tax liabilities arising from the non-deductibility of royalties.
Uranium ownership control - FIRA	In December it was decided that control of the ownership of uranium and thorium mines should be effected through the Foreign Investment Review Act (see October 1975 note).
Energy conservation information program	In December a decision was taken to have the EMR Office of Energy Conservation develop and undertake an information program designed to inform the Canadian public about the importance of end-use conservation and to provide suggestions on how to effect it. The Office was also to coordinate programs of R&D on energy conservation as part of an overall energy research and development program which would identify, define and evaluate opportunities for improving the efficiency of energy use and for reducing the demand for energy.
Nelson River Transmission system equipment sourcing	In December, the federal government decided to provide loans up to 50% of the cost of financing the expansion of the Nelson River transmission system by means of the first and second bipoles, provided it would be consistent with the policy for regional electrical interconnections adopted by Cabinet in January 1974. A key feature of that policy was that purchase of equipment involving federally sourced funds should exploit opportunities for industrial and technology development in Canada. The Premier of Manitoba had been advised in a letter of May 31, 1972 from the Minister of EMR that federal financial assistance for the Nelson project would be linked with emphasis on technology and development, a position that had been repeated in many previous communications. However, Manitoba had decided to purchase additional equipment for the first bipole of the system from offshore sources and, at the end of 1974, appeared to be preparing to purchase some \$90 million of equipment for the second bipole from a West German consortium because it would be 7.7% cheaper (see note for March 1977).



## THE YEAR 1975

Glace Bay heavy water plant	In January, a decision was taken to have Atomic Energy of Canada Limited make an offer to purchase the Glace Bay heavy water plant from the Province of Nova Scotia for 20 equal installments of \$3.3 million each, commencing on the date of capitalization, or January 1, 1978, whichever was earlier.
Income tax changes and the issue of revenue sharing	In January, debate on second reading in the House of Commons commenced on Bill C-49 to amend the statute law relating to income tax. The purpose of the bill was to implement changes in personal and corporate income tax provisions proposed by the Minister of Finance in his budget of November 18, 1974. In the January 28, 1975 debate, the Minister of Finance reviewed the federal government's position on resource taxation which had been the subject of great controversy with the oil producing provinces in 1974 on the issue of what constituted a fair sharing of revenue as between industry, the provinces and the federal government. The November budget had proposed the disallowance of the deductibility of oil and gas royalties and other similar levies after the provinces had raised royalty levels from moderate to much higher levels. This action was taken to prevent the provincial levies from undermining the federal Treasury. Following the Canadian oil price increase in April 1974 from \$3.80 a barrel to the new level of \$6.50, Alberta introduced an incremental royalty of 65 percent of the increased price and Saskatchewan's royalty increase was equivalent to 100 percent of the increased price which, without a change in the royalty deductibility provision of the federal corporate income tax, would have reduced the federal share of oil production revenue to 6 percent from the existing 13 percent.
International price for Syncrude	In January, the federal government decided that international oil prices could be applied to the production of synthetic crude produced at the Syncrude plant in the oil sands area of Alberta. There would be an upward quality adjustment in the price, less transportation costs from Montreal back to Syncrude plant. In addition, royalties paid to the Government of Alberta were to be deductible for income tax purposes
Syncrude oil sands plant to proceed with government partnership	The Governments of Canada, Alberta and Ontario in February reached an agreement with the three participants of Syncrude Canada Limited to form a new partnership to continue to build and to operate the Syncrude oil sands plant. The federal, Alberta and Ontario shares of the equity were 15 percent, 10 percent and 5 percent, respectively, the federal commitment being \$300 million.
National conservation policy	In February the Minister of EMR announced an energy conservation program for Canada, directed to reducing the rate of growth in energy consumption in the residential, industrial and transportation sectors. A major statement introducing the program was made in the House of Commons on February 6.
Gull Island project - Lower Churchill	In February, the federal Cabinet authorized a 30-year loan of \$343 million in respect to 50 per cent of the cost of a transmission system from the proposed 1800 KW Gull Island hydroelectric station on the Lower Churchill River to terminal points on the Island of Newfoundland, a distance of about 690 miles including a crossing in a 11.5 mile tunnel of the Strait of Belle Isle. In March 1974 the Newfoundland government had asked the federal government for financial assistance on the project following a number of studies dating from the late 1960s. A joint federal-provincial task force reviewed the project in 1974 and confirmed Newfoundland's contention that the Gull project represented the least cost method of meeting the expected growth in electrical energy demand in Newfoundland. In 1975 Newfoundland continued its technical studies and, by March 1975, revised estimates had raised the expected total cost of the project from the 1974 estimate of \$1.1 billion to \$1.4 billion, excluding interest during construction of \$409 million. Further revisions resulted in a September 1975 total cost estimate of about \$2.3 billion which, among other factors, led to further delays until February 1978 when a new federal-Newfoundland agreement in principle was reached to establish the Lower Churchill Development Corporation as a basis for the

development of the hydroelectric potential of the Lower Churchill River.

oil price guidelines	In February, further oil price guidelines were announced to provide for oil companies to recover non-crude oil cost increases
Task Force on Northern Oil Development reports	In March, the four-year Environmental-Social Program of the Task Force on Northern Oil Development was completed. The Task Force was established in 1968, as an interdepartmental group, to advise the federal government on all regional and national matters relating to northern oil and gas development. The Environmental-Social Committee was one of six committees of the Task Force. By the end of 1974-75, some 275 reports based on work carried out under that Committee's program had been published, including the general overview report "Mackenzie Valley-Northern Yukon Pipelines: Socio-economic and Environmental Aspects."
Montreal oil pipeline (IPL) deficiency agreement	A Deficiency Agreement was concluded by the federal government and Interprovincial Pipe Line Limited (IPL) in February as a pre-condition to construction of the oil pipeline extension from Toronto to Montreal. This Agreement included a provision whereby, if in any calendar year of its operation, the operating revenue of the IPL section from Sarnia to Montreal was insufficient to meet fixed and variable costs, the company would be paid the amount of the deficiency by the federal government. The Agreement was signed on April 8, 1975.
oil sands environmental study	Agreement was reached between the federal and Alberta governments in March on the establishment of a \$40 million program, over 10 years, for coordination, funding and implementation of the Alberta Oil sands Environmental Research Program to obtain data that could be used to devise measures for the protection of the environment during the recovery, transport and processing of oil sands products.
West Coast transfer shipments threat	A voluntary traffic plan for Canada/U.S. joint management of ships in the Puget Sound/Juan de Fuca area of the West Coast went into effect in March following expressions of concern on both sides of the border about the hazards of tanker shipment of Alaska crude oil along the B.C. coast, scheduled to begin in 1978.
Agreement on construction of IPL pipeline to Montreal	Final agreement was reached in March between the federal government and Interprovincial Pipe Line Limited on the construction of a crude oil pipeline extension eastward of Toronto to Montreal, a proposal that had been considered at various times since the late 1950s. The oil embargo and large oil price escalations in the winter of 1973-74 had convinced the federal government of the need to provide consumers in Eastern Ontario and Western Quebec with access to more secure domestic oil supplies.
Petro-Canada bill tabled	Bill C-5, An Act to establish a national petroleum company was debated in March and a major statement was made by the Minister of EMR on second reading, on March 12, on the objectives for the company.
Foothills Pipe Lines Ltd. Maple Leaf application	In March, Foothills Pipe Lines Ltd. submitted an application to the NEB and the Department of Indian and Northern Affairs to construct its Maple Leaf gas pipeline along the Mackenzie Valley from the Mackenzie Delta to northern Alberta. The Foothills Maple Leaf project had been formed in mid-1974. Prior to that time, Canadian Arctic Gas and Foothills had worked together in Canadian Arctic Gas Study Limited relative to a Mackenzie Valley application which had been filed in March 1974.
Canada/U.S. energy relations	At a meeting in March of the Canadian/American Committee, the U.S. government position was one of acceptance of the need for Canada to cut back on its oil exports to the U.S. but strong resistance to any curtailment of natural gas exports, the view being that any breach of current export contracts would be a serious blow to Canadian/American relations. At that time there was

evidence that deliverability from conventional gas reserves in Canada was declining.

Fundy Tidal studies	In March, negotiations were commenced toward an agreement with the provinces of N.B. and N.S. to undertake studies of the development of tidal power in the Bay of Fundy, with the studies to be generally in accordance with the recommendations contained in the report of the Bay of Fundy Tidal Power Review Board, dated September 1974. The federal government committed to 50% of the estimated cost of \$3 million, with the two provinces to share the balance of the costs. The Review Board, consisting of representatives of Canada, N.B., and N.S., would continue to oversee the conduct of the studies.
An end of reliance on the market system in oil pricing	Energy policy planning in March, following assessments of international and domestic trends since publication of the report in mid-1973 of "An Energy Policy for Canada - Phase I", was leading to the conclusion that the general characteristics of the energy policy planning environment implied an end of reliance on the market system for determining oil and gas prices for the foreseeable future, and an acceleration in Canada, and many other countries, of attempts to move towards greater self-reliance in energy at greatly increased costs.
First Ministers= Conference	A First Ministers= Conference on Energy was held on April 9-10 but no consensus was reached as to the timing of the next crude oil price increase. Consuming provinces resisted further increases scheduled for July 1, 1975. The First Ministers' Conference had failed as a forum for price negotiations.
Petroleum Administration Act passed	The Petroleum Administration Act was passed by the House of Commons in April and subsequently by the Senate. This legislation gave the federal government the ultimate authority over oil and gas pricing. The Act received Royal Assent in May. It came into force in June, 1975.
Canadian Energy Research Institute	In April the Department of Energy, Mines and Resources, the Alberta Department of Energy and Natural Resources, the Private Energy Research Association (a group of energy companies), and the University of Calgary entered into an agreement to establish and fund the Canadian Energy Research Institute. The Agreement was signed on March 24, 1975 and execution of the Agreement by the Minister of EMR, on behalf of the federal government, was approved on April 8 by P.C. 1975-744. The purpose of the Institute, located in Calgary, is to investigate energy problems, in particular the medium and long-range problems of the energy sector in Canada, and to develop a recognized and respected economic research capability in all energy matters.
NEB report on gas supply and requirements	In a report entitled "Canadian Natural Gas Supply Requirements", dated April 1975, the National Energy Board concluded that an actual and potential shortage of natural gas, until natural gas from Frontier areas was connected, resulted from two factors: a lack of adequate growth in deliverability due to low discovery rates and a lack of incentive to explore and develop new reserves; and a high rate of growth in gas demand in Canada partly because of underpricing of gas in relation to other fuels. The Board made a number of recommendations aimed at alleviating the impending shortage in the 1970s, including measures for raising prices, conserving energy, and placing conditions on export commitments so that priority could be given to Canadian demand (see July note).
Natural gas export price increases	In May, the Minister of Energy, Mines and Resources announced further changes with respect to the pricing of natural gas exports to the United States. They were scheduled to increase to \$1.40/Mcf effective August 1, 1975 and to \$1.60 effective November. An export price of \$1.00 had become effective on January 1, 1975. The policy was to have natural gas exports priced in a competitive relationship to energy alternatives in the U.S., and to have the price phased to the equivalent price of crude oil in the domestic market.
Energy R&D program activity	In May, the federal government decided to give high priority to the funding of new energy R&D programs, responding to the priorities of Canada's energy policies and requirements. A new

increased	program and organization structure was adopted, consisting of six Tasks to develop and implement the program. EMR's Office of Energy R&D (OERD) was to be strengthened to serve as a focus of federal energy R&D activities and their extension nationally and internationally. The six Task related objectives were identified as follows: reduce consumption of energy and/or increase efficiency; increase domestic non-renewable energy production; substitute other energy sources for oil and gas; develop nuclear capability; exploit energy resources; and improve transportation and transmission systems.
Construction of IPL extension to Montreal authorized by NEB	On May 20, the National Energy Board authorized Interprovincial Pipe Line Limited (IPL) to start construction of a 520-mile oil pipeline between Sarnia and Montreal, with an initial capacity of 300,000 barrels a day and provision for expansion to 600,000 barrels a day. The NEB conducted hearings over the period May 14, 1974 to April 11, 1975 relative to the \$185 million project.
June 1975 budget: oil and gas prices increased; excise tax on gasoline levied	The federal budget brought down in June provided for an increase in the crude oil price to \$8.00/barrel, from \$6.50; a special 10 cent excise tax on motor gasoline for non-commercial use; the increase to \$1.25/Mcf, effective November 1, 1975, of the Toronto city-gate price of Alberta natural gas; and an increased tax incentive to those companies that increased exploration activities. The 10-cent excise tax on gasoline was designed to close the gap between the cost of oil import compensation and export charge revenues although it was not designated as such.
Petroleum tax system modifications	The June budget introduced two modifications to the taxation system for petroleum to take effect in 1976. The special tax abatement introduced in November 1974 was to be replaced by a resource allowance, by which companies could deduct 25 percent of their adjusted production income. This resource allowance recognized the special position of the provinces in respect of resources and met, to a degree, the request for some form of deductibility of provincial levies. Since the resource allowance was based on production profits before the deduction of exploration and development, it also increased the incentive to explore and develop. At the same time, the corporation tax rate was reduced from 50 percent to 46 percent, the same rate applying to most other corporate activities; the net federal tax rate, because of the withdrawal of the resource abatement, increased from 25 percent to 36 percent, but it now applied to a lower tax base. These changes reduced slightly the anticipated federal share of resource revenues and increased substantially the incentives to explore for and develop new petroleum resources.
Petroleum Administration Act in force	The Petroleum Administration Act (PAA) came into force in June providing a legislative base for oil Import Compensation which had been administered under regulations since June 1974. Under Part II, Division II of the PAA, the federal government was given powers to enforce the price of crude oil in interprovincial trade if agreement could not be reached with a producer province. Similar powers were provided under Part III with respect to natural gas pricing (see November 1974 note). The Petroleum Administration Act (S.C. 1974-75 c.47) also gave authority to the National Energy Board to administer Part I of the Act dealing with petroleum export charges, making this function effective from April 1, 1974. Part IV of the Act provided for compensation of certain petroleum costs.
Canada/U.S oil exchanges	Canada/United States understanding was reached on oil "swapping" arrangements in June. Following bilateral discussions, the two governments implemented an arrangement whereby companies were permitted to complete commercial exchanges of oil, if consistent with broad energy policy guidelines and if they were designed to assist raw material supply to Canadian-dependent U.S. refiners while affording commercial benefits to the Canadian exchangers. Over the previous 10 years, a number of U.S. oil refining companies, situated near the Canadian/U.S. border, had relied for an important portion of their refinery feedstocks on crude oil and other hydrocarbons purchased from Canadian suppliers. Reflecting declining production and increasing domestic demand forecasts, the National Energy Board had released in November 1974 a schedule of declining petroleum feedstocks available for export for the period 1975 through 1983 when

exports would be terminated completely. In an effort to alleviate the problem being faced by U.S. refiners and other end-users of Canadian petroleum feedstocks, the two governments concluded that exchanges of oil between U.S. and Canadian refining companies would be an effective way of dealing with the problem. Canadian supplies delivered to U.S. areas in proximity to the international border in western Canada would be offset by U.S. supplies delivered to refineries in eastern Canada.

Obligations underlying nuclear policy

In an address to the Canadian Nuclear Association in June, the Prime Minister identified three obligations underlying the Canadian government's nuclear policy: the obligation to share nuclear technology with other countries thereby contributing to the quest for social and economic justice in the developing countries; the obligation to insist on the most stringent of safeguards to ensure that nuclear devices, materials and technology from Canadian sources are not used for explosive or illegal purposes; and the obligation to be supportive of Canadian initiative and competence in technologically advanced energy fields, including nuclear energy, thereby to provide safe sources of energy, protect the environment and foster a competitive industry.

Reduction in provincial royalties

In July Alberta reduced its effective royalty rate for oil from 65 percent to 50 percent, on that portion of the price between \$6.50 and \$8.00 a barrel. Saskatchewan also initiated tax modifications.

Oil price guidelines

In July, federal government oil price guidelines were announced to provide for an increase in the wholesale price of oil products, equivalent to the \$1.50/barrel increase in crude oil, effective 45 days following July 1 when the crude oil price became effective.

NEB report on natural gas supply and requirements - government response

In a news release of July 15, the Minister of Energy, Mines and Resources commented on the Natural Energy Board's report "Canadian Natural Gas Supply & Requirements" which was prepared following extensive public hearings held across Canada in late 1974 and early 1975, and published in April. The Minister noted that the Board's report confirmed earlier concerns that natural gas supplies would not be adequate in the near term to meet both projected increases in domestic demand and existing export commitments. Some curtailment of export contracts was accordingly indicated while growth in demand would have to be restrained until frontier supplies of gas became available. The last major commitment of natural gas to export had been in 1970 when certain surpluses were declared, but since then, new discoveries had not taken place as expected. The OPEC oil price increases had left gas underpriced in the domestic market with resultant demand increases. Price adjustment was now underway and conservation programs had been initiated. In its April report, the NEB also set out procedures for determining gas surpluses.

The gas export cut-back issue

The NEB report on Natural Gas Supply & Requirements led immediately in July to a consideration of the extent and method of phasing down gas exports having regard to the requirement under the NEB Act to protect future Canadian requirements and, at the same time, being as Responsive as possible to U.S. concerns regarding the dependence of certain areas on Canadian gas supplies. The Minister noted that: "Agreements will be required which are flexible as to the amount and timing of any cutbacks in exports; which focus not only on exports but equally on reductions of unnecessary or wasteful consumption in Canada; which avoid the seemingly simple solution of attempting to meet the problem entirely at the expense of the U.S. customers; and which maintain the essential principle that after reasonable consultations, Canadian authorities must make the decision as to the quantities of Canadian gas to be exported." At the same time, the U.S. Administration had made clear its concern about any unilateral action by Canada to cut off or reduce gas exports under existing long-term contracts. The circumstances in mid-1975 regarding natural gas supply and requirements illustrate well the difficulty of maintaining the delicate balance between supply and demand, and the importance of price in that process

Petro-Canada legislation

In July, legislation to establish a national petroleum company, Petro-Canada, was approved by Parliament and Royal Assent was given on July 30. The purpose of the Petro-Canada Act: "is to

approved	establish within the energy industries in Canada a Crown owned company with authority to explore for hydrocarbon deposits, to negotiate for and acquire petroleum and petroleum products from abroad to assure a continuity of supply for the needs of Canada, to develop and exploit deposits of hydrocarbons within and without Canada in the interests of Canada, to carry out research and development projects in relation to hydrocarbons and other fuels, and to engage in exploration for, and the production, distribution, refining and marketing of, fuels." The Act was proclaimed on July 30
Polar Gas Project	The federal government in July approved the participation by Petro-Canada in the Polar Gas Study Group to help the development of an information base on the technical feasibility as well as on the economic, social and environmental costs and benefits of transporting natural gas from the high Arctic to the Canadian market
Oil Import Compensation Program	The Oil Import Compensation Program was amended in July so that compensation for crude oil imports would be paid on a flat rate basis rather than using rates varying with crude type, source and landing points. Compensation was based on the difference between the theoretical average cost of three foreign crudes and equivalent quality Canadian crude at Toronto. To protect domestic refineries, petroleum product compensation was set at \$1.50 per barrel below the crude oil rate.
Columbia River plant - Libby	The Columbia River Treaty Libby Generation plant on the Kootenai River in the U.S. became operational and the plant was dedicated by U.S. President Ford and the Hon. Donald S. Macdonald on August 24.
Northern gas pipeline applications	In August the National Energy Board announced that it would commence hearing the applications of Canadian Arctic Gas Pipeline Ltd, and Foothills Pipelines Ltd. on October 27. Thus, the hearing process was commencing after at least five years of preparation involving initially two groups, then one large consortium, and then the realignment of participants again into the two groups noted above. Canadian Arctic Gas Study Ltd. continued the program commenced by the two initiating groups and on March 21, 1974 it made application, under the name of Canadian Arctic Gas Pipe Line Ltd., to Canadian and U.S. authorities to construct a gas pipeline to take Alaska gas across the Yukon and deliver it, along with Mackenzie Delta gas, through a 48-inch pipeline to southern markets. Foothills Pipeline, whose principals were participants in the Canadian Arctic Gas Pipe Line proposal until they left that group in mid-1974 to establish their own project, filed with Canadian authorities in March 1975 to construct a pipeline along the Mackenzie Valley to take delivery of Mackenzie Delta gas only. Mr. Justice Berger's Inquiry, to examine regional, social, environmental and economic aspects of the application for a pipeline right-of-way started its formal hearings in March 1975 after a year of preliminary study.
Natural gas revenue flowback and pricing decisions	An agreement was reached in September between the federal government and the Government of Alberta on natural gas pricing and on the flowback to producers of extra revenue from gas at the higher export price. It was a matter of policy to phase the export price of natural gas to commodity value with competitive fuels in export markets. The border price had been increased to \$1.00/Mcf on January 1, 1975. It was further increased to \$1.40/Mcf in August 1975 and to \$1.60 in November. The effect of the domestic and export pricing decisions, and of the export flowback provision, had been to increase the field price of Alberta natural gas to about 95¢/Mcf in the latter part of 1975 which, in turn, began to stimulate exploration and development of new gas resources.
Dominion Coal Blocks	in September, a recommendation was made by the Minister of EMR for a federal exploration program in the Dominion Coal Blocks in southeast British Columbia. The possibility of opening up this major resource, estimated at 8.6 billion tons of bituminous coal, had been under consideration for many years. The Government of Canada holds rights to the 50,000 acres of coal-bearing lands of the Coal Blocks under terms of the Crow's Nest Pass Act of June 29, 1897 but a clause of that Act had stipulated that the coal could not be sold at a price exceeding \$2.00 per ton. In addition, during the 1960s and 1970s, the British Columbia Government had challenged the

Federal Government's ownership of the coal rights. While a number of companies had expressed interest in the 1960s and 1970s in developing this resource, particularly in relation to export opportunities, these two constraints had prevented any mine development activities. In addition, with the decline in world coal demand in the late 1970s and early 1980s, and the related decline in coal prices, there was less incentive to open up this resource. Detailed resource evaluations were also stalled. The \$2.00 selling price restraint was eventually removed with the passing of the Western Grain Transportation Act in late 1983 and in the mid-1980s consideration was being given by the federal and B.C. Governments to the possibilities of negotiating the ownership issue.

Second NEB report on oil supply and requirements

In September, the National Energy Board issued its second report on Canadian oil supply and requirements, with a focus on the need for oil export reduction. It followed a similar report published in October 1974, both of which showed declining producibility and shrinking surpluses.

FIRA review of uranium exploration

In October, Part II of the Foreign Investment Review Act, relating to review of new businesses, came into force. As a result, any company that was not exploring for uranium prior to October 1975 was henceforth to be reviewed by the Federal Investment Review Agency (FIRA) to determine whether or not any proposed exploration programs by foreign companies would be of significant benefit to Canada

Heavy water capacity

A survey of heavy water production capacity in Canada in October indicated that Ontario Hydro and Atomic Energy of Canada Ltd. had enough capacity in operation and coming on stream to supply five new nuclear plants every year. The Bruce, Ontario and Port Hawkesbury, N.S. plants were operating and five other plants were under construction which, if completed, would raise Canadian production to more than 3 300 metric tons of heavy water a year. Of the five proposed plants, three more were scheduled for the Bruce site, to be in production by 1980. The Glace Bay, N.S. plant, after 10 years in construction, was expected to reach the production stage in 1976, and AECL was building a plant at La Prade, Quebec. Of the three scheduled Bruce site plants, Bruce B went into production at 800 tons of heavy water per year in 1979, Bruce C was cancelled, and Bruce D was started but later mothballed.

Northern gas pipeline hearings

National Energy Board hearings on applications of Canadian Arctic Gas Pipeline Ltd. and of Foothills Pipelines Ltd. to construct northern gas pipelines commenced in October.

Natural gas pricing and flowback agreement announced

On October 20 the governments of Canada and Alberta announced an agreement on the pricing of natural gas. The price of gas in Canada was to be determined by the wholesale price at Toronto. The wholesale prices at locations between the Alberta border and Toronto would be a function of pipeline transportation costs: the Toronto city gas price, less the Alberta-Toronto transport cost plus the cost of transportation to a given location. The price of \$1.25 at Toronto, fixed until June 30, 1976, was 85 percent-of the crude oil equivalent price. The objective was to gradually move towards the crude oil equivalent rate. Also under the agreement, the Alberta government was to receive the additional revenues from the higher export prices and distribute them to Alberta producers including those serving only the Alberta market.

Anti-Inflation Program, Oct. 1975 - Dec. 1978

On October 14, the Minister of Finance tabled a policy statement in the House of Commons on a program of national action concerning inflation. The federal government had concluded that it had become essential to undertake a concerted national effort to bring inflation under control. The program set in motion included fiscal and monetary policies, government expenditure policies, structural policies, and a prices and income policy which established guidelines for determining prices and incomes of groups together with machinery for administering these guidelines and ensuring compliance (see note of December 1978 on review of the AIP).

Toronto gas price - \$1.25Mcf

The Toronto city-gas price of \$1.25 per Mcf for natural gas became effective on November 1 as a result of the June budget and the federal Alberta agreement of October, being 85 percent of the oil

- \$1.25Mcf	price equivalent.
Canada-Alta. Gas Pricing Agreement	Prior to November 1975, the price for natural gas in interprovincial trade was determined by negotiation between producers and TransCanada PipeLines (TCPL). TCPL was the sole purchaser and carrier of gas into interprovincial markets east of Alberta. It sold its gas to provincial distributors at the city gate at negotiated prices. The transportation component of the price has been regulated by the National Energy Board. The passing of the Petroleum Administration Act in June 1975 provided for the federal prescription of city-gate prices and led to the negotiation of the first Canada-Alberta Gas Pricing Agreement effective November 1, 1975. From 1975 until 1985, the price of Alberta natural gas sold in interprovincial trade was administered under agreements between the governments of Canada and Alberta. During this period, natural gas prices were linked to crude oil prices.
Significant federal - provincial adjustments to 1973-74 OPEC price escalation	As part of the process at the federal and provincial levels in 1975 of adjusting tax regimes to new conditions of pricing and revenue requirements, the Government of Saskatchewan in November made plans to replace complex legislation and regulation with a single system related to productivity and to initiate a new royalty which would raise producers' returns. By the end of 1975 governments in Canada had made significant adjustments to the new oil price circumstances initiated by the four-fold international oil price increase of late 1973 - early 1974.
oil exports to be phased out	In November, the Minister of Energy, Mines and Resources announced a reduction in crude oil exports to the United States following publication in September of a report on Canadian oil supply and requirements by the National Energy Board. The reduction called for a phasing-out of oil exports by 1981.
Conservation vital to adequate energy supply	An address given by the Minister of Energy, Mines and Resources in November emphasized the importance of energy conservation initiatives by noting that oil forecasts were indicating a short-fall in oil supply in areas west of the Ottawa Valley by 1981; and similarly for gas, spot shortages starting late in the 1970s with a gap between domestic gas demand and conventional supplies by 1984 unless concerted action was taken to cut back on exports and greatly improve the efficiency of energy use in Canada through conservation measures.
Energy Ministers= Conference	An Energy Ministers' Conference was held on December 12 on energy supply and demand, conservation, pricing and energy research and development. This was the first of several such meetings of federal and provincial Energy Ministers held in the following three years. A forum was thereby provided to give continuing attention to the problems that had been generated by the OPEC initiatives of 1973-1974 when international oil prices increased four-fold in a short period of time.
The poor record in energy forecasting	International oil industry forecasts made in December predicted OPEC crude oil production at 37 million barrels a day for 1985 (actually OPEC production in 1985 was about one half that amount). Forecasts being made in the 1970s were not foreseeing the demand restraint impacts of conservation and world recession, nor the extent of new oil supply from the North Sea and other new sources. Neither had there been any forecasts in the early 1970s of the large 1973-74 oil price increases. The predictions of natural gas shortages in Canada, made in 1975, are further illustrative of the difficulties of energy economy forecasting.
Conference on International Energy Cooperation (CIEC)	Canada played a prominent role in the Conference on International Energy Cooperation (CIEC) held in Paris in December. CEIC, part of the "North-South dialogue", had two main objectives: western industrialized countries were looking for stable oil prices; Third World countries were seeking a bigger share of the world's resources. The oil producers of the Third World countries insisted on their unilateral right to supply and fix prices for oil. At the same time, industrialized countries opposed any concept of indexing the price of oil to the cost of other goods and services.



Anti-inflation program	Anti-inflation legislation was passed by Parliament in December, two months after the Prime Minister had announced the government's intention of imposing a system of controls on rising prices and incomes. In an address in November the Minister of Energy, Mines and Resources stated that two extremely important and critical subjects held the national spotlight: anti-inflation measures and the country's energy concerns, with the most urgent concern of Canadians being inflation. AIP pricing guidelines became, a condition of oil import compensation eligibility.
Coal policy re self-sufficiency	During 1975 considerable attention had been given to a comprehensive Canadian policy on coal. In December, it was decided that further study should be made of the matter of granting to Canadian consumers first right of refusal of future supplies by producers, before the latter entered into export commitments. The possibility of protecting domestic requirements by making long-term export contracts subject to annual review was also to be assessed. In this context, the appropriateness of the Export and Import Permits Act was to be examined as a means of protecting domestic requirements. The attention being given to coal policy reflected the government's view that the orderly expansion of coal production and utilization represented an important element in the policies aimed at restoring Canada's self-sufficiency in all energy sources.
IEA Long-Term Program commitment	Canada participated extensively in the development of Long-Term International Energy Agency (IEA) programs in 1975. In December, it was decided that Canada would fully support the IEA program for Long-Term Cooperation on Energy with the exception that it would seek an exemption from the general commitment concerning access to energy production and national treatment for investment. At the same time, Canada accepted the commitment to "Guiding Principles" for project by project cooperation, on grounds that the provisions concerning the determination of the Host Government offered sufficient protection for Canadian interests. It also accepted the system of a Minimum Safeguard Price with the establishment of a price level for oil in the range of \$6 to \$8 a barrel.
New energy conservation initiatives	Based on extensive study, the federal government decided in December to set a conservation target of limiting the annual rate of growth of total primary energy consumption to no more than 3.5% between 1975 and 1985. To this end, the National Research Council was to coordinate the establishment of guideline criteria for the design and operation of energy efficient buildings by the end of 1976. Other measures to be pursued by government and industry included: district heating, greater fuel economies in new automobiles, the use of energy-efficient public transport, minimum energy efficient standards for furnaces, home and office appliances, etc., improved efficiency in air transport, increased attention to energy conservation in the administration of industrial assistance programs, energy audits of industrial operations with possible support in terms of matching grants or loans, increasing attention to home insulation, possible capital cost allowances in the purchase of energy conserving equipment, and increased mileage standards in automobile operation to no less than 27 miles per gallon by 1980 and 33 by 1985.
Panarctic Oils Ltd.	Panarctic Oils Ltd., formed in 1967, commenced an active drilling program in the Arctic Islands in 1969 and continued each year with 3 to 5 drilling rigs. By December 1975, five gas fields had been discovered containing an estimated 12 trillion cubic feet, about one half the reserves required to support a pipeline from the Arctic Islands to southern markets. The largest of these fields, Hecla and Drake Point, were drilled offshore from Melville Island using an ice platform technique.
Oil export reduction	Based on the NEB report released in September, which pointed to the need for further oil export reduction, the target set in December for the first half of 1976 was 510,000 b/d, and for the second half, 385,000 b/d, for an average in 1976 of 460,000 b/d. The plan in 1974 had been for a reduction to 540,000 b/d in 1976. The intention in 1975 was to phase out oil exports by the early 1980s to protect future Canadian requirements.
Energy outlook at end of 1975	The energy outlook at the end of December was that, even with an energy price structure substantially higher than that prevailing in Canada at the time, Canadian dependence on imported

oil would continue to increase at least until the mid-1980s with a balance of trade deficit for oil as high as \$4.5 billion in 1980. It was further indicated that a natural gas shortage could persist until the availability of frontier gas in southern markets was established, necessitating some reduction in committed exports to the U.S., and thereby lessening the degree to which natural gas exports could be expected to offset the balance-of-payments impacts of persistent oil deficits. The conclusion reached was that strong policy responses directed at increasing energy supplies and reducing energy demands were needed along with policies directed towards the substitution of domestic energy resources for imported oil. Accordingly, the focus was on frontier oil and gas supplies and northern pipelines, conservation, energy investment, and pricing policies, and on development of the Athabasca oil sands with some predictions of 10 to 15 plants by 1990 producing a total of one million barrels a day from this resource.

## THE YEAR 1976

Energy R&D priorities and new funding	In <u>January</u> a decision was taken to allocate new federal Funding on energy R&D to six major energy areas directed to: conserve energy, maintain an adequate supply of liquid fuels, use coal as a substitute for liquid fuels, use nuclear power, develop renewable sources of energy, and to promote transportation and transmission R&D. Activities concerned with R&D were to be pursued simultaneously in these six areas but where priorities were modified by fiscal restraint, the order of priority would rate energy conservation first followed in order by the other 5 categories but with transportation and transmission R&D related to the appropriate commodity priority ratings. For 1976/77, there was to be additional funding of \$9.7 million and 64 person-years made available for the increased energy R&D programs. The increased funding, announced in March, increased the total expenditures on energy R&D to \$123 million.
Petro-Canada in operation	Petro-Canada commenced operations early in January, the Petro-Canada Act having been proclaimed July 30, 1975.
Oil and gas export cut-back predicted	In addressing a U.S. audience in January, the Minister of Energy, Mines and Resources predicted that by the early 1980s Canada would have insufficient oil and gas to meet its domestic needs and for that reason it was having to curtail exports of oil, and a cut-back in natural gas was also a possibility. New supply from the frontier regions was the main hope for the 1980s and beyond; although these new oil and gas sources would be costly to develop.
Canada commits to IEA Long Term Program	On January 30, Canada agreed to adopt chapters I to IV of the Long Term Program of the International Energy Agency (IEA). The IEA had been established the previous year and Canada became a member of this organization which had the overall objective of taking measures to protect its members from the full impact of OPEC oil price increases and possible oil supply disruption. The Long Term Program, (LTP) complemented the other IEA activities: the emergency sharing scheme; the information system on the international oil market; and cooperative relations with oil-producing and other consuming countries. The LTP provided four main cooperative elements., of which Canada accepted three: conservation; accelerated development of alternative sources of energy; and energy R&D. It did not accept the fourth element, under which IEA Member Countries would endeavour to provide to nationals of other IEA countries treatment no less favourable than that afforded to their own nationals with regard to energy investments, the purchase and sale of energy, and the enforcement of rules of competition. Those commitments could not be accepted for constitutional, legislative and policy reasons.
Energy strategy statement	In February, preparations were being made to finalize a national energy strategy, to be implemented within economic and fiscal policies and with as much provincial acceptance as possible. The statement was to focus on federal energy policies and programs as they had evolved over the previous two years; on Canadian energy prospects and problems to 1990; and on the elaboration of a positive, credible and broadly acceptable national energy strategy. The goal of energy self-reliance was to be defined but not in such a way as to imply any commitment by the government to provide guaranteed prices for the oil and gas throughput of northern pipelines, in order to ensure their economic viability, nor to imply any other commitment by the Canadian government to the construction of such pipelines, nor to imply any other commitment to the development of non-competitive domestic energy sources.
Radioactivity cleanup	On February 19, the Minister of Energy, Mines and Resources announced in the House of Commons the formation of a federal-provincial task force to expedite the cleanup of radioactive contaminants in the Port Hope area of Ontario and to assist the Atomic Energy Control Board in assessing the significance of radioactivity in other locations in Canada. A total of 109 locations in 25 areas were identified as having known or suspected radioactivity.
New energy conservation	On February 26, the Minister of Energy, Mines and Resources announced a number of new energy conservation programs. A package of regulations, guidelines and incentives constituted the first

measures	major federal measures to enforce conservation. These measures included mileage standards for new cars (to provide for an average for all Canadian cars by 1985 of 28 miles per gallon); new building codes; financial encouragement, through revisions of CMHC loan and grant programs, for home insulation; minimum energy efficiency standards to be applied to furnaces and home appliances; industrial assistance programs to emphasize conservation; and reduction of energy consumption in federal facilities ("save 10" program).
Energy Supplies Allocation Board (ESAB)	In March, it was decided that, in view of the expiration of the Energy Supplies Emergency Act on June 30, (ESAB) 1976, the Energy Supplies Allocation Board would continue to administer the oil import compensation program, pursuant to the Petroleum Administration Act, beyond that date and other programs which might be delegated by the Minister of EMR. It was also decided to revoke departmental status of ESAB under the Financial Administration Act and to appoint public servants to the Board
IPL extension to Montreal	In March a decision was taken to ensure that Montreal refiners would be given access to Western Canada crude oil at the same delivered cost as Toronto refiners. Interprovincial Pipe Lines Limited was to be compensated for the differences between its revenue from the extension and the fixed and operating costs through the Deficiency Agreement signed in February 1975 between the federal government and IPL. Following this interim measure, oil prices would be adjusted through the Import Compensation Program to the extent that was needed to make it attractive for Montreal refiners to ship via IPL without subsidy and without the government incurring further deficiency payments. The Minister of EMR was to take such steps as were necessary to ensure that Montreal refiners provided a market for Western Canada crude, building up to 250,000 barrels a day by the fourth quarter of 1976. The Montreal Crude Use Program, initiated when the pipeline began operations in June, required refinery participation as a condition of import compensation.
Energy R&D increases	Following the decision in January to increase energy R&D funding by \$9.7 million in 1976-77, details were announced in March. Of the total increase, \$1.8 million was for conservation; \$1.5 million for oil sands and heavy oils; \$2.5 million for coal gasification and related coal research; \$1.1 million for nuclear energy; \$1.7 million for energy transportation, including electrical transmission; and \$1 million for renewable energy R&D. Notwithstanding these increases, nuclear energy R&D was still accounting for about 70% of total energy R&D funding of \$123 million.
Northern pipeline studies	By the end of the 1975-76 fiscal year, in March, some 400 reports based on work carried out under programs in the Mackenzie Valley and northern Yukon relative to proposed pipelines, had been published. While a large proportion of these reports had been published under the authority and \$15 million budget of the Environmental-Social Committee of the Task Force on Northern Oil Development, established in December 1968, many other reports and papers were published by the participating departments and in the proceedings of conferences and seminars or in professional journals. In addition, some studies were conducted in 1975-76 by the Environmental-Social Committee in the Eastern Arctic, north of Spence Bay, relative to the proposed eastern Arctic pipeline of the Polar Gas Project, but further work was withheld pending a decision on the routing east or west of Hudson Bay. The studies and reports completed under auspices of the federal government in the first half of the 1970s in preparation for pipeline proposal decisions, and the extensive feasibility work conducted by companies in support of their pipeline proposals, constitute a large body of knowledge concerning, in particular, the Mackenzie River Valley and northern Yukon regions.
Loan on CANDU for Argentina	In April approval was given for a loan of \$25 million, under the Export Development Act, in support of the renegotiated AECL contract to supply a 600 MWe CANDU nuclear steam supply system to Argentina. This was in addition to a previous loan of \$129.45 million. The interest rate on the \$25 million loan was to be 9 2%, repayable semi-annually over 15 years. Earlier in the year, a decision had been taken to renegotiate the commercial terms of the contract to supply a CANDU reactor. The reactor was placed in service at Cordoba in 1983.

Northern gas pipeline hearings	The National Energy Board began its northern natural gas pipeline hearings on April 12. Three proposals were being considered. Canadian Arctic Gas Pipeline Ltd. had proposed a pipeline from Prudhoe Bay, Alaska, east to the Mackenzie Delta then south along the Mackenzie River Valley to Canadian and U.S. markets. The Foothills Pipe Lines Ltd. consortium had proposed an all-Canadian "Maple Leaf Line" from the Delta to southern markets. Foothills Pipe Lines (Yukon) proposed the Alaska Highway route.
Thunder Bay coal terminal	Work began in April on a new \$45 million coal loading terminal at Thunder Bay, Ontario, designed to provide, by 1980, a trans-shipment capacity of about 3.25 million tonnes of coal annually for Ontario Hydro with most of the coal to come from Western Canada. Ontario Hydro planned to spend \$26 million on new facilities to blend coal from the U.S. and Western Canada.
"An Energy Strategy for Canada: Policies for Self-Reliance"	On April 27, the Minister of EMR tabled in the House of Commons a document entitled "An Energy Strategy for Canada: Policies for Self-Reliance". This report-outlined nine policy elements and five major energy-related targets to deal with energy problems. The strategy was designed to minimize Canada's dependence on imported energy sources while ensuring that the country would become as self-reliant as possible on secure, domestic sources of energy. The nine policy elements were defined in the following terms: appropriate energy pricing; energy conservation; increased exploration and development; increased resource information; substituting domestic energy for expensive imported energy; new or improved transportation and transmission systems; emergency preparedness; increased R&D; and greater Canadian content and participation. Self-reliance was defined as reducing the vulnerability of Canadians to arbitrary changes in price or supply of imported energy by using domestic resources to the greatest extent possible and protecting against interruptions in the supply of energy that must be imported, but such a strategy did not imply self-sufficiency at any price. Energy self-reliance within 10 years was the objective of this new national energy strategy.
Newfoundland offshore Court Reference	In April an agreement was reached between the federal and Newfoundland governments to prepare a joint Reference to the Supreme Court of Canada to settle the question of jurisdiction and property rights in relation to offshore mineral rights, off the coast of Newfoundland and Labrador
Oil and gas price increases, effective July 1, 1976 and January 1, 1977	On May 18, the Minister of EMR announced in the House of Commons certain major decisions concerning crude oil and natural gas prices. The decisions reached had been preceded by federal-provincial conferences on energy on December 12, 1975 and March 5, 1976, a meeting of First Ministers on May 6, and numerous bilateral contacts at ministerial and First Ministers levels. The single price of crude oil had, since the previous July, been held at \$8 per barrel, \$4.50 below the international price, and was due to be changed on July 1. Accordingly, the government had decided to increase the price by \$1.05 a barrel effective July 1 and by a further 70 cents to \$9.75 on January 1, 1977. Increases in petroleum product prices would be delayed 45 days, but subsequent to January 1, 1977, the price freeze for products was generally 60 days on all price adjustments. The price of natural gas was scheduled to rise by 15.5 cents to \$1.40 per million Btus, at the Toronto city gate on July 1, and by a further 10 cents on January 1, 1977, thereby maintaining an 85% commodity price relationship with crude oil. The federal government's price decisions represented a majority view among the provinces, but not unanimous support as some provinces resisted any increase.
Proposed P&NG Act	In May, the Minister of EMR and the Minister of Indian Affairs and Northern Development announced the elements of a Petroleum and Natural Gas Act which was scheduled to be placed before Parliament later in the year. The new legislation was designed to promote the early assessment of Canada's frontier oil and gas resources through incentives to explore, and disincentives to allow land to remain idle, and by granting the necessary authority to require a certain pace in exploration activity as a condition of holding exploration permits. This was in accordance with the goal of self-reliance and the elements of the national energy strategy announced in April. Improved efficiency in the collection of a fair share of the economic rent from discoveries would be accommodated through the introduction of a new Progressive Incremental

Royalty (PIR) system in addition to the 10% basic royalty on production. The PIR was to consist of a 40% tax on profits over and above a 25% rate of return on investment in a field. The unitary development concept was implemented and the "no front end load" principle was retained. The new Act would authorize regulations that impacted on existing contractual obligations. one of the regulations would make provision for an option for Petro-Canada to acquire a 25% working interest in any existing grant for which a special renewal permit was granted or in any provisional lease issued before a discovery had been made.

Alberta Heritage Fund

In May, the Alberta government established the Alberta Heritage Savings Trust Fund to build up a pool of capital from provincial oil and gas revenues in support of the government's commitment to provide for the diversification of the Alberta economy in the future. The Fund was also to be used to enhance the quality of life of Albertans, and to ensure an alternative revenue source for the government in the future if needed. About 30 per cent of the non-renewable resource revenues accruing to the government were committed to the Fund, with the remainder going into general revenue funds. The Fund increased from \$2.2 billion in 1977 to \$13.1 billion in 1982. While the federal government in 1978 supported the concept of the Fund, its size by the early 1980s, with projections for the early 1990s of some \$150 billion, appeared to demonstrate an obstruction to the distribution of national wealth, and a major transfer of revenue collecting authority away from the federal government while deficits of the national government were increasing. In 1982-83, the share of provincial revenues going into the Fund was reduced to 15 per cent, and some direct assistance was given to Alberta residents who were in financial difficulties because of the recession. The rate of growth in the Fund declined considerably in the 1980s as oil revenues declined with falling prices.

Increase in gas export price - impact on exploration

On June 10, the Minister of EMR announced that the international border price of natural gas exports would be increased in two stages to \$1.94 per thousand cubic feet from \$1.60, the latter price having become effective on November 1, 1975. In setting an average border price, the government was responding to the wishes of the U.S. government. The price of \$1.94, effective January 1, 1977, was to be reached through an intermediate increase to \$1.80 on September 10, 1976. The government's export price decision followed from the National Energy Board's third "Report in the Matter of the Pricing of Natural Gas Being Exported under Existing Licences", issued in April 1976, although the Board had made its price recommendations in an export price range of \$1.60 & \$2.10. In 1975 and 1976 there was a marked increase in gas exploration as a result, in part, of the domestic and export pricing policy being implemented.

Management of nuclear waste

In June, the Department of EMR and Atomic Energy of Canada Limited jointly embarked on a long-term program for the storage of spent reactor fuel and other radioactive wastes. The program was designed to assess the method of emplacing radioactive waste in rock formations at great depth

Uranium resource estimates increased by URAG

In June, the Minister of ERR released revised uranium resource estimates contained in the report - 1975 Assessment of Canada's Uranium Supply and Demand". Uranium recoverable at two prices, up to \$20 per pound and up to \$40 per pound of uranium oxide, was included in the assessment of measured, indicated and inferred resources totalling 562,000 tons, an increase of 7.8% from the 1974 estimate. This was the second report of the Uranium Resources Appraisal Group (URAG).

IPL extended to Montreal

The extension of the Interprovincial Pipeline system from Toronto to Montreal was completed in June and oil deliveries commenced. By mid-November, a delivery rate of 250,000 barrels a day had been attained. Decision to extend the line to Montreal had been announced in December 1973 in view of concern about the security of foreign oil supplies

B.C. offshore Court of Appeal judgment

Following a reference in October 1974 by the B.C. government to that province's Court of Appeal on the question of the status of the submerged land lying between Vancouver Island and the mainland, the Court of Appeal in June found that the lands are the property of the province. The federal government subsequently launched an appeal against this opinion

Glace Bay heavy water plant opened	In June, the Glace Bay heavy water plant came into production after ten years of design, construction, and labour problems. Because of a lack of markets, AECL began decommissioning the Glace Bay and Port Hawkesbury plants in Nova Scotia in May 1985.
Petro-Canada preferential treatment - back-in option	In an address on June 17 to the Independent Petroleum Association of Canada, the Minister of RMH spelled out in further detail the preferential treatment proposed for Petro-Canada in the policy statement made in May on the Petroleum and Natural Gas Act. With regard to the acquisition of oil and gas rights in the frontier regions, under the new Regulations, Petro-Canada could select up to 25% of any lands surrendered back to the Crown. A further preferential process would involve an option for the acquisition of a 25% working interest without payback of previous exploratory expenditures in respect of acreage covered by existing exploration rights, but only in the case of a specialized Permit or in the case of a Provisional Lease, and then only when the holder of the rights was still in the exploration phase. The 25% working interest could not be obtained in the case of a delineated field or any discovery declared a 'commercial' discovery
AECB role and Ham Commission	In June, the report of the Ontario Royal Commission on the Health and Safety of Workers in Mines (Ham Commission) was issued. The Commissioner had been appointed in September 1974 to investigate matters related to mine workers' health and safety following public expressions of concern regarding the effectiveness of mine safety programs, particularly in the uranium mines of Ontario. The Commission findings included data pointing to excess deaths due to lung cancer in uranium miners in the period 1955-1974. The report pointed out strongly that the jurisdictional responsibilities, as between the federal and provincial governments, in matters of safety of uranium mines, were not clear and must be resolved. The Commissioner recommended that "the Atomic Energy Control Board issue explicit regulations establishing the maximum permissible annual exposures to ionizing radiation for workers in uranium and thorium mines and mills". The Board had issued Regulations in 1974 specifying the maximum annual dose as 15 rems. Following the Ham Commission report and further assessments, the Board issued even more stringent restrictions regarding maximum exposure, in its 1978 Regulations. This issue of uranium miners' health, together with the explosion by India of a nuclear device in 1974 and the emergence of contamination problems at Port Hope in 1975, raised nuclear safety matters to particular prominence in the mid-1970s and added urgency to the need for a larger AECB staff. It also led to proposals for more definite legislation to replace the Atomic Energy Control Act of 1946. (See also notes for November 1977 and October 1978.)
Offshore negotiations	During 1976, negotiations relative to offshore mineral rights continued and in July it was decided, as part of the federal government's negotiating position, to offer the Maritime provinces 75% of the net offshore mineral resource revenues accruing from areas offshore from those provinces, and to indicate a willingness to come to an agreement with the Maritime provinces, with or without the concurrence of Newfoundland and Quebec, on the limits of the offshore areas to be covered by the federal-provincial Agreement in respect of the Maritime provinces. Such an agreement might be based on the inter-provincial boundary lines suggested at a previous Federal-Provincial Conference. Before the end of the year, negotiations were concluded for a memorandum of understanding on the administration of activities relating to mineral resources offshore and the division of revenues. Shoreward of mineral resource administration lines, the adjacent province would receive 100% of the revenues, and 75% seaward of the lines. The memorandum opened the way for the conclusion of a formal agreement.
ESAB responsibilities transferred	In July, responsibilities of the Energy Supplies Allocation Board were transferred to the Department of Energy, Mines and Resources (see March note)
Canada reaffirms its claim on the Arctic Archipelago	In relation to the United Nations Conference on the Law of the Sea, Canada, in July decided to reaffirm its historic claim that the waters within the Arctic Archipelago are internal Canadian waters. No commitment was to be made that would weaken Canada's claim to the Arctic Archipelagic waters, including the Northwest Passage, and other special bodies of water. It was

Canada's intention at an appropriate time to draw straight baseline, in accordance with accepted principles of international law, around the perimeter of the Arctic Archipelago, thereby delimiting the waters regarded by Canada as internal. In September 1985, the Canadian government declared those waters to be inland waters of Canada but, by 1987, this claim had not been tested in international law nor had it been formally recognized by any country.

Uranium exploration accelerated - Uranium Reconnaissance Program	In August, the federal government entered into shared-cost agreements with New Brunswick, Ontario, Saskatchewan and British Columbia under the Federal-Provincial Uranium Reconnaissance Program to accelerate exploration for uranium. The agreements raised to \$5.6 million the amount committed to the program since it began in 1975, with half of the amount being federally-funded. The program was designed to provide industry with data on areas most likely to contain new uranium deposits, and to provide governments with information to help in assessing total Canadian uranium resources.
Petro-Canada acquisition of Atlantic Richfield	Effective August 1, Petro-Canada acquired the Canadian assets of Atlantic Richfield Canada Ltd. and these assets were incorporated into the Corporation as its subsidiary, Petro-Canada Exploration Inc. The cost of this acquisition in 1976 was \$342,440,000 (see December 1980 note).
National coal policy proposal	During September, the five coal-producing provinces pledged their support to the federal government in the development of a new national coal policy. British Columbia, Alberta, Saskatchewan, Nova Scotia and New Brunswick expressed interest in the following elements of a national coal policy: a national inventory of coal resources; market projections of coal demand in domestic and export markets; studies of the impact of transportation costs on coal marketing; coal R&D; and an export policy providing Canada with the right of first refusal to ensure adequate supplies for domestic requirements. A national coal policy would be directed towards determining the role of coal in meeting Canada's total energy budget, and it would also help governments and industry develop plans to meet future coal requirements.
Nuclear Power expansion forecast - Canada	A public statement by the President of Atomic Energy of Canada Ltd (AECL) in September suggested that Canada's nuclear development program would likely require the installation of three nuclear power units in Ontario each year in the 1980s, a similar rate of expansion in Quebec in the 1990s, one unit every other year after 1985 in the Maritimes, and two units a year in Western Canada in the 1990s. This would raise the 1976 requirement of 500 tons of refined uranium fuel to about 5000 tons by 1990.
Security of uranium information - international marketing arrangement	In September it was decided to take the necessary action to deem confidential any information possessed by a uranium company relating to its special activities during the period 1972-75 and to prevent its disclosure unless authorized by the Minister of EMR. This decision of general application applied specifically to Gulf Minerals (Canada) in relation to its parent Gulf Minerals U.S. The federal government approved a Regulation under the Atomic Energy Control Act to effect these decisions. The action was taken in the light of demand for such information by U.S. subpoenas which, while served upon officers of U.S. companies, called upon the presentation of information in the possession of subsidiary or affiliate companies "wherever located." As noted in a statement issued by the Minister of EMR on September 22, Canada had tried in the early 1970s to elicit consumer nation support for the uranium industry in a situation of oversupply and low prices compounded by U.S. policies which closed the U.S. market to foreign uranium, and moved the U.S. government stockpile into the international market through conditions imposed on foreign users of U.S. uranium enrichment facilities. Lacking support from consuming nations, and in view of the projected demand for uranium, Canada along with uranium producing nations developed informal marketing arrangements. In accordance with those arrangements, the Atomic Energy Control Board rejected any export of uranium at prices below those called for by the marketing arrangements. The minimum prices adopted were almost without exception below those in the protected U.S. market and ranged from \$5.40 to \$8.20 per pound of U308 for delivery in 1972 and 1974, respectively. After the 1973-74 oil crisis, uranium prices rose well above any agreed



minimum price structure and, as the marketing arrangements had been overtaken by market forces, Canada withdrew all minimum price directives in early 1975. The U.S. vigorously pursued its inquiry in the post-1915 period because, among other reasons, a U.S. company had been caught in a deal of its own making whereby it had undertaken to supply uranium at early-1970s prices whereas uranium was not available at those prices when the time came for delivery (see October 1977 note).

Foothills (Yukon)  
gas pipeline  
application

In September, Foothills (Yukon) Pipe Lines Ltd. applied to the NEB to build a gas pipeline, 42-inch diameter, from the Alaska/Yukon border through the Yukon to connect with Westcoast Transmission Company facilities in B.C. and Alberta Gas Trunk Line Ltd. in Alberta to transport Prudhoe Bay gas south to the U.S. border. While maintaining its Maple Leaf application (see March 1975 note), it ceased work on that alternative.

Canada -  
Saskatchewan  
heavy oil  
agreement

On October 4, the "Canada/Saskatchewan Cooperative Agreement for a Program of Enhanced Recovery of Heavy Oil in Saskatchewan" was signed. This was a \$16.2 million shared-cost program to develop new methods of recovering heavy oils from Lloydminster and similar fields in the province. Under the Agreement, proposals were to be sought from industry for testing new methods of oil extraction. The Agreement was administered by a federal-provincial committee. A company would carry out work, which would subsequently be evaluated by the two governments, and any new technology would be made available to other producers.

Speech from the  
Throne - northern  
exploration,  
renewable energy

The Speech from the Throne on October 12, marking the opening of the Second Session of the Thirtieth Parliament, included the following references to energy:  
"There is a growing awareness among Canadians of the need for more careful conservation of vital energy resources such as petroleum and natural gas. The Government will place further emphasis on research and development of renewable energy sources and on means of improving the efficiency with which energy is used in Canada, particularly the thermal efficiency of residential and commercial buildings. To ensure responsible development of our indigenous resources, the Government intends to introduce measures to regulate exploration and development on federal lands."

"The Way Ahead:  
A Framework for  
Discussion" re  
energy policy  
directions

In October, the federal government released a working paper entitled "The Way Ahead: A Framework for Discussion" which outlined the economic and social directions the government planned to take after the program of direct controls of incomes and prices, instituted in October 1975, was discontinued in 1978. This policy paper, in commenting on the importance of economic growth in future planning, noted that "the investment requirements foreseen for energy in the 1980s may be only one component of a severely stretched economy. Among the policy directions offering the potential to ease the adjustment problems of the 1980s and to assure that the growth process results in an improved quality of life would be a greater emphasis on energy conservation programs which are a least-cost, least-risk direction for Canadian energy policies and a critical contributor to the reduction of inflationary pressures. In this same regard, the capital intensity and large scale of existing energy supply alternatives strongly suggest that urgent attention be given to less capital intensive, more decentralized, renewable energy alternatives."

Alberta/Canada  
energy research  
fund agreement

In a letter of October 28 to the Premier of Alberta, the Prime Minister outlined proposals for the disposition of money available under the "special fund" which resulted from the March 1974 oil pricing agreement. In his reply of November 18, the Premier accepted the federal proposals and this exchange of letters became the basis for the disposition of the \$145 million in the fund, with \$96 million being allocated to energy and energy related research projected in Alberta and \$48 million for transportation projects in that province. The fund had accumulated on the basis of 25 cents per barrel of Alberta crude oil produced between April 1, 1974 and June 30, 1975. It was agreed that the funds to be allocated to energy projects would be administered by an Alberta-federal 'committee of senior officials. Transfer of federal funds commenced in fiscal 1976-77 and amounted to \$4 million. Subsequently, \$10 million was transferred in each of 1977-78 and 1978-79, and \$24 million for each of the fiscal years 1979-80, 1980-81 and 1981-82 for a total of \$96

million. The special fund had accumulated as a result of the March 1974 oil pricing agreement whereby Alberta accepted the federal oil price maintenance proposal to hold the field price of crude oil at \$6.50 per barrel through to June 30, 1975 in exchange for a federal undertaking to step up federal spending within Alberta by an amount equivalent to 25 cents per barrel of crude oil produced in the province in that period. It was subsequently determined that the accumulated amount in the fund was about \$145 million. The moneys were to be allocated in the proportion of one-third to transportation and two-thirds to energy-related projects (see December note).

Electricity export policy

In November, the existing policy of permitting exports of electricity, subject to adequate price levels and priority for Canada, was confirmed. The principal elements applying in this policy were defined in the following terms: the price of electricity exports to be no less than comparable sales to Canadian customers and at a level compatible with the cost of production in the U.S., with Canadian customers having first right of refusal; where an export market exists for electricity, this might establish an opportunity price which a neighbouring province should expect to pay if it exercised a prior right to the energy; as long as the short and longer term national interest was protected, there would be no discouragement to building facilities that are initially intended primarily for export markets; in the administration of environmental standards and other general aspects of public interest, the approval of competent provincial authorities would normally suffice; electricity produced from oil and gas and sold on export markets would usually be priced consistent with the export or international price level of those fuels, including adjustments for export taxes on import compensation; and where the price to be charged for fuel under an export licence exceeds the price normally paid for fuel supplies by the utility, this difference to be recovered by Canada through drafting amendments to regulations under the Petroleum Administration Act or through other appropriate means. Subject to these safeguards, encouragement was to be given to interconnections between Canadian and U.S. electric utilities where mutual benefits could be obtained, particularly if the interconnections formed part of a regional power pool.

Berger northern pipeline inquiry

In November, the Berger Commission inquiry into a pipeline through the Mackenzie Valley completed its 20 months of hearings on the environmental and social impacts of pipeline proposals. The report, expected in the spring of 1977, was to recommend what conditions should be placed on the granting of right-of-way for any pipeline construction. EMR was coordinating an interdepartmental assessment of options relative to northern gas pipelines so that the government would be in a position to decide on an appropriate course of action once the recommendations from the Berger Commission, and from hearings of the National Energy Board on northern pipeline applications, became available.

LaPrade heavy water plant

In December, the federal government decided, on the basis of anticipated future sales of CANDU reactors, to consider postponing the construction of La Prade heavy water plant in Quebec. In consulting with Quebec on this matter, the federal government planned to ascertain the province's interest in making a firm commitment to a CANDU program or, alternately, to otherwise share the risk of heavy water inventory accumulation through direct participation in La Prade.

Tidal power report

A preliminary report on a \$3 million tidal power study, funded jointly by the governments of Canada, Nova Scotia and New Brunswick, was released in November. It concluded that the Bay of Fundy tides could provide economically feasible power under the right set of circumstances. However, while the technology was available, the requisite price and other circumstances would not likely occur within the 1980s.

Uranium export prices

In December, it was decided that new uranium sales abroad should be made at prevailing world prices with provision for an escalating floor price and annual negotiation of price. Canadian producers would be encouraged to renegotiate existing contracts where selling prices were too low to provide a reasonable return

Export of nuclear reactors and related nuclear products - greater safeguards	In December, after considerable study, a decision was reached to proceed with a program directed to the export of nuclear reactors, related nuclear products and technology but subject to increased safeguards procedures. This was to include ratification of the Non-Proliferation Treaty by a potential importer or a binding commitment to the non-proliferation of nuclear weapons and acceptance of the application of International Atomic Energy Agency safeguards to all nuclear activities. Canada would seek the broadening and strengthening of IAEA safeguards, the widest possible adherence to the Non-Proliferation Treaty and agreement among major nuclear suppliers to place even more stringent conditions on their nuclear sales, particularly on the transfer of the most sensitive parts of the nuclear fuel cycle. By the end of 1976, South Korea and Finland had met the safeguards. There was an interim arrangement with the U.S., some upgrading was required by Argentina and Spain, and negotiations were continuing with Japan and the European Economic Community. Nuclear program aid to India and Pakistan had been dropped.
Syncrude oil sands plant	By the end of December, construction of the Syncrude Canada Ltd. oil sands project near Fort McMurray was 60% completed and expected final cost when completed in early 1978 was \$2 billion for the 125,000 barrel a day plant. A final agreement among the partners had been signed in April: Imperial Oil (31.25%); Canada Cities Service (22%); Gulf (16.75%); Petro-Canada (15%); Alberta (10%); and Ontario (5%). This was based on the agreement reached in February 1975 to establish an industry-government partnership to provide funds needed to complete the project.
Alberta/Canada \$96 million energy research fund	As announced in December, a sum of \$96 million was made available by the federal government under terms of the Alberta/Canada Energy Resources Research Fund. A 'special fund' of \$145 million resulted from a federal government commitment made in March 1974 in relation to a crude oil price policy for the period April 1, 1974 to July 1, 1975, with Alberta having agreed to a \$6.50 a barrel price ceiling for that period. The fund was to be used for energy research projects in Alberta, with the choice and timing of those projects to be made by the Alberta/Canada Energy Resources Research Committee. In addition to the allotment of \$96 million for energy research projects, \$48 million was allocated to transportation projects in Alberta as a result of the March 1974 agreement (see October note).
Columbia River Treaty Mica power plant completed	In December, the Columbia River Treaty Mica Dam power station was completed and commenced its first year of operation. The history of the Columbia River Treaty dates from 1944 when the International Joint Commission undertook investigations to determine whether further development of the water resources of the Columbia River basin would be practical and advantageous to both Canada and the United States. Subsequent studies and negotiations eventually led to ratification of the Treaty on September 16, 1964. Payments for flood control totalling \$64 million (US) were made by the United States to Canada as the Treaty storage dams (Duncan, Arrow and Mica) were completed in Canada. These Treaty dams combine to control great seasonal fluctuations of the Columbia River's flow, thereby reducing flood hazards and increasing the power potential in both countries. In payment for the downstream power benefits on the Columbia River as sold to a group of power entities in the U.S. called the Columbia Storage Power Exchange, for a period of 30 years, the Government of Canada received \$253,929,534 (US). This was made available to the B.C. Government which, under terms of an Agreement of July 9, 1963 with the Government of Canada, undertook to use these funds for the construction of the three large storage dams. Operational storage at the Duncan Dam was completed in July 1967; at the Arrow Dam (now Keenleyside) in July 1969; at the Mica Dam in March 1973; and at the Libby Dam on the Kootenay River, a tributary of the Columbia in the U.S., in April 1973. The Libby power generation plant became operational in August 1975 and the Mica power plant at the end of 1976. The Mica plant was designed to ultimately produce 2.6 million kilowatts of power, and other projects located downstream from Mica in Canada and on the Kootenay River in the U.S. would raise the total potential from the Columbia River Treaty to more than 6 million kilowatts. The Mica power plant is one of the world's largest underground powerhouses. The Mica Dam is the only one of the three Columbia River Treaty dams designed to generate power.

Canada-U.S.  
energy relations

Canada-U.S. relations, viewed in December in the perspective of developments in the early to mid-1970s, were seen to be strained as a result of the fact that both countries were being forced to adjust their overall energy policies to reflect the new realities of energy supply and demand. In Canada, there was a growing realization that the energy resource base was far from being infinite and there was, therefore, need to reassess resource management policies that would bring supply and demand into better balance over the longer term. With declining Canadian exports, U.S. customers were faced with the task of redeploing their distribution systems as a means of adjusting to a situation of declining supplies from Canada. From a net oil exporter in 1973, Canada was becoming an increasingly large net importer in the mid-1970s. Oil exploration programs were disappointing in western Canada and the prospects in the Arctic and off the east coast, while encouraging, were long-term. on November 24, 1974, the Canadian government had announced a phasing-out program for Canadian crude oil exports to the U.S. by the early 1980s in order to adjust to the declining supply situation in Western Canada. Since 1970 all applications for additional natural gas exports had been denied because reserves were insufficient to meet foreseeable Canadian requirements and existing export commitments, a position confirmed in an NEB report of April 1975. The U.S. position was that all shortages should be shared equally between the two countries. Within Canada, there was a rejection of the "continentalist" solution to North America's energy problem because it was felt that Canada faced a substantial challenge in developing sufficient supplies for its own needs until frontier sources could be brought into production.

## THE YEAR 1977

Stronger nuclear safeguards	In January, the federal government embargoed the export of Canadian nuclear materials and technology to all countries which had not entered into agreements on tighter regulations regarding nuclear safeguards. Shipments to a number of countries were affected, principally Japan, countries of the European Economic Community, Switzerland and the U.S.A. At the end of 1977, agreements were outstanding with Japan and Switzerland. An agreement was completed with Japan early in 1978.
Transit Pipeline Treaty	Canada and the U.S. held negotiation's in 1976 on a bilateral pipeline agreement which was signed on January 28, 1977 as the Transit Pipeline Treaty. It provides for non-interference and non-discrimination for transit pipelines carrying oil and natural gas destined for one country across the territory of the other. The agreement would not come into force as a treaty until ratification by both countries. The ad referendum text of the proposed agreement between Canada and the U.S. had been released in May 1976 in Canada and a decision was taken to authorize signature and ratification in parallel with U.S. action (see September 1977 notes on Northern Pipeline
La Prade heavy water plant	In February, consultation was underway among departments and agencies directly concerned with the options of completing the La Prade heavy water plant on a schedule with a 1982 completion date, or "mothballing" the plant for several years until additional reactors requiring heavy water were committed, other than in Ontario. Decision was deferred until the end of 1977 (see December note).
Environmental Assessment Review Process	In February, steps were taken to strengthen the Environmental Assessment and Review Process (EARP), including provisions to ensure that federal departments and agencies provided information on their projects and arranged for public response early in the planning stage before vital decisions were taken that could be difficult to alter regardless of public opinion. There was also to be a sharing of costs between the government and proponents of projects, with proponents bearing costs that were clearly incremental to a department's normal budgeting expenditures. The federal government would bear the costs of baseline studies, the assessment procedure, verification and enforcement, and monitoring studies. Proponents would be responsible for costs of preparing environmental evaluation reports, any expertise unique to the government that was required to prepare those reports, and proponent inspection and reporting.
U.S. and P.E.I. conservation programs based on federal funding	The second component of a \$92 million program to encourage greater energy conservation was announced in February consisting of \$63 million in federal contributions to Nova Scotia. The province was to contribute an additional \$7 million. In December 1976, the federal government made funds available to Prince Edward Island in the amount of \$12 million for conservation programs. The programs for both provinces emphasized home insulation projects, with also attention to conservation practices in the commercial and industrial sectors. Included in the Nova Scotia program was an amount of \$24.2 million for projects to reduce the use of imported oil for the generation of electricity.
The Bayda uranium inquiry - Sask. Cluff Lake	Further to previously announced plans to investigate the implications of expanding uranium mining in Saskatchewan, the provincial government in February appointed a 3-member board under the chairmanship of Mr. Justice Bayda to inquire into the implications of the Cluff Lake uranium development in northern Saskatchewan. The inquiry continued throughout 1977. The Ontario Environmental Assessment Board also held public hearings during the year to assess the environmental impact of the expansion of Elliot Lake uranium operations. The recommendations of these inquiries would have a considerable effect on the future of uranium development in Canada.
Maritime Energy Corporation - agreement in	On February 8, the Minister of EMR and the Premiers of N.S., N.B., and P.E.I. announced their agreement in principle to the establishment of a Maritime Energy Corporation to be concerned with the means of achieving optimal expansion of electric generation and supply in the Maritime

principle	provinces with the object of maximizing the most favourable options of each of the participating utilities. The Corporation would undertake responsibilities relative to financing, construction and operation of regional power projects, negotiating of agreements with neighbouring power systems, coordination of the day-to-day operation of the entire combined system of generation and bulk transmission in the three Maritime provinces, provision of competent system planning staff, and engaging in R&D, energy conservation, and load management projects on behalf of the power utilities of the Maritime provinces.
Federal-Maritime offshore M.O.U.	In February, the three Maritime Provinces signed a Memorandum of Understanding (M.O.U.) with the federal government in the form of a statement of principles calling for negotiation of a formal agreement on a new regime for joint administration and management of mineral resources offshore the Maritime provinces. It envisaged an agreement incorporating the following features: lines of demarcation as between provinces, and as between federal and provincial jurisdictions; a Maritime Offshore Resources Board to issue offshore rights and ensure that spin-offs benefited the Maritimes; a Resource Management Agency to carry out administration and management functions under direction of the Board; and revenue sharing - 75% to provinces seaward of federal-provincial demarcation lines, and 100% landward of these lines (Mineral Resources Administration Lines).
Foothills (Yukon) amended application for Alaska Highway route	In February, Foothills (Yukon) and associated Foothills companies amended their application in order to provide for a 48-inch express pipeline system to transport Alaska gas overland to the lower 48 states, without using existing Westcoast Transmission and Alberta Gas Trunk Line facilities (see note for September 1976). In March 1977, Foothills withdrew its earlier proposal.
Renewable Energy Branch in EMR and increased R&D	On February 11, the Minister of EMR announced the establishment of a Renewable Energy Resources Branch in EMR and a \$4.4 million increase in federal energy R&D spending on renewable energy in a total energy R&D increase of \$10 million to a proposed \$137.8 million in 1977-78. The increased emphasis on renewable energy R&D was to be supported by the formation of the new Renewable Energy Resources Branch which was to direct its efforts to ensuring that these alternate forms of energy received full consideration when policy decisions were taken. The \$10 million increase in R&D funding also made provision for \$3.7 million in new research on energy conservation.
Nelson River transmission system	on March 1, the federal government announced that it would make long-term loans totalling \$193.2 million, repayable in 30 years, to Manitoba for the Nelson River Transmission system. This was a continuation of the program whereby Canada paid for and managed construction of most of the first phase of the Nelson River transmission system at a cost of \$244 million. Whereas the first phase, under terms of the Canada-Manitoba Nelson River Transmission Agreement of 1966, involved transmission of hydroelectric power from generating stations on the Nelson River to southern Manitoba, the program announced in March was directed to helping finance interconnecting regional transmission lines and associated facilities. The new loan was to be made in installments according to the construction schedule and repayable over 30 years from the completion of each element of the facilities. Loan installments were to be payable over a period terminating in 1985 but in total were not to exceed the lesser of \$193.2 million or 50% of the capital cost of constructing and equipping the transmission facilities, excluding the installed cost of equipment related to the second bipole procured by Manitoba Hydro from offshore sources. The federal government had completed the original transmission lines over a 560-mile route and the related converter stations up to a normal capacity of 1000 MV, in the period 1967-1972 at a cost of \$244 million. The Nelson River transmission system was scheduled for completion in 1984, with the federal loans covering \$437 million of the total cost of \$725 million.
Annual renegotiation of uranium contracts	In March, Canadian uranium producers were advised by the Minister of EMR that all uranium contracts not then approved by the Atomic Energy Control Board, and all future contracts, would be subject to annual renegotiation of price based on then existing world prices, and with regard to such factors as term and size of contract and any special financing arrangements.

oil and natural gas resources studies	In March, the Department of EMR issued two reports on oil and gas resource appraisals: "Oil and Natural Gas Resources of Canada, 1976", and "Oil Sands and Heavy Oils: The Prospects". The first study presented estimates of recoverable reserves of crude oil and natural gas, and probability estimates of potential resources. The second study presented estimates of recoverable, upgraded oil in the Athabasca oil sands and heavy oil areas. The potential resource estimates were prepared by the Geological Survey of Canada.
Cape Breton Coal problem - 1976/77 loss of \$26 million	By the end of March, the results of the Cape Breton Development Corporation (DEVCO) financial year 1976-17 indicated a continuation of the long-term Cape Breton coal problem. The Coal Division of DEVCO required federal grants of \$26 million in 1976-77 to cover operating losses. DEVCO had been established as a federal Crown corporation at the end of 1966 to acquire the properties and leases of the failing Dominion Steel and Coal Company in order to phase down and/or phase out coal mining in Cape Breton and introduce alternative industries into the Sydney, N.S. area. As the introduction of viable alternative industries was not successful and inasmuch as coal marketing became more attractive in the early 1970s with the rising oil prices, the objectives of DEVCO changed. Two new mines were developed (Lingan and Prince), and one mine was rehabilitated (No. 26 Colliery). While production capacity by 1977 had been raised to 3.5 million tons per year, actual output was 2.5 million tons in 1977. The performance of the new mines had been disappointing and DEVCO continued to operate at a loss, requiring large federal grants to maintain its operations.
Energy Ministers' Conferences	Three Energy ministers' Conferences, chaired by the Minister of Energy, Mines and Resources and involving all provincial Ministers of Energy were held in 1977: April 6, May 11 and December 1. Previously, there had been Energy Ministers' Conferences on December 12, 1975 and March 5, 1976. While these meetings covered a broad range of energy policy topics, the central topic related to oil and gas prices, with each province setting out its position. At the April 6 meeting, the Quebec Energy Minister stated that Quebec was in agreement with the federal approach of gradually moving domestic prices towards world price levels but in terms of two requirements: Canadian prices not to exceed those of the U.S. in order to ensure the maintenance of the competitive capacity of Quebec enterprises; and to ensure the protection of Quebec consumers against too rapid a price increase.
Federal electrical energy programs for the Atlantic provinces and preparation for the MEC	On April 1, the Minister of EMR announced measures to encourage electrical energy development projects in the four Atlantic provinces. Specific measures included federal funding of a study to organize a new Maritime Energy Corporation (MEC) that would undertake joint development of regional generation and transmission facilities on an integrated basis. There was also provision for a loan program to provide funding for a \$14 million program to strengthen regional transmission ties between N.B. and N.S., and a \$500,000 grant to Newfoundland to meet 50% of the first phase of a joint Canada-Newfoundland inventory of the remaining hydroelectricity capacity of Labrador. Finally, there would be funding of a study and demonstration project for electrical load management to establish opportunities for reducing capital requirements for power generation by reducing peak loads. At this time, there was an outstanding offer to provide loans up to \$343 million to Newfoundland re the Gull Island transmission system, and grants and loans totalling \$27 million were to be made to P.E.I. in respect to the underwater power cable interconnection with N.B.
IPL 18 cent subsidy	An agreement was signed between Interprovincial Pipeline Limited (IPL) and the federal government on April 7, retroactive to March 1, 1977, whereby the federal government would pay Interprovincial a subsidy of 18 cents per barrel on all crude oil transported east of Toronto to Montreal. The purpose of the subsidy, which was to apply in the period March 1, 1977 - March 31, 1980, was to maintain a single cost zone for domestic crude purchases at Montreal and Toronto. The subsidy rate of 18 cents represented the difference between the Sarnia-Toronto and the Sarnia-Montreal IPL tariffs. Payment was to be made to IPL on behalf of Montreal refiners receiving domestic crude through the Sarnia-Montreal IPL extension.

New energy conservation building codes	On April 12, the Minister of EMR announced that new energy conservation building codes would be adopted by the 5 federal government departments that account for the bulk of the federal government's construction activities. This followed from a Cabinet decision of 1975 to develop new energy-efficient standards for all buildings as a supplement to the National Building Code. Adoption of the new energy building standards by all provinces was considered an essential component of Canada's long-term national energy strategy and had the potential of resulting in a decrease of one-half of one per cent in the annual overall growth rate of energy use in the country.
Mackenzie Valley Pipeline Inquiry - Berger Report, Volume 1	On May 9, Mr. Justice T.R. Berger's Report (Volume 1) on the Mackenzie Valley Pipeline Inquiry was tabled in the House of Commons. Mr. Berger was appointed by Order-in-Council of March 21, 1974 to undertake the inquiry to identify the broad social, economic and environmental impacts that a gas Pipeline and an energy corridor would have in the Mackenzie Valley and the Western Arctic (which is the subject of Volume 1 of the Report), and to set out the terms and conditions that should be imposed if a pipeline is built (the subject of Volume 2, published on November 30, 1977). In Volume 1, he recommended that, on environmental grounds, no pipeline be built and no energy corridor be established across the Northern Yukon. He concluded that construction of a pipeline along the Mackenzie Valley would be feasible from an environmental point of view, but recommended that it be postponed for ten years to allow for a settlement of native claims. He also expressed the view that, if a Pipeline had to be built to deliver natural gas to the lower 48 States, the Alaska Highway route was preferable from an environmental point of view.
NEB report: Canadian Oil Supply and Requirements	In May, the National Energy Board's report on Canadian Oil Supply and Requirements was issued, forecasting that a shortfall in supply of Canadian crude to meet the domestic markets being served by that oil would likely occur between 1981 and 1983. By 1985, the Board expected a shortfall of some 450,000 b/d and 600,000 b/d in the period 1990 to 1995. Even in the event that its low requirements and high supply forecasts proved to be true, indigenous oil supply was projected to fall short of requirements by about 250,000 b/d in 1985. It seemed evident at the time that imported crude oil would be required in the early 1980s in the markets then being served by indigenous crude. The report, based on public hearings in October 1976, had followed publication of a report on Canadian Oil Supply and Requirements in September 1975. Both of these reports followed decisions made in relation to hearings conducted in April and May of 1974, and announced in a report of September 1974, to the effect that oil exports would be limited when 10 years of future Canadian requirements for indigenous crude oil and equivalent feedstocks could not be assured. At that time, too, it was decided to hold public hearings periodically to receive evidence with respect to the potential producibility of oil, requirements, and the effects of conservation on Canadian consumption and exportable surplus.
Radioactive waste disposal study	In June a study on safe long-term storage of radioactive waste was commissioned by the federal government. The study was designed to assess the nature and amounts of radioactive wastes likely to be developed in the spent fuel of Canada's foreseeable nuclear power program and to indicate the alternatives that may be available for the safe storage of such wastes
New energy conservation measures, including CHIP	In June the Minister of EMR and the Minister of Urban Affairs announced a series of energy conservation initiatives directed to reducing the average rate of growth of energy use in Canada to zero per capita by 1985. The key initiative was a \$1.4 billion federally funded Canadian Home Insulation Program (CHIP), to be delivered over the following seven years. Participating provinces would be those, which complemented the program through their own conservation measures, including the adoption of energy codes for new buildings; the removal of sales tax on insulation materials, and the reduction of speed on highways. Other new initiatives included a \$1 million national energy bus program to be jointly funded with interested provinces and a \$1.5 million industrial energy conservation R&D program. Under the Canadian Home Insulation Program (CHIP), eligible home owners could apply for taxable grants of up to \$350 to cover two-thirds of the cost of insulation materials. By the end of the year the ten provinces had joined the home insulation program



Alaska Highway Gas Pipeline route recommended by NEB	In June, the National Energy Board, after 214 days of public hearings, recommended to Cabinet approval of the proposal by Foothills Pipeline (Yukon) Limited to construct a Pipeline along the Alaska Highway to transmit Alaskan natural gas to the U-S (see July note).
Prudhoe Bay oil production	Oil production in the Prudhoe Bay oilfield on the North Slope of Alaska commenced in June and, by the end of the year, was averaging 800,000 b/d. The field had been discovered in 1968 and has taken almost 10 years to get into production because of Pipeline delays
Uranium enrichment plant not recommended	A report released in June, entitled "1976 Review of Uranium Enrichment Prospects in Canada" concluded that prospects for a Canadian enrichment plant to serve the export market were less attractive than in 1971. The study reviewed the advancement in enrichment technologies since 1971, the development of Canada's uranium policy, the effects of the economic shocks of inflation and oil price increases, the economic and cost-benefit studies of a privately-proposed gaseous diffusion plant in Quebec, and further evaluated the use of enriched uranium as a fuel for CANDU nuclear systems. On the basis of this study, the federal government concluded that there would be no reason to support a uranium enrichment project as it would give very limited benefits to Canada
The June 1977 Canada-Alberta oil pricing arrangement	In June the federal and Alberta governments entered into a two-year crude oil pricing arrangement. This understanding evolved out of a series of successive federal-provincial meetings of Energy Ministers and Deputy Ministers, against the background of the federal government's firm commitment, in its April 1976 "Energy Strategy for Canada" report, to move Canadian oil prices towards international levels and gas prices to an appropriate relationship with oil prices. Up to November 1975, gas was sold by producers at the wellhead or the field gate under a normal supply/demand relationship. In some areas there was only one prospective gas purchaser but many contracts provided for periodic renegotiation to reach a fair market price. The June understanding took the form of an exchange of letters in June 1977 between the federal and Alberta Energy Ministers. It envisaged four increases in the oil price, each of \$1 per barrel, occurring at six-month intervals starting on July 1, 1977 provided, inter alia, that any particular increase did not bring the price of the average barrel of Alberta oil delivered to Toronto above the average price of crude oil and imported products in the Chicago area. Canadian wellhead/Persian Gulf port parity was also a price constraint. The increases scheduled for July 1, 1977 and January 1 and July 1, 1978 subsequently were implemented without breaking the "Chicago ceiling", bringing the average price of Alberta oil at the wellhead to \$12.75 and the average price at Toronto to about \$13.75 in July 1978 (see November 1978 re extension of the June 1977 pricing arrangement). The natural gas price increases were to follow the oil price increases by one month.
Maritime Energy Corporation - feasibility study	On June, 21 the Government of Canada and representatives of the three Maritime governments entered into an agreement to undertake studies on the establishment, nature and structure of the Maritime Energy Corporation (MEC) or some appropriate alternative. The studies were to provide guidance on the establishment of the MEC which would have responsibilities relative to regional electrical planning, project development, day-to-day operation of Maritime systems, optimizing regional benefits achievable from transmission ties external to the Maritimes, and R&D.
NEB report on northern gas Pipeline applications - Alaska Highway recommended	On July 4, the National Energy Board released its decision on the Northern Gas Pipeline Applications. Canadian Arctic Gas Pipeline Limited (CAGPL) had submitted its application to the NEB in March 1974 to construct a gas Pipeline for transporting Prudhoe Bay, Alaska and Beaufort Basin gas southward via a Mackenzie Valley route. In a competing application, Foothills Pipe Lines Ltd. had applied in March 1975 along a similar route but for Canadian gas only. In August and September 1976 a third set of applications for Pipeline construction was made by a group of associated companies called the Foothills (Yukon) Project Group, proposing to move Alaska gas through Canada to U.S. markets. In February 1977 this Group filed an alternative proposal to construct an "express line" along the Alaska Highway route without using existing Westcoast and Alberta Trunk Line ' facilities, and in March withdrew its earlier proposal. The NEB found that a

Pipeline to transport Mackenzie Delta gas to Canadian markets would be needed during the first half of the 1980s. The Board had specific environmental concerns relative to a Pipeline route from the Alaska-Yukon to join the Alberta system but held that the social and economic impact of the Foothills (Yukon) project could be held to tolerable levels. A necessary complement to the undertaking given by Foothills (Yukon) to construct a Dempster link to the Mackenzie Delta would be a re-routing of the Dempster line via Dawson, Yukon. The Board found that the CAGPL route would be unacceptable from an environmental point of view whereas environmental concerns associated with the Foothills (Yukon) route could be overcome. In its decisions and recommendations the NEB denied the Foothills and CAGPL applications via the Mackenzie Valley. However, it was prepared to issue certificates of public convenience and necessity for the Foothills (Yukon) proposal subject to conditions defined in its report related to further studies, provision for delivery of Delta gas, and assistance in financing socioeconomic interest costs of the project north of the 60th parallel.

Forecast benefits of the Foothills (Yukon) gas pipeline proposal

In its findings, announced in July, relative to Northern Gas Pipeline Applications (see above), the NEB estimated that the net economic benefits of the Foothills (Yukon) project, along the Alaska Highway route, including the Dempster Link, would be about \$3.5 billion. Employment generated would be some 100,000 person-years over 5 to 7 years. There would be other national and regional benefits related to the increase in economic activity. In addition to these benefits, the Board forecast the beginning of a gas supply deficiency in 1983 in relation to projected domestic and export markets if northern gas was not available. This deficiency would reach 1.2 trillion cubic feet a year by 1995 if provision was not made for northern gas supply.

Lysyk Alaska Highway Pipeline inquiry

In July the Lysyk inquiry on the Alaska Highway Pipeline reported to the Minister of Indian and Northern Affairs, having concluded in its assessment that the social and economic impacts of a natural gas Pipeline through the southern Yukon could be kept within acceptable limits, thereby confirming the conclusions of the NEB.

Energy R&D principles

In July, provision was made for significantly increasing the level of federal funding devoted to Energy R&D in order to reduce the serious gap between energy supply and demand foreseen in Canada beginning in the 1980s. In developing proposals for the use of R&D funds, departments and the Energy R&D Panel would proceed in accordance with the following principles: a strategy based on criteria of lowest cost energy, highest probability of technical success, and highest contribution to energy self-reliance; appropriate balance between research and development, maintenance of adequate awareness programs, and the encouragement of risk-taking in the private sector and also cost sharing; and inclusion in the cost of energy R&D projects of any associated expenditures for measures aimed at avoiding or correcting environmental damage.

Foothills (Yukon) Pipeline approval following Parliamentary debate

In August, the federal government gave Foothills (Yukon) Pipe Line Ltd. tentative approval for a natural gas Pipeline for transmission of Alaskan gas crossing the Yukon. Alberta and B.C., with provision for a future interconnection, via the Dempster Link, with Mackenzie Delta gas. In a Press Conference of August 8, following an extensive Parliamentary debate, the Prime Minister, in announcing this decision, noted that the federal government had been advised by the U.S. President (Carter) that his Administration was prepared to join in discussions with Canada in order to explore whether a basis could be established for agreement between the two countries concerning routing of a Pipeline through the southern Yukon, the timing of its construction, provision for the Dempster Link to the Mackenzie Delta, and the financial feasibility of the system. There was also need for assurances relative to protection of the interests of the people in the North and protection of the environment. With the achievement of agreement in principle with the U.S., the federal government would pursue wide-ranging consultations with interested provinces, territorial governments, native organizations, community groups and other concerned interests. This statement followed a two-day debate in the House of Commons, which commenced on August 4 and reviewed all aspects of the northern gas Pipeline issue.

Renewable energy research	In August, the federal government awarded a \$170,000 contract to study all aspects of the production of synthetic fuels from forest biomass resources. This followed awards totalling \$45,000 in July to three organizations to provide information on renewable energy resources. These initiatives were in keeping with a policy of giving greater attention to the potential of renewable energy sources in meeting future energy requirements.
Amendments to Canada Oil and Gas Lands Regulations - opens up 1 billion acres and gives access for Petro-Canada	In August announcement was made of amendments to the Canada Oil and Gas Land Regulations which would open up over one billion acres of land under federal jurisdiction in the north and offshore areas for oil and natural gas exploration. The new system enabled the processing of existing applications for oil and gas leases on some 31 million acres held under permit, and opened the door for the selective issuing of new exploration rights on about 700 million acres of Crown reserve lands which had been surrendered to the Crown. In addition, more than 600 million acres of Canada lands that had never been covered by permit or lease became available for exploration on a selected basis. Three entities were involved in the original land tenure systems - an exploration licence, an exploration permit, and an oil and gas lease. After the August 1977 amendments, no new exploration permits could be issued, the place of the permit being taken by a new entity, the exploration agreement. The amendments also provided special options for Petro-Canada to obtain up to 25% of any lands surrendered to the Crown over a period of 7 years from that date. Petro-Canada would also be able to acquire up to a 25% working interest on lands where the normal permit had expired and no significant finds of oil or gas had been made, but not in cases where the net Canadian equity represented by companies involved was more than 35%.
The Hare report the Management of Nuclear Wastes	In August a report entitled "The Management of Canada's Nuclear Wastes" (the Hare report) was completed. It had been commissioned by EMR to provide the government and the public with the views of an independent expert group on the subject of nuclear waste disposal and thereby contribute to the development of a national plan for the management and disposal of nuclear reactor wastes and wastes from other components of the nuclear fuel cycle, including mining, refining, fuel fabrication, and the operation of nuclear powered generating stations, and also from other industries. The report set out certain key target dates as a guide for a program of R&D and construction. Its 19 conclusions and recommendations included the statement that there were good prospects for the safe, permanent disposal of reactor wastes and irradiated fuel. Provided the government proceeded immediately to the program of R&D, there would be no reason why the disposal problem need delay the country's nuclear power programs. The report was published in November.
Canada-U.S.A. Agreement on the Northern Pipeline	In September the President of the Privy Council announced that Canada and the U.S. had successfully concluded negotiations on a cooperative intergovernmental agreement providing for construction of a northern gas Pipeline which would initially transport Alaskan natural gas to southern U.S. markets and would also provide economic access to Canadian gas in the Mackenzie Delta, as and when it was required to meet Canadian energy needs. A decision by the two countries to proceed with construction of the Pipeline under terms and conditions of this inter-governmental agreement would provide major economic and industrial benefits throughout much of Canada. The September 9 statement in the House of Commons by the President of the Privy Council included considerable background information on the Northern Pipeline as well as details concerning the Canada-U.S.A. Agreement on Principles Applicable to a Northern Natural Gas Pipeline.
President and P.M. agree in principle on Northern Pipeline	On September 8, the President of the U.S. and the Prime Minister participated in a press conference on the Northern Pipeline, following a meeting in which they agreed ,in principle on the proposed project (see previous item). They spoke of the major benefits which each country would derive from this cooperative project, taking note of the importance of protecting the environment and the interests of the northern people. Reference was made to a similar giant project -- the Seaway -- which had been successfully completed a generation before by the two countries. The subsequent signing of the Northern Pipeline Agreement, on September 20, 1977, culminated studies and hearings within Canada and the U.S. that had been underway since the late 1960s on various

Northern gas Pipeline proposals. Commitment of both countries to the Transit Pipeline Treaty, as signed on January 28, 1977, was reiterated in the Agreement. The Agreement called for completion of the Pipeline to enable initial operation by January 1, 1983 but was subject to conditions regarding routing, the construction timetable, taxation, and the availability of the Pipeline for the transportation of Canadian gas.

IEA oil import commitment	Canada continued to be an active participant in the International Energy Agency (IEA) which was established in November 1974. In October, the Energy Ministers of the 19 member countries of the IEA met in Paris under the Chairmanship of the Canadian Minister of Energy, mines and Resources. The Ministers adopted a 12-point energy program aimed at holding oil imports in 1985 to no more than 26 million barrels per day. For Canada, the target was to limit oil imports in 1985 to one third of total requirements, or 800,000 b/d, whichever was less.
Increased energy R&D funding	In October, the Minister of Energy, Mines and Resources announced an increase of \$15 million in supplementary funding for federal energy R&D for 1978-79, bringing the total expenditure planned for that fiscal year to \$145 million. Of the additional funds, \$6.3 million was allocated to renewable energy R&D and \$5.6 million to energy conservation, these two components of the R&D program accounting for almost 80% of the increase.
P.E.I. cable completed	The \$36 million electric power cable, connecting P.E.I. with the New Brunswick Power Commission was completed and placed in service in October. The federal government made grants (\$18 million) and loans (\$9 million) totalling \$27 million available for the project to ensure lower-cost electricity for P.E.I. Two 100-megawatt cables carry power across the 21.7 km interconnection, built at a cost of \$39.2 million.
Speech from the Throne - energy objectives - forecasts of energy shortages	In the Speech from the Throne on the opening of the Third Session of the Thirtieth Parliament on October 18, the Government reaffirmed its policy to work with the provinces toward the goal of self-reliance, particularly encouraging exploration and conservation to reduce the country's dependence on imported oil. Exploration, which had appeared promising on Canada lands in the North, was to be further encouraged by the proposed northern gas Pipeline. A Bill was to be placed before Parliament to seek approval for the implementation of the Pipeline agreement, negotiated with the Government of the U.S., which would "launch one of the largest civil engineering projects in the history of the world and provide immense benefits to Canada through jobs, investment, the purchase of materials, and through easier and cheaper access to northern gas reserves." In his participation in the debate on the Speech from the Throne on October 21, the Minister of Energy, Mines and Resources identified additional energy project objectives including accelerated development of the oil sands and heavy oil resources, expansion of the natural gas market in Quebec, improvement of the energy supply situation in the Atlantic provinces, and increased emphasis on energy conservation and renewable energy initiatives. He also reported on the meeting of the International Energy Agency, held earlier in October, when forecasts were made by industrialized countries of an energy crisis by 1985 when OPEC nations would not be able to meet the oil needs of the western economies. (By 1985-86 a surplus of world oil supplies had driven the OPEC price down to less than \$10 a barrel from the 1984-85 peak of \$34 U.S.).
IEA research projects	In October, Canada signed three energy research agreements with member IEA countries on hydrogen, wind energy research and fusion research. Earlier in the year Canada had joined other IEA research projects concerned with coal, conservation, nuclear safety, and fusion.
The 1972-75 international uranium marketing arrangement	On October 14, the Minister of EMR issued a Press Release relative to the actions the government took in the period 1972-75 to protect the Canadian uranium industry from the consequences of U.S. actions. In 1972 the government had approved an international marketing arrangement for uranium whereby certain Crown corporations were authorized to participate in the arrangement, and a regulation was passed under the Atomic Energy Control Act requiring Canadian uranium producers to comply with the pricing and quota provisions which had been agreed upon internationally. It had been considered a matter of public policy for the government to protect the uranium producing

industry from extinction and to do so by helping to stabilize world prices at levels above the cost of production. The October 14 statement, and accompanying documentation, set out full details of the considerations leading to Canada's participation in this program and of the 7 general Directions dealing with prices and quotas that were issued between 1972 and 1975 by the Minister to the Atomic Energy Control Board. The statement also dealt with the Uranium Information Security Regulations that were designed to protect Canadian sovereignty in the face of extraterritorial application of U.S. legal processes relative to court proceedings in the U.S. Those proceedings were concerned with the sale by Westinghouse Electric Corporation of uranium it did not have and stood to lose over \$2 billion if it fulfilled its contractual obligations in 1975.

Nuclear Control and Administration Bill	The Nuclear Control and Administration Act (Bill C-14) was tabled in the House of Commons on November 24 and was designed to provide for a reconstituted Atomic Energy 'Control Board, responsible for regulating all segments of the nuclear industry, with all commercial aspects relating to exploration, mining, processing, import, export, sale or disposal of uranium to be under supervision of EMR. The Bill died on the Order Paper with the end of the session in 1978.
Petroleum Corporations Monitoring Act	The Petroleum Corporations Monitoring Act (Bill C-12) was introduced in the House of Commons for first reading on November 2. The legislation was designed to enable the Government to better plan and develop policies for the management of Canada's energy supplies and resources. Provisions of the Act included the filing by companies on June 30 and December 31 of each year details on all sources of funds together with an indication of their allocation to various activities within the company. The objective was to provide assurance that revenue from increased oil and gas prices was being reinvested by industry in greater exploration and development in Canada. Bill C-12 received Royal Assent on June 30, 1978.
Mackenzie Valley Pipeline Inquiry - Berger Report, Volume 2	On November 30, Mr. Justice T.R. Berger's Report (Volume I) on the Mackenzie Valley Pipeline inquiry was presented to the Government (see note of May 1977 on Volume 1). Volume 2 outlines the terms and conditions applicable to the construction of a Mackenzie Valley Pipeline if, and when, it is built. The recommendations are divided into three groups: social and economic recommendations environmental recommendations and recommendations applicable to the project itself. At the heart of the recommendations is the need to settle native claims prior to the construction of a Mackenzie Valley Pipeline. Mr. Berger's published report is entitled "Northern Frontier, Northern Homeland".
Imperial Oil Cold Lake project	Imperial Oil Limited in November applied to the Alberta Energy Resources Conservation Board to build and operate a major heavy oil recovery and upgrading project near Cold Lake. The design called for a project capacity of up to 140,000 barrels a day of synthetic crude oil. Cost of the project over its entire life was estimated as high as \$4 billion.
Canada Oil and Gas Act	In December, the federal government introduced a bill (Bill C-20) in Parliament to regulate the disposition and development of oil and gas rights in Canada Lands which would implement policy intentions announced in May 1976 and applying to about 1.3 billion acres of Crown reserve land. It included a minimum 25% Canadian participation requirement for obtaining a production licence, and provisions to give special rights to Petro-Canada, including a limited (up to 25%) "back-in" privilege on leases up for renewal where no discovery had been made. This Bill died on the Order Paper at the end of the Session in 1978.
Polar Gas Pipeline application	In December Polar Gas Ltd., a consortium including TransCanada Pipelines, Panarctic Oils Ltd., Tenneco Oil Canada Ltd., and the Ontario Energy Corporation applied to the NEB to construct a 2,338-mile natural gas Pipeline from the Arctic Islands to join the TransCanada system at Longlac in northern Ontario. Polar Gas had commenced research and feasibility studies in 1973.
Coal policy and studies - including	A Preliminary Statement for a Canadian Coal Policy was discussed at the Energy Ministers' Conference held in Ottawa in December, and further consultations on the policy were planned for 1978. During 1977, the federal government had commenced a continuous appraisal of Canada's

resource assessments, Canada - B.C. coal agreement	coal reserves and published a first report "Assessment of Canada's Coal Resources and Reserves". Under the terms of the Canada-B.C. Northeast Coal Subsidiary Agreement, the federal government undertook during 1977 to share jointly in the cost, up to \$10 million, of studies to evaluate the Northeast B.C. coal potential and related transportation and other infrastructure needs.
LaPrade heavy water plant	The federal and Quebec governments announced in December an agreement, which would allow the continuation of the La Prade heavy water plant at Becancour adjacent to the Gentilly nuclear complex. The heavy water plant was being built by AECL. The estimated total cost of the plant, on which construction had commenced in November 1974, was \$846 million. As part of the agreement to continue with La Prade, the Premier of Quebec would commit one CANDU reactor of at least 600 MW and buy sufficient heavy water to charge that reactor plus two additional reactors of 600 MW each during the 1980s.
Tenneco LNG import-export proposal - N.B.	On December 15, Order-in-Council approval, on the recommendation of the Minister of EMR, was given with respect to two licences issued to Tenneco LNG Inc. for the importation of liquefied natural gas at a place near St. John, N.B., and for the exportation of an equivalent volume of natural gas at a point near St. Stephen on the Canada-U.S. border. The proposal to import LNG from Algeria for re-export to the U.S. had been the subject of considerable study, and following hearings in 1977 the National Energy Board granted licences covering the import and export of 7.5 trillion cubic feet of gas over a 20 year period. The total cost of the project was estimated at \$700 million. Notwithstanding Canadian approval, the proposal was rejected by the U.S. Energy Regulatory Administration on December 18, 1978.
Petroleum Administration Act amendment re: Syncrude oil price	Legislation to amend the Petroleum Administration Act was tabled for first reading in the House of Commons on December 20. The principal purpose of the Bill was to enable effect to be given to the Government's commitment to provide the international oil price for the output of the Syncrude oil sands plant, scheduled to go into production early in 1978 at an initial rate of 50,000 barrels daily, rising to 125,000 b/d by 1981. The Bill provided for the equivalent of crude oil import compensation to 'be paid to Canadian refiners of Syncrude products or other high-cost domestic petroleum sources designated by the Governor-in-Council.
Oil exchanges to supply Northern Tier U.S. refineries	In December, the Minister of EMR commented on the effect of the progressive reduction in Canadian crude exports on landlocked Northern Tier refineries in the U.S. Midwest, noting that notwithstanding the decision taken following the NEB's October 1974 "Report on the Matter of the Exportation of Oil" to reduce exports, Canada had been prepared to release additional export volumes to those refineries in return for U.S. crude supplied into existing pipelines serving Ontario and Quebec from western Canada, essentially the Lakehead portion of the Interprovincial Pipeline system. With the Northern Tier refineries facing further shortages in 1978, Canada had now advised the U.S. that, in order to facilitate additional exchanges, it would be prepared to permit deliveries of Canadian crude in exchange for overseas crude entering the Lakehead system and destined for refineries at Sarnia, Toronto and Montreal.
U.S. commitment to Alaska Highway gas Pipeline	A number of initiatives were taken in the United States in 1977 in support of the proposed Alaska Highway natural gas Pipeline (Alcan Pipeline) following the signing with Canada of the Northern Pipeline Agreement on September 20. Congress enacted by Joint Resolution the President's decision to build the Pipeline and the President signed the Joint Resolution in to Law on November 8. On December 16, the U.S. Federal Regulatory Commission (FERC) issued a conditional certificate enabling Northwest Alaskan Pipeline company to proceed with Pipeline design and planning activities for the section in Alaska, while Foothills (Yukon) proceeded with design and preparation for the Canadian section.
Denison-Ont. Hydro uranium contract, 1980-2011	In December, Denison Mines Limited and Ontario Hydro jointly announced an agreement whereby Denison would provide Ontario Hydro with some 48,465 tonnes of uranium from 1980 to 2011. Prices would be determined from time to time according to a formula that took into account the cost of production and agreed margin, and world price. The contract provided for adjustments in

the amount of uranium to be delivered if requirements should diminish. In 1917 uranium exploration in Canada increased considerably and a number of discoveries were made in northern Saskatchewan.

Energy Ministers' Conference

At the December 1 Energy Ministers' Conference, federal and provincial Energy Ministers re-affirmed the national emphasis on energy conservation and the need to develop domestic oil supplies to reduce the country's dependence on oil imports. There was agreement that the world energy supply and demand balance was a matter of serious concern and that Ministers would do their utmost to reduce imports, in terms of the International Energy Agency objectives.

Energy publications in 1977

By December, several (EMR) energy publications had been completed and published during the year including: "Energy Conservation in Canada: Programs and Perspectives"; "Energy Demand Projections: A Total Energy Approach"; and "The Management of Canada's Nuclear Wastes". During the 1970s, and into the 1980s, EMR published a considerable number of reports on energy conservation procedures and benefits.

Canada - U.S. energy relations

A review of Canada-U.S. energy relations in December showed that there continued to be a number of issues of direct concern to the governments of both countries. While the U.S. government appeared to be interested in dealing with the Canada-U.S. energy relationship in terms of a ".1 package" including all major bilateral issues, the Canadian approach was to deal with issues on the basis of their individual merits, avoiding linkages of unrelated issues but leaving open the possibility of cooperation on a case-by-case basis. Matters of particular interest and concern at the end of 1977 included the following: the U.S. desire for increased gas imports from Canada by early construction of the southern portion of the Alaska Highway natural gas Pipeline (the pre-build); the interest of Eastern Canada petroleum refiners in preferential access to U.S. markets but being faced with competition from Venezuela and Caribbean export refineries; the possibility of several sites in Eastern Canada being selected for part of the U.S. government's strategic petroleum storage reserve, the Wabana mine near St. John's having received extensive study; the efforts of both countries to deal with pending oil shortages at U.S. Northern Tier refineries following the Canadian decision in the mid-1970s to phase down oil exports, with much attention being given in 1977 to oil "exchanges"; the efforts in Canada to promote a LNG port and related Pipeline facilities as part of the U.S. plan to import LNG from Algeria, but with the U.S. Administration becoming less interested in LNG imports because of security of supply concerns; the U.S. interest in a joint study with Canada of bulk electricity exchanges but with Canada seeing no realistic prospect of a quantum increase in electricity exports to the U.S. because virtually all low cost sources of electrical energy had been developed; continuing interest of the U.S. in the transportation of Alaskan oil from the West Coast to serve its inland markets, possibly via the Kitimat proposal for which there was strong opposition in Canada on environmental grounds; and concern in Canada about the continuing availability of U.S. coal for Ontario markets, with the coal strike in the U.S. in 1977 underlining Canada's vulnerability. These and other issues were under consideration at a time when Canada was trying to cut back on crude oil exports and restrain gas exports due to future supply uncertainties. The country had no large blocks of electrical power for export, and remained vulnerable to coal supply because of uncertain U.S. labour relations. At the same time, Canadian uranium companies were facing U.S. agreement subpoenas for proprietary information relative to an informal international marketing arrangement that operated in the early 1970s. Notwithstanding such issues and problems, the two countries had many common interests and objectives in the administration of their energy economies, as illustrated by the announcement in September of the Canada-U.S.A. Agreement on Principles Applicable to a Northern Natural Gas Pipeline.

Eneraction conservation program

On December 16, the Minister of EMR announced that the Office of Energy Conservation (OEC) would participate in the \$150 million Federal Labour Intensive Program through an OEC program, Eneraction, which would employ 2000 people in the first 10 months of 1978 in N.B., Quebec, Ontario and B.C. on conservation-related services and assistance programs.

## THE YEAR 1978

Exposure to medium or long term oil shortages - NEB inquiry	In January the Minister of EMR requested the NEB to investigate and report to him on a range of possible oil supply situations over the course of the succeeding 10-15 years and the import dependence which might develop for Quebec and the Atlantic Provinces and also for British Columbia. This study was requested in view of the indication from some projections of domestic oil production that the federal government might be faced with a difficult decision as to how to allocate inadequate supplies between eastern and western market areas. Considerable effort had been made to reduce the vulnerability of these regions through extension of the IPL Pipeline to Montreal and studies of greater natural gas use and greater emergency oil storage. However, in the latter part of the 1970s, there was increased uncertainty about the security of oil supply, particularly in eastern areas of the country.
Oil export charge reduced	With the increase of \$1.00 per barrel in the wellhead price of Canadian crude oil, effective January 1, the Minister of EMR recommended to the Governor in Council that charges applicable to exports of crude oil and equivalent hydrocarbons be reduced by \$1.00, effective February 1, 1978.
Electrical energy research	In January the Minister of EMR and the President of the Canadian Electrical Association signed an agreement to share the costs of a research program on electricity. The agreement formalized arrangements for contributions by the Government of Canada to the CEA begun in 1974. The program was designed to improve the techniques and reduce the costs of generating, transmitting, using, and conserving electricity.
\$265 million for Cape Breton coal	In January, the federal government announced approval in principle of a 5-year, \$265 million plan for new coal mine developments and rehabilitation of existing mines in Nova Scotia. Engineering and feasibility studies were to begin immediately with final approval conditional upon the outcome of these studies.
Canada-U.S. energy studies	U.S. Vice President Mondale visited Canada in January at which time the two countries agreed to undertake a joint study of oil storage possibilities within Canadian territory and also a study of the feasibility of increasing electric power exchanges.
Satellite surveillance of offshore activity	In January a report prepared by a federal government Task Force on Satellites and sovereignty was released. The extension of Canada's offshore limits to 200 miles, together with increasing oil and gas exploration and tanker traffic in the Arctic and off the east coast had led the Government to consider the use of radar-equipped surveillance satellites to augment aircraft and ship surveillance. The task force had conducted a feasibility study of a Canadian surveillance satellite to be operational in the early 1980s to help meet predicted surveillance needs in the period 1980-2000. "Surveillance" includes monitoring both environmental conditions, such as sea state, ice, fogs, winds, oil pollution, etc., and human activity - ships, drill rigs, and exploration parties. The task force report examined five options for a Canadian surveillance satellite and, as a result of its work, the Government commenced negotiations with the U.S. National Aeronautics and Space Administration (NASA) to participate in the SEASAT satellite program.
Nuclear agreement between Canada and EURATOM, and prior safeguards initiatives	An agreement was signed between Canada and the European Atomic Energy Community (EURATOM) on January 16 for cooperation in the peaceful uses of atomic energy. This safeguards agreement was an updating of the original agreement which had been signed on October 6, 1959. Following completion of the updating agreement, the Canadian government decided to resume shipments of uranium to the European Community. Shipments had been suspended since January 1977 when Canada had initiated stronger safeguards. The January 1978 agreement followed a series of earlier nonproliferation initiatives by Canada, including ratification of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) on January 8, 1969. This Treaty entered into force on March 5, 1970. On February 21, 1972, Canada concluded a Safeguards Agreement with the International Atomic Energy Agency (IAEA) to permit Agency officials to inspect nuclear facilities in Canada to ensure that no nuclear material was diverted from peaceful



use to the manufacture of nuclear weapons or other nuclear devices: "An Agreement for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons". On December 20, 1974, the Canadian government decided to negotiate additional safeguards and by June 1977 this had been completed with all countries except EURATOM countries, and Switzerland and Japan. In December 1976, Canada announced further requirements that its new customers must either be signatories of the NPT or agree to "full scope safeguards", meaning that all nuclear installations in a country, whether supplied by Canada or not, must be available to safeguards inspection. With the signing of the January 16, 1978 agreement, as noted above, EURATOM had met all of Canada's safeguards requirements in relation to the supply by Canada of uranium and other nuclear material and all nuclear facilities. (EURATOM countries: Belgium, Denmark, France, the Federal Republic of Germany, Ireland, Italy, Luxembourg, The Netherlands, and the United Kingdom).

Atomic Energy Control Regulations concerning health hazards to uranium miners

In January, the Atomic Energy Control Regulations were revised to make provision for higher standards of control relative to maximum permissible annual exposures to ionizing radiation for workers in uranium and thorium mines and mills. The 1978 Regulations also amended the definition of 'nuclear facility, to include "a uranium or thorium mine or mill", thereby bringing these facilities more clearly within the scope of the Atomic Energy Control Board's regulatory activities. The 1978 amendments followed 1974 Regulations; the establishment in 1975 of a Mine Safety Advisory Committee; and other measures in the 1970s all directed towards greater safety and health control in the uranium industry. The findings of the Ham Commission Report of 1976 were instrumental in the action taken by the AECB in drafting its 1978 Regulations which specified a maximum permissible exposure to radon daughters of 4 WLM (Working Level Months) per year. (The WLM exposure unit is a measure of the potential for radiation dose which a miner can be expected to inhale from a mine atmosphere.)

Energy capital expenditures to 1990 - First Ministers' Conference

A Conference of First Ministers was held in February to consider economic issues and prospects. The Minister of EMR outlined a number of energy projects that could impact favourably on economic development in the medium-term future and it was agreed that certain projects including Lower Churchill power and Saskatchewan heavy oil development should have high priority. At that time, it was estimated that \$180 billion of total energy-related expenditures would be required through to 1990. Projects already underway and projects for which firm estimates were available aggregated \$55 billion in construction costs and included oil, gas, electricity and conservation projects.

Federal R&D funding

Energy R&D funding provided by the federal government, as announced in February, was to be increased by almost \$15 million in 1978-79 to raise the total allotment for that fiscal year to \$144.5 million compared with expenditures of \$129.9 million in 1977-78 and \$120.2 million in 1976-77. The percentage of R&D funds to be spent on renewable energy and energy conservation increased from 11% in 1976-77 to 21% in 1978-79. While there had been no increase in the R&D funds for nuclear energy research in that period, nuclear research had only declined from 75 to 62 in percentage terms in relation to the total R&D budget.

Northern Pipeline Bill

Debate on second reading commenced on February 13 for Bill C-25, Northern Pipeline Act. This legislation implemented the terms of the co-operative agreement between Canada and the U.S. to serve the mutual interests of the two countries. The agreement had been signed in Ottawa on September 20, 1977. The legislation also established the Northern Pipeline Agency to provide a single regulatory authority to exercise all federal responsibilities directly related to the building of the Pipeline system by Foothills (Yukon) Pipeline Limited. The primary objective of the Agency, together with other provisions of the Bill, was to ensure that the Pipeline project was planned and implemented in a way that would maximize the potential economic, industrial, energy and social benefits for Canada, while at the same time minimizing adverse social and environmental impacts. The 2,754-mile, 48-inch diameter Pipeline was designed to deliver Prudhoe Bay, Alaska, natural gas to U.S. markets by following the Alaska Highway route and crossing Alberta to the U.S. Provision was made for the construction of the Dempster lateral to transport Mackenzie Delta gas

to the Alcan system, at a junction in the Yukon, when Canada would need to draw on that frontier gas to supplement Western Canada supplies. It was estimated that some 100,000 person-years of employment would be generated in Canada during construction of the total system. It was also estimated that construction would start in January 1981, giving three years for preparation and for settlement of Yukon Indian land claims, and for financing the project. By the mid-1980s there was still no indication as to when financing would be possible

- Maritime Energy Corporation In February, the governments of New Brunswick, Nova Scotia and P.E.I. and the federal government accepted in principle the establishment of the Maritime Energy Corporation which had been recommended in 1977 following a joint federal-provincial feasibility study. The objective of the Corporation was to improve the efficiency of electric utility expansion in the region through joint operation, planning and joint ownership of facilities in the three Maritime provinces.
- Lower Churchill Development Corp. On February 14, the federal and Newfoundland governments issued the following joint statement:
- "Agreement in principle has been reached to the establishment of a Lower Churchill Development Corporation. The Corporation would initially have as equity shareholders the province of Newfoundland and Labrador and the Government of Canada, and would have the primary objective of establishing a basis for the development of the hydroelectric potential of Labrador with the first emphasis being on the Lower Churchill River downstream of the existing Churchill Falls generating station." (see also note for November 1978)
- As noted in the February 1975 comment on the Lower Churchill, studies have been underway since the late 1960s on the possibilities of supplying the Island of Newfoundland with electric power from the Gull Island site. In November 1975, because of increased cost estimates Newfoundland had decided to defer development of Gull Island and give priority to the transmission phase, but this depended on satisfactory arrangements with Hydro Quebec for supply of a block of power from the Upper Churchill Falls plant over and above the 300 MW which Newfoundland could recall. No progress was made in this respect and, in a letter of May 18, 1976, the Premier of Newfoundland advised of his government's intention of proceeding with a court action unless Quebec agreed to release 800 KW from Churchill Falls for Newfoundland's own use at the same price as paid by Hydro Quebec. As this matter was not resolved, work on the transmission line was terminated and new assessments got underway following the signing of an agreement, in November 1978, by the federal and Newfoundland governments to establish the Lower Churchill Development Corporation.
- Tidal power studies In March the federal government accepted the recommendations of the Fundy Tidal Power Review Board that a pre-investment design study should be undertaken on the Cumberland Basin site in the Bay of Fundy. This report covered the conclusion of the second major study undertaken on the development of tidal power in the Bay of Fundy. The first report, presented to the federal and provincial governments in 1970, concluded that Fundy Tidal Power was not then economic in comparison with alternative sources of generation in the maritime provinces. The more recent study was undertaken under authority of a federal-provincial agreement of December 3, 1975 at a cost of some \$3.6 million over a two-year period following preliminary work initiated in February 1972. The decision to proceed with the design study, costing \$33 million, was subject to willingness of N.S. and N.B. to participate on a 50:50 basis. The decision to proceed at this stage did not imply a plan to undertake the estimated \$3 billion investment in the full-scale tidal project, but it would provide the necessarily move detailed design information for an eventual decision as to whether to construct a tidal power plant.
- Energy bus program In March, the federal and Saskatchewan governments signed an agreement to share the costs of an "energy bus" program. The program offered unique and diverse on-site computerized energy audits designed to provide free assistance to industry, business and public institutions to reduce energy costs by identifying energy conservation 'opportunities. The program had been operating successfully in Ontario for two years, and in Nova Scotia and P.E.I. since mid-1977.

Nelson River hydro development agreement - EMR responsibility	Effective March 31, 1978, Atomic Energy of Canada Limited (AECL) ceased to be Canada's agent in terms of Section 7 of the 1966 Agreement between Canada and Manitoba on Nelson River hydro development. Administration of the Agreement by Canada became the responsibility of the Department of Energy, Mines and Resources
Financing energy self-reliance	An EMR analysis, published in March, entitled "Financing Energy Self-Reliance" concluded that an estimated investment of \$180 billion over the period 1976-1990 needed to finance energy self-reliance should not impose unmanageable strains on the Canadian economy. The analysis of industry's ability to raise that amount of capital indicated that some financing problems for specific energy projects were possible, but fears of a widespread capital crunch were groundless. Two scenarios analyzed projected energy expenditures of some \$180 billion: one was optimistic about frontier oil and gas supplies and was based on three frontier pipelines; the second scenario called for only one frontier Pipeline but placed more reliance on synthetic crude oil from the oil sands and heavy oils of Western Canada. The latter scenario contemplated capital requirements of \$110 billion for electric power generation, \$42 billion for petroleum development including oil sands and refining, \$17 billion for Pipeline, \$9 billion for natural gas and oil marketing and distribution, and \$3 billion for coal and uranium development. Based on historic relations between domestic and foreign sources for external financing requirements, the inflow of foreign capital would have to be in the range of \$52-\$61 billion, for a yearly average of about \$3.8 billion during the 15-year period covered by the analysis. This is about half the \$8 billion borrowed by Canada abroad in 1976.
Canada participates in IEA research projects	Canada signed four new international research agreements at the International Energy Agency (IEA) Governing Board meeting in Tokyo in April, bringing to 14 the number of IEA energy research projects in which Canada was participating. The four new agreements were all directed to renewable energy and conservation projects. The IEA's energy research, development and demonstration program is based on close cooperation and collaboration among 19 member nations to reduce their dependence on declining oil resources
Northern Pipeline Act passed giving approval to Alcan Pipeline but project delayed	In April, the Northern Pipeline Act was approved by Parliament. It received Royal Assent on April 12 and was proclaimed on April 13 (S.C. 1978, c.20). In September 1977 the U.S. and Canadian governments had signed an Agreement to construct a Pipeline system, estimated to cost some \$10 billion, to take delivery of Prudhoe Bay gas for U.S. markets and to provide for the later transportation of Mackenzie Delta gas to Canadian markets. The Alaska Highway Pipeline project (ALCAN) was approved by the U.S. Congress in November 1977, and the passing of the Northern Pipeline Act provided for Canadian approval. The Act sets forth the Agreement with the U.S., of September 20, 1977, as Schedule 1. It also created the Northern Pipeline Agency to oversee the design and construction of the pipeline. Under the Act, the National Energy Board was given responsibility with respect to the incentive rate of return, the financing and tariffs, and the granting of "leave to open" orders. However, the project was being delayed pending resolution of the gas pricing issue in the U.S. which in turn depended on approval of the President. As a result of this delay, pressures were mounting on both sides of the border for pre-building the southern section of the pipeline system to allow export of Canadian gas ahead of completion of the main project. The federal government was not disposed towards pre-building, and approval of new gas exports, without some specific commitments relative to repayment of those gas exports as worked out between exporters and importers on a commercial basis.
TransCanada Pipeline plans for Quebec market expansion	In April, TransCanada Pipelines Limited filed an application with the National Energy Board to expand its natural gas transmission system eastward from Montreal to Trois Rivieres and B6cancour. At the same time, it was making plans to extend its Pipeline farther east to Quebec City, south to the eastern townships, and north to industrial areas including Shawinigan. The availability of natural gas in Quebec began when TransCanada completed its pipeline facilities in the vicinity of Montreal and the first gas from western Canada began to flow through the system in 1958. In the following 20 years, the company had experienced continuing difficulties in

establishing a proper equilibrium between availability of gas supply, pipeline capacity, and market demand, and consequently its service had not been extended beyond Montreal.

PAA Act passed	An Act to amend the Petroleum Administration Act and the Energy Supplies Emergency Act received Royal Assent on April 20, making provision for the equivalent of international prices for selected domestic oil production, and for the change in the name of the Energy Supplies Allocation Board in relation to oil import compensation matters to the Petroleum Compensation Board. The amendment of the PAA provided for a charge on domestic and imported petroleum in order to make the international price available to Syncrude and other high-cost Canadian crudes the Syncrude Levy. It also established a special compensation provision for cases of "undue financial hardship".
Budget incentives for non-conventional oil based on requirements forecast	The budget-brought down in April, and certain non-budgetary measures, provided a total federal package aimed at bringing on additional supplies of non-conventional oil. For mining projects of the Athabasca oil sands type, international prices were available for synthetic oil and development expenditures could be written off against income from other operations, while the operation could be treated as a new mine with related incentives. In addition, the limit of writing off depletion had been doubled, with the write-off being allowed against all income. For <i>in-situ</i> projects, such as Cold Lake, the new budget provided for a special depletion and other incentives. Similarly, special incentive provisions were made available for heavy oil projects and for tertiary recovery projects. The total incentive package for oil development included in the budget represented one of the more important budgetary initiatives in respect of energy in several years and was considered of particular importance in view of the expected decline in conventional oil production to less than 700,000 barrels a day in 1990 from the 1977 level of 1.4 million b/d, indicating that over 700,000 b/d of tar sands and heavy oil would be required by 1990.
International Energy Agency (IEA)	In April, the Governing Board of the IEA met in Tokyo, continuing the procedure of meeting periodically at the senior level, while the various Standing Groups continued their active programs which had been initiated with the establishment of the IEA in 1974 (see note for November 1974). Canada is represented in all Standing Groups and has provided extensive support to IEA objectives and programs since the signing of the "Agreement on an International Energy Program" in November 1974. In 1978, considerable attention was being given by the 19 member countries towards achieving the Group Objective of limiting oil imports to 26 million barrels per day by 1985, as had been agreed to at the Governing Board meeting at the ministerial level in October 1977. Much of the work of the IEA is recorded in annual reports which include reviews of national energy programs as conducted in the Standing Group on Long Term Cooperation (SLT). By 1978 the Standing Group on Emergency Questions (SEQ) had produced an Emergency Management Manual describing in detail the operation of the Emergency Oil Sharing System, and had conducted a world-wide test of IEA's emergency oil sharing program. The Standing Group on the Oil Market (SOM) had developed and implemented reporting systems relating to crude oil and product import prices for IEA countries, and other statistical reporting systems, and was also engaged in long-term market analysis. The Committee for Research and Development (CRD) was established to achieve cooperation among member countries in the introduction and use of new technologies directed to the resolution of energy production, conservation and use problems. Canada's active participation in the IEA in the 1970s was considerably strengthening its links with the international energy economy.
NEB inquiry into oil supply and demand outlook	In May, the National Energy Board commenced a public inquiry, which extended into June, in response to a January 16, 1978 request of the Minister of EMR that the Board report on a range of oil supply situations that might occur over the following 10 to 15 years and the import dependency that might develop for B.C. consumers as well as for eastern Canadians. When the Board commenced its hearings, the submissions that had been received included projections of lower oil demand and higher oil supply than in submissions made to a 1976 hearing. Oil import projections were correspondingly reduced. Projections of production from the oil sands indicated that it would not exceed 800,000 to 950,000 b/d by 1995, compared with an earlier target of 1 million b/d by

1990. There was strong support for the continued export of conventional heavy oil and some concern on the part of heavy oil producers that the netback could be less from an upgrading plant than from existing markets. The Board reported on its findings in September (see notes for that month).

crude oil price  
increase and the  
Syncrude levy.

The third of four scheduled domestic crude oil price increases was announced by the Minister of EMR on June 30. The \$1.00 increase brought the price of an average barrel to \$12.75, while a barrel of imported crude oil of the same quality landed at Montreal cost about \$16.00. The four scheduled price increases, to take place every six months, had stemmed from understandings reached in the May 1977 Federal-Provincial Energy Ministers' meeting and were subsequently embodied in a Federal-Alberta agreement. Also effective on July 1, 1978, was a levy (Syncrude levy) of 10¢ per barrel to be charged to all users of domestic or imported crude and most imported petroleum products, with this revenue to be used to fulfill the government's guarantee of the world price for the output of synthetic crude oil from the new Syncrude oil sands plant, scheduled to start operations in the third quarter of 1978. The government also commenced subsidizing the differential in the Toronto and Montreal oil prices, at a \$16 million annual cost to permit the continued equalization of crude oil costs at Toronto and Montreal. In addition, two rates of compensation were established for Canadian ports and Montreal, with the former having a fixed proxy of a 15 cents per barrel advantage

New energy  
conservation  
building code

The development of a "Canadian Code for Energy Conservation in New Buildings" was completed in June. The code contains thermal efficiency standards based on economic and technical criteria developed by the National Research Council for varying climates, defined in degree days.

Saskatchewan  
Cluff Lake  
inquiry favours  
uranium mining

The Cluff Lake Board of Inquiry's final report was released in June. As result of its findings, which were favourable to uranium mining, the Saskatchewan government indicated that the first phase of the Cluff Lake mining project could proceed, with completion scheduled for mid-1980 at a cost of \$130 million. The operation was to be subject to strict occupational, health, safety and environmental regulation.

Ontario-federal  
agreement on  
radioactive waste  
management

An agreement was reached between the federal and Ontario governments in June on Radioactive Waste Management. The agreement enabled geological field work for verification of the concept of deep underground disposal in igneous rocks to be initiated. The first phase of the work was scheduled to be completed in three years and, if successful, would be followed by selection of a site for a demonstration mine

Petroleum  
Corporations  
Monitoring Act

The Petroleum Corporations Monitoring Act received Royal Assent on June 30, as "An Act to require the reporting of certain financial and other statistics relating to the affairs of certain petroleum companies carrying on business in Canada".

Uranium and  
Thorium Mining  
Review  
legislation

On June 29, the Minister of EMR introduced the Uranium and Thorium Mining Review Bill (Bill C-64) in Parliament. The proposed legislation drew heavily on policy principles limiting foreign ownership in the uranium industry that were first announced by the Prime Minister on March 2, 1970 directed towards the objective of at least 50% Canadian ownership in major resource industries. The bill provided for tests concerning ownership related to shares held by non-residents; three quarters of the company directors to be Canadians; and certain limits on the holding of working interests by non-residents. In cases where the level of foreign ownership in an applicant company met the second and third tests, if foreign ownership exceeded 33.7% but not 50% and the applicant was able to demonstrate that it was not a non-eligible person for purposes of the Foreign Investment Review Act (i.e. was able to demonstrate that it was Canadian-controlled), then the applicant was to be deemed to be a qualified applicant and eligible to produce uranium in Canada. This legislation had its origin in a proposed take-over of Denison Mines Limited by a foreign-owned company early in 1970. A draft Bill had been completed in 1971 but had subsequently been extensively revised. (Bill C-64 died on the Order Paper when the Session ended in October 1978).

Tenneco LNG import proposal	In June the NEB extended by one year the approval, given in December 1977, to the Tenneco LNG Project on a proposal to import liquefied natural gas from Algeria to Saint John, N.B. and export it to the U.S. The project was held up pending approval of imports into the U.S and further progress on the proposal depended on U.S. regulatory approval. However, the proposal was rejected by the U.S. Energy Regulatory Administration on December 18, 1978
World oil supply/demand outlook	In June, Sheikh Yamani, Saudi Arabia oil minister visited Canada and in the course of his visit expressed views then held in the Middle East regarding the long-term oil outlook. The 1978 oversupply of oil was forecast to end within two years, to be followed by a period of supply-demand balance until about 1988, when a shortage would ensue. Unless there were orderly and gradual price increases during the period 1978-1988, a price explosion would occur with the onset of petroleum shortages in 1988 which, in turn, would cause severe economic hardship and difficulties. In the year following this prediction, the OPEC price more than doubled with the onset of the Iranian crisis and related short-term oil shortages. The supply situation moved into a surplus position in the early to mid-1980s and the price gradually declined in real terms rather than gradually increasing. In terms of the views held in 1978, the trend in the 1980s could lead to an even more severe price and supply adjustment in the late 1980s than had been foreseen in 1978.
\$380 million renewable energy program	On July 4, the Minister of EMR announced that the renewable energy government would spend \$380 million over the following 5 years on programs to develop renewable energy with the objective of creating a strong Canadian industry in the manufacture of solar heating systems, encouraging the use of wood as a source of energy in the forest industries, and promoting the use of other renewable energy sources. Under the Purchase and Use of the Solar Heating Program (PUSH), \$125 million was to be made available in the period 1979-84 for the preferential purchase of Canadian-made solar space and water heating equipment for new federal buildings. Under the Program of Assistance to Solar Energy Manufacturers (PASEM) grants of up to \$10,000 were to be awarded to firms to prepare solar equipment design proposals and contributions of \$200,000-\$300,000 were to be made to assist firms to develop solar equipment. Under the Low Energy Building Design Awards (LEBDA), awards were available to winners of national competitions to encourage more energy-efficient building designs for residential and commercial buildings. Over the following 5 years, \$114 million was to be allocated to cost-sharing agreements with provinces and the private sector for the demonstration of new technologies in the renewable and conservation areas. Under the Forest Industry Renewable Energy Program (FIRE), the federal government was committed to provide \$143 million in the period 1978-85 for the forest industry to use wood wastes as a fuel source instead of oil and gas. This would include federal contributions of up to 20% of the capital cost of certain kinds of equipment in the forest industry to get the energy content out of wood wastes. In addition, federal guarantees for loans, worth a total of \$150 million, were designed to assist in establishing electrical generating facilities using biomass as the energy source. Under the Expanded Research Development and Demonstration for Forest Biomass Energy Program (ENFOR), \$40 million was to be available in the period 1978-84 in support of research projects and demonstrations of innovative techniques such as biomass plantations and the conversion of biomass to liquid fuels or chemicals.
Canada-B.C. Coal Subsidiary Agreement	By July, several programs funded under the Canada British Columbia Coal Subsidiary Agreement of 1977 were nearing completion. Under that Agreement, the federal government undertook to share jointly with B.C. up to \$10 million for studies to evaluate the proposed northeast coal and related developments. The studies included a program for more accurate coal resources appraisals and more complete estimates of the overall costs and benefits of the proposed regional coal development program in northeast B.C. preparatory to a decision in the early 1980s as to whether it should proceed.
Gas/oil price ratio remains at 85%	On August 1, a new Federal-Alberta gas pricing agreement was announced which provided that the ratio of natural gas to crude oil prices would be maintained at the existing 85% for 1 year, effective August 1, 1978. Following the \$1.00 a barrel crude oil price increase in July, this raised the new wholesale price of natural gas in Toronto to \$2 per million Btu's from \$1.85

Syncrude in production	In August, Syncrude Canada Limited's oil sands plant came on stream, with an initial production of 9,540 cubic metres per day and a design capacity of 20,000 cubic metres per day, scheduled to be reached in 1982. The Syncrude property had been under development since the late 1960's but it was not until February 1975 that its future was assured. At that time, the Governments of Canada, Alberta and Ontario reached an agreement with the three private participants of Syncrude to form a new partnership to continue to build and to operate the plant,.
LaPrade to be mothballed	In August, the federal government announced that in order to save an expenditure of \$150 million in fiscal 1979-80, it would proceed immediately to negotiate with the Province of Quebec on the mothballing of the La Prade Heavy water plant. The plant could then be brought into service at a later time when its output was needed. La Prade had been under construction since 1974.
Pause in upward movement of oil and gas prices	On August 25, the Minister of EMR announced that he and the Minister of Finance would be contacting Ministers of oil producing provinces to seek their agreement on the need for a pause in the upward movement of oil and gas prices that had been scheduled for January 1, 1979. They would also be proposing that natural gas prices be allowed to find their appropriate level in the market place within a defined range. It was estimated that the previously scheduled oil price increase of \$1.00 a barrel for January 1, 1979 would exceed the limitation set in the June 1977 agreement, namely the average price of crude oil in the Chicago area. with the increase in natural gas reserves in the previous two or three years, greater amounts were available for the domestic market but the price relationships of natural gas to crude oil(85%) had been acting as a constraint on gas sales in eastern markets, hence the need to free-up the price.
Thunder Bay coal terminal opens	In September, the new Thunder Bay, Ontario, coal terminal opened, completing the final link of an upgraded west-to-east coal transportation system. The new terminal had been constructed to facilitate the use of western Canada coal in central Canada, thereby contributing, to Canada's energy self-reliance. The initial capacity was 3 million tonnes a year with provision for increasing it to 6 million tonnes. It was expected that coal deliveries to central Canada from the West would reach the 4 million tonne level in the early 1980s.
1977 Petroleum Monitoring Survey	The results of the 1977 monitoring survey of Canadian petroleum corporations were announced in September. The companies surveyed accounted for 80% of total Canadian crude oil production and, in 1977, their internal cash generation increased by 24% from \$3.1 billion ,in 1976 to \$3.8 billion in 1977 while total capital expenditures rose by 36.6% from \$2.3 billion to \$3.2 billion. Total exploration and development expenditures in 1977 were \$2.3 billion, an increase of \$710 million over 1976, the growth in industry activity reflecting increases in the domestic wellhead price of oil and gas. This and previous surveys were based mainly on information provided voluntarily by the petroleum corporations. With the passing of the Petroleum Corporations Monitoring Act in June 1978 (see June note), the filing of financial and other statistical data became mandatory.
EMR organizational changes	In September, organizational changes relative to EMR's energy policy function were announced. The Economic and Policy Analysis Sector was established and the Energy Sector was reorganized in terms of three new branches: the Conservation and Renewable Energy Branch; the Petroleum Branch; and the Electrical, Coal, Uranium and Nuclear Energy Branch. The strengthened capacity for economic analysis in the new Economic and Policy Analysis Sector was designed to complement the policy and technical expertise in other sectors of the Department.
NEB report on Oil Supply and Requirements-demand down, supply outlook improved	The Natural Energy Board published in September the findings of its investigation into oil supply and demand in response to the January 16, 1978 request of the Minister of EMR that it report on a range of possible oil supply situations that might occur over the following 10-15 years and the import dependence that might develop in Canada (s(-@e May note). The report "Canada Oil Supply and Requirements, September 1978" concluded that it should not be necessary to increase the capacity of existing oil importing facilities during the forecast period ending in 1995. This was a change from the views the Board expressed in its February 1977 oil report that it was likely that

refineries west of the Ottawa Valley would need imported oil in the 1980s. The changed outlook reflected a lower than previously anticipated increase in demand as well as an improved supply forecast, particularly in oil sands development. Instead of oil deliveries to Montreal needing to be phased down because of declining supply in western Canada, it was estimated that deliveries at the 315,000 b/d level could be maintained until 1983 and then only phased down gradually to 100,000 b/d by 1995.

Offshore jurisdictional issues

In September, Nova Scotia repudiated the Memorandum of Understanding that had been signed by the Maritime provinces and the federal government in February 1977, and asked that the offshore question be part of a constitutional review. During the period October 1978 February 1979 the question of offshore resources jurisdiction was on the agenda of constitutional discussions.

The Northern Tier oil supply problem

While the NEB report, completed in September, indicated that no new port facilities would be required to serve domestic oil needs in the foreseeable future, Canadian exports to Northern Tier refineries in the U.S. Midwest had been steadily reduced since the decision was taken in 1974 to phase out oil exports by 1981. By September they had been reduced to the level of about 55,000 b/d and the issue of oil supply to the Northern Tier refineries had loomed large in Canada/US relations since 1974. Oil exchanges between the two countries had helped considerably but other alternatives, such as transporting Alaskan oil to the U.S. Midwest, had been unsuccessful because of the reluctance, for environmental and other reasons, of U.S. ports to accept Alaskan and other crude oil for trans-shipment inland. The establishment of an oil port at Kitimat on the B.C. coast had been similarly ruled out. A proposed U.S. port in Puget Sound and a Northern Tier Pipeline had been confronted with many difficulties. Northern Tier supply remained a problem for Canada because refineries had been originally tied to supplies from Canada and, while the cutback was gradual, no solutions additional to oil exchanges had emerged. In the oil exchange process, Canada increased its deliveries to the Northern Tier above planned levels in proportion to quantities of replacement U.S. oil delivered to eastern Canada refineries.

IPACE report on a national electrical grid

In October, the Interprovincial Advisory Committee on Energy (IPACE) completed a study of a national grid entitled "An Evaluation of Strengthened Inter-provincial Interconnections of Electric Power System", which constituted a further review of the national grid proposal which had been examined in a joint federal-provincial study in 1968. At that time, it was concluded that, while a national grid was not economic, encouragement should be given to the expansion of regional interconnections as economic and technical opportunity dictated. In the intervening years, there had been substantial reinforcement of interprovincial connections between electrical utilities including stronger ties between Manitoba and Saskatchewan, the completion of the east-west interconnection in Ontario, the direct interconnection between New Brunswick and Quebec, and the submarine cable interconnection between Prince Edward Island and the mainland. There had also been reinforcement of ties between New Brunswick and Nova Scotia and the construction of a transmission system from Labrador to the Quebec system in connection with the Churchill Falls development. With those projects in place, the only gaps that existed in a national interconnection were those between Alberta and Saskatchewan, and the gap between Labrador and the Island of Newfoundland. The IPACE report of October 1978 concluded that the costs of a major overlay to the existing and planned systems would not produce commensurate benefits but that continued consideration should be given to improving transmission ties as circumstances and economics dictated.

NEB natural gas supply and requirements inquiry

In October, the National Energy Board commenced a hearing concerned with an appraisal of the supply of gas in relation to reasonably foreseeable requirements for use in Canada and for authorized exports. The appraisal was made because of changing circumstances as to supply, price and markets in the natural gas industry, and also because the NEB felt it was timely in the light of possible applications for licenses to export natural gas, to re-examine its procedures for determining the surplus of natural gas. Plans for the hearing were made early in 1978 and the hearing, scheduled to commence in October, was announced in April. Hearings were held in several cities across Canada in the period October 11-December 4, and the Board published its



finding in a report dated February 1979 (see note for that month of 1979). In its 1975 report "Canadian Natural Gas Supply and Requirements", the Board had set forth certain general principles respecting surplus calculation procedures.. In its 1978 hearing, it invited submissions on specific surplus calculation procedures which would embody as many as possible of the aspects of the principles set forth in the 1975 report. While this inquiry was not established to consider specific applications, it was the intent to determine the extent to which reserves and deliverability of gas exceeded foreseeable requirements for gas in Canada and authorized exports. Such surplus determination would form the basis for considering specific export applications in subsequent proceedings.

The Q&M Pipeline proposal for eastern gas markets

Q&M Pipe Lines Limited filed an application before the NEB in October to extend natural gas service to markets east of Montreal which was in line with the federal government's objective to see more Canadian gas used in eastern Canada to replace oil imports. At the same time, there was a developing surplus of gas deliverability in western Canada, and producing companies were pressing for export approval but the federal government was awaiting the results of the NEB natural gas supply and requirements examination, noted above.

Speech from the Throne

In the Speech from the Throne on October 11, at the commencement of the Fourth Session of the Thirtieth Parliament, the Government set a priority on industrial expansion in the context of budgetary restraint. In the area of economic development, it emphasized industrial innovation and reaffirmed initiatives in the April budget including measures to stimulate non-conventional oil development. Emphasis was also given to measures announced during June and July to encourage energy conservation and the development of renewable energy sources.

Nuclear Control and Administration Bill C-14 and Uranium and Thorium Mining Review Bill C-64

The Nuclear Control and Administration Bill C-14, and the Uranium and Thorium Mining Review Bill C-64, died on the Order Paper in October. Bill C-14 had been tabled for first reading in the House of Commons on November 24 1977. Its purpose was primarily to replace the existing Atomic Energy Control Act with a strengthened legislative vehicle to take account of the developments in the uranium and nuclear energy fields that had occurred since the Atomic Energy Control Board had been established in 1946 under the Atomic Energy Control Act. Bill C-64 had been tabled for first reading on June 29, 1978 (see note for June on that Bill). It was the first expression in potential legislation form of the policies announced in 1970 by the government restricting foreign ownership in the Canadian uranium industry. The provinces had opposed the legislation proposed by the two Bills on the grounds of two principles, as expressed at a November 1978 Mines Ministers' Conference: the provinces should have sole jurisdiction and responsibility for the management of resources, including all aspects relating to uranium exploration, mining, and milling; and they should have sole jurisdiction and responsibility for the protection of workers. The first principle would undermine Bill C-64 which was based on the issuance by the federal government of an extraction permit to be effective at the mining stage. The second principle would undercut the provision of Bill C-14 relative to the prime responsibility of the proposed federal, Nuclear Control Board for health, safety, security, safeguards and environmental control. By the mid-1980s neither Bill had been re-introduced in Parliament.

AECB report on radioactive waste management criteria

In October, the Atomic Energy Control Board completed a report "The Regulatory Role in the Disposal of Radioactive Waste in Bedrock", further to its January 1974 report "Guide for Licensing of Radioactive Water Management Facilities", and its July 1975 report "Regulating the Management of Radioactive Wastes in Canada". These reports provide an important record of the Board's development in the 1970s of radioactive waste management criteria.

First Ministers' Conference on the Economy-energy conclusions

At a conference of First Ministers, held on November 27-29, discussion of a number of energy matters took place. Ministers agreed on the importance of developing new gas markets east of Alberta. To this end, they recognized the need for the rationalization of refinery surplus capacity in Eastern Canada and equitable treatment of gas relative to other energy forms. A decision was taken to establish a federal government-Alberta task force, with provision for consultation with other interested provinces, to identify mechanisms to achieve gas market expansion. Ministers

stressed the importance to all regions of the country of greater energy self-reliance and the early development of major energy projects especially relative to heavy oil, oil sands and hydroelectric power. Emphasis was also given to the importance of energy conservation programs and the development of renewable energy sources. Ministers noted in particular the benefits which energy development has for job creation and improving the balance of payments.

Lower Churchill  
Development  
Corporation  
established

In November the federal and Newfoundland governments announced that they had signed an agreement that provided for the incorporation and joint federal-provincial funding of the Lower Churchill Development Corporation. The first objective of the Corporation was to finalize the investigation of the hydroelectric potential of the Lower Churchill River in Labrador, involving evaluation of both the Gull Island and Muskrat Falls sites, related transmission facilities, marketing prospects, and methods of long-term debt financing. Studies relative to the objective of supplying electrical energy from the Lower Churchill to the Island of Newfoundland had been conducted from time to time since 1965. A detailed evaluation of the Gull Island project by a joint Federal-Provincial Task Force, updated to December 1974, had indicated Gull Island development to be the lowest-cost solution to meeting the expected growth in demand for electrical energy in Newfoundland. Further studies led to the agreement of November 1978. The agreement provided that, should the Lower Churchill Project proceed, Newfoundland and Canada would maintain their respective 51/49 equity positions in the Corporation. It was estimated that development of the Gull Island site would cost about \$3 billion, of which 10% (about \$300 million) would be provided through equity financing. Canada would contribute about \$150 million for its equity position. Newfoundland would contribute \$75 million in cash, acquiring the balance of its equity by transferring its existing Gull Island assets to the Corporation. Newfoundland had a right to acquire the federal government's shares at any time.

June 1977 oil  
price agreement  
extended to June  
1980 -Energy  
Ministers

In November, there was a meeting of federal and provincial Energy Ministers (Nov. 16) and a First Minister's conference on the Economy (Nov. 27-29). At the Energy Ministers' Conference, all of the provinces supported, with varying degrees of enthusiasm, Alberta's position that if there was "headroom" relative to the Chicago price "ceiling" for a January 1, 1979 crude oil price increase, then that increase should take place regardless of the national economic impact. The federal government was concerned about the impact of an increase on inflation (about 0.7% on the CPI for each \$1 per barrel increase) and other economic effects. Prior to the First Ministers' Conference, federal and Alberta Ministers of Energy reached an agreement to extend the June 1977 pricing agreement through to the end of June 1980, to forego the January 1, 1979 increase, and to provide, under certain conditions, for increases of \$1 per barrel on July 1, 1979 and January 1, 1980. On gas pricing, it was agreed that Alberta would make gas available at an incentive price established from time to time in new markets east of Alberta, with the incentive price being rolled-in at the Alberta border so that all producers continued to receive a "single-price".

Great Canadian  
Oil Sands plant  
expansion

In November, it was announced that Great Canadian Oil Sands Limited (GCOS) had committed to expand the capacity of its oil sands plant at Fort McMurray, Alberta, by 13,000 barrels per day, at a cost of \$185 million. In 1977 the plant had operated at an average capacity of 45,000 b/d. GCOS was to be given access to world prices for its output, a price incentive considered necessary to develop Canada's high-cost non-conventional oil resources. GCOS had commenced production in 1968. This incentive became effective in April 1979.

Alcan gas  
pipeline pricing  
provisions

The main event in the United States in 1978 relative to the Canada-U.S. proposal to construct the Alaska Highway natural gas pipeline (Alcan Pipeline) for delivery of Prudhoe Bay gas to U.S. markets, and the later delivery of Mackenzie Delta gas to Canadian markets, was the President's signing in to law on November 9 The U.S. National Energy Plan, with Alaska gas pricing provisions. This followed enactment by Congress on October 17 of the U.S. President's Energy Bill, including provisions for setting of producer prices of Alaska natural gas and also making provision for the gas to be priced on a "rolled-in" basis to encourage its marketability in the lower 48 States.

Increased Canadian ownership and control	An analysis of Canadian ownership and control of the petroleum industry conducted on the basis of data available to December showed that Canadians owned an estimated 34.5% of industry assets, up from 24.1% in 1972. Assets under Canadian control were an estimated 24.5% in 1978 compared with 10.3% in 1972.
Bruce A nuclear station completed in Ontario's nuclear program	By December, the third and fourth Units of the Bruce A nuclear generating station, near Kincardine, Ontario, had begun operations. The Unit 2 reactor of the Bruce Station went critical on July 28, 1976, with Unit 1 being commissioned in 1977. With all four Units in operation in 1979, the Bruce A was one of the largest operating nuclear stations in the world, having a capacity of 3000 megawatts. In 1978, the other nuclear power reactors in Ontario were the Nuclear Power Demonstration Unit - 25 MWe, operational in 1962; the Douglas Point Station - 200 MWe, operational in 1966; and Pickering A, Units 1 and 2, operational in 1971, and Units 3 and 4 in 1972-3, with a total capacity at Pickering of 2000 Mwe. Pickering B was ordered in 1974, designed for four 500 Mwe units, and started up in 1982. Bruce A was approved in 1969 and construction began in the same year. Bruce B was approved in 1975, with operation scheduled for the mid to late 1980s. Gentilly 2 in Quebec and Point Lepreau in N.B. were each designed at 600 MWe and had a 1982 start-up.
Post Anti-Inflation Program oil price administration, and review of oil price controls	On December 22 the Minister of EMR issued a communiqué indicating the extent to which the government would be involved in oil pricing and monitoring in the post-Anti-Inflation era, effective January 1, 1979. The communiqué reflected a consensus of provincial views, as expressed by Energy Ministers in a meeting held in November, for less interference by governments in industry. Under the Anti-Inflation program, which had been implemented on October 14, 1975, oil companies could only make upward adjustments in their posted prices in terms of increased crude oil costs announced by the Minister of EMR and non-crude cost increases as approved by the Anti-Inflation Board. With the termination of the Anti-Inflation Program at the end of 1978, the federal government no longer administered the flow-through of non-crude cost increases to producer prices, or set price level guidelines for petroleum products obtained from imported petroleum, but it continued to regulate both the wellhead crude oil price as well as the resulting flow-through to oil product prices of wellhead increases. The federal government, with the support of the provinces, also continued to maintain a system for monitoring the industry's pricing performance and cost experience, with industry continuing to provide cost and price information to EMR, but the December 22 communiqué in essence freed the petroleum industry from both product price level control, as well as the control over the flow-through of non-crude costs to product prices. Termination of the Anti-Inflation program marked the end of the third phase of federal oil product price controls since 1973. During the first phase, September-December 1973, a "voluntary freeze" on the prices of automotive fuels and heating oil was maintained as part of the cost of living measures announced on September 4, 1973. During the period January 1974 - October, 1975, the second phase, mandatory control under the Oil Import Compensation Program was maintained; and compliance with federal oil product price guidelines was made a condition of eligibility for oil import compensation. Full recovery was allowed of industry-wide crude cost increases occurring at April 1, 1974 and July 1, 1975, with a 45-day inventory-related "lag". The third phase was one of mandatory price control under the Anti-Inflation Program, October 14, 1975 - December 31, 1978, as noted above.
Oil price inquiries - provincial	December marked the completion of another year of oil price inquiries at the provincial government level. In 1978, the B.C. Energy Commission completed its inquiry into oil and gasoline pricing in the province. Earlier inquiries had included those of the Royal Commission on Gasoline Price Structure in British Columbia in 1966, the Royal Commission on the Price Structure of Gasoline and Diesel Oil in Nova Scotia in 1968, the McKenzie inquiry into gasoline marketing in Alberta in 1968, and the Royal Commission on Petroleum Products Pricing in Ontario in 1976. Later inquiries included the Task Force on Fuel Prices in Quebec in 1985. None of these provincial inquiries was as broad ranging as the Combines Investigation inquiry initiated at the federal level in February 1973 followed by the Restrictive Trade Practices Commission examination which was completed in 1986 (see note for February 1973).

## THE YEAR 1979

- Arctic Islands natural gas - no progress
- The Arctic Pilot Project, a joint undertaking of Petro-Canada, Alberta Gas Trunk Line Company Ltd., and Melville Shipping Ltd., a Montreal consortium of three shipping companies, filed an application in January with the NEB for export of liquified natural gas (LNG) from Melville Island in the Arctic Islands. The \$1.5 billion project was designed to transport LNG to a terminal in the Maritimes or Quebec using two Arctic Class VII icebreaker LNG tankers. The Polar Gas consortium was proposing to take delivery of Melville Island gas by constructing a pipeline under McClure Strait to Victoria Island and to the mainland near Coppermine, N.W.T. Exploration for gas and oil had been underway in the Arctic Islands for many years, the first deep exploratory well having been drilled in 1961 and the first gas discovery was made in 1969. In the mid-1980s, 25 years after the first well was drilled, proposals to market Arctic Islands gas were in abeyance but a test shipment by tanker was made of Arctic crude oil in the summer of 1985 from the Bent Horn field on Cameron Island to Montreal, a distance of 3100 miles.
- Canada Oil & Gas Drilling Regulations
- New regulations to govern the drilling for oil and gas on lands under federal jurisdiction were approved in January under the title of Canada Oil and Gas Drilling Regulations. They specify standards in equipment and procedures that must be met in conducting drilling operations in the Northwest Territories, Yukon, and all Canadian offshore areas. Over 1,060 wells had been drilled in the search for oil and gas on federal lands to the end of 1978, 183 being offshore wells.
- Maritime Energy Corporation
- On February 16, the Minister of Energy, Mines and Resources and the three Maritime Premiers signed a Memorandum of Understanding concerning the development of the Maritime Energy Corporation (MEC). The MEC was being established to carry out regional planning of the generation and bulk transmission system supplying the three Maritime Provinces, and to finance and build projects and assume responsibilities related to regional generating stations and associated transmission systems. It was agreed that the Point Lepreau nuclear unit would be purchased from the N.B. Electric Power Commission by the MEC as its first major project. It was also agreed in principle that any additional work on major Fundy tidal projects should be carried out through the MEC. Specific arrangements for the participation of Canada, N.B., N.S. and P.E-I were defined in the Memorandum of Understanding. Subsidiary agreements were listed in the document, to be completed and signed by the appropriate parties as soon as possible, including power contracts, a performance loan agreement, and a planning agreement. The Memorandum of Understanding confirmed the objectives as set out in the Agreement of June 21, 1977 relative to studies on the establishment, nature and structure of the MEC. It also followed from the acceptance in February 1978, by the four governments, of the principle of establishing the MEC.
- Energy Supplies Emergency Act, 1979
- The Energy Supplies Emergency Bill, 1979 was introduced in the House of Commons in February. The Bill was designed to provide the Government with authority to allocate energy resources within Canada during periods of supply disruption caused by shortages or market conditions outside domestic control. The authority contained in the Bill was of a stand-by nature. A specific decision would be taken by the Cabinet to involve the emergency authority and establish administrative machinery. The Bill, as introduced in February 1979, was essentially the same as the Energy Supplies Emergency Act, 1974, which was legislated in response to the Arab oil embargo of late 1973 and early 1974. The earlier Act had a legislated duration of two and one-half years and expired on June 30, 1976. At the time the 1979 Bill was introduced, the world was faced with the Iranian oil crisis which resulted in that country's oil exports being cut off in December 1978. Canada had been getting 100,000 barrels a day of crude oil from Iran, one-fifth of total oil imports into this country. Alternate supply arrangements were being made but the new legislation was being put in place in the event of future disruptions. The Energy Supplies Emergency Act received Royal Assent on March 26, 1979.
- Iranian oil crisis - actions by Canada
- An appraisal made in mid-February, by the federal government, of Canada's oil supply situation indicated that while the supply outlook was serious it was manageable. Alberta crude oil production had been increased to a maximum and the extension of the Interprovincial Pipe Line

system to Montreal, completed in 1976, had resulted in a cut in direct import dependency by 300,000 barrels a day. Of the 500,000 barrels daily of imports still being required in 1979, 200,000 b/d were coming from Venezuela. Oil exchanges with the U.S. provided a further means of alleviating the eastern Canada oil supply situation. The diversion of 25,000 barrels a day of Venezuelan crude, by EXXON, from Canada to another offshore market became an issue of some importance at the height of the Iranian crisis and Petro-Canada commenced state-to-state negotiations with Venezuela's state oil company, Petro-Ven, for crude oil supplies. At the same time, the Government was in negotiation with Mexico and Venezuela for energy agreements, including oil supply contracts. However, an agreement with Mexico was not completed until mid-1980 but Venezuela was able to maintain its customary supply of some 200,000 b/d.

Northern Tier transportation alternatives for oil supply

An Aide-Memoire delivered by the U.S. Government to the Government of Canada on February 28 advised of the enactment of legislation empowering the President to approve a delivery system to transport Alaskan and other crude oil to the Northern Tier and other mid-west areas of the U.S. which were facing restricted crude oil supplies. The legislation, Title V of the U.S. Public Utilities Regulatory Act of 1978, provided a mechanism for the President to decide which, if any, of the competing applications for a crude oil transportation system should be approved. Four companies had applied to the U.S. Secretary of the Interior: Northern Tier Pipeline Company (a pipeline from Port Angeles, Wash. to Clearbrook, Minn.); Kitimat Pipeline Ltd (a pipeline from Kitimat, B.C. to Edmonton); Northeast Energy Company (a pipeline from Skagway, Alaska, to Edmonton); and Trans Mountain Pipe Line Company (a pipeline from Cherry Point, Wash. to Edmonton -a loop on the existing line but moving oil in the opposite direction). The U.S. Government wished to give full consideration to the three trans-Canadian options and requested views and preferences from Canada by October 26, 1979. The Northern Tier oil supply situation had been an issue since 1975 when Canada decided it would have to begin to phase out crude oil supplies to Northern Tier refineries because of the declining oil resources in Western Canada. Oil exchanges with the U.S. had been initiated to lessen the impact of cut-backs.

"Energy Futures for Canadians" report

A report entitled "Energy Futures for Canadians", a long-term assessment to the years 2000 and 2025, was released in February. The study was prepared for the Department of Energy, Mines and Resources and published as a contribution to the public discussion of energy issues. The study recommended reduction in Canada's reliance on imported oil and replacing it with Canadian oil, natural gas, coal, nuclear power, hydro power and renewable energy resources. The report forecast that total reliance on oil would be reduced and that the rate of growth in energy demand would be significantly lower than in the previous 25 years. A National Energy Program was proposed with prescribed quantitative targets and specific programs in support of 5 policy elements relating to energy supply, use, price, economic benefit, and a comprehensive information program to enlist public support. The study also provided a world energy perspective.

NEB report "Canadian Natural Gas Supply & Requirements"

In February, the National Energy Board published its report "Canadian Natural Gas Supply & Requirements." In April 1978 it had announced that a public inquiry would be held commencing in October 1978, and it had conducted hearings in several centres across Canada in the period October 11-December 4 and received written briefs. The purpose of the inquiry was to examine gas supply and demand and to review procedures for calculating surplus. In its 1975 Gas Report, the Board had set forth certain general principles respecting surplus calculation, procedures (see July 1975 note). In its 1979 Report, it concluded that the determination of a surplus of natural gas should be made using three tests: a Current Deliverability Test, a Current Reserves Test, and a Future Deliverability Test. All three tests would have to be met before the Board would deem a surplus to exist. Any new exports that were dependent upon deliverability from established reserves plus reserve additions would be subject to interruption. As a result of this inquiry, the Board's estimate of remaining established reserves in conventional areas was 66.1 trillion cubic feet (tcf) at the end of 1978, 4.7 tcf more than estimated for the year-end in 1976. The NEB did not believe the established frontier reserves, forecast additions or deliverability from those reserves could be included in the calculation of deliverability and reserve tests until it was satisfied a transmission system to link the reserves to markets would be constructed. After taking into

consideration its demand forecasts, the Board found that surplus gas existed in the amount of about 2 tcf., and it concluded that supply could meet Canadian demand east of Alberta plus authorized exports until the end of 1992, compared with a period ending in 1983 as estimated in a report it had published two years earlier.

offshore  
jurisdiction -  
federal proposal

During the First Ministers' Conference on the Constitution, February 5-6, the Prime Minister tabled a draft federal proposal accepting the principle of concurrent legislative authority over the management of offshore resources, with federal paramountcy for some elements of the management regime and provincial paramountcy for others, but leaving aside the question of ownership. To give effect to the constitutional change contemplated, the proposal anticipated the design of complementary administrative arrangements as a means of assuring continued federal-provincial cooperation and consultation.

Continental  
energy policy

In an address given on February 27, the Commissioner of the Northern Pipeline Agency stated: "From time to time there has been talk of a continental energy policy. Back in the 50's and 60's one could hear this kind of talk in Canada from those who thought it would be a good thing to be able to penetrate the protected markets of the United States by extending the protective cover to include Canada. This concept received a frosty reception from Canadian public opinion and political decision-makers who wanted to preserve greater freedom of action than would be found within a formal continental approach. It elicited very little response or support at that time on the other side of the border. In the 1970s, when supply shortages began to appear, the field was reversed. Prominent Americans found an integrated energy policy attractive. There is even less sympathy in Canada today for the formal continental approach than there was when energy was cheap and plentiful. Canadians are ready and willing to co-operate with Americans in dealing with common problems relating to energy. They hesitate to commit themselves to ill-defined general concepts that seem to imply a pooling of resources."

Fuel oil shortage  
problems in  
Iranian crisis

In March, the Minister of EHR expressed concern about difficulties in the supply of certain grades of fuel oil in parts of eastern Canada which had arisen as a result of the Iranian oil crisis compounded by serious operating problems at several refineries and abnormally cold weather. In addition to the overall shortage, there was also a problem of allocation of the scarce supplies and, as a result of claims by resellers that refiners had been taking advantage of the shortage, an investigation into the marketing practices for petroleum products was undertaken under the authority of the Petroleum Administration Act (see July note). In the area of foreign crude purchasing, the federal government had asked Imperial Oil Ltd. to deal directly with the national oil company of Venezuela, Petro-Ven. However, Imperial advised in March that EXXON was not willing to permit its Canadian affiliate to make direct purchases. Accordingly, the government instructed Petro-Canada to open negotiations for a supply contract. The concerns in early 1979 about adequate foreign oil supplies had come just 5 years after the 1973-74 Arab oil embargo, both events being also characterized by sharp international oil price increases.

P.M.-President  
statement on  
Canada/U.S.  
energy relations -  
consultative  
mechanism  
established

Following a meeting on March 3, the Prime Minister and the President of the U.S. issued a joint communiqué in which they reaffirmed that enhanced bilateral cooperation in the field of energy would serve the interests of both countries and they also agreed that maximizing the supplies of domestic energy available to each country was a common and shared objective. It was further noted that the recent international event (Iranian oil crisis) had served to underline the vulnerability of the U.S. and Canada and other oil-consuming countries to oil supply and pricing disruptions. At this meeting, the President affirmed his government's strong commitment to the completion of the Northern Gas Pipeline. To enhance the close cooperation in bilateral energy matters, the two leaders agreed to establish a consultative mechanism at the sub-cabinet level which would meet periodically to consider options on operational issues.

AECB Advisory  
Committees  
replaced

On April 1, the Advisory Committee system, which had been initiated in 1956, to advise the Atomic Energy Control Board on operational matters through the use of panels of outside part-time experts, was abolished and the establishment of five new advisory groups proceeded. The new

groups were given the responsibility to advise on radiological protection, security, environmental protection, nuclear facility safety, and intergovernmental relations, with the emphasis on technical policy rather than operational procedures

- Canada's response to IEA 5% cutback proposal - increased oil supply, conservation, CHIP
- In April the Minister of EMR announced a three-part energy program in response to the call on March 2, 1979 from the International Energy Agency (IEA) for member countries to improve the international oil supply/demand balance through demand restraint and domestic production increase. The IEA objective was to reduce the total energy demand of the 20 countries by 5%, or about 2 million barrels per day, and thereby reduce the upward pressure on international oil prices that had been initiated by the Iranian oil crisis. The three-part Canadian response included increased domestic oil production to augment supplies to eastern Canada and to increase oil "swaps" with the U.S.; a voluntary oil conservation program to expand existing conservation measures directed to reducing the nation's oil demand by 3% within a year; and increased availability of home insulation grants through changes in CHIP, including changing the eligibility date from 1946 to 1961, allowing 100% of the cost of insulation up to \$350 per house and one third of the labour cost up to \$150.
- Petroleum Corp. Monitoring Survey
- In April, the results of the Canadian Petroleum Corporations Monitoring Survey for the first 6 months of 1978 were announced. The report included historical information of the 31 corporations that had voluntarily participated in the survey, and the "expanded monitoring universe" data which covered all corporations that had reported since the enactment on June 30, 1978 of the Petroleum Corporations Monitoring Act. The high level of exploration and development that characterized the petroleum industry in 1977 continued during the first half of 1978, and the reinvestment ratio of capital expenditures as a percentage of internal cash generation increased to 90.5%.
- Renewable energy program
- In May, the Minister of EMR reported on the status of renewable energy development projects that had been announced as a \$380 million package on July 4, 1978. Under the Program of Assistance to Solar Manufacturers (PASEM), after a proposal phase, 10 companies had received contracts of \$300,000 each to design, test and market new solar equipment. Contracts were being awarded under the \$103 million Forest Industry Renewable Energy Program (FIRE). Under the Federal-Provincial Demonstration Project Agreements Program with a \$114 million budget over 5 years, agreements with 6 provinces were being completed for various renewable energy projects. Many proposals had been received under the Energy from the Forest Program (ENFOR) designed to foster research and demonstration projects of innovative techniques in the forest energy sector such as the conversion of biomass to liquid fuels, and 16 companies had received contracts. These and other programs were directed towards the goal of energy self-reliance while building up an indigenous Canadian technology and industry.
- Polar Gas Project
- In May, the Polar Gas Project filed socio-economic statements with the NEB and the Department of Indian and Northern Affairs, further to its application of December 21, 1977 to construct a natural gas pipeline system from the Arctic Islands to southern markets. The Group had completed an environmental statement in March 1978 as part of an on-going program to determine the feasibility of transporting Arctic Islands gas to market by pipeline. The Polar Gas Project was formed in late 1972 and throughout the 1970s conducted an extensive program of office studies, and field work in the Arctic Islands, with particular emphasis on pipelaying methods for channel crossings. By the mid-1980s, Polar Gas had not proceeded further with its application
- LaPrade heavy water project
- In May, negotiations broke off between the federal and Quebec governments as to the terms and conditions under which an amount of \$200 million would be spent as a federal offset to continuing with the La Prade heavy water plant construction at Gentilly, near Trois Rivieres. The proposal to build La Prade was initiated in 1972 by Atomic Energy of Canada Limited (AECL) shortly after the Quebec Hydro decision to build the Gentilly II nuclear power generating station and the Quebec government's indication that Quebec Hydro was to proceed on a significant nuclear generating program. By November 1974, federal-Quebec negotiations had been completed and construction commenced. By the end of 1977, \$260 million had been spent on plant construction.

Earlier that year, the federal Minister of EHR had detailed the number and timing of-CANDU reactor orders needed from Hydro Quebec over the following decade in order to justify continued construction of La Prade. In the absence of positive responses from Quebec, AECL recommended to the federal Cabinet that the plant be mothballed in view of the uncertainty surrounding the Quebec nuclear program. On October 21, 1977, the Prime Minister sent to the Quebec Premier a letter specifying the conditions under which AECL would be authorized to continue to build La Prade. Following a subsequent exchange of correspondence, an agreement to proceed was reached based on an understanding that Quebec would build a third nuclear plant by the late 1980s and would start taking delivery of 1440 tonnes of heavy water in 1988. However, the Quebec White Paper published in June 1978 clearly indicated that Quebec would not need more nuclear power until well after 1990 and no longer desired to follow the previously-planned nuclear program. When further efforts to negotiate failed, the federal government decided in November to abrogate the agreement and to pay all consequent damages. Subsequently, the federal government offered \$200 million to Quebec to be spent on energy-related projects as an offset to continuing with La Prade but no agreement could be reached as to the use of this money and negotiations broke off in May 1979, to be continued in the 1980s towards final resolution well past the middle of the decade, with the plant remaining mothballed.

Canada-Mexico  
Energy  
Cooperation  
Agreement

In May, an Energy Cooperation Agreement was concluded with Mexico whereby Mexico would supply Canada with up to 100,000 barrels a day of oil as soon as production schedules permitted, with deliveries to reach a minimum of 50,000 b/d in 1981. The Agreement also provided for a study in depth of the feasibility of introducing CANDU reactors into Mexico's nuclear program, for the possible application of Canadian technology for developing a Mexican uranium industry, for expanding coal sales to Mexico, and for joint action in energy conservation and the development of renewable energy resources. At the same time, an industrial Cooperation Agreement was completed. These Agreements were not signed until May 1980, on the occasion of the visit of the Mexican President to Canada. At that time they were combined into one Agreement.

Dickey-Lincoln  
School Lakes  
hydro project

In May, the federal government declined an invitation from the U.S. government to resume formal discussions at that time on the Dickey-Lincoln School-Saint John Lakes hydro project. This was a proposed hydroelectric River development for the Saint John River, an international boundary water, with two dams to be located in the State of Maine. The proposed project would impact on Canada through the storage and regulation of flows affecting three existing hydroelectric dams in New Brunswick and through inundation by Dickey Lake of about 5000 acres of land in Quebec. Discussions had begun in 1965. After years of very little activity, Congress appropriated funds for a resumption of project planning in 1975 but discussions with Canada were deferred pending development of a draft environmental impact statement which was completed in December 1978. Canadian interests involved in the project included, in addition to the flooding of an area in Quebec, the potential environmental and fisheries effects on the Saint John River in N.B., its social and economic implications for near-border communities in Canada, and the energy aspects of the project, including downstream power benefits that might accrue to Canada. Unlike the Columbia River Treaty discussions which were initiated in 1944 and carried through to completion and implementation (see note for December 1976), the Dickey-Lincoln School Lakes hydroelectric project remained dormant 20 years after initial discussions because of questions which remained on both sides of the border as to its merit.

Canada/U.S.  
electricity  
exchanges

In June the Department of EMR and the U.S. Department of Energy released a joint study of Canada/U.S. electricity exchanges which was initiated when the Prime Minister and President agreed in January 1978 that the two countries should examine the potential for increasing electricity exchanges. The study concluded there were significant opportunities for increased international exchanges in all regions, which could result in mutual benefits such as reduced oil consumption in the production of electricity and increased system reliability. It identified obstacles to the development of such exchanges, citing time-consuming public and regulatory review processes as hindrances, and made recommendations to utilities and to the regulatory agencies of the two governments.



Commitment to keep 1985 oil imports below 600,000 b/d	At the Tokyo Summit in June, Canada agreed with other members on the importance of keeping domestic oil prices at world market level or raising them to that level as soon as possible, and it confirmed that it would reduce oil imports by about 100,000 barrels a day by the fourth quarter of 1979. There was also a commitment to keep oil imports by 1985 within a maximum of 600,000 b/d by reducing the country's average annual rate of growth in oil consumption to 1%. At this time, Canada's domestic oil price was further below the international oil price than at any time since 1973 and it was also \$8.50 below the average cost of crude oil in the U.S. at Chicago.
Annual assessment of uranium resources	The fifth annual assessment of Canada's uranium resources was published in June. Using two price categories -- up to \$125/kg U and from \$125 to \$175/kg U - the total of the estimated resources mineable at uranium prices of up to \$175/kg U was expressed in the following resource categories: measured-80,000 tonnes U; indicated 55,000 tonnes U; and inferred - 302,000 tonnes U. One tonne U is equivalent to 1 metric ton of elemental uranium and to 1.2999 short tons of uranium oxide (U3O8). The resource assessments are used for the purpose of allocating responsibility among Canadian producers for setting aside reserves to meet future domestic requirements before approval is given for exports, and as an ongoing record of uranium resource development
Offshore jurisdictional issues	The new federal government elected in June had promised to transfer ownership and jurisdiction of offshore mineral rights to coastal provinces. The government was subsequently defeated in December 1979 before having time to implement such a policy.
Natural gas price increases	On July 13, the Minister of EMR announced that the export price of natural gas exports would be increased to \$2.61(U.S) per gigajoule (\$2.80 U.S. per MMBTU) from \$2.14(U.S.) per gigajoule (\$2.30 U.S. per MMBTU), effective August 11, 1979. The price increase would raise the annual value of gas exports to about \$2.5 billion. This followed a price advance in February 1979 to \$2.30(U.S.) per MMBTu, both increases being made because of OPEC oil price increases which had raised the price that Canada had to pay for imported oil. The gas export price was set in terms of the cost to Canada of importing the equivalent amount of energy as oil.
Heating oil shortage explained	In July, the finding of an investigation initiated in March, as to the cause of heating oil supply shortages in Quebec and eastern Ontario, was made public. The heating oil supply problem, and increased prices experienced by retailers and consumers, resulted from serious operating problems at a number of oil refineries in Montreal, combined with abnormally cold weather. The inquiry had been initiated following concern that refiners might have misused their dominant supply position at a critical time, associated with the Iranian crisis, to squeeze out resellers. The report made a number of recommendations designed to lessen the impact of a future oil shortage and unexpected refinery breakdown.
The resource development and export issue - gas exports - C.P.A. views	A press report of July 13 directed attention to a recent report by the Canadian Petroleum Association which declared that the urgency of shipping more natural gas out of the country could not be overstated. "It is vital for Canada to maintain or expand the present exploration momentum. Only the exploration and development process can provide real security of supply. Restrictions of markets will eventually stifle this process". At the same time, the Science Council of Canada was warning against being stampeded into more exports in a report in which it was calling for increased expenditures in alternative energy resources development. The Council claimed that the federal and provincial governments were again exposed to pressures for natural gas exports. In the absence of an adequate framework for longer-range and more consistent national decisions, Canada would run the risk of jeopardizing the policy of self-reliance for the move immediate intention of defending its dollar. These views are illustrative of some positions taken in the continuing debate on the oil and gas export question since the early 1950s.
NEB hearing on gas export surplus for Alcan pre-build	On July 10, the NEB commenced a hearing to determine precisely how much gas was available for export, who should export it, and if some or all should be transmitted in 'Pre-build' facilities of the proposed Alcan Pipeline. Applicants had indicated they would attempt to show that the Board's February 1979 estimate of surplus gas of 2 trillion cubic feet was too conservative.

AECB exploration licenses discontinued	In August, the Atomic Energy Control Board (AECB) discontinued the licensing of surface uranium exploration activities, thereby strictly limiting the application of its exploration permit system to the bounds of the Atomic Energy Control Regulations, as revised in 1974. Companies were no longer obliged to obtain an exploration permit from the AECB as they had had to do since the 1940s.
Energy policy principles	In an address in August, the Minister of EMR set out 9 principles to serve as guidelines and objectives in a federal energy policy: energy self-sufficiency by 1990, with increased participation by Canadians in energy developments; energy prices that reflect true replacement cost and that support conservation objectives; objectives and problem resolution to be equitable to all regions and jurisdictions in Canada; a shift in attitude regarding the need to conserve energy; the substitution of energy resources in plentiful supply for scarcer resources; an energy policy that supports economic growth; enhancement of security of supply, with particular emphasis on Quebec and Atlantic Canada; encouragement of energy R & D; and protection of the environment.
Need for a new energy policy	An assessment of the energy supply and demand situation in September showed that Canada was running a very tight oil supply situation in which it was vulnerable to any refinery breakdown or other mishap. The oil industry had been running at full capacity, since the cut-off of Iranian crude oil deliveries early in the year, in order to minimize oil imports and to meet Canada's International Energy Agency commitments. The more than 60% increase in the international oil price had left the Canadian domestic price \$10 a barrel below the international price but a rapid movement to international price levels would generate huge revenue transfers from eastern to western Canada in the absence of a compensation measure. With a 10% share of oil revenues, as opposed to 45:45 for the provinces and industry, the federal government no longer had the capacity to offset and ameliorate regional problems. In its relations with the U.S. it was having to control oil exports on a monthly basis and to begin to cut back on the 55,000 barrels a day of light crude oil export to 14,000 b/d, a matter of some concern to both governments. This was the environment in late 1979 requiring new national energy policy measures although before they could be developed there was another change of government as a result of the February 1980 federal election.
Columbia River Treaty	The fifteenth Annual Report, dated September 30, 1979, of the Permanent Engineering Board of the Columbia River Treaty concludes that the objectives of the Treaty were being met. Representative of these Annual Reports, the review for the period October 1, 1978 - September 30, 1979 describes the status of projects, progress of Entity studies, operation of the Duncan, Arrow, Mica and Libby reservoirs, and the resulting benefits. The establishment of the Permanent Engineering Board was provided for under Article XV of the Treaty. One of its duties is to "make reports to Canada and the United States of America at least once a year of the results being achieved under the Treaty" which, through its various Articles, is directed to the cooperative development of the water resources of the Columbia River basin in Canada and the U.S. The Board's reports, which have been published since 1964-65, provide a full record of the implementation of the Treaty and of the results being achieved.
Foothills Oil Pipe Lines plan for Northern Tier cancelled	In October, Foothills Oil Pipe Lines Ltd withdrew its oil pipeline application from NEB hearings. It had proposed transporting-Alaska crude along a Canadian route, from Alaska to Edmonton, to augment oil supplies to Northern Tier refineries in the U.S. mid-west. It was apparent at the time that U.S. authorities were favouring the Northern Tier pipeline proposal along an all-U.S. route from the Puget Sound area to Minnesota. However, none of the four proposals (see February 1979 note) was ever approved.
Speech from the Throne	The Speech from the Throne of October 9 included a government commitment to make Canada self-sufficient in energy by 1990. To that end, in consultation with the provinces, measures were to be taken to encourage a significant reduction in Canada's overall energy consumption, and to stimulate a major expansion in the country's capacity to supply and distribute energy in various fora. "In bringing forth these measures, my government accepts and respects provincial jurisdiction over resources, as it accepts its own responsibility to ensure economic stability, competitive

advantages and other national objectives." The position being taken by the federal government at this time in relation to offshore jurisdiction was that coastal provinces should have essentially the same rights to mineral resources off the Continental Shelf as all provinces have with respect to natural resources on land.

Task Force report  
on privatizing  
Petro-Canada

In October, the Report of the Task Force on Petro-Canada was completed and submitted to the Minister of EMR. The Task Force had been asked to advise the government as to procedures for transferring Petro-Canada to private ownership, which of the existing assets of Petro-Canada might most beneficially be returned to the private sector, as well as means of broadening Canadian participation and ownership in the petroleum industry. It had also been indicated that it would be important for the federal government to be left with sufficient capacity to negotiate state-to-state oil purchase contracts; to promote frontier exploration with increased Canadian participation and at a pace which could not be expected of the private sector alone; and to promote oil sands and heavy oil development. on the basis of these terms of reference, the Task Force recommended that the public sector activities and assets of Petro-Canada should reside in a new Government Agency and that Petro-Canada, without its public sector mandate, should not be dismantled but should be privatized, with all shares of ' the financially restructured and re-organized company being distributed to every Canadian citizen as a gift from the Crown. On December 20 the government announced its plans for Petro-Canada as a publicly-traded commercial energy resource corporation, but it was defeated in the February 1980 election and the proposal did not proceed at that time.

James Bay hydro  
project opens

In October, opening ceremonies for the James Bay Hydroelectric Project were held at the LG 2 site. The first James Bay studies were carried out in 1964. The decision to construct four generating stations on the La Grande River was made in 1972 but preparatory studies were not completed until 1974 and a modification of the Phase I development was made in 1978 involving the adjustment in the capacity at certain sites and the elimination of site LG 1 from the initial development. It was considered in 1979 that the Phase I development on La Grande would meet Quebec's electrical needs until 1986 or 1987. Following the full utilization of the output from the La Grande River, other development possibilities existed on other rivers flowing into James Bay. The LG 2 site installation, 900 miles north of Montreal, has a capacity of 5328 MW, slightly larger than Churchill Falls. It was estimated in 1979 that the overall project cost of the four sites of the La Grande complex and the transmission lines would be \$16.2 billion. Prior to the James Bay development, Hydro Quebec had contracted to purchase the major portion of the Churchill Falls output on a long-term contract basis which remained a subject of dispute, as to price, between Quebec and Newfoundland during much of the 1970s and 1980s

Industrial energy  
conservation  
programs and  
conferences

On October 1-3, an International Industrial Energy Conservation Conference was held in Toronto as Canada's major contribution to International Energy Conservation Month. In December 1978, the International Energy Agency (IEA) had declared October 1979 as a period of time in which all IEA member countries would re-emphasize the need for energy conservation and launch new initiatives. The October conference provided an opportunity for all IEA countries to review and evaluate energy conservation programs in a range of industries and to assess new trends. Canada had held its first conference on industrial energy conservation in May 1975 involving representatives of industry and government, and the second conference in March 1976 when 10 Task forces were at work. By 1979, at least 15 industry task forces were working on a voluntary basis towards conservation targets ranging from 3% to 20% for reduction in energy usage per unit of output between 1972 and 1980. At the October 1979 international conferences, Canada was able to announce that in 1978 there had been virtual attainment of industry's overall 1980 target.

Canada-U.S.  
energy relations -  
extraterritorial  
issue; Alcan  
commitment

On November 2, the Canadian government sent a formal Note to the U.S.A. government referring in particular to the Oil Windfall Acquisition Act of 1979 then before Congressional Committees for consideration. The Canadian government considered that the extraterritorial reach of the proposed legislation on the activities undertaken by Canadian corporations outside the U.S. was unacceptable, being in conflict with Canadian law and policy and, in claiming jurisdiction over

foreign affiliates including those incorporated in Canada, offended against Canadian sovereignty. The Windfall Tax proposal was part of the President's national energy strategy announced on April 5, 1979 which also included a plan to let oil prices rise to world levels, with full decontrol by September 1981. In announcing further energy priorities on July 15, 1979, the President stated that the Alaska Natural Gas Transmission System, would be completed by 1985: "I will insist this pipeline be built". Such assurances led to the federal government decision on July 1980 to approve the Canadian pre-build sections.

First Ministers' Conference on Energy - energy pricing issues

A First Ministers Conference on Energy was held on November 12. In opening the Conference the Prime Minister emphasized the importance of taking a decision on energy policy in the near future and had convened the meeting with Premiers to provide a full opportunity for an exchange of views on energy pricing and policy objectives. Opposing views on pricing were taken by Ontario and Alberta. Ontario was opposed to equating Canadian crude oil prices to OPEC prices, or even U.S. oil prices, claiming that a \$4 per barrel annual increase would lead to a national recession. With a \$4 per annum increase, Ontario's 1983 oil and gas bill would be \$13-\$14 billion above 1979 levels while Alberta's revenues would be \$5 billion over and above its 1979 \$4 billion income rate. This might remove the federal government's ability to manage the economy. Alberta noted that conventional oil reserves were declining rapidly and that production was at its limit. Higher prices were needed to encourage greater resource development but Alberta would accept an oil price set somewhat below the U.S. price level. The Alberta Premier maintained that the province had forgone revenues amounting to \$15 billion in the period 1975-79 because, instead of prices rising steadily toward international levels, the gap had widened. All Premiers shared the view that definitive action had to be taken towards energy self-sufficiency. A partial agreement was reached between the federal and Alberta governments providing for the international price for synthetic crudes, and 85% of the lower of the Chicago or international price for conventional crudes by 1984 but the agreement had yet to be concluded when the government fell as a result of its December 11 budget.

Coal resources and reserves

In December, EMR released a report entitled "Coal Resources and Reserves of Canada". The report provides reserve estimates in terms of rank and quality and includes information on other physical characteristics of Canadian coals. The report also describes the resource and reserve classification system developed for Canadian coals, noting that it is based in the first instance on international criteria and then adapted to suit Canadian conditions. Following the publication of this report, plans were made to complete coal resource and reserve assessments more frequently than had been the case in the past.

Gas export approvals - a step towards pre-build

On December 6, the Minister of EMR announced new natural gas measures including plans to work with the provinces and the gas utilities to expand the market for natural gas in Canada. At the same time, Alberta introduced legislation to facilitate the implementation of marketing incentives for new gas sales. The Minister also reported that the NEB had determined that Canada now had a significant exportable surplus of natural gas and was prepared to issue export licences for a total of 3.75 trillion cubic feet. The Board had received applications for the export of 8.8 tcf for terms of up to 15 years and found it could approve the full amount only through 1984, with reduced levels through 1987, and no new exports beyond 1987. Almost half the new exports were for Pan-Alberta Gas Company and, in approving them, the Board specified that they be delivered through the pre-build section of the Alaska Natural Gas Pipeline. It was left to the sponsors of the Alaska Highway Natural Gas Pipeline to respond with firm commitments for the entire pipeline so that the federal government could approve the pre-build.

Government defeated on Budget energy provisions

On December 11, the federal government brought down its budget which contained a number of new energy measures related to conservation, oil substitution, oil supply, and R&D directed to the goal of self-sufficiency in oil by 1990. These measures were to include a new energy tax whereby the federal government would obtain half of the returns from oil and gas price increases that exceeded \$2.00 a barrel and 30¢ per Mcf. In order to encourage greater conservation of energy and to raise revenues badly needed by the government, an excise tax of 25¢ a gallon was to be imposed

on gasoline and other transportation fuels but not on heating oil. It was to replace the existing 7 tax on gasoline, representing an increase of 18J. Other measures included a refundable, energy tax credit of \$80 per adult and \$30 per child for the benefit of lower income groups. The wellhead price of oil would increase in 1980 by \$1 per barrel on January 1, \$2 on July 1, and \$1 on October 1. From 1981 to 1984, the price would increase by \$2.25 on January 1 and July 1. On December 13, 1979, the government was defeated on a vote of non-confidence on the budget and an election was called for February 8.

Energy Supplies Allocation Board established pursuant to 1979 Act

On December 12, the Minister of EMR announced the appointment of members of the Energy Supplies Allocation Board, pursuant to the Energy Supplies Act, 1979. The Board's initial role, as provided in the Act, was to review the planning already carried out by officials of EMR, in conjunction with the provinces and industry, in order to ensure that Canada would be fully capable of meeting any petroleum supply emergency with well-prepared and timely plans for action. In the event of a supply emergency being declared by Parliament, the Board is empowered, as required, to allocate crude oil supplies and petroleum product supplies and to implement a gasoline rationing system.

Conservation "Save 10" program saves \$100 million

Analysis completed in December showed that the Federal Internal Energy Conservation Program, "Save 10", reduced the government's energy bill by \$36.5 million during fiscal 1978-79, bringing the savings for the three years since its introduction to about \$100 million. Conservation measures adopted by participating departments included reduced lighting and heating levels, and improved heating plant efficiency.

Hibernia P-15 oil discovery

The oil and gas exploration highlight of 1979 was the successful completion and testing in December of the Hibernia P-15 oil discovery off the east coast of Newfoundland. During testing, flow rates of up to 3,770 barrels per day were recorded, with much greater potential being indicated. Delineation drilling on the Hibernia structure proceeded in 1980 to determine its recoverable oil reserves.

Low head hydro - tidal power

In December, the federal and Nova Scotia governments announced agreement on construction of a low head hydro demonstration plant at a site in the Annapolis Basin of Nova Scotia. The federal government agreed to contribute up to \$25 million to cover the difference between estimated direct benefits and total cost of the project. The two governments believed that large scale development of a new hydroelectric turbine for the project could improve the economics of harnessing undeveloped hydro resources in Canada and enhance prospects for development of major total energy sites on the Bay of Fundy. Immediate benefits to Nova Scotia from the Annapolis Basin project were expected to include displacement of fuel oil imported to produce electricity from existing thermal generating stations

Energy policy planning - end of 1979

A number of energy policy programs were in advanced planning stages at the time of the call of an election in December 1979. The nature of these programs is indicative of the energy policy situation in Canada at that time, and the government had planned to proceed with them early in 1980. With a change of government in February 1980, some of the programs were carried forward and incorporated into the National Energy Program as announced in October of that year, while others were changed or replaced. Among the programs being prepared at the end of 1979 were those relating to oil pricing; gas pricing; a change in energy taxation to ensure that the federal government acquired a greater share of total oil industry tax revenues than had been customary in the past; accelerated development of the oil sands; provision of a refundable tax credit for lower-income families to compensate for increasing fuel costs; transfer of the Canadian Home Insulation Program (CHIP) to the provinces; transitional assistance grants to the Atlantic region to cushion the effects of higher electricity prices; measures to make the income tax system more equitable in the energy area and the closing of tax loopholes; establishment of a Parliamentary inquiry on nuclear energy; and the privatization of Petro-Canada. Reflecting rapidly changing and uncertain conditions in the international energy economy, the period 1979-80 was one of the most active in the history of energy policy planning in Canada.

Oil and natural  
gas pricing in the  
1970s

In December, following continuing increases in the international oil price throughout the 1970s, highlighted by those of 1973-74 and 1979, much attention was being given in Canada to oil and gas pricing policy as further major increases in the world price were being forecast for the 1980s. Appraisals were taking place from the perspective of pricing policy administration of the 1970s, and earlier. The oil and gas pricing policies adopted since the OPEC price shocks of the early 1970s comprised six main elements:

- a one-price system across Canada for crude oil, subject only to transportation charges;
- a Canadian oil price held below the world level, but moving slowly towards it;
- a ceiling on the Canadian price set in terms of the U.S. oil price at Chicago;
- international oil prices allowed on the output of non-conventional oil projects;
- the domestic market price for natural gas being set to reflect its competitive value with respect to oil;
- the export prices of oil and gas being set to reflect the full competitive value in the export marketplace and the cost of replacing these commodities with imported oil. The oil pricing policies were implemented through a combination of restraint of the wellhead price of ' domestic-origin oil, and a federal subsidy program (Oil Import Compensation Program) for users of imported oil. The Petroleum Administration Act (PAA) established a legal framework for elements of the policy, including a federal charge on exported crude oil. Commencing on April 1, 1974, the price of domestic oil was established by agreement between the federal government and the Alberta government. Until 1974, the export price of Canadian natural gas was determined by the gas sales price in contracts between the exporting Canadian transmission companies and the U.S. importer. In the spring of 1974, the National Energy Board held a public hearing into gas export pricing and found exports to be under-priced and, effective December 1, 1974, the government established a new export price of \$1.00/Mcf, 40 cents above the existing price. Thereafter, the export price was determined on a Btu-parity price basis with the world price for crude oil. Administered increases led to a price of \$2.46/MMBtu (U.S.) by August 1, 1978. The domestic price of natural gas was set by federal-Alberta annual agreement, commencing in November 1975, following the establishment of the PAA, (a practice that continued until 1986 when price de-regulation was being implemented). Up to 1975, city gates prices of natural gas sold in Canada were established by the cost of gas in the field plus the TransCanada PipeLines cost of service, with rates, tolls and tariffs to Eastern Canada being set by that company, subject to NEB approval. In 1973, the NEB established a five-zone detailed rate structure on the TCPL system which determined city-gate prices for Alberta gas sold east of Alberta. The following tabulation provides a record of oil and gas price trends in the 1970s, in terms of delivered costs to Toronto of domestic crude oil and natural gas (annual averages):

	Crude Oil \$/bbl	Natural Gas \$/Mcf
1970	3.25	0.43
1971	3.50	0.43
1972	3.60	0.48
1973	4.20	0.49
1974	6.46	0.59
1975	8.04	0.88
1976	9.30	1.33
1977	11.07	1.58
1978	13.25	1.90
1979	14.67	2.06
1980	18.08	2.42

## THE YEAR 1980

International crude oil price 17 times the 1970 level

As a result of the dramatic transformation in the international oil trade in the 1970s, the 1980s opened with the weighted average of official dollar prices for crude oil being almost double in January of what it was *12 months earlier* and about 17 times what it was in January 1970. The price escalation initiated in 1973 gathered momentum during 1979 and increased rapidly in the latter part of that year so that by January 1980 Saudi Arabia Light crude oil was \$ US 34.50 a barrel, up from \$23.49 in July 1979 and \$14.82 in January 1979. It was against this background of rapidly escalating oil prices that the new federal government, elected on February 18, 1980, began to urgently put in place new energy policy measures, announced as the National Energy Program, later in the year at the end of October. However, by that time the price had peaked and by 1986 had declined to as low as \$10.

Renewable energy and energy conservation technologies programs

In January the Canada-New Brunswick Agreement for the Development and Demonstration of Renewable Energy and Energy Conservation Technologies was signed. By that time other provinces and territories were committed to this \$113 million, 5-year program. Saskatchewan and the Northwest Territories signed their Agreements in March. Alberta, Nova Scotia and P.E.I. were participating with the federal government in other, but similar, conservation and renewable energy programs. Projects sponsored by these programs could range from the demonstration of energy-efficient building systems to the production of energy from wood waste as well as projects *involving the* use of wind, biomass, and solar energy.

The energy price, security and development issues

During the election campaign, leading to the federal election of February 18, there was much debate in January on energy policy matters. The debate centered on three issues: domestic oil and gas prices and how they should be related to international prices; energy security of supply and how it should be achieved through accelerated resource development, oil substitution and conservation; and the relation between energy and economic development with reference also to questions of tax incidence and revenue sharing.

Cape Breton electrical generation plant

In February it was announced that the Lingan Two coal-fired electric generation plant in Cape Breton Island would come on stream by mid-year, a year ahead of schedule. The 400,000 tons of coal required annually in the plant was scheduled to come from Cape Breton mines and would replace 1.6 million barrels of imported oil a year. The construction of this plant was assisted through a \$3 million grant under the Canada - Nova Scotia Oil Substitution and Conservation Agreement.

Canada - U.S. agreement on gas pricing

Following a visit to Ottawa in March of the U.S. Secretary of Energy, he and the Minister of FMR released texts on March 28 of an exchange of letters on gas export pricing. It was agreed that the pricing formula for natural gas would continue to be based on an export price for Canadian gas which was linked to the cost of Canadian oil imports. A new pricing formula called for the calculation on the first of every month of the export price and changes 90 days later as required. The monthly calculation allowed Canada to react immediately to changes in world oil prices and the 90-day price lag was to ensure that Canadian gas would remain competitive with alternative fuels in the U.S. On April 15 it was decided to delay the first export price determination for 3 months and to leave the export price at \$ US 4.47 per million Btu until October 1, 1980. The visit of the U.S. Secretary of Energy to Ottawa provided for an exchange of views on a wide range of energy matters at a time when it was considered that the world was facing very serious energy problems. While the two countries would pursue strategies designed to meet their individual circumstances, it was agreed that such exchanges could be valuable in determining the position each country would take in response to the energy changes of the 1980s.

Government invokes force majeure clause of the Syncrude

On March 28, the Minister of EMR announced that, due to the sudden and extreme escalation in international oil prices of the previous few months, the federal government would be invoking the force majeure clause of its agreement with participants in the Syncrude oil sands project. Under that agreement, the federal government had allowed production from the oil sands plant access to

agreement re international oil prices

international prices, based on the original agreement of 1976 when international prices were under \$13 per barrel. By March 1980, prices had increased by about 300% and had actually doubled to \$36(Cdn) over the previous year. However, pending completion of discussions with the Alberta government in relation to the federal objective of developing a "made in Canada" price which would reflect the economic cost of developing incremental oil supplies, the federal government had decided to continue to make compensation payments allowing Syncrude, and Suncor, access to international prices. An appropriate synthetic oil price was to be established within the context of an overall pricing agreement.

Petroleum Compensation Board and the OICP

In its report to the Minister of EMR on fiscal year 1979-80, the Petroleum Compensation Board (PCB) provided information for that fiscal year as available to the end of March, noting that total expenditures had been \$406,357,000 against total revenues of \$399,597,000. Almost all of the revenues came from the Petroleum Levy while total expenditures had been divided almost evenly for Syncrude and for Suncor oil sands compensation. The Energy Supplies Allocation Board had been established on January 14, 1974 and continued in existence by virtue of section 68 of the Petroleum Administration Act (PAA) of June 19, 1975. The Board was renamed to Petroleum Compensation Board by an Amendment to that Act on April 20, 1978. PCB administered the Oil Import Compensation Program (OICP), the program for use of Canadian crude at Montreal, and the New Petroleum Resources Compensation Program. The OICP was established in April 1974, retroactive to January 1, 1974, to insulate the Canadian economy from the impact of the rapid increases in the price of foreign crude. By March 1980, the average cost of imported crude was \$ Can. 34.50. The aggregate amount of compensation authorized to be paid, pursuant to Part IV of the PAA for fiscal 1979-80, totalled slightly more than \$1.6 billion. Until the late 1970s, import compensation paid on imported crude was to a large extent offset by export charge revenues from Canadian crude exports. In the last quarter of fiscal 1979-80, there was a \$21.20 per barrel difference between the import and domestic oil prices. The Petroleum Compensation Revolving Fund was created, with an initial authorization to have up to \$20 million outstanding at any time, in order to provide compensation on synthetic crude through revenues generated by the Petroleum Levy which began to fall short in 1979-80, with additional funds being made available on a loan basis from the Consolidated Revenue Fund.

Financing Petro-Canada operations

On April 8, the Minister of EMR announced the completion of a further purchase by the government of shares in Petro-Canada. An additional \$80 million was invested in Petro-Canada preferred shares, the government thereby reinforcing its commitment to the company and its program of exploration and development, particularly in frontier regions and in the oil sands. This means of helping to finance Petro-Canada operations had been used since the company went into operation in 1976.

Speech from the Throne energy intentions

In the Speech from the Throne, presented on April 14 after the general election of February 18, the government announced the following intentions with respect to energy and commenced implementation of related policy measures:

- a made in Canada oil price;
  - a petroleum monitoring agency;
  - new conservation initiatives;
  - increased emphasis on the production of new domestic energy supplies;
  - more rapid substitution of oil by other energy sources;
  - plans for a gas pipeline to Quebec City and to the Maritimes;
  - expansion of Petro-Canada's resource development and oil supply initiatives;
  - new oil and gas legislation to encourage accelerated frontier development;
  - establishment of an alternative energy corporation;
- and the goal of 50% Canadian ownership of the petroleum industry by 1990.

NEB report preparatory to pre-build

At the end of April, the government commented on the National Energy Board's Reasons for Decisions in a report released by the Board which had recommended new natural gas exports. Board recommendations require Governor-in-Council approval before export licences can be



issued, and the report at that stage had not been considered by Cabinet. However, the government had approved release of the report in order to allow the Board's hearing on the financing of the pre-build sections of the Alaska Highway Gas Pipeline to go forward. Once the hearing was completed, and assurances received from the U.S. regarding the Alaska section of the pipeline, the Cabinet would be able to consider all of the issues relevant to pre-building and new gas exports. The government emphasized that decisions on natural gas exports would not be taken until it was satisfied that domestic market expansion was proceeding as quickly as possible.

Site selection for uranium refining facility at Blind River

In April, the government announced site selection in northern Ontario for the construction of a new uranium refining facility. The site chosen was in the vicinity of Blind River. The decision to locate the refinery at that site was taken following an extensive review of all factors including the policy of having resources processed at or near their source whenever it was feasible to do so. A second reason was recognition of the need for research and development leading to safe interim storage and underground disposal facilities for spent reactor fuel. At the time of this decision, Canada was the second largest producer and the largest exporter of uranium in the world. Federal government policy required that uranium mined in Canada and surplus to domestic requirements be processed to the most advanced form possible prior to export. Additional processing capacity was needed to ensure continuity of supply to Canadian export markets.

Energy and the Quebec referendum

During April, when there was extensive debate preparatory to the referendum in May on Quebec's independence, there was considerable reference in federal government statements to Quebec's energy future. The federal view was that a "sovereign" Quebec could not become self-sufficient in energy. Hydroelectric power alone would not be enough and Quebec, without Canada, would be highly vulnerable to uncertain international sources of hydrocarbons, and vulnerable to relying on exports of a resource (hydroelectric power) that the Province would need in the future. It was also pointed out that between 1974 and 1979 Quebec was able to save \$5.5 billion as a result of Canada's import subsidy policy.

Petro-Canada proposed oil sands project

In May, Petro-Canada and Alberta Gas Trunk Line Company Limited announced a joint venture to construct Canada's fourth oil-sands mining complex (Suncor and Syncrude were in production and Alsands was under development). The new project was to be the first Canadian-owned and managed oil-sands mining complex. The project was planned to be of comparable size to Syncrude (130,000 b/d of synthetic crude) and Alsands (140,000 b/d).

Energy conservation in industry

The third federal government/industry conference on energy conservation was held in *4M*. The conference provided a forum for an exchange of views between government officials and industry sectors participating in the voluntary Industry Energy Conservation Program which had been initiated in 1976. At that time, industry agreed to organize itself into task forces along industry sector lines and to establish conservation goals for each sector. When the program was established it covered 10 industrial sectors. By 1980 it had been expanded to include additional task forces and covered 80% of industry energy use. Targets for 1980 were met and new conservation goals and initiatives were set for 1985, including a reduction of 23% in energy use compared with the base year, 1976.

Oil pricing and revenue sharing principles

In May, the Minister of EMR identified in public statements a set of principles with regard to energy pricing, supply, use and equity, in the context of the international oil prices experience of the 1970s but particularly in relation to the doubling in price in 1979. The first principle was that Canadian prices must reflect Canadian realities, with Canadian oil consumers not being tied to international prices. Secondly, the price of oil in Canada should reflect in some direct way the costs of acquiring it. Thirdly, the revenue sharing system should be altered so as to ensure that the federal government would have sufficient revenue to allow it to carry out its basic responsibilities of economic stabilization and revenue equalization across the country. These objectives had been defined as a result of revenue trends within Canada arising from oil price increases, with the revenues of the Alberta government from natural resources being about \$1900 per capita in 1978 while Ontario's were about \$14. With large increases in oil revenues in 1979 and expected further

increases in the 1980s, the outlook was for all of the advantages of higher international prices going to the oil producing provinces and producers, while all of the economic consequences of higher energy costs would be borne by consumers and the national government. This was the nature of the federal government's concern as it entered negotiations regarding the oil pricing system that was to expire on July 1.

Canadian Energy Research Institute

In May, Order in Council approval was given for the continuing support by the Government of Canada, through the Minister of EMR, of the Canadian Energy Research Institute. The Institute had been established by an agreement entered into in April 1975 by the Alberta Department of Energy and Natural Resources, the Private Energy Research Association, the University of Calgary, and EMR. With renewal of the agreement in 1980, the Institute entered its second five-year program of research into energy matters.

New energy policy targets including reduction of oil use to 10% of requirements; gas pipeline to Quebec City; heavy oil upgrading

In speaking to the Pipeline Contractors Association on May 15, the Minister of EMR announced that, as a general goal, the federal government intended to begin working immediately towards a reduction in the residential, industrial and commercial uses of oil to 10% of their net energy requirements. In total this would save about 375,000 barrels of oil each day. At the time, oil was accounting for 25% of commercial and industrial energy requirements, and 40% of the residential energy market. In the same statement, the Minister advised that the federal government had accepted the National Energy Board recommendation that the natural gas system be extended beyond Montreal to Quebec City, at an estimated cost of \$1 billion. In addition, it was also announced that three eastern Canada refiners that were major producers of residual oil -- Petrosar and Suncor in Sarnia and Ultramar near Quebec City - had made commitments to install upgrading facilities to help deal with the heavy fuel oil surplus problem.

The blended oil price

Statements made by the Minister of EHR during May expanded on the stated intention in the April 14 Speech from the Throne of establishing a made in Canada price for oil -- a new blended price which would progressively incorporate the cost of the Oil Import Compensation Program while at the same time maintaining a single national price for consumers. The new blended price system allowed for the creation of a new class or classes of domestic oil, in addition to the existing conventional and synthetic production. The "new" oil classes could include new conventional oil, tertiary recovery oil, or frontier oil and these classes were to receive incentive prices as determined by negotiation. Production from existing conventional fields was classified as "old" oil and was to receive a lower price than "new" oil. The total cost of oil imports was to be folded into the consumer price by an extension of the system of refinery levies. When fully operational, the system would call for all domestic refiners to pay a levy covering the additional costs of imported oil and they would also continue to pay a levy to defray the extra costs of synthetic oil. The total levy would also be applied to the costs of other kinds of "new" domestic oil. Thus, domestic refiners would, in effect, be paying a blended price based on the true cost of imported oil and the various streams of domestic oil and, in the process, the burden of oil prices was to be shifted from the taxpayer to the oil consumer.

Purchase of Mexican oil through bilateral negotiations but resistance to continental energy policy

During a visit of the Mexican President to Canada in May, an agreement was signed which included an undertaking on the part of Mexico to sell Canada, through a state-to-state oil contract, 50,000 barrels a day of crude oil. This followed negotiations which had extended over a period of more than a year. Threatened oil shortages resulting from the Iranian crisis in 1979 had led Canada to seek alternative sources of foreign oil supply. The visit was also the occasion for the airing of views concerning trilateral economic cooperation among Canada, the U.S. and Mexico, a proposal being promoted by some U.S. politicians. Neither Canada nor Mexico favoured a formal agreement of this nature. Canada preferred to deal with its North American neighbours in the customary bilateral manner. The Canadian government also confirmed the traditional aversion to a continental energy policy or common market in energy.

Labrador Sea exploration

In June, the Resource Management Branch (now COGLA) of EMR approved three drilling programs by Petro-Canada in the Labrador Sea. Since exploration began in this east coast region in

1971, 17 wells had been drilled, with significant flows of gas and condensate in four of these wells. (By 1985 Petro-Canada had set aside any further exploration in the Labrador Sea for an indefinite period)

Venice Summit -  
coal use to be  
doubled by 1990

Canada participated in the Venice Summit meeting in June and agreed with other western industrialized countries on a target of doubling coal production and use by 1990. This followed an International Energy Agency (IEA) meeting in May when Canada supported the common international position on coal that had been worked out in the IEA a year earlier regarding increased coal use through construction of coal-fired electricity generation plants. In 1980 Canada was preparing for new international coal marketing opportunities in the expectation of coal being taken into greater use throughout the world.

No progress on  
mid-1980  
domestic oil price  
negotiations

During June, oil price negotiations between the federal and Alberta governments were unsuccessful in reaching an agreement regarding future pricing following termination of the existing agreement on June 30. Alberta wanted to have Canadian oil prices linked to prices at world levels while the federal government's policy was to implement a blended-price system in which the price for domestically produced crude oil would reflect Canadian production costs and the Canadian industry's cash needs. The existing Canadian price was \$14.75 per barrel compared with the world price of \$32. The Alberta proposal was to have domestic prices rise gradually to 85% of the U.S. price. The international oil price situation remained unsettled following a June meeting of OPEC when the 13 countries failed to agree on a unified structure of prices, with some members pressing for yet another increase and others led by Saudi Arabia attempting to curtail further price advances.

EMR Energy  
Program  
expansion

In July, Treasury Board authority was received by EMR to establish and staff new organizations and programs to implement a new national energy program. A requested increase in resources was approved along with plans for a change in the organization structure of the Energy Program. Final approval of a new Energy Program activity structure was received in January 1981.

Alaska Highway  
Gas Pipeline  
pro-build  
approved

On July 17, the Minister of EMR announced in the House of Commons approval in principle of the Alaska Highway Gas Pipeline pre-build section. The Minister noted that in 1977, Canada and the U.S. had signed a bilateral agreement for construction of the gas pipeline (see September 1977 note). The Northern Pipeline Act was proclaimed on April 13, 1978, thus providing the legislative authority to implement the bilateral agreement of September 20, 1977. Pre-building had become of prime importance as a means of facilitating completion of the entire gas pipeline project from Alaska, and it was also seen in terms of its potential to provide widespread economic benefits to Canada. In the intervening years since the project was first planned, the volume of Canadian gas, surplus to domestic needs and available for export, had grown from 800 billion cubic feet to 4.5 trillion cubic feet. For pre-build to commence in the summer of 1980, Condition 12(1) of Schedule III of the Northern Pipeline Act required modification because it would have been impossible for Foothills (Yukon) to meet the original requirement of establishing that financing had been obtained for the whole line in Canada. Accordingly, the NEB had issued an order amending condition 12 on April 2, subject to establishing that financing for the southern segments had been obtained and that financing could be obtained for the remainder of the system before construction of the pre-build would be authorized. The NEB held hearings to determine if these requirements could be met, and the government was subsequently satisfied that the financing commitments could be met. On July 18, 1980, the Governor-in-Council accepted the NEB recommendations relative to pre-build and to the export of additional volumes of gas through the pre-build facilities. As proposed in 1979, the Alaska Highway Gas Pipeline was designed to transport 2.4 billion cubic feet per day from Prudhoe Bay to markets in the U.S. The system in Alaska, Canada and the U.S. would have a length of 4,786 miles. Total cost of the project was estimated in 1980 at \$14.8 billion.

U.S. assurance re  
pre-build of the  
Alaska Highway  
Gas Pipeline

In his July 17 statement in the House of Commons concerning the \$1.6 billion pre-build of the Alaska Gas Pipeline, the Minister of EMR reported on the assurances given by the U.S. government that the entire pipeline system would be built. This had been a condition of Canadian approval of the pre-build sections. These assurances included a joint resolution of Congress in July

expressing strong and continuing commitment to the project. The Canadian government had also taken account of the assurances the U.S. government was prepared to make with respect to the financeability and time completion of the system and the President had provided formal assurances in a letter to the Prime Minister received on July 17, 1980. Within the U.S., the Federal Energy Regulatory Commission had certified the pre-building of the western and eastern legs of the system in the lower 48 States. Finally, a June 19, 1980 agreement was signed by the major gas producers in Alaska and Northwest Alaska Inc., the pipeline sponsor in that area, on the sharing of some \$500 million in expenditures to complete final design and engineering work required to construct the pipeline and a gas plant, and to arrive at final cost estimates. On June 19, the producers and the sponsor also signed a statement of intention in which they undertook to work together to facilitate the financing of the pipeline in Alaska with a view to achieving completion of the system by 1985. (By 1987, as a result of rising costs and the fact that gas was not in short supply in the U.S., the economics of the pipeline system from Alaska were such that financing of the project still remained in abeyance although the pre-build sections from southern Alberta had been in operation since the early 1980s).

Petroleum  
Monitoring  
Agency  
established

On August 1, the Minister of EMR announced establishment of the Petroleum Monitoring Agency (PMA). Under the Petroleum Corporation Monitoring Act, reports on the petroleum industry were issued by EMR for 1977, 1978 and 1979. Pending amendments to the Act, the new Agency was equipped with all the powers of a commission under the Inquiries Act. The Agency reports to the Minister and has authority to publish reports in respect to the financial position and performance including profitability, cash flow, research and development effort, reinvestment behaviour, costs of exploration, development and production, and ownership and control of the industry. Through the activities of the PRA, the public would be better informed, and the government would be better able to plan and develop policies for the management of Canadian energy supplies and resources. The report on the petroleum industry's 1979 financial performance, investment patterns, and ownership and control was released early in August, 1980, the last in a series of three produced by EMR under the *Petroleum Corporations* Monitoring Act of 1978. By the end of 1979 non-residents owned 72% of Canadian petroleum industry revenues, down from 80% a year earlier.

Federal-Alberta  
oil pricing  
impasse -notice  
given re new  
national energy  
policy

On August 1, the Minister of EMR issued a statement on oil and gas prices and related matters. This followed extensive discussions with Alberta on energy policy, but important differences were not resolved. The federal government had offered a 10-year agreement under which the wellhead price of Alberta crude would rise from \$14.75 a barrel to the same price as that proposed for non-conventional oil prices and would be several times the 1980 level by 1990. Alberta wished to link domestic prices to international prices and to raise natural gas prices faster than oil prices. By 1984, Alberta's proposal would have resulted in an increase in the range of \$22.50-\$44.60 per barrel over and above the July 1, 1980 price of \$14.75, depending on the rate of escalation of international oil prices. The federal government was also concerned about the division of petroleum revenues: 45:45:10 for industry, the provincial governments, and the federal government. The Minister gave notice at that time that the government would publish a report on the occasion of the next budget., detailing a set of decisions relative to a comprehensive national energy policy. In the *meantime*, it was not prepared to accept anything more than Alberta's proposed \$2/bbl. increase effective August 1, 1980 and planned on the normal lag of 60 days before an increase was reflected in consumer prices of petroleum products.

11th World  
Energy  
Conference;  
CANWEC

The 11th World Energy Conference was held in Munich in September when 164 technical papers on all aspects of energy technology were presented. The general theme of the Conference was "Energy for our World", and the aim was to show the importance of a long term and safe energy supply by examining the interaction between existing energy *reserves and* the possibilities for their rational and economic utilization; the development of society; and *the* protection and improvement of the environment. The papers in total were an impressive testimony to the vast and diverse effort that is going on in the world in research, development and demonstration in all branches of energy technology. Canada has been an active participant in the World Energy Conference since its inception in the 1920s, and in the 1970s and 1980s the Canadian National Committee of the World

Energy Conference (CANWEC) conducted a series of energy seminars and sponsored papers for the world conference held once every three years.

International oil emergency test - ESAB participation

It was announced in September that Canada would participate in a 21-nation international test of emergency oil allocation systems during October and November. The objective was to test mechanisms that were designed to ensure equitable distribution of available oil supplies in the event of offshore oil supply shortages. The Canadian portion of the test was directed by the Energy Supplies Allocation Board (ESAB), a federal agency created under the authority of the Energy Supplies Emergency Act (1979). The Board has the mandate to prepare the regulations controlling the allocation of available oil and petroleum products in Canada in the event of a national emergency caused by supply shortages. At the international level, the test in the latter part of 1980, and other earlier exercises were organized and coordinated by the International Energy Agency comprised of 21 nations. In addition, 45 major international and national oil companies and several hundred of their affiliates participated. In Canada, 18 companies took part with ESAB in conducting Canada's part of the test, the third to be held by the IEA.

Accelerated federal role in coal technology and development

In a statement made in September, the Minister of EMR emphasized the importance of coal in the Canadian energy economy, announcing that the federal government was prepared to assume a large proportion of the technical risk in the introduction of new technologies, up to the point of commercial use. Technologies of interest in, the near-term included fluidized-bed combustion and coal-in-oil combustion. Fluidized-bed combustion technology was to be tested in a heating plant in P.E.I., with the expectation that this technology would allow the use of the high-sulphur Cape Breton coals in an environmentally acceptable way. Other tests were being planned with the Nova Scotia Power Commission. In studies with British Columbia Hydro and the Saskatchewan Power Corporation, the federal government was testing other new coal combustion technologies to provide for the use of coal under strict environmental standards. In addition to cooperating with the provinces interested in coal, the federal government was negotiating an improved agreement on coal technology with the U.S. government and was participating in a number of coal research projects mounted by the International Energy Agency. Research in EMR laboratories had led to an improved hydrocracking process for upgrading bitumen and heavy and residual oils. In early September, the federal government concluded an agreement with B.C. for the doubling of the Roberts Bank shipping port capacity to facilitate coal exports to Japan and other Pacific markets, and was participating in northeastern B.C. coal development through the provision of transportation and Port facilities in the northern part of the Province and through coal resource and feasibility studies.

Oil pricing and revenue sharing the central issues

In a public statement in mid-September, the Minister of EMR referred to the difficulties in reaching an agreement with the producing provinces on oil prices, emphasizing the federal position that oil prices should reflect Canadian cost realities and that the government was not prepared to grant a huge windfall on conventional oil production but would offer steadily rising prices for conventional production and a very high price to production from the oil sands and enhanced heavy oil. Along with pricing, the issue of revenue sharing had been at the centre of federal/provincial negotiations, and the federal government's responsibility to manage the national economy was noted in the context of the need for some adjustment in the provincial/industry/federal revenue sharing of 45/45/10. The government's intention to announce soon a set of decisions with respect to Canadian energy policy was again made known on this occasion.

Solar and renewable energy initiatives

In September, the federal government announced further incentives to encourage the use of solar energy including a \$5 million demonstration program to accelerate the development of solar hot water technology and a provision whereby solar heating equipment would qualify for a 50% capital cost allowance under Class 34 of the Income Tax Regulations. Further reference was also made to plans to establish an Alternate Energy Corporation, as a Crown Corporation, to provide essential support in moving renewable energy technologies beyond the demonstration stage into wide commercial use.

First Ministers' Conference - federal position on the offshore	At the First Ministers' Conference on the Constitution held on September 8-12, the Prime Minister set out the position on offshore mineral resources on September 9 in the following terms: the question of ownership should be set aside; the federal government was ready to make a proposal on that basis; the federal government agreed in principle that the major benefits from development offshore should accrue to the residents of the adjacent coastal province; the government proposed, therefore, that until those provinces became "have" provinces, they should receive the same kinds of revenues as are derived by provinces from their onshore resources; the government also proposed a system of joint administration for offshore mineral resources, to involve the federal government and each of the coastal provinces. This system would ensure that each coastal province would have a major say in how the resources were developed off its coast. The issue of offshore jurisdiction with Newfoundland remained unresolved until the signing of the Atlantic Accord in 1985 following a change in government at the federal level in 1984.
Newfoundland offshore jurisdiction	In its National Energy Program (NEP), announced in October, the federal government expressed its desire to have the Supreme Court of Canada settle the offshore ownership question with Newfoundland as soon as possible. Development of offshore resources had been a subject of federal-provincial discussions for many years. In April 1965, the question of the jurisdiction and ownership of West Coast resources had been referred to the Supreme Court, with a ruling in November 1967 that the Government of Canada owned and had legislative jurisdiction beyond the low water mark and outside the inland waters. A federal-Newfoundland agreement to begin work on a reference of offshore jurisdiction to the Supreme Court had been accepted in April 1976 but agreement on the question to be submitted to the Court was never reached.
Super Energy-Efficient Home program	In October, a new \$6 million demonstration program to promote the design and construction of energy-efficient houses suited to Canadian conditions was initiated as the Super Energy-Efficient Housing Demonstration Program. The plan was to build 1000 houses in Canada to demonstrate new design and building practices, with construction to commence in mid-1981. Annual heating costs were expected to be less than 25% of the cost of heating an ordinary new home.
Oil resource expectations less promising than gas in Canada	In October the Geological Survey of Canada published an oil and gas resources report which indicated that 103 trillion cubic feet of natural gas resources could be discovered during the 1980s, an amount equal to 60 times Canada's 1980 consumption of natural gas. Of this total, 35 Tcf of additional gas discoveries were projected for western Canada in areas where major gas transmission systems were already in place. The prospects for oil discoveries were less promising - 7.8 billion barrels being expected over the decade, with only 2.6 billion barrels in western Canada where pipelines were in place. The indication was that efforts should be made to develop non-conventional resources including the oil sands and that every effort should also be made towards substitution of oil by more plentiful energy sources, and increased efficiency in oil use.
U.S. resistance to Canadian gas following pre-build approval	In October, construction of the pre-build sections of the Alaska Highway Natural Gas Pipeline was under-way in Canada following the federal government's decision in July to authorize construction. However, there was no move on the U.S. side to get the main project moving ahead and there was some concern in Canada over the initiation in the U.S., by the Economic Regulatory Administration, of formal proceedings regarding the continued importation of gas from Canada, with U.S. transmission companies being asked to consider the continued security, reliability, and economic desirability of Canadian gas supplies. They were also asked to address specific issues relating to the treatment of take-or-pay obligations in existing sales contracts and the adoption of contingency plans to reduce reliance on Canadian gas -- all directed towards considering Canadian gas as a marginal source of supply priced at the lowest cost alternative on the U.S. market.
National Energy Program (NEP)	On October 28, on the occasion of its first Budget, the federal government published its energy strategy for the coming decade in a report entitled the National Energy Program (NEP). The Program was a set of decisions for national energy management, with three basic objectives: security of supply and ultimate energy independence; opportunity for Canadians to participate in energy industries, especially oil and gas;

fairness in pricing and the sharing of revenues among governments and industry

NEP provisions

The NEP, as announced in October, instituted many measures to reduce consumer demand for oil as well as incentives to encourage increased exploration for new oil supplies. On the supply side, most of the tax incentives, which previously benefited only a few producers, were replaced by Petroleum Incentives Payments (PIP). On the demand side, an umbrella Canada Oil Substitution Program was introduced to encourage consumers to substitute plentiful forms of energy for oil, together with other conservation and renewable energy programs. Canadianization initiatives were important components of the NEP. As a strategy for the 1980s, the federal government had decided to bring a wide range of its policy tools to bear in ensuring that Canadianization objectives, initially set in the early 1970s, were met. It was a policy area in which not only rich incentives (such as the PIP grants) were provided, but there were also certain obligations on the oil and gas industry, such as the requirement that consortia seeking oil and gas production licences in the Canada Lands would be at least 50% Canadian-owned. Under the NEP, new initiatives for 1980-83 were planned at a total budget level of \$8.2 billion, including incentives to industry for oil supply initiatives, oil substitution programs, conservation and renewable energy programs, special Atlantic Canada provisions, energy R&D, and several other provisions.

NEP tax and incentive changes

Among the federal tax and incentive changes introduced with the WEP in October were the following. The frontier exploration allowance expired effective April 1, 1980; the supplemental depletion allowance was withdrawn, effective January 1, 1981; earned depletion for Canadian Development Expenses (CDE) on projects that did not qualify for incentive prices was withdrawn, effective January 1, 1981; earned depletion for Canadian Exploration Expenses (CEE) on provincial lands was to be phased out by 1984; and the Petroleum Incentives Program (PIP) was introduced as the replacement for earned depletion, for CEE and CDE, effective January 1, 1981. CEE and CDE were generally reduced by the amount of any government assistance such as PIP payments and provincial drilling incentives. The Petroleum and Gas Revenue Tax (PGRT) was introduced at a rate of 8% on production revenue, effective January 1, 1981. The Natural Gas and Gas Liquids Tax (NGGLT) was introduced on gas and NGL's sold in Canada, effective November 1, 1980, and on gas and NGL's sold outside of Canada, effective February 1, 1981. The Petroleum Compensation Charge (PCC), which replaced the Syncrude Levy, was set at a level sufficient to cover the costs of compensating refiners using imported oil and various categories of high cost domestic oil, to establish a blended pricing system for oil, with the blended price not to exceed 85% of the international price or the average price of oil in the U.S., whichever was lower. The Canadian ownership Special Charge (COSC) was set at a rate of \$7.25 per M3 on oil and \$0.14 per GJ on natural gas effective May 1, 1981, being established to finance an increase in public ownership in the energy sector. The Special Compensation Charge (SCC) was introduced at the rate of \$4.75 per M3 effective March 31, 1981, to be increased to \$11.64 per M3, effective June 3, 1981.

Alberta retaliates against the NEP

On October 30, two days after the federal government's announcement of the National Energy Program (NEP), the Premier of Alberta announced in a TV broadcast, his government's intention to reduce oil production by 15% over 9 months as a means of retaliation against the federal government. He indicated that in the event of an international emergency, production would be resumed at the full level but otherwise put the onus on the federal government to find new international oil supplies for eastern Canada to replace the oil being cut off by Alberta. To affect the oil supply cutback, the Alberta government passed the Maximum Petroleum Production Regulations under the Mines and Minerals Act in November. In addition, the Alsands oil sands project and the Cold Lake heavy oil project were to be held in abeyance, and the Alberta government also decided to take the federal government to court on the tax (NGGLT) imposed on natural gas exports. The cutback in crude oil production was to proceed in three, 3-month stages of 60,000 barrels per day commencing in March 1981 for a total of 180,000 b/d by the end of 9 months when the additional cost in federal import compensation would be close to \$4 million a day. The foreign exchange cost for 9 months of 1981 was estimated at \$1.7 billion, the import compensation cost being \$965 million.

Alberta-federal dispute over oil pricing and the NEP

During November ' there was extensive debate in Canada on the National Energy Program (*NEP*), and on the Alberta government's action to cut back on crude oil production which the Prime Minister felt raised a fundamental question about the federal government's power to regulate interprovincial trade and commerce. However, the Prime Minister, in a statement in the House of Commons, welcomed Alberta's decision to wait for three months before beginning the staged reductions in oil supply, thereby allowing further time for discussion and negotiation. The federal government was particularly dismayed that Alberta had decided, in retaliation against the NEP, to hold in abeyance decisions on oil sands projects even though the equivalent of the international oil price, \$ Cdn 38 a barrel, escalated for inflation, had been offered. Alberta had refused to separate the issues of oil sands pricing and crude oil pricing, wanting the latter to be linked to the international price at the 75% level and achieved on a staged basis over 4 years. The federal government did not want a direct linkage and had instead scheduled price increases of \$1 a barrel every six months and in addition, had scheduled oil recovered by tertiary methods at \$30 a barrel.

Price provisions of PAA proclaimed

On November 12, proclamations of Division II of Part II and Subsection 52(1) of Part III of the Petroleum Administration Act (PAA) were tabled in the House of Commons. The proclamations had been issued effective Budget night, October 28, 1980, and were tabled in fulfillment of the requirement that they be laid before Parliament within 15 days of their date of issue. These parts of the PAA permit the Government of Canada to prescribe prices for oil and gas entering interprovincial trade. The Minister of EMR stated that the government had no choice but to proclaim the relevant provisions of federal legislation given the failure to reach an agreement with the producing provinces on oil and natural gas pricing, but noted further that it was hoped that this action would be only a short bridge to new pricing agreements with the producing provinces, at which point the pricing regulations could be rescinded.

World oil price trend of late 1970s reversed in early 1980s

Forecasts of international oil production and consumption being quoted in **November**, and earlier in the year when the NEP was in preparation, were based on assessments by the International Energy Agency (IEA) and other world authorities. Those forecasts were foreseeing a shortfall in world oil supply as early as 1985 with related continuing upward pressures on prices. In Canada a quadrupling of the domestic price of crude oil by 1990 from the 1980 level of \$16.75 a barrel for conventional oil was expected. The federal government had offered Alberta a 10-year agreement which would see domestic prices reaching this level by 1990 in keeping with international trends. The record shows that world oil production, including NGLs, peaked at 65.8 million barrels a day in 1979 and, as a result of declining world demand, had declined to 57.5 million barrels a day in 1984 instead of continuing the upward trend of the late 1970s and creating the expected shortage by the mid-1980s. As a result, the world price peaked in 1981 and the official selling price for OPEC crude declined from \$ US 34.00 in that year to \$27.50 in mid-1985 and to the \$10-15 range in 1986.

Criticism of the NEP

During the debate across Canada in November that followed the announcement of the National Energy Program, in addition to the pricing issue much attention was directed to the federal government's objective of increasing the federal revenue share of oil industry revenue from about 10% to 33%. In this context, the Petroleum and Gas Revenue Tax, by which oil and gas producers were to be subject to a tax of 8% of their net operating revenue, was a matter of direct concern to producers. In relation to the Canadianization objective of at least 50% Canadian ownership of oil and gas production by 1990, one of the measures directed towards that objective came under particularly strong criticism: the provision for the federal government, through a Crown company, to acquire 25% interest in a resource development project at any time prior to authorization of a production system for a particular field. The government considered the 25% interest as a form of compensation for the taxpayer while industry (and the U.S. government) considered it as a form of confiscation.

ESAB emergency supply priority categories

In December, the Energy Board (ESAB) which takes its legislative authority from Supplies Allocation the Energy Supplies Emergency Act, passed in March 1979, approved a new classification -- primary food production - for inclusion in the highest priority rating for the supply



of petroleum products in the event of an emergency. The Board's legislation requires it to prepare, review and maintain contingency plans in readiness before the need for allocation or rationing arises. In the event of an emergency, it must assure sufficient supplies of petroleum to the various parts of Canada by providing for a national and equitable distribution of petroleum products from the suppliers to their wholesale customers. For the allocation process, the Board has three categories, with Category A covering the use of petroleum products relating to the health, welfare and security of Canadians, and including primary food production; uses relating to the economic stability of the country generally falling under Category B; and Category C applying to uses relating to the maintenance of the standard of living, and being the last order of the three priorities. By the end of 1980, ESAB had its contingency plans well underway.

#### Canada Oil and Gas Act

On December 9, legislation to implement a new legal framework to govern oil and gas resource-development activity in Canada's frontier and offshore regions was tabled in the House of Commons for First Reading in the form of Bill C-48 Canada Oil and Gas Act. The Bill was debated extensively in 1981 and, following House of Commons and Senate approval, it received Royal Assent on December 18, 1981 and was proclaimed in March 1982. It replaced the Territorial Lands Act and the Public Lands Grants Act in relation to the disposition and management of oil and gas rights in Canada lands. The Bill also made provision for amendments to the Oil and Gas Production and Conservation Act to strengthen safety and pollution prevention measures. Principal objectives of the new Act included ensuring active exploration and development of frontier oil and gas rights, increasing Canadian ownership of frontier oil and gas reserves, ensuring that Canadians received a fair return for these oil and gas resources, and optimizing the employment of Canadians and the use of Canadian goods and services in frontier oil and gas activities. Under the new Act, all non-producing federal oil and gas rights were to be converted to the new regime within one year and the terms and conditions of rights issued under that regime were to be negotiated with prospective operators in accordance with perceived geologic promise, operating conditions and desired activity levels. The legislation was designed to establish the Crown's right to an undivided 25% interest in all Canada lands (except lands subject to former leases that fell into the category of pioneer producers). The Crown, or a designated Crown corporation, such as Petro-Canada, would not be liable for any expenses incurred prior to conversion of the Crown share from a "carried interest" to a "working interest". Under that scheme, essentially all of the exploration costs would be incurred by the other interest holders before the Crown converted its share to working interest. However, under the NEP the government would be contributing, to future exploration costs under the Petroleum Incentive Program: "the new incentive payment of a minimum of 25% of approved exploration costs on Canada lands, available to any investor, reflects an understanding on the part of the Government that in return for its direct participation in the industry's efforts whenever they occur in the Canada lands, there should be a commensurate government contribution to the costs of that activity." Federal incentive payments could reach 80% of exploration costs in the case of Canadian companies with a Canadian ownership rate of 75% or greater. The Canada Oil and Gas Lands Administration (COGLA) was established in 1981 to administer the new regime. It replaced the Resource Management Branch in EMR and a similar organization in the Department of Indian Affairs and Northern Development.

#### IPAC criticism of the NEP

On December 12, the Minister of EMR responded to criticisms of the National Energy Program made by the Independent Petroleum Association of Canada (IPAC) in the form of advertisements taken out in a number of Canadian newspapers. IPAC set out 5 criticisms: the NEP will make Canadians more dependent on expensive insecure foreign oil; it will delay essential frontier exploration, oil sands plants and heavy oil development; it will cost thousands of jobs that could be created by the oil industry across Canada; it will cost Canadians more for gasoline and heating oil in the long run; and "we are the companies your program was supposed to help - the independent companies, but it doesn't help us, it has stopped us in our tracks." Of particular concern to the IPAC at the time was that some of their members were moving their drilling rigs south to the U.S. where they believed operating conditions would be better. The drilling industry had been greatly expanded in 1979 and during the first half of 1980 in anticipation of continually increasing markets and prices. However, a large inventory of natural gas had been built up due to the lack of growth in

exports to the U.S. and, consequently, there was little incentive to develop further gas reserves in Western Canada which had been the main activity of many member companies of IPAC. The independent companies were also disappointed in the relatively greater emphasis given to incentives for frontier development than to Western Canada which was their main field of operation and, like the Alberta government, they also had expected a much greater acceleration in the upward movement of oil and gas prices. As in the case of the larger companies, IPAC members were critical of the new tax regime, particularly the Petroleum and Gas Revenue Tax (PGRT), and the special tax on natural gas and gas liquids (NGGLT) which applied to gas exports as well as domestic sales.

Petroleum  
Incentives  
Program (PIP)

In December, the federal government released the Petroleum Incentives Program document entitled "The Basic Rules - A Framework", which described the concepts and intended structure of PIP.

Petro-Canada  
acquisitions

For the fiscal year ending December 31, Petro-Canada reported revenues of over \$1 billion, compared with \$39 million in its first year of operation in 1976. During that 5-year period, its total assets had risen to \$3.8 billion. Shortly after Petro-Canada was incorporated, the Crown's shares of Panarctic Oils Limited were assigned to it at book value of \$78 million. on April 30, 1976, Petro-Canada was given the federal government's 15% share in the Syncrude project and the company took over the government's participation in that project. In August 1976, Petro-Canada acquired all of the outstanding shares of Atlantic Richfield Canada Ltd. (ARCAN) for \$342 million and ARCAN became part of the wholly-owned subsidiary of Petro-Canada: Petro-Canada Exploration Inc. In November 1978 Petro-Canada acquired control (52% of the shares) of Pacific Petroleum Ltd. In early 1979, Petro-Canada acquired over 90% of the shares of Pacific Petroleum, and subsequently obtained all of the remaining shares, and thereby became a 36.7% shareholder in Westcoast Transmission Co. Ltd., which, in turn, was a major partner with Alberta Gas Trunkline Company (later NOVA) in several joint ventures. During 1980, Petro-Canada negotiated for the purchase of Petrofina Canada Inc., leading to an offer in February 1981 to purchase all the assets of that company for an initial aggregate consideration of \$1.46 billion, the acquisition becoming effective on May 12, 1981. This transaction was completed in 1983, the aggregate cost of acquiring all of the shares being \$1.6 billion. In October 1982, Petro-Canada agreed to make an offer to acquire all of the shares of BP Refining and Marketing Canada Limited, with the transaction to be completed by 1985. The Petro-Canada Act had received Royal Assent on July 30, 1975; ten years later Petro-Canada had become one of the largest oil and gas companies in Canada.

Newfoundland-  
Quebec Power  
Dispute

In December, the Newfoundland government passed the Water Rights Reversion Act whereby Newfoundland repealed the original lease to the existing Upper Churchill Falls power plant. The legislation was then referred to the courts for a ruling as to its constitutional validity, before proclamation. The Act would expropriate the water rights necessary for the production of power and the power plant itself, and this would effectively cancel the contract between Churchill Falls (Labrador) Corporation Limited (CFLCo) and Quebec which had been signed in the 1969. Dispute between Newfoundland and Quebec originated in the 1960s when the Government of Newfoundland authorized development of the Upper Churchill watershed by granting a long term lease to CFLCo. In the same decade, CFLCo and Hydro-Quebec concluded a power contract which gave the Quebec utility the right to purchase almost all of the output of the Churchill Falls generating plant for a period of 65 years at a price of about 3 mills per kilowatt hour initially, declining to 2 mills. Actual controversy began in 1976 when Newfoundland requested 800 megawatts from the Churchill Falls power plant for its own use and in September of that year launched legal action before the Supreme Court of Newfoundland, seeking to recall Churchill Falls power. Quebec countered with its own court action in 1977. Subsequent procedural battles prevented the central issue - validity of the 1969 power contract - from being tried in either action. Newfoundland's objective was to obtain additional electricity supply and force Quebec to pay a higher price for Churchill Falls power. The issue continued unresolved in the 1980s.

Drilling activity  
in Canada

Oil and gas drilling activity to the end of December resulted in 9,102 well completions for the year in Canada, an all-time record and considerably above the previous record of the 7,634 wells which had been completed in 1979. In 1981, the total declined to 7,102 well completions. A forecast of drilling activity by the Canadian Association of Drilling Contractors early in 1980 had estimated quite accurately the total for 1980 but had noted that, by the end of the year, the industry would have a capacity to drill nearly 11,000 wells per year and had commented on the possibility of a surplus of equipment. Even before the downturn of the early 1980s, the emerging natural gas surplus and the lack of growth in gas exports to the U.S. were indications that the drilling industry was overbuilding. The decline to the post-1980 low in 1982 of 6,449 well completions created major problems for the drilling and oilfield service industry which did not begin to recover until the mid-1980s. Sharply declining world oil prices in 1986 quickly reversed the recovery trend.

1980 energy  
program and  
legislative  
initiatives carried  
forward into  
1981-82

At the end of 1980, initiatives were being taken to implement the National Energy Program although negotiations were to continue with the oil and gas producing provinces through to September 1981 before an agreement was reached on oil pricing and related matters. Early priority was given to oil and gas industry incentives through the Petroleum Incentives Program (PIP); to oil substitution through the Canada Oil Substitution Program (COSP); to new conservation initiatives through an expanded Canadian Home Insulation Program (CHIP) with the objective of upgrading 70% of Canadian houses by 1987; to renewable energy programs, particularly solar and biomass; to the Canadianization objective; to several special Atlantic Canada initiatives; and to a large legislative program required for the full implementation of the many new policies and programs. The following listing of legislation carried forward from the 1980 initiatives provides a record of its scheduling and finalization in 1981 and 1982:

Bill C-48—An Act to regulate oil and gas interests in Canada lands and to amend the Oil and Gas Production and Conservation Act  
1st reading—December 9, 1980

Bill C-60—An Act to amend the National Energy Board Act  
1st. reading - February 10, 1981  
Royal Assent - December 18, 1981

Bill C-75—An Act respecting a home insulation program for certain provinces in Canada  
1st. reading - June 29, 1981  
Royal Assent - June 30, 1981

Bill C-76—An Act respecting a home insulation program for certain Maritime provinces in Canada  
1st. reading - June 29, 1981  
Royal Assent - June 30, 1981

Bill C-77—An Act respecting oil conservation and the substitution for oil of other energy sources  
1st. reading - June 29, 1981  
Royal Assent - June 30, 1981

Bill C-87—An Act to amend the National Energy Board Act (No. 2)  
1st. reading December 18, 1981  
Royal Assent December 18, 1981

Bill C-101—An Act to amend the Petro-Canada Act '  
1st. reading - April 5, 1982  
Royal Assent - June 29, 1982

Bill C-102—An Act to amend the Department of Energy, Mines and Resources Act

1st. reading - April 5, 1982  
Royal Assent - June 29, 1982

Bill C-103—An Act to amend the Petroleum Administration Act and to enact provisions related thereto

1st. reading - April 6, 1982  
Royal Assent - July 7, 1982

Bill C-104—An Act respecting petroleum incentives and Canadian ownership and control determination and to amend the Foreign Investment Review Act

1st. reading - April 7, 1982  
Royal Assent - June 29, 1982

Bill C-105—An Act to amend the Canada Business Corporations Act

1st. reading April 7, 1982  
Royal Assent July 7, 1982

Bill C-106—An Act respecting energy monitoring and to amend the Energy Supplies Emergency Act, 1979 and the oil Substitution and Conservation Act

1st. reading - April 7, 1982  
Royal Assent - July 7, 1982

Bill C-107—An Act respecting motor vehicle fuel consumption standards

1st. reading - April 7, 1982  
Royal Assent - July 7, 1982

Bill C-108—An Act to amend the National Energy Board Act (No. 3)

1st. reading April 7, 1982  
Royal Assent July 7, 1982

Bill C-116—An Act to establish the Cooperative Energy Corporation and the Cooperative Energy Development Corporation

1st. reading - June 8, 1982  
Royal Assent - July 7, 1982

Energy  
Legislation

The Appendix on Energy Legislation documents energy Legislation, as recorded in the Statutes of Canada, that was enacted in the 1970s and 1980s, through to 1986, including the above above-noted bills which were directly relevant to the National Energy Program (NEP) as announced in October 1980.

## THE YEAR 1981

NEP  
implemented

In January, the federal government proceeded with the full implementation of the National Energy Program (NEP) following its announcement on October 28, 1980 and some initial steps in November and December. Administration of the new energy policy framework was directed in particular to pricing and fiscal incentives, energy supply, energy conservation, oil substitution, R&D, and the enactment of implementing legislation. The pricing policies and new legislative instruments were designed to address both supply and demand objectives. The Program also included many supporting mechanisms involving large financial commitments by the federal government to supplement programs already in place at the federal and provincial levels. The new initiatives, planned at a total budget level of \$8.2 billion for the period 1980-83, were set out in terms of the following activity groupings:

	<u>Expenditures</u> <u>(\$ millions)</u>
Industry Incentives	2,550
Gas Bank	440
Oil Substitution	1,620
Conservation & Renewables	1,150
Special Atlantic Canada	460
Upgraders	310
R&D	260
Petro-Canada International	200
Future Initiatives	1 200
	<b>\$8,190</b>

These expenditures were planned in addition to existing programs and budgets of federal government departments and agencies having energy-related responsibilities which, in total, for 1980-83 were estimated at \$3,410 million. The total energy expenditure for this period was accordingly being estimated at 11.6 billion as the NEP got underway

N.E. B.C. coal  
development

In January, separate agreements were signed with Quintette Coal Limited and Teck Corporation for delivery of 7 million tonnes of coking coal and 1 million tonnes of thermal coal to Japanese markets from two new mines being developed in northeastern British Columbia. The development of the new mines also involved a new townsite called Tumbler Ridge, a new rail spur to connect with the existing B.C. Rail Line North of Prince George, upgrading of the existing railway lines to Prince Rupert, development of a new coal terminal at Ridley Island near Prince Rupert, and the acquisition of new coal unit train sets. In late 1981, it was announced that the federal government had approved a joint undertaking between the National Harbours Board (NHB) and Federal Commerce and Navigation Ltd. For the construction and operation of the Ridley Island coal handling facilities, with the NHB assuming a 90 per cent equity position. At the same time, the conclusion of agreements with the coal shippers signalled the completion of agreements between industry and the federal and B.C. governments for the infrastructure required for this new coal development, with first shipments scheduled to begin by late 1983. Total cost of the mine development and related infrastructure -- townsite, rail and port -- was estimated at over \$2 billion.

National Energy  
Program in  
review --  
Concerns

By January, three months after the announcement of the National Energy Program (NEP), concerns had been expressed by representatives of the oil industry, the financial community and the Western Provinces regarding the expected impact of various provisions of the NEP on the oil industry and the economy at large. The industry had had expectations of drilling 10,500 wells in 1981 but early in the year had downgraded that estimate to about 6,000 wells. An estimate of the movement of 120 drilling rigs to the United States by-April was also attributed to the investment effects of the NEP. The international oil companies were particularly critical of such Canadianization measures as retroactive provision for a 25 per cent interest in Canada Lands oil and gas discoveries. Most

companies resisted the concept of the Petroleum and Gas Revenue Tax (PGRT) on net operating income from oil and gas production, and claimed that cashflow would be greatly reduced as a result of this and other tax measures. The Petroleum Incentives Program (PIP) did not meet with a great deal of favour on the part of the smaller companies who were doing most of their work in western Canada whereas PIP favoured frontier exploration, while the large international companies were critical because the program favoured Canadian ownership and control. The Canadianization program was criticized as having a negative impact on the balance of payments and from the point of view that the high cost of buying a foreign oil company would not yield any new oil. The federal government's attempt to increase its oil revenue share from 10 per cent to 26 per cent was seen as a measure to deprive industry of funds it would use for reinvestment. In general, there was concern about the cost of financing Canadianization, about the apparent discriminatory nature of taxes and exploration grants, and about the overall interventionist nature of the federal government's program and the related overburden of constraints and objectives of a regulatory nature. As a result of these and other criticism, the government implemented a number of modifications not only in 1981 but continuing through to 1984 when the new government, following its election in September, commenced phasing out most of the pricing and fiscal measures of the NEP.

Dome  
Petroleum's  
access to PIP  
incentives

On January 29, the Minister of EMR announced an agreement between Dome Petroleum Ltd. and the Government of Canada whereby a Dome affiliate, Dome Canada Limited, would obtain maximum benefits under the Petroleum Incentives Program (PIP). With a Canadian Ownership Rate (COR) of at least 75 per cent, Dome Canada received from Dome Petroleum its land for exploration and the subsequent development of interests earned, including lands on which discoveries had been made. This agreement enabled Dome Petroleum, a foreign-owned corporation, to benefit through its 48 per cent ownership of Dome Canada, in the special incentives available to Canadian corporations under terms of the Petroleum Incentives Program.

Forestry Industry  
Renewable  
Energy Program  
(FIRE)

In February, Treasury Board approved expansion of the Forest Industry Renewable Energy Program (FIRE) from \$103 million to \$288 million through to March 1986, and extension to all industrial commercial and institutional establishments with application to all types of biomass as well as municipal wastes. As of November 30, 1981, a total of 80 projects across Canada had been approved under this program since its inception in 1978. The program was designed to encourage the substitution of wood residues, and other biomass, for fossil fuels in the generation of energy. Financial incentives of 10 to 20 per cent of capital costs for fuel handling and burning equipment, and electrical generators if part of a regeneration installation, were available to industrial, commercial, institutional or similar organizations. The FIRE program was originally designed to provide financial incentives to the forest industry to use wood wastes in place of fossil fuel and was expanded as part of the National Energy Program announced in October 1980. Administrative details of the expanded program were announced in December 1981. In the period 1978-1981 grants totalling \$42.5 million were approved under provisions of the program.

East Coast Oil  
and gas hold  
great promise

In a presentation to the Standing Committee on Public Works and National Resources on February 10 when Bill C-48, the Canada Oil and Gas Act, was being reviewed, EMR's Resource Management Branch (now COGLA) presented an overview of oil and gas resource development progress in the East Coast offshore as perceived at that time. It was estimated that 6 trillion cubic feet of gas and 1 billion barrels of oil had been discovered, with the potential being very much greater. The Hibernia oil discovery off Newfoundland and the Venture gas discovery off Nova Scotia were considered as probably being "world-class" discoveries.

NEB Act  
amendment re  
pipeline routes

An Act to amend the National Energy Board Act was introduced for first reading in the form of Bill C-60 on February 10 and, following Parliamentary approval, received Royal Assent on December 18, 1981. The bill was designed to establish new procedures for determining the route of a pipeline, acquisition of the right of way, and to deal with compensation and damage claims resulting from the building of a pipeline. Land acquisitions and compensation had been previously governed by the Railway Act. Bill C-87, accompanying Bill C-60 made provision for up to six temporary members of the NEB to perform new responsibilities outlined in Bill C-60 relative to the

hearings process.

Petro-Canada  
acquisition of  
Petrofina --  
financed by  
COSC

On February 3, the federal government expressed approval of Petro-Canada's acquisition of Petrofina Canada from Petrofina S.A. of Belgium which would give Petro-Canada retail outlets across Canada. In April, the federal government announced that it would implement, effective May 1, the Canadian Ownership Special Charge (COSC) on sales of petroleum products and natural gas to cover most of the costs of the acquisition. The total cost of all outstanding shares as purchased by Petro-Canada Inc. on May 2 was \$1.46 billion. An additional \$350 million was set aside to cover financing costs which would depend on the timing of share tendering during the 25 month acquisition period. Since Petro-Canada was faced in early 1981 with a \$2 billion debt load (\$1.5 billion of which was the remaining debt of the Pacific Petroleum purchase in 1978), the government decided to finance 85 per cent of the Petrofina purchase price by the Canadian Ownership Special Charge (COSC), rather than asking the national oil company to assume further debt. It was estimated that the COSC, set at \$1.15 a barrel (0.8 cents a litre), on all oil processed or used domestically in Canada and 15 cents per thousand cubic feet on natural gas used in Canada, would be sufficient to cover 85 per cent of the Petrofina acquisition cost in no more than two years. On May 13, 1981 Petro-Canada announced the establishment of a new, national refining and marketing subsidiary, Petro-Canada Products Ltd., resulting from the successful acquisition of Petrofina. With the acquisition of Petrofina, Petro-Canada increased its oil production by 35 per cent to 15 400 cubic metres (96,900) barrels a day, its natural gas production by 22 per cent, and it added 15 000 cubic metres (95,000 barrels) a day of refinery capacity and over 1000 retail outlets in Eastern Canada. Petro-Canada also acquired some 8 million cubic metres of proven oil reserves and 20,000 cubic metres of proven natural gas reserves along with Petrofina's interests in exploration and development off the east coast of Canada and in the Arctic, and its 5 per cent interest in the Syncrude oil sands project.

Accelerated tax  
write-offs for  
conservation  
equipment

Provision was made in February to expand the coverage of the two-year accelerated tax write-off program for specified conservation equipment, with the provision being extended to the end of 1984. Conservation equipment included in Class 34 under Schedule II (Capital Cost Allowances) of the Income Tax Regulations could be written off in two years with a maximum write-offs of 50 per cent in each year. New categories added to the list of eligible equipment included equipment used for generating electricity at small hydroelectric sites, and equipment used in a wide range of active solar heating systems. The changes complemented other off-oil program initiatives of the NEP and were designed to encourage energy conservation and promote the development of solar energy programs.

Institute for  
Radiation

In February, the federal and Ontario governments joined the Ontario uranium industry to provide Safety; 1.5 million for the establishment of the Canadian Institute for Radiation Safety (CAIRS). The Institute at Elliot Lake; Ontario, was to serve as a documentation and public information centre on radiation safety; train personnel in radiation safety and provide special services for those engaged in radiation-risk employment; improve radiation safety devices and practices; and engage in scientific investigations concerning radiation safety in the uranium and other industries in which radiation risks are involved.

Petroleum  
Incentives  
Program (PIP)

In February, a new phasing-in approach to the Petroleum Incentives Program (PIP) was announced, enabling more companies to be immediately eligible for the maximum incentive payments for exploration and development. PIP had been announced in October 1980 as part of the NEP and a document entitled "The Basic Rules - A Framework" had been released in December 1980. Further details on the design and implementation of the program were set out in a policy framework paper issued in June 1981 entitled "Petroleum Incentives Program". The Program made provision for cash incentives for petroleum exploration and development and replaced the former "super depletion" allowance for frontier exploration, and would also gradually replace depletion allowances. Maximum PIP grants were to be available in 1981 and beyond to Canadian-controlled companies with at least 65 per cent beneficial Canadian ownership as measured by the Canadian Ownership Rating (COR). The eligibility standard was to rise by two percentage points annually to

reach 75 per cent in 1986, the level originally proposed for 1981 for maximum grants under the NEP. Other measures were implemented to give maximum grants to companies while steadily increasing Canadian ownership over a period of five years. PIP grants ranged from a low of zero, for the lowest COR category for exploration in Provincial lands, to a high of 80 per cent of eligible exploration expenditures for the highest COR category in the Canada lands. The PIP grants were scaled to reflect the need for, and the high cost of, active exploration of promising oil and gas prospects in northern frontier and offshore regions. Expenditures incurred in exploring for oil and gas in the North and offshore were entitled to an incentive equal to 25 per cent of eligible exploration expenses, with additional PIP incentives depending upon the Canadian ownership and degree of Canadian control of the applicant, the location of the expenditure and the type - exploration, development or eligible assets. PIP came under criticism because of the strong bias towards northern exploration at the expense of exploration in western Canada and because of the concern that some frontier exploration programs, financed by large grants, were not as well planned as they should have been.

Alberta's concern about the NEP

In an address given in Montreal on February 24, the Premier of Alberta spoke out strongly against the National Energy Program (NEP) which had been implemented by the federal government in October 1980. He expressed concern about the pricing provisions of the NEP, with the oil price being determined within Canada rather than being linked to the international price. The Petroleum and Gas Revenue Tax on oil production, and taxes on natural gas, were other causes of concern. The NEP was perceived as an action on the part of the federal government to "move in and take over" the control of western Canada's oil and gas reserves.

Alberta oil cut-back leads to Special Compensation Charge

On March 1, the Alberta government proceeded with the implementation of its intention announced on October 30, 1980 (two days after the federal government's introduction of the NEP) to reduce Alberta's oil production by 60,000 barrels a day. The production cut-back, to proceed in three, 3-month stages of 60,000 barrels a day, was in retaliation against the federal government's NEP initiatives. As the production cut-back commenced, the federal government announced that the price of all petroleum products would be increased by an average of 0.5 cents per litre, with the increase being in the form of a special temporary levy, Special Compensation Charge, to meet the costs of subsidizing additional imports to offset the 60,000 barrel a day reduction in domestic production. The levy would be used to finance special compensation payments to refiners in eastern Canada having to import additional supplies of international crude oil at the higher offshore prices. It was estimated that an additional foreign exchange requirement of about \$240 million would result from a 3-month domestic production reduction of 60,000 barrels a day, and \$1.7 billion if the cutback continued throughout 1981. The Special Compensation Charge was increased in June when Alberta increased the cut-back to 120,000 barrels a day but ended as a result of the agreement reached on September 1, 1981 by the federal and Alberta governments on energy pricing and taxation.

Energy R&D expenditure increases- March and July

On March 4, the federal government announced approval of supplementary R&D expenditures in the amount of almost \$2.3 million for 1980-81 as a first step in accelerating the energy R&D program. R&D expenditures in 1980-81 totalled \$174 million. On July 31 further increases of \$35 million were announced and total expenditures for 1981-82 were budgeted at \$206 million. Priority was to be given to developing new liquid fuel alternatives to gasoline, to increasing the efficiency of energy use in all sectors of the economy, to developing environmentally acceptable alternatives to oil and gas, and to ensuring the continuing development of conventional energy.

Federal response to NEP criticism

During the early months of 1981 the federal government made a number of public responses to criticisms by industry and some of the western Provinces of the NEP. In an address in Calgary on March 3, the Minister of EMR responded to the Premier of Alberta's Montreal address of February 24 and expressed concern about the oil production cutbacks initiated by Alberta and the Alberta decision to withhold approval on proposed oil sands plants until agreement was reached on an oil pricing schedule. The federal Minister denied that the NEP represented a resource grab, noting that the federal revenue share that had fallen below 10 per cent would still be less than one quarter over



the 1980 to 1983 period. It was also maintained that the NEP was exercising the right of the national government to price oil in international trade and to impose new taxes believed to be within the federal government's constitutional powers. There was no question that the provinces owned and controlled their resources. Much of the debate between the federal and Alberta governments during 1981 related to the expectation of much higher oil prices, the concern on the Alberta side being that it would be deprived of much of the potential revenue while the federal estimate in March 1981 was claiming that the Alberta government, under NEP provisions, would receive at least \$100 billion over the following 10 years from oil and gas alone, more than all the other provinces combined for all of their resources since 1867. The revenue sharing issue was exacerbated by the 1980-81 oil price expectations, which were never realized.

EMR Regional  
Offices -- CREOs

On March 20, the federal government announced that 12 regional Conservation and Renewable Energy offices would be opened across Canada by the Department of Energy, Mines and Resources. A major part of the responsibility of the new offices was to coordinate the regional aspects of major conservation and renewable energy programs emanating from the NEP. Within the year an office was operating in each province and territory, and dealing with energy conservation, oil substitution, renewable energy, and R&D programs.

OICP savings in  
Quebec and other  
benefits

In March, the federal government announced that it had spend \$4.8 billion through its Oil Import Compensation Program (OICP) in support of oil pricing provisions for Quebec. The difference early in 1981 between the imported oil cost of \$43.50 a barrel and the price of \$24.90 being paid by Quebec consumers was being made up by the federal government through the OICP. Under the NEP, the federal government had earmarked over \$1 billion to be spent in Quebec over the following four years to promote research, energy conservation, and to replace oil by other forms of energy. The emphasis throughout Canada as in other industrial countries at this time was on energy conservation and on oil substitution programs.

Fluidized-bed  
combustion for  
greater coal use

In March, the federal government initiated a major coal utilization project under the NEP Special Atlantic Initiatives coal utilization program to demonstrate the effectiveness of fluidized-bed combustion in the use of low-quality fuels in boilers of heating systems while suppressing gaseous emissions of pollutants that cause acid rain. The project, installed at the Canadian Armed Forces Base at Summerside, P.E.I., had been investigated by EMR and the Department of National Defence in the previous four years. It was designed to use high-sulphur coal from Cape Breton and wood chips from P.E.I. A utility-scale plant was being planned for Cape Breton and other applications in western Canada were being considered, all directed towards the more efficient and environmentally-acceptable use of lower grade fuels and the replacement of oil.

Restrictive Trade  
Practices  
Commission  
inquiry on the oil  
industry

In March, the report of the Director of Combines Investigation, under the title of "The State of Competition in the Petroleum Industry", was made public following an extensive inquiry which had been initiated in 1973 (see note for February 1973). The Director concluded that there were conditions and practices in each sector of the petroleum industry that were undesirably monopolistic and restrictive. He proposed measures to the Restrictive Trade Practices Commission that, in his view, were required in order to deal with the monopolistic conditions and practices in restraint of Trade that he reported he had found. The Restrictive Trade Practices Commission then commenced a hearing under section 47 of its Act, relative to the Director's study of the 1958-1973 period, and also concerning post-1973 oil price and marketing developments. "The extreme and adversarial nature of some of the Director's criticisms and conclusions, and the way in which the Director had publicized them, resulted in the proceedings before the Commission being of an adversarial nature throughout". (Restrictive Trade Practices Commission report of May 16, 1986.) Among the Director's findings was the allegation that Canadian consumers had been overcharged some \$12 billion by the oil industry in the 1958-1973 period and that the overcharge was continuing. Following its extensive hearings across Canada, commencing in October 1981, the Commission reported in May 1986 to the Minister of Consumer and Corporate Affairs and made 12 recommendations to bring about the better functioning of the petroleum market. In its inquiry, the Commission found no proof that Canadian petroleum companies had overcharged consumers

by \$12 billion and no evidence of collusion in any sector of the petroleum industry. The 700-page report of the Commission entitled "Competition in the Canadian Petroleum Industry" and the seven-volume "Statement of Evidence and Material" referred to as the "Green Book" submitted by the Director of Combines Investigation to the Commission constitute an important record of oil marketing matters in Canada for the period 1958-1986.

Natural gas pricing policy

In April, the Minister of EMR issued a statement to implement that part of the National Energy Program (NEP) relating to natural gas prices in the domestic market past Alberta. Prices were to be set in accordance with the following guidelines:

The existing TransCanada Pipelines Ltd. eastern price zone was to be extended to include the area to be served by the planned eastern extension of the pipeline system to the Maritimes;

The natural gas price in markets east of Toronto would be the same as the price at the Toronto city-gate;

- Natural gas prices in zones west of the TransCanada eastern zone would be linked to the Toronto city-gate price, but would be somewhat lower recognizing lower transportation costs;

- There would be a uniform imputed border price for all natural gas produced in Alberta and consumed in Canada outside that province.

All prices were to be prescribed by the Governor-in-Council, on the advice of the National Energy Board, under Part III of the Petroleum Administration Act rather than being derived from rates developed under Part IV of the NEB Act. The NEB would be periodically requested by the Minister, under Part II of the NEB Act, to review and report on matters associated with the pricing of natural gas sold in the domestic market. There was provision in the NEP for the setting aside of \$500 million to assist in the expansion of the gas pipeline system east of Montreal. At the time of the announcement of natural gas pricing policy for the domestic market, an increase in the export price from \$US4.47 per MMBTu to \$US4.94, effective April 1, was also announced.

CHIP expanded

In April, the Canadian Home Insulation Program (CHIP), which had been initiated in 1977, was expanded from the original \$80 million to \$265 million annually and the program was extended to 1987. While the eligibility date for houses in most regions remained at the year 1961, it was brought forward for houses in Newfoundland, the Northwest Territories and the Yukon to cover all houses built prior to September 1, 1977. By the end of 1981, federal grants totalling \$420 million, on 1.15 million applications, had been made under CHIP, and 20 per cent of all eligible homes had participated in the program.

Federal Energy Management Programs

In April, the Government of Canada initiated new measures to reduce its own dependence on oil through retrofit and off-oil conversion projects in a number of federal office buildings across Canada. Initiated in 1975/76, the federal government's internal energy conservation program had by the end of the fifth year, in March 1981, resulted in an energy consumption reduction of 17.6 per cent on an adjusted base from 1975/76 levels. Energy savings involving all government buildings and vehicles were in the order of \$90 million in the fifth year.

Marine and aviation fuel compensation recovery charge

Further to the budget announcement of October 28, 1980, the Minister of EMR announced on April 23 that, effective **May 1, 1981**, a marine and aviation fuel compensation recovery charge would be applied on all marine and aviation fuels consumed by domestic and foreign carriers with international destinations. The measure provided for the recovery of some of the compensation paid by the federal government on oil imported to replace transportation fuels exported from Canada. Compensation payments for high-priced foreign crude imports allowed for the maintenance of lower domestic price levels for all petroleum products as long as they were used within Canada. The compensation recovery charge on aviation fuel was discontinued in January 1982.

Canada Oil Substitution

On May 25, the Minister of EMR announced the inauguration of the Canada Oil Substitution Program (COSP). It had been included in the provisions of the NEP, as introduced in October

Program (COSP) inaugurated	<p>1980. COSP provided federal taxable grants of up to \$800 to homeowners to assist in the change of heating systems from oil to more abundant alternative fuels. Assistance for off-oil conversions was in the form of grants of 50 per cent of the cost of converting an oil burning furnace to natural gas, electricity, propane and renewable energy sources such as wood and solar - up to a maximum of \$800. Because there was no ready access to natural gas and eligible electricity in P.E.I., Newfoundland, N.W.T. and the Yukon, consumers there could apply the grants to furnace retrofits, insulation and other conversion-related investments, as well as furnace conversions to renewable sources. During 1981 over 110,000 applications for grant assistance were received and payments totalling \$51.7 million were made for conversions from oil to natural gas and electricity. Under contract with EMR, some 40 gas and electric utilities across Canada administered the part of the COSP relating to those energy sources. In 1981 it was expected that over \$1.9 billion would be contributed to the conversion of some 2.4 million furnaces over the ten-year planned life of the COSP. On November 9, 1984, the newly-elected government announced that the COSP would be ended, effective March 31, 1985, the major purposes of the program having been achieved.</p>
Lepreau nuclear plant- further federal assistance	<p>On May 28, the federal government committed itself to additional financial support for the construction and operation of the Point Lepreau nuclear power station in New Brunswick. Construction of the 630-megawatt unit had begun in 1974 with the federal government agreeing to provide loans covering 50 per cent of the estimated constructed costs of \$684 million and with a maximum of \$350 million set on this commitment. Construction delays had put the expected in-service date back to 1982, from 1980, and raised cost estimates to \$1.25 billion. The financial support announced in May 1981 took two forms: the federal government agreed to forgive interest already paid on the \$350 million loan advanced to New Brunswick Electric Power Commission through Atomic Energy of Canada Limited, and also agreed that interest would not be payable until the earlier of the in-service date or October 8, 1982. This represented a cost to the federal government of \$102 million over three years. As part of this new financial support arrangement, the federal government further agreed that loans would be made available to 'N.B. Power at Crown corporation rates to lessen the impact on the utility's revenue requirements of possible performance problems that might reduce the nuclear unit's output in the early years of operation up to 10 years. Each year these loans would be \$650,000 for each per cent that the power availability was less than 75 per cent of capacity, with a maximum annual loan of \$48.75 million. Repayment would begin when availability exceeded 75 per cent in any year. When completed, Lepreau was expected to account for about 18.5 per cent of New Brunswick's projected total installed generating capacity of 3,400 megawatts.</p>
Canertech	<p>Canertech, a Crown corporation designed to function as a venture capital development company for conservation and renewable energy technology, was established in May with its head office in Winnipeg. Its initial \$20 million budget was to be directed into work to support Canadian businesses engaged in renewable energy development and conservation, either through joint ventures or equity investments. By the end of 1981, plans were being made for Canertech to be the lead agency in the development of a pilot plant and related R&amp;D programs to demonstrate new processes to extract ethanol from vegetation.</p>
Propane Vehicle Grant Program	<p>The federal government's Propane Vehicle Grant Program was announced on June 2 and payments under the program were initiated in September. During the year safety standards for new propane and compressed natural gas vehicles were developed and published in the Canada Gazette on January 2, 1982. Taxable grants of up to \$400 for each vehicle were made available to encourage conversions from gasoline to propane, the grants being restricted to commercial fleet conversions at the time. In addition, the federal government set a target to convert 8000 of its own vehicles to propane over the following five years.</p>
Energy Security Bill	<p>On June 22, the Minister of EMR tabled in the House of Commons, in draft form, legislative proposals for an Energy Security Bill representing the means for giving legislative effect to a number of elements of the NEP. The proposed legislation was designed to establish the Petroleum Incentives Program (PIP), a new incentives program to encourage petroleum exploration and</p>

development; establish the legislative framework for guidelines concerning Canadian ownership and control; allow the government to collect information in accordance with NEP objectives; provide legislative authority for a number of petroleum and natural gas pricing, compensation and tax initiatives; authorize the capital necessary to expand the role of Petro-Canada and establish a Canadian Ownership Account to help finance acquisitions. The draft bill was made public at this time for comment and discussion and the legislation was given first reading on February 26, 1982, as Bill C-94, the Energy Security Act 1982. It was subsequently changed into eight new energy bills and introduced for first reading in the House of Commons on April 7, 1982 (see note for April 1982).

NEB Act amendments for power line route expropriation

On June 22, proposed amendments to the National Energy Board Act were announced which would broaden the Board's authority to permit expropriation for designated interprovincial and international electric power lines linking a producer of electricity with consumers elsewhere in Canada or on the continent. The modifications would parallel provisions relating to pipelines. Relevant provisions were included in the energy legislation tabled in the House of Commons in April 1982.

Hydroelectric small-scale plant-Roddickton

The Roddickton small-scale hydroelectric generating plant was officially opened in June at White Bay, Newfoundland, with a 425-kilowatt capacity. The plant was designed to show the potential for using indigenous energy sources to replace oil. The \$1.2 million plant, largely financed from federal funds, was the twenty-second small hydro plant built over the years in Newfoundland, that province being a pioneer in the field of small-scale hydro development.

Oil price increase natural gas tax; increase

Effective July 1, the wellhead price of conventional crude oils rose by \$1/barrel (\$6.3/cubic metre) to an average of \$18.75/bbl (\$118.0/cubic metre). The related increase of 0.7 cents per litre on petroleum products was passed through to consumers on August 30. The excise tax on domestic sales of natural gas and gas liquids, introduced on November 1, 1980 at an initial rate of 28 cents per GJ, was increased by 14 cents on July 1.

Lower Churchill Development Corporation

In July the federal and Newfoundland governments invested an additional \$10 million in the Lower Churchill Development Corp. (LCDC), the investment of each government being in proportion to the 51% Newfoundland/49% Canada equity participation in the Corporation. The new investment was directed to the study of the proposed transmission cable crossing of the Strait of Bell Isle between Labrador and the Island of Newfoundland. The LCDC was established in 1978, and the ultimate development of the hydroelectric potential of the lower Churchill River remained a high priority to reduce dependence on foreign oil and to contribute to the achievement of Newfoundland's economic development goals.

CANMET hydrocracking process

In July, the Department of Energy, Mines and Resources (EMR) and Petro-Canada Exploration Inc (PEX) signed an agreement which extended and revised a 1979 agreement under which PEX obtained the rights to use the new hydrocracking process which had been invented and developed in EMR's Canada Centre for Mineral and Energy Technology (CANMET). Under the terms of the agreement, PEX was to develop the CANMET process to the point of commercial application by 1984. The CANMET process uses a 'hydrogen addition' method in upgrading bitumen and heavy oil that produces 10-12 per cent more distillate oil than 'carbon rejection' methods such as delayed coking and fluid coking, and it eliminates the waste by-product coke which results from those processes. PEX's responsibilities under the new agreement included the development of a plant to demonstrate the hydrocracking process; the design of a full-scale commercial plant; and the development of a complete marketing and licensing package for the installation of the process throughout the petroleum industry.

Romania purchase of CANDU reactor

In July, contractual agreements were concluded between Atomic Energy of Canada Limited and the Romanian State Corporation, Romenergo, relative to the construction of the Cernavoda Candu nuclear reactor. This marked the first international sale for Canada since 1979 when Romania ordered its first CANDU reactor.

NEP report on energy supply and demand	In July, the National Energy Board report on Canadian energy supply and demand found that the supply of domestic oil could not be significantly increased in the short term although conservation would help show the decline in available reserves. At that time, the Board found that established conventional reserves would amount to about 10 years of supply at the then prevailing production rate. Most companies submitting evidence during the hearings leading to the Board's report believed that, although the NEP would reduce demand for oil, it would reduce supply even more and that oil self-sufficiency could not be reached by the NEP-target date of 1990.
Frontier exploration - Dome, Petro-Canada, Esso, Gulf, Mobil	In July, Dome Petroleum commenced its sixth year of exploratory drilling in the Beaufort Sea, with the drilling season lasting only from mid-July to October 31 in 1981. Exploration in the frontier regions of the Arctic Island, Beaufort-Mackenzie area, and the East Coast offshore by a number of companies remained in 1981 at the high level experienced in 1980 as the industry continued to focus on promising areas. A total of 19 rigs were active in these regions and total exploration expenditures during 1981 amounted to about \$675 million, nearly \$200 million of which was contributed by Petro-Canada. Dome remained optimistic about the production prospects of the Beaufort Sea. Esso Resources and Gulf continued active exploration in the shallow waters of the Beaufort Sea using artificial islands as drilling platforms. Panarctic operated in the Arctic Islands region. Off the east coast Mobil oil and Petro-Canada were the principal operators. These and other companies held high expectations of early production prospects, but by the mid-1980s, largely as the result of rapidly declining world oil prices, most exploration programs in the frontier regions had been discontinued.
Petro-Canada International established	In August, Petro-Canada International was established as a subsidiary of Petro-Canada. The mandate given to the new company was to offer Canadian technology and expertise to assist developing countries in becoming more energy self-reliant by reducing or eliminating their dependence on imported oil. The company was to act as a direct delivery mechanism for Canadian development assistance by participating in exploration for hydrocarbon resources, conducting pre-exploration and related studies, and providing technical assistance and training in hydrocarbon exploration and production. It was also to act as an executing agent for other developing assistance institutions including the Canadian International Development Agency (CIDA) and the International Bank for Reconstruction and Development (IBRD). Under the NEP, funds of \$250 million were made available for PCI purposes for the four-year period ending 1984-85.
Canada Oil and Gas Lands Administration (COGLA) established - frontier outlook promising	On August 17, the Administrator of the Canada Oil and Gas Lands Administration (COGLA) was appointed and that organization assumed the duties of resource management branches in EMR and in the Department of Indian and Northern Affairs, with the new Administrator being responsible to the Ministers of the two Departments relative to the development of oil and natural gas in the Canada Lands. The Administrator's main responsibility on behalf of the two Ministers is to obtain maximum benefits for Canadians from oil and gas development in the North and off the East and West Coasts, and to ensure that Canadian requirements are met in terms of ownership, employment, industrial benefits, and protection of the physical and social environments. In mid-1981, it was being estimated that Canada Lands exploration and development activities would involve direct expenditures by oil and gas companies averaging \$4 billion a year in the 1980s, an estimate made at the height of exploration activity before the rapid decline in world oil prices and in exploration, was foreseen.
Coleson Cove coal-fired proposal	In August, the federal and New Brunswick governments announced agreement on a \$1.2 million study of the feasibility of converting the 1000 MW oil-fired Coleson Cove electrical generating plant to a partially or totally coal-fired operation. This was the first project under the NEP Utility Off-Oil Fund which provided contributions of up to 75 per cent of the cost of environmentally acceptable conversions of oil-fired electrical plants to coal. It was estimated at the time that Canada would save over \$100 million annually in import compensation payments if the Coleson Cove plant were to be completely converted to coal. However, as a result of the removal of oil compensation payments for fuel used for generating electricity exports, N.B. Electric Power

Commission had to renegotiate an export contract and the federal government agreed to provide compensation of up to \$25 million annually for five years to cover the loss of revenue. As a result of a profitable alternative use of the plant within the N.B. system, the compensation was limited to \$15.5 million. During 1981 and 1982 a study was undertaken to determine if conversion to coal from oil would be practical and economic in all respects, including those relating to environmental control.

Nuclear energy  
discussion papers

In August, 16 discussion papers were released on a broad range of nuclear energy and related matters ranging from electrical demand to uranium mining and nuclear wastes. The papers were products of an internal review by the federal government of the country's nuclear policy. The review was designed to stimulate a better understanding of the potential of nuclear energy to enhance Canada's energy supply position, and to provide a factual basis for the discussion of the broad range of issues related to the supply and use of nuclear energy.

Radioactive  
waste disposal

In August, the federal and Ontario governments announced the procedure to be followed in continuing research efforts on safe means for the permanent disposal of nuclear wastes from reactor operations. Emphasis would be on underground disposal, placing wastes deep within stable rock formations. The program would include public hearings leading to acceptance of a disposal method. At this time the two governments agreed on two new research areas in northern Ontario where research would be done on the properties of granite and on groundwater movements. A planned 10-year research program would not involve the use of radioactive wastes. In September, the federal government announced that a \$13.8 million underground research laboratory would be established near Lac Du Bonnet, Manitoba, the first such laboratory to be established below the water table in undisturbed granite. The research and development program on permanent passive disposal of irradiated nuclear fuel wastes proceeded under the direction of Atomic Energy of Canada Limited.

National Energy  
Program in  
review --  
concerns

During the year, representatives of the oil industry and other business interests continued to make their concerns known regarding the effect of the National Energy Program on the oil industry and the economy. In August, the Canadian Chamber of Commerce presented a brief to the federal government on views representative of 600 local Board of Trade and Chambers of Commerce across Canada who had considered energy matters at the 1981 Chamber of Commerce Annual Meeting. Included in the recommendations made at that time was one calling for governments to develop an agreed system which would be effective in moving domestic crude oil prices to a free market valuation regardless of further changes within the following three to five years, and for governments to also adopt a policy of moving Canadian energy prices towards world levels. It was further recommended that the significant tax revenues that would accrue to governments as prices rose should be directed, not to subsidizing consumption and new or expanded government programs, but rather to the reduction of government deficits or to productive investment. Temporary adjustment assistance to energy-intensive firms, to help finance more productive energy-efficient equipment or to research and development for alternative sources of energy, were considered to be reasonable uses for such government funds. The Chamber was of the view that a policy that accepted the need for significantly higher energy prices would lead the Canadian economy out of its existing "stagflation phase" and spur good economic performance based on energy investment. The Canada-Alberta agreement on energy pricing and taxation was completed shortly after but rising interest rates, a softening of international oil prices, and a general world recession soon made conditions more difficult in the Canadian energy economy.

Federal-Alberta  
agreement on  
energy pricing  
and taxation

On September 1, a Memorandum of Agreement between the Government of Canada and the Government of Alberta relating to Energy Pricing and Taxation was signed by the Prime Minister and the Premier, establishing a taxation and pricing regime for oil and gas produced in Alberta. The Agreement was signed to provide for the gradual rise in the price of petroleum and its products under a "made-in Canada" formula that would keep Canadian prices below international levels yet provide governments and industry with revenues to promote oil self-sufficiency by 1990; the favourable pricing of natural gas in relation to oil, making it an attractive substitute for consumers;

higher prices for future oil discoveries in recognition of their risk and high-cost nature; and a revenue sharing program giving an increased share of oil and gas revenues to the federal government in view of its responsibility for the management of national programs. The Agreement established in broad terms a two-tier pricing system for oil produced in Canada and was scheduled to remain in force until December 31, 1986. The Agreement was spelled out in terms of the following sections: Prices for Conventional Old Oil, New Oil Reference Price, Natural Gas Prices, Natural Gas Liquids, Petroleum Compensation Charge, Natural Gas and Gas Liquids Tax, Petroleum and Gas Revenue Tax and Incremental Oil Revenue Tax, Income Tax Changes, Alberta Royalties and Freehold Mineral Tax, Alberta Royalties on Alsands and Cold Lake heavy oil, Petroleum Incentives Program, Oil Sands Approval Process, Fiscal Undertakings, General Conditions, and Revenue Estimates.

Federal-Alberta agreement based on faulty pricing scenario

The expectations held in September, at the time of the signing of the Federal-Alberta agreement on energy pricing and taxation, related to continuing increases in the international oil price. As a result, it was forecast that total oil and gas revenues would amount to \$212.8 billion in the period 1981-1986, with the federal and Alberta governments' shares being 25.5% and 30.2%, respectively, and industry's share, 44.2%. This revenue expectation was based on projections of oil price schedules, with the price of 'old' oil rising from \$18./5 in September 1981 to \$57.75 per barrel by July 1, 1986, and the New Oil Reference Price (NORP) increasing from \$45.92 on January 1, 1982 to \$77.48 per barrel by July 1, 1986. (Following the price declines of the first half of the 1980s, the world oil price in 1985 was only \$US 28 per barrel and in 1986 it went as low as \$10). A supplementary announcement to the Memorandum of Agreement specified that the overall price of 'old' oil would not exceed 75 per cent of the international price. Both the New Oil Reference Price (for oil sands, frontier, oil and new discoveries) and the price ceiling for 'old' oil specified in the agreement were tied to the world prices. The natural gas price, in turn, was also linked with international oil trends. While the agreement established a fixed price for natural gas at the Alberta border, with a scheduled increase of 25 cents per Mcf every six months, the Toronto city-gate price was to be maintained at 65 per cent parity with oil through federal adjustments in the Natural Gas and Gas Liquids Tax (NGGLT). The faulty price assumptions at the base of the federal-Alberta agreement began in 1982 to cause serious problems in the administration of the NEP and in federal-provincial energy relations.

Federal-B.C. agreement on oil and gas pricing and fiscal matters

On September 24, the Prime Minister and the Premier of British Columbia announced that the issues outstanding between the two governments concerning oil and gas pricing and related fiscal matters had been resolved. The principal features of that accord were the application of the New Oil Reference Price to new conventional oil produced in B.C.; the agreement of the B.C. government to pay outstanding taxes in respect of the Natural Gas and Gas Liquids Tax and the Canadian Ownership Charge; and the establishment of an export tax on natural gas at a rate of zero for the purpose of the Natural Gas and Gas Liquids Tax. The tax and price levels were the same as in the Federal-Alberta Agreement; the major distinction between the two Agreements centred on the funding and administering of the Petroleum Incentives Program (PIP) by the federal government in B.C. while the Alberta government had opted to be fully responsible for PIP in that province. When the Agreement with B.C. was reached, it was expected that oil and gas revenues related to B.C. production would total \$12.3 billion over the period 1981-86, with the federal and B.C. shares being 26% and 37.4%, respectively, and the industry share, 36.6%.

Pre-build sections of Alaska Highway gas pipeline

The western leg of the pre-build portion of the Alaska Highway Natural Gas Pipeline opened on October 1. The pre-build section consists of two legs designed to carry surplus Alberta natural gas to the western and midwestern United States. The National Energy Board had approved construction of the pre-build pipelines in July 1980 and gas exports through the two legs of the system. Construction of the eastern leg was scheduled for completion in September 1982.

Alternative liquid fuels

In October, a comprehensive plan for research and development on alternative liquid fuels, covering all stages from production and processing to distribution and use, was published. The plan incorporated major elements on co-processing of coal and bitumen, liquid fuels from wood,

compressed natural gas, and investigation of the environmental impacts of new liquid fuels. Programs were commenced in these areas with a budget commitment of \$12 million for 1981/82.

Federal-Saskatchewan agreement relating to energy pricing and taxation	<p>On October 26, the Prime Minister and the Premier of Saskatchewan announced that issues outstanding between the two governments concerning oil and gas pricing and related fiscal matters had been resolved. The tax and price levels in the accord reached were the same as in the agreements reached by the federal government with the Alberta and B.C. governments in September, with additional emphasis on heavy oil in the Saskatchewan agreement reflecting that Province's major heavy crude oil resources. The federal and Saskatchewan governments agreed to provide incentive pricing and fiscal arrangements for an upgrader to process heavy oil into a product more easily handled by conventional refineries. The Appendix to the Letter of Understanding between the two governments set out specific provisions regarding the Conventional Old Oil Price, the New Oil Reference Price and its administration, the Petroleum Incentives Program, Provincial incentives to Industry and the Saskatchewan Royalty Tax Rebate, Payment of the Natural Gas and Gas Liquids (NGGLT) and of the Canadian Ownership Special Charge (COSC), Payment of the Petroleum and Gas Revenue Tax (PGRT) and the Incremental Oil Revenue Tax (IORT), a Heavy Oil Upgrader, Heavy Oil Exports, Heavy Oil-Fossil Fuel Research, Development and Demonstration, Enhanced Oil Recovery, Saskatchewan's Income Tax on Incremental Oil Revenue, Saskatchewan's Royalty and Tax Regime, Fiscal Undertakings, Low Productivity Wells, and Revenue Estimates. At the time, It was expected that total revenues accruing from Saskatchewan oil and gas production in the period 1981-86 would amount to \$15.4 billion, with the federal and Saskatchewan governments' shares being 22.7% and 37.7%, and the industry share, 39.6%.</p>
Norman Wells oil pipeline	<p>On November 17, the NEB announced it had issued a certificate to Interprovincial PipeLine (NW) Ltd. authorizing construction of a \$1.3 billion, 900 km pipeline to transport oil from the Norman Wells field in the N.W.T. to a northern Alberta pipeline connection. The certificate allowed Interprovincial to proceed with financial, environmental, inspection and monitoring programs in preparation for a mid-1985 start-up.</p>
Canada-Alberta agreement on gas pricing and market development incentive payments	<p>In November, a Memorandum of Agreement between the Government of Canada and the Government of Alberta respecting Gas Pricing and Market Development Incentive Payments was completed and signed on <u>December 10</u> by the federal Minister of EMR and the Alberta Minister of Energy and Natural Resources. It was a sub-agreement to September 1 Memorandum of Agreement on Energy Pricing and Taxation between the two governments. The November Agreement provided for steadily rising natural gas prices, from \$1.701/GJ on November 1, 1981 to \$4.03/GJ by August 1, 1986, with semi-annual increases being set at the Alberta border. Under terms of the Agreement, the Alberta government undertook to make gas market development incentive payments to the federal government to facilitate the expansion of markets for gas in provinces east of Alberta. The payments were to be used to fund federally-administered transmission and distribution system expansion programs and other programs under the NEP designed to encourage the growth of markets for Alberta gas. For its part, the federal government undertook to maintain a significant price advantage in the market place for natural gas over oil. Natural gas producers would benefit from higher volumes and consumers from incentive prices.</p>
Canada-Saskatchewan heavy oil agreement	<p>In November, the management committee of the Canada-Saskatchewan Heavy Oil Agreement, signed in October 1976, met to review 21 proposals received under the second call. Up to late 1981, \$9.5 million had been spent to encourage the more efficient and complete extraction of heavy oils from the Lloydminster oil area. The two governments had made \$16.2 million in total available to assist in the development and application of improved recovery techniques. The program continued in 1982 in terms of 13 new R&amp;D contracts costing at about \$6.2 million.</p>
TQM gas pipeline application	<p>On November 12, notice was given of the filing of a modified routing application with the National Energy Board by Trans Quebec and Maritimes Pipeline Inc. (TQM) for the section of the proposed gas pipeline to the Maritimes between Levis-Lauzon, Quebec, and Edmundson, N.B. The federal</p>



government had set aside funds to assist companies such as TQM, Gaz Metropolitan Inc. and Gaz Inter-Cité Inc. to develop and expand transmission and distribution systems to communities such as those in the Lower St. Lawrence region. At this time, the federal government indicated its intention of approving the August 1981 decision of the NEB in favour of constructing the TQM system to Nova Scotia. That project had been recommended in the NEP of October 1980. The plan in late 1981 was to route the TQM through Rivière-du-Loup before entering New Brunswick. At the end of 1981 TQM, a consortium consisting of TransCanada Pipelines Company Ltd. and NOVA, An Alberta Corporation, received government approval to extend the gas pipeline system from Quebec City through New Brunswick to Nova Scotia. By the late 1980s, the gas pipeline system had not been extended into the Maritimes.

November 1981  
Budget -- PGRT,  
IORT, PIP

On November 12, the Minister of Finance tabled a budget which introduced changes in the tax structure to implement decisions reached in the Energy Agreements with the western provinces in September and October. The Petroleum and Gas Revenue Tax (PGRT), levied on net revenues of oil and gas productions had been initially set at 8 per cent but was increased to 16 per cent effective January 1, 1982. However, a 25 per cent resource allowance deduction reduced this tax to an effective rate of 12 per cent. An Incremental Oil Revenue Tax (IORT) became effective January 1, 1982 and taxed revenue from the production of 'old' oil at a rate of 50 per cent of "incremental oil revenues", these being defined as the difference between wellhead oil prices established in the NEP and those actually received, less applicable Crown royalties. Another tax provision called for the phasing out of all earned depletion allowances for exploration and development on provincial lands at the end of 1983, and on Canada Lands at the end of 1984. Incentives for exploration and development were to be provided under the Petroleum Incentives Program (PIP), introduced as part of the NEP. PIP was designed to provide incentives on a sliding scale, depending on the area of exploration and development, and the amount of Canadian ownership and control of the participant. The excise tax on natural gas exports, set at 28 cents/GJ on February 1, 1981, was set at zero for the period October 1, 1981 to December 31, 1986 for gas exported from the provinces but remained at the original level for any gas exported from Canada Lands.

Budget paper on  
economic  
development

Included in the Budget Papers tabled in the House of Commons by the Minister of Finance on November 12 was the document "Economic Development for Canada in the 1980s", setting out the Government of Canada's policies and priorities for national economic development. The paper emphasized the importance of energy in future economic development. As part of the fiscal plan announced in the Budget, the government allocated over \$42 billion to economic development expenditures and another \$18.2 billion to energy development in the period 1981-82 to 1985-86. Progress in the priority areas of industrial development, resource development, transportation, export promotion, and human resources was considered to be considerably dependent on progress made in the energy programs and projects of the NEP.

Offshore  
negotiations -  
Newfoundland

Offshore negotiations continued with Nova Scotia and Newfoundland, and on November 2 the Minister of EMR in a televised message to the people of Newfoundland reviewed the federal government's proposal for settlement of the offshore jurisdictional issues. The federal government's proposal included the offer to treat offshore oil and gas resources for revenue purposes as though the resources were located on land, an offer that would continue until Newfoundland achieved an agreed upon level of wealth. After that, a new sharing arrangement, which reflected the national government's long-term responsibilities, would come into effect. Negotiations continued but no settlement was reached until February 1985, following the election of a new federal government in September 1984.

Crown interest  
(share) in Canada  
Lands

Concern was expressed in 1981 by the United States government about a provision of the National Energy Program making retroactive application of the 25 per cent Crown interest or share to existing discoveries of oil and gas in Canada Lands. This was provided for in the Canada Oil and Gas Act. This matter was particularly active in November when Bill C-48 to establish this Act, was before Parliament. The Bill received Royal Assent in December. U.S. concern related primarily to the retroactive feature of the Crown interest. Earlier assertions of the Crown interest had operated

prospectively, the Crown's interest being known and established prior to major discoveries. Previously, affected investors claimed the option to avoid an assertion of Crown interest through higher royalty payments to the Crown. The charge was made by the U.S. government, and international oil companies, that the new legislation changed the rules of the game in mid-course and frustrated the reasonable expectations of investors developed over a 20-year period. In response to the concern expressed about this matter, the government amended the legislation to provide for "ex gratia" payments to foreign and domestic companies in respect of 25 per cent of exploration expenditures. However, this was not considered by critics of the legislation to be adequate compensation and the matter continued to be controversial until 1985 when the provision was removed from the new Canadian Petroleum Resources Bill, tabled in the House of Commons in December of that year. The previous procedures enforcing the 50 per cent Canadian ownership policy under the Canada Oil and Gas Act were, at the same time, replaced by a Canadian share emphasizing sales to Canadian-owned public and private sector firms, the Canadian share pertaining only to that portion of a project that would be less than 50 per cent Canadian-owned.

B.C. Hydro  
Expansion plans

In November, B.C. Hydro announced plans to dam two of the province's last remaining wilderness rivers, the Liard and the Stikine, as the end of B.C. major hydro projects, which would take the province to the year 2000. The plan was to spend \$28 billion in the 1980s.

Eldorado Nuclear  
to close  
Beaverlodge  
mine

In December, Eldorado Nuclear Limited announced the closure of its Beaverlodge uranium mining operation at Uranium City, Saskatchewan, effective June 30, 1982. Cost of producing uranium at this mine were stated to be the highest in Canada, in the order of \$C156/kg U(\$C60/ lb U308). The mine was being closed because of the high costs and steady decline in ore grades, and the drop in world uranium prices. The remote location had added to problems of retaining skilled workers. The company, a federal Crown corporation, and the government of Saskatchewan entered into a generous program to minimize the social impact and implement an orderly shutdown. In the process, all of the classic problems of a declining mining community were encountered.

Petroleum  
compensation  
charge  
differential

On December 16, the Minister of EMR released for public comment a discussion paper entitled "A Quality Differentiated Petroleum Compensation Charge for Domestic Origin Refinery Feedstocks". The Petroleum Compensation Charge (PCC) was being levied as a refinery tax on crude oil at \$39.64 per cubic metre (\$6.30 per barrel) to finance the oil import subsidy and to provide reference prices for synthetic and new oil and, in total, to provide for the blended oil price regime. The discussion paper proposed a system of varying the rate of the PCC, depending on the quality of the domestic crude oil to which it applied. The "differentiation" was designed to make light, high quality crude oils more expensive and heavy, low quality crude oil cheaper for refiners and thereby encourage Canadian refiners to use more of the country's abundant heavier crudes in keeping with supply security goals. The wider differences between heavy and light crudes would also provide the basis for upgrading heavy crude oil into light synthetic oil, as envisaged in the proposed Saskatchewan heavy crude oil upgrader project. A phased introduction of wider differentials through the PCC over the period 1983-86 was proposed.

Cooperatives --  
federal joint oil  
and gas ventures

On December 17, the Minister of EMR and a representative of an association of cooperative financial and marketing institutions signed an agreement-in-principle which would enable those institutions to become participants in a joint venture with the federal government in the oil and gas industry. As a result of the agreement, three new organizations were to be created to provide a means for members of the cooperative system to participate in the oil and gas industry: the Cooperative Energy Corp (CEC), a holding company; the Cooperative Exploration and Development Corp (CEDC); and the Cooperative Energy Investment Fund (CEIF), a trust fund. The federal government planned to make up to \$100 million available for oil and gas developments as matching funds to investment funds generated by the cooperative organizations over the following five years. The federal funds would be placed in CEC which in turn would invest in CEDC and CEIF. CEDC would seek additional investment by offering shares to the general public, and CEIF would offer units to the public through credit unions. Cooperating organizations across Canada were represented in the joint ventures.

Canada Oil and Gas Act	<p>Bill C-48, An Act to regulate oil and gas interests in Canada lands and to amend the Oil and Gas Production and Conservation Act, which was tabled for first reading in the House of Commons on December 9, 1980, was subject to considerable review in 1981 before being approved by Parliament and receiving Royal Assent on <u>December 18</u>, 1981. The Act was proclaimed on March 5, 1982. It was the legislative element of the NEP that established a new management regime for oil and gas resource development in the Yukon and Northwest Territories as well as Canada's offshore areas -- on all Canada lands which in total comprise an area almost twice as large as that of the 10 Provinces combined. The new legislation replaced the Territorial Lands Act and the Public Lands Grants Act in matters concerned with the disposition and management of oil and gas rights. It also amended the oil and Gas Production and Conservation Act to strengthen provisions for the supervision and control of frontier oil and gas activities in the interests of safety and pollution prevention. The new Act was designed to encourage greater Canadian ownership of oil and gas supplies and to stimulate petroleum exploration and development in frontier areas. It required a minimum of 50 per cent Canadian ownership before production could begin on Canada lands; reserved to the federal government a 25 per cent interest in oil and gas discoveries on Canada lands; provided for maximum possible use of Canadian goods and services; and established a royalty system, including a Progressive Incremental Royalty (PIR), which provided higher royalties based on the profitability of fields after production begins. The legislation came under considerable criticism from industry, particularly in relation to the 25 per cent Crown share which was described as 'carried interest', or the Petro-Canada 'back-in' provision.</p>
Uranium resource assessment	<p>In December, EMR released another of a series of annual reports on uranium resources and requirements under the title of "Uranium in Canada: 1980 Assessment of Supply and Requirements". The resource study conducted by the Uranium Resources Appraisal Group (URAG), concluded that total resources in the measured, indicated and inferred categories amounted to 573,000 tonnes of uranium at the end of 1980, some 2 per cent less than reported for 1979. It was further estimated that just over 10 per cent of this uranium would be required domestically over the following 30 years to fuel the 15,000 megawatts of nuclear power capacity operating in 1981 or committed for operation in Canada by 1991. Some 60 per cent of the reported resources were located in the Elliot Lake and Agnew Lake areas of Ontario with most of the remaining resources of economic interest being in northern Saskatchewan. Of the more than \$600 million worth of uranium shipped by Canadian producers in 1980, some 80 per cent went to the export market, with Japan being Canada's most important customer followed by the U.S., the U.S., and West Germany.</p>
Crude oil price changes - NORP for oil sands	<p>Crude oil price changes were announced on December 30, in accordance with the energy pricing and taxation agreements between the federal government and the oil producing provinces completed in September and October. The average wellhead price of 'old' conventional crude oil (discovered before January 1, 1981) increased by \$14.15 per cubic metre (\$2.25 per barrel) effective January 1, 1982. Flow-through of the price increase to consumers was to be delayed 60 days, to March 2, 1982. Commencing January 1, 1982, production of 'new' conventional crude as well as synthetic crude from the Syncrude and Suncor oil sands projects received the New Oil Reference Price (NORP).</p>
Renewable energy projects	<p>By December, the federal government had spent more than \$100 million in 1981 on research, development and demonstration projects in renewable energy (other than large-scale hydroelectricity). A target had been set in 1980 for renewables to supply about 6 per cent of total energy demand by 1990 and 10 per cent by the turn of the century. About 32 per cent of Canada's energy demand is in the form of low-grade heat below 100°C and some of this demand, which is largely for water and space heating, can be met by solar energy. Solar and other renewable energy technologies were benefiting from such initiatives as the off-oil programs, increased R&amp;D in the National Research Council, and demonstrations of technologies through federal-provincial agreements administered by EMR.</p>

Energy conservation projects - CREDAs, NEAP AECIP	<p>The record in December showed that Conservation and Renewable Energy Demonstration Agreements (CREDAs) had been signed with most provinces to provide industry with financing on approved costs for commercial first-time use of proven energy-saving technology. The CREDA program, funded jointly by the federal and provincial governments and administered by the provinces, had received \$18.6 million from the federal government by the end of 1981, and provincial contributions totalling \$13.4 million, for 210 projects. The National Energy Audit Program (NEAP), initiated in 1981, was providing funds for educational and consulting purposes. It also included a strengthened Energy Bus Program which by the end of 1981 had made 5500 visits to industrial establishments reviewing energy expenditures of \$140 million and identifying potential energy savings of \$27 million. The \$40 million, 3-year NEAP was being operated under federal/provincial cost-sharing agreements with 20 per cent of the funding provided by the provinces. For the planned 5-year Atlantic Energy Conservation Investment Program (AECIP), introduced in September, grants to cover up to 50 per cent of capital costs for eligible conservation projects were to be made available to qualifying industries, businesses, and private institutions in the Atlantic region</p>
ESAB allocation programs	<p>By December, the Energy Supplies Allocation Board (ESAB) had completed plans for a mandatory crude oil and petroleum products allocation program. A gasoline rationing plan was also completed, and work was proceeding on a retail diesel fuel rationing program.</p>
NEP initiatives n review - 1981	<p>A review of the NEP in December showed that a number of initiatives had been taken in 1981, directed towards the three primary goals of security of supply, greater opportunity for Canadians to participate in the oil and gas industry, and a fairer sharing of petroleum revenue. By the end of the year most measures were still in early stages of implementation. They included the following:</p> <p>Pricing and fiscal incentives: the federal agreements with the three western provinces; the gas market development incentives; and a number of other fiscal and price initiatives such as the Petroleum Compensation Charge (PCC), the Petroleum and Gas Revenue Tax (PGRT), the Natural Gas and Gas Liquids Tax (NGGLT), the Incremental Oil Revenue Tax (IORT), and the introduction of price differentials to encourage the greater use of heavy oil resources.</p> <p>Energy supply measures: the Petroleum Incentives Program (PIP), offshore negotiations, pipeline approvals, and nuclear and coal supply projects.</p> <p>Oil substitution provisions through the Canada Oil Substitution Program (COSP) and the Utility Off-Oil Program.</p> <p>Energy conservation initiatives directed to the building and industrial sectors, transportation, government properties, federal-provincial joint programs, and the establishment of federal conservation offices across Canada, with earlier programs such as the Canadian Home Insulation Program (CHIP) initiated in 1977, being expanded.</p> <p>Energy research and development, with increased funds for conservation and the development of alternative energy sources.</p> <p>Legislation in the form of a proposed Energy Security Act to provide a legislative base for the many NEP initiatives, and the establishment of a new Canada Oil and Gas Act.</p> <p>Canadianization initiatives enshrined in the Canada Oil and Gas Act and the PIP program and the related COR/CS Program; the authorities of the Foreign Investment Review Agency (FIRA); government acquisitions through Petro-Canada such as the Petrofina acquisition financed by the Canadian Ownership Special Charge (COSC); and the monitoring surveys of the Petroleum Monitoring Agency as to Canadian content.</p> <p>Even as early as the end of 1981 when world price and other conditions that had prevailed in 1979 and 1980 showed signs of change, the many price and incentive tax measures being implemented under the NEP in anticipation of price and supply emergencies, and the related revenue and cost sharing problems, began to appear extremely complex, out of touch with market realities, and sometimes in conflict, one with another. However, the general public response to the NEP remained positive. A Gallup pole in December indicated that 65 per cent of Canadians would favour even more rapid Canadianization - 75 per Canadian ownership by 1985.</p>

## THE YEAR 1982

Natural Gas pricing for markets east of Toronto

A natural gas pricing policy was announced on January 13, subsequent to the September 1, 1981 Canada/Alberta Agreement on Energy Pricing and Taxation and recommendations of the National Energy Board. Scheduled to be implemented on November 1, 1982, the new statement superseded the policy statement of April 1, 1981 and, for purposes of gas pricing, extended the existing TransCanada Pipelines (TCPL) eastern zone to include the areas of Québec and the Maritimes which was to be served by the TransQuébec and Maritimes Pipeline (TQM). City-gate prices in markets east of Toronto would be the same as the Toronto city-gate price for the same type of gas source. The long-term pricing regime would be based on the principle that the revenues received by TCPL and TQM from sales of natural gas in the domestic market would be equal to the cost of gas at the Alberta border plus all transportation tolls associated with the movement of that gas as authorized by the NEB. The Alberta Border Price for markets east of Alberta would be set in terms of the September 1, 1981 Agreement and would escalate every February 1 and August 1 from \$1.701 per GJ on November 1, 1981 to \$4.03/GJ on August 1, 1986. The Natural Gas and Gas Liquids Tax (NGGLT) would also be set every February 1 and August 1 so that the wholesale price of natural gas at Toronto (the city gate price plus the NGGLT plus the Canadian Ownership Special Charge -- COSC) would be about 65 per cent of the crude oil price at Toronto. (Effective February 1, 1982, the NGGLT was 63 cents/GJ and the COSC was 14 cents/GJ). To encourage rapid expansion and build-up of new natural gas markets in Quebec and the Maritimes, beginning November 1, 1982 developmental prices were to be prescribed in accordance with this schedule and, for the initial three years of each contract, the development price would be equal to the price of 100 per cent load factor, notwithstanding the distributor's actual load factor.

Compressed Natural Gas Demonstration Program

On January 22, a new federal government demonstration program designed to assess the commercial, technical and regulatory feasibility of operating vehicles on compressed natural gas was announced. The program was designed to aid in the development of natural gas as an alternative vehicle fuel and followed such other initiatives as the Propane Vehicle Grant Program with its target of 100,000 propane powered vehicles by 1985. The program consisted of two parts: a general CNG vehicle demonstration designed for small-fleets or individual vehicles, with each participant receiving a taxable contribution of \$600 per vehicle in exchange for the provision of data on costs and operating experience; and a CNG fleet demonstration for such fleet operations as taxis, school buses and light commercial vehicles.

Low-productivity well allowance

In January, the federal government announced that, effective January 1, a special federal tax assistance known as the Low-Productivity Well Allowance, would provide relief from the Incremental Oil Revenue Tax (IORT) on wells producing less than 20 bbls per day. More than 10,000 wells would be eligible amounting to some \$150 million in tax credits over the period to 1986.

Dome Petroleum financing

During 1982 Dome financing became an issue of national importance which continued to attract attention into the late 1980s. In January, Dome announced that it had arranged a \$US 1.7 billion (\$Cdn. 2.1) billion) loan from a consortium of 25 banks headed by Citibank N.A. of New York, with the money to be used by Dome to buy back the three year retractable preferred shares that were to be exchanged for Hudson's Bay Oil and Gas Co. Ltd. (HBOG) common shares. The minority shareholders of HBOG had voted in favour of a proposal by Dome to exchange preferred shares of Dome subsidiary (Dome Resources Ltd.) for the common stock of HBOG that Dome did not already own (47%). When the takeover was completed, Dome would be the largest oil and gas company in Canada based on book value of assets. Based on upstream revenues, the combined Dome-HBOG companies would rank second, and based on total revenues they would rank sixth. Dome Resources was set up by Dome when it acquired HBOG shares from the minority shareholders. Dome had given HBOG stockholders one retractable preferred share of Dome Resources for each of their shares and had promised to buy back all of the Dome Resources shares for \$57.50 each by December 1984. To meet this commitment, Dome had taken out the \$2.1 billion loan, noted above, and held the money in trust to redeem the 36 million Dome Resources shares

outstanding. By mid-1982, Dome's financial problems were increased (see note for June).

Ontario Hydro nuclear forecast	In a paper written by the President of Ontario Hydro in January he forecast that in another 10 years (1992) 60 . to 70 per cent of Ontario's electricity needs would be met by nuclear energy. "This reflects the provincial government's energy policy, a policy aimed at getting us to "kick the oil habit". Because Ontario brings in three quarters of its energy -- mostly oil and natural gas - from outside the province, both business and industry are vulnerable to price increases set internationally. The price of world oil is pretty well dictated by what OPEC decides to charge and Canadian prices are subject to upward pressure from OPEC. The people of Ontario, and Canada, must get away from the use of oil because it is highly expensive".
New Oil Reference Price (NORP)	Effective January 1, crude oil discovered on or after that date, and certain experimental schemes for the enhanced recovery of crude oil, became eligible for a price supplement under the new Oil Reference Price (NORP) regime. In the Memorandum of Agreement of September 1, 1981 between the Government of Canada and the Government of Alberta, and subsequent accords with the other producing provinces, a new category of oil was recognized and it was agreed that oil from new sources would receive a new oil reference price supplement up to the limit of international prices. The NEP Update 1982 announced further price supplements (see note for may) following extension of the coverage in March.
Ocean Ranger drilling rig disaster	On February 15, the Ocean Ranger, semi-submersible drill ship sank in a storm 175 nautical miles east of St. John's, Newfoundland with the loss of 84 lives. On February 26, the federal and Newfoundland governments announced the establishment of a Joint Commission of Inquiry into the circumstances surrounding the sinking of the Ocean Ranger rig. An investigation by the U.S. Coast Guard, which was responsible for safety inspections of the U.S.-registered rig, was also initiated. Terms of reference for the federal/provincial inquiry were announced on March 18 and gave the six-man commission freedom to report on such matters as acts or commissions by the owner, operator or any contractor of the Ocean Ranger, and to comment on the search and rescue response from Newfoundland and elsewhere.
Newfoundland— federal offshore negotiations	The controversial issue of offshore resource ownership and jurisdiction, which had been the subject of negotiation between the federal and Newfoundland governments for a number of years, had reached an impasse and in February the Newfoundland government announced a reference to the Newfoundland Superior Court concerning ownership of offshore resources. In February 1983, the Newfoundland Court of Appeal ruled against Newfoundland.
NEP taxation measures	On February 23, the federal government introduced a Ways and Means Motion setting out a series of taxes preparatory to legislation to implement a wide range of measures contained in the National Energy Program, as announced in October 1980. The Motion covered taxation measures relative to the Oil Export Charge, the Transportation Fuel Compensation Recovery Charge, the Petroleum Compensation Charge, the Canadian Ownership Special Charge, and the Special Compensation Charge.
Energy Security Bill 1982 for NEP implementation led to March 2-17 ringing of H. of C. division bells	On February 26, the federal government introduced Bill C-94, the Energy Security Act 1982, to implement the major elements of the National Energy Program. The intention, on the basis of this bill, was to create four new Acts: the Petroleum Incentives Program Act, The Canadian Ownership and Control Determination Act, the Petroleum Monitoring Act, and the Motor Vehicle Consumption Standards Act. In addition, the bill was designed to amend the Petroleum Administration Act, the National Energy Board Act, the Petro-Canada Act, the Canada Business Corporations Act, the Energy Supplies Emergency Act 1979, and the Oil Substitution and Conservation Act. It also included two technical amendments to the Foreign Investment Review Act. The bill had been released in draft form on June 22, 1981 to allow for study and comment, and was subsequently changed after extensive consultation with industry representatives, financial institutions and provincial governments. On March 1, the official opposition raised a motion that Bill C-94, being an omnibus bill of considerable complexity, should be divided. On

March 2, the Speaker ruled against this proposition. This decision resulted in the presentation of an adjournment vote by the P.C.'s, which they then boycotted, thereby closing down the operations of the House of Commons until March 17 when the Parliament reconvened to vote on the adjournment motion of March 2. Following negotiations commenced immediately after the vote, the government announced on March 22 its intention to introduce no later than April 8, a total of eight proposed bills which were to be finally disposed of no later than June 30, 1982 (see note for April).

Alaska Highway  
gas pipeline  
endangered

Early in February, five States, 24 Congressmen, and several consumer groups in the U.S. filed a legal challenge to the financing arrangements for the planned \$40 billion Alaska Highway natural gas pipeline, an action that appeared likely to delay or cancel the project. Those challenging the financing arrangements claimed that the U.S. "waiver package" recently passed by Congress would expose consumers in 36 States to the costs of financing a massive pipeline project which might never be completed. In April, the sponsors and producers associated with the project decided to postpone it because of financing difficulties, high interest rates and sagging world oil and gas prices. The project, which had been originally scheduled for completion by 1983, appeared to be indefinitely suspended. In the meantime, the western leg of the pre-build section to deliver Alberta gas to U.S. markets had been completed and the eastern leg was scheduled for completion in September 1982. By the late 1980s, still no progress had been made on financing the Alaska Highway transmission system from Prudhoe Bay in northern Alaska.

Canada-Nova  
Scotia offshore  
oil and gas  
agreement

On March 2, the Canada-Nova Scotia Agreement on offshore Oil and Gas Resource Management and Revenue Sharing was announced. The agreement made provision for the establishment of the Canada-Nova Scotia Offshore Oil and Gas Board to manage offshore oil and gas resources. The Canada Oil and Gas Lands Administration (COGLA) was to administer offshore oil and gas activities. Under the agreement, Nova Scotia would initially receive all provincial-type resource revenues and additional revenues equivalent to the basic 10 per cent royalty on gross production revenue, the progressive incremental royalty up to 40 per cent of net revenue, a provincial corporate tax and a retail sales tax applied in the offshore region, bonus payments, rentals and license fees above administrative costs, and the Federal Petroleum and Gas Revenue Tax (PGRT) at an effective 12 per cent rate. Such revenues would continue until Nova Scotia reached a level of fiscal and economic capacity above the national average when revenues would then be shared with the federal government. The agreement was to stand, after implementing legislation had been passed by Parliament and the Nova Scotia Legislature, even in the case of any subsequent court decision with respect to ownership of the offshore. Nova Scotia thereby gained the majority share of government revenues while the ultimate authority for the management of the offshore resources rested with the federal majority on the joint board. The agreement was directed towards increased energy security and economic prosperity through the development of Nova Scotia's offshore oil and gas resources under terms of a pricing and fiscal regime which it was expected would encourage increased offshore exploration and development on an economic basis,

NORP coverage  
extended

On March 2, the federal and Alberta governments announced extension of the New Oil Reference Price (NORP) program to cover new pentanes plus discovered or produced in significant quantities after December 31, 1980, effective April 1, 1982. Crude bitumen and heavy oil from most experimental projects in oil sands and conventional heavy oil areas would be eligible effective by April 1, as would conventional crude produced from drilling spacing units in heavy oil fields in Alberta. Thus, the incentives were being broadened to encourage the more effective use of the resource.

oil price declines  
signal changing  
economic  
conditions

In March, spot prices on the world oil market began to drop below official prices for the first time since 1973. While the official price of Saudi Arabia light crude continued at \$US 34.00 per barrel, the spot price declined from that level in mid-January 1982 to \$28.10 by mid-March. World prices were on the decline as the economic recession deepened and oil surpluses developed. Within the Canadian oil industry, domestic investment was off, oil rigs were continuing to move to the U.S., and the Cold Lake and Alsands megaprojects had been cancelled. This led the Alberta and federal

governments to take some remedial actions in April and May in the form of Alberta's program of royalty reductions and special grants, and the federal government's National Energy Program Update 1982.

Canada Oil and Gas Act

On March 5, the Canada Oil and Gas Act was proclaimed. It was the legislative element of the National Energy Program that established a new management regime for oil and gas resource development on Canada Lands. The legislation was designed to encourage increased participation in exploration and development of petroleum resources in the North and offshore, and provide for increased government influence on the pace of exploration and development. As noted in the following item, the "back-in" provision (Section 27) of the Act continued to be the subject of criticism by foreign companies and their governments.

Petroleum Incentives Program (PIP), COR and CS programs started, - 25% "back-in" remains controversial

On March 9, the Minister of EMR announced the conditional start-up of the Canadian Ownership Rate (COR) and Control Status (CS) programs and the conditional commencement on April 19, 1982 of the Petroleum Incentives Program (PIP). Legislation was still pending and about \$940 million of PIP payments had been set aside for the petroleum industry between January 1, 1981 and March 31, 1982. The three programs were considered to be central elements of the National Energy Program and key to the objectives of 50 per cent Canadian ownership of the petroleum industry by 1990, and self-sufficiency in oil by that date. The amount of the incentive payments under PIP were to be determined in terms of an investor's COR and CS. PIP would pay incentives on a graduated scale of up to 80 per cent of exploration expenditures depending upon the degree of Canadian ownership and control of firms, the nature of their expenditures and the location of the expenditures (whether on Canada Lands or in the provinces). In addition, all firms -- whether Canadian controlled or otherwise -- were to be eligible for payments to cover 25 per cent of eligible exploration costs on the Canada Lands, in recognition of the fact that the federal government was reserving a 25 per cent Crown interest in every exploration right in the Canada Lands. This latter provision, the 25 per cent "back-in", continued to be highly controversial and subject to strong attack by the international industry and some foreign governments though the interest could only be exercised prior to production and the federal government would pay all production costs associated with the 25 per cent Crown share. While Canadian law appeared firm on the point that no compensation for expropriated interests was constitutionally required so long as an uncompensated taking was authorized clearly and unambiguously by the relevant legislation, the question being raised was whether the compensation provided met the norms established by the international community in such situations. However, this issue also involved views to the effect that foreign-controlled companies that have incorporated Canadian subsidiaries in order to exploit energy resources must be taken to have accepted fully the jurisdiction of Canadian authorities. They should not invoke the protection of another state when Canadian policy displeases them.

Distribution System Expansion Program (DSEP) a major off-oil initiative

The Distribution System Expansion Program (DSEP) was initiated in March for a planned five-year period. It provided assistance to gas utilities in order to aid the expansion of their distribution networks into markets served by oil. Financial assistance was available to assist projects which would not be financially viable for a utility to construct by itself. The program thereby promoted a reduction in oil use in each of the residential, commercial and industrial sectors where gas was available and where the government target of reducing the use of oil to no more than 10 per cent had not been achieved. During its first year of operation, 1982/83, over 350 projects involving \$40 million in federal contributions were approved. These projects brought gas service within reach of 35,000 new customers in the participating provinces B.C., Saskatchewan, Manitoba, Ontario and Quebec. Two approaches were used in DSEP administration: an annual competition, designed for large extension projects; and an incentive funding component designed to encourage gas expansion activity in areas where some gas service already existed. For the competition procedure, gas distribution companies submitted project proposals to EMR having total capital costs of at least \$100,000, and selections for awards were based primarily on cost effectiveness in displacing oil. Under the incentive funding component, projects not in excess of \$25,000 in total capital costs and which were cost effective in displacing oil were considered.



Market Development Incentive Payments (MDIP) for DSEP, GMAP and ICAP	When the DSEP was launched in March, as described above, funds came from two sources: Government of Canada appropriations and from Market Development Incentive Payments (MDIP) made by the Government of Alberta. MDIP was established under the Canada/Alberta Agreement on Energy Pricing and Taxation of September 1981 and the subsequent November 1981 Agreement on Gas Pricing and Market Development Incentive Payments. It provided funds for partially financing several federally administered programs, including DSEP, to expand gas markets east of Alberta; the \$100 million Gas Marketing Assistance Program (GMAP) to assist Quebec distributors in promoting gas sales in new franchise areas; and the \$25 million Industrial Conversion Assistance Program (ICAP) to promote the use of heavy fuel oil.
CHIP eligibility increased by 1.6 million homes	On March 23, the federal government announced that, effective April 1, an additional 1.6 million homes across Canada would become eligible for grants under the Canadian Home Insulation Program (CHIP). The announcement changed the eligibility date in most provinces from January 1 1961 to January 1, 1971. CHIP provided grants of up to \$500 for insulation improvements in homes of three storeys or less. Total expenditures under the program, initiated in 1977, had amounted to \$447 million. Program costs for 1982/83 were estimated at a further \$280 million. The objective of CHIP was to reduce home energy consumption by 30 per cent through better insulation, and to upgrade 70 per cent of Canadian housing stock by 1987. CHIP payments were on the bases of up to \$350 in taxable grants for approved insulation materials plus one third of the cost of contracted labour to install these materials, up to a maximum of \$150.
Upper Churchill Falls power Quebec Newfoundland dispute	In March, a Newfoundland Appeal Court ruling supported the Newfoundland government's initiative in passing the Water Rights Reversion Act and repealing the original leases to the Upper Churchill Falls power plant. It would thereby permit the province to break the 65-year contract between Churchill Falls (Labrador) Corporation and Hydro-Quebec which had been signed in 1969 (See note for December 1980 on Newfoundland - Quebec power). The matter was then referred to the Supreme Court of Canada. The Quebec government indicated that it would be prepared to negotiate a package deal that would include compensation to Newfoundland for some of the money that province claimed it had lost through the 1969 contract. However, any re-examination of that contract would depend on the results of talks aimed at negotiating a total package which would include Quebec proposals to develop other parts of Labrador having a hydroelectric potential. Newfoundland was not prepared to enter into such a negotiation.
Radioactive waste management - AECB	The Atomic Energy Control Board (AECB) in March ruled out any selection of a site in rock to bury high-level radioactive waste until the concept had been thoroughly researched. AECB specified that it wanted proof that once a repository is closed and sealed, radiation doses to the public would likely be no more than a small fraction of those from natural causes. Atomic Energy of Canada was in the process of researching the possibilities of underground disposal for radioactive wastes.
Alberta complaints re. shut-in capacity	The Alberta government in March continued to blame federal subsidies on imported oil as the cause of a high degree of shut-in capacity in its oil fields. The federal government noted that the reason for production cutbacks related to a declining demand for gasoline, large inventories of crude oil, and the long term oil import contracts which some eastern Canada refiners had to undertake when the Alberta government cut oil production back in the period March-September in retaliation against the NEP.
Fundy tidal power report	In March an up-dated study of Fundy tidal power, prepared by Nova Scotia Power Corp. and the Tidal Power Corp. of Nova Scotia with support from the federal government, concluded that a \$6-billion (1981 dollars), 4 684 MW power plant could be economically viable. However for the project to proceed, it would require long-term irrevocable export permits and contracts as a condition of financing. About 90 per cent of the power would have to be sold in the export market for the project to be feasible.

NEP Special Atlantic Coal Initiatives, including Scotia Coal Synfuels

By March, considerable progress had been made under the Special Atlantic Coal Initiatives of the National Energy Program as announced in October 1980. These energy initiative were established to increase the contribution of coal to the primary energy balance within Atlantic Canada. The Off-Oil Utility Fund was providing support for a \$2 million technical-economic study of the conversion to coal of the New Brunswick Electric Power Commission's 1,005 MWe Coleson Cove Generating Station and the first two phases of the study had been completed. The Coal Utilization Sub-Program, with federal support of up to \$150 million, included construction of the atmosphere fluidized-bed boiler heating plant at Summerside, P.E.I., and other projects to promote efficient and environmentally acceptable advanced coal utilization technologies including a fluidized-bed test facility to be built at the Point Tupper, Nova Scotia, 150 MWe oil-fired electricity generating plant, as announced in March. In that month, the CANMET Eastern Mining Research Laboratory was officially opened with a mandate to improve mine safety and productivity. The Scotia Coal Synfuels Consortium, with financial support of up to \$1 million from the Canada/Nova Scotia Oil Substitution and Conservation Agreement, had completed the first phase of a feasibility study of the potential for liquefaction of up to 4 million tonnes per year of Nova Scotia coal to enhance the region's supply of transportation fuels.

Oil markets action program

On April 1, the federal government announced a program of action to improve oil markets and increase the production of western Canada light and heavy crudes in view of the extensive shut-in capacity in the country's oil fields. The program included assurances that Canadian heavy crude oil exports to the U.S.A. would continue to be competitively priced by adjusting the export charge as required; promise of favourable treatment of applications to export heavy crude oil surplus to domestic needs including provisions for 1-year licences; provision for exchanges of light and heavy western Canada crude oil via the U.S., without export charge; and consideration of special treatment of crude oil chronically shut-in, such as light Saskatchewan crude, and provision for its export. The oil industry in eastern Canada was being requested to limit imports of crude oil to minimum levels provided for under contracts. The difficulties in the western Canada oil producing industry had arisen as a result of the decline in world oil demand and a related weakening in international prices; the impacts of the NEP "off-oil" and conservation programs, which were lessening the demand for oil within Canada; increases in oil availability in western Canada as a result of various NEP oil price incentives including the NORP; and some decline in U.S. market demand for Canadian oil. There were also complaints that the Oil Import Compensation Program was favouring oil imports at a time when international prices were softening. In response, the Petroleum Compensation Board changed its methodology of calculating the import compensation rate, from a procedure based on past cargoes and current price postings to set the flat rate in advance, to one in which the rate was set after the fact, based on prices paid for actual cargoes.

Energy Security Legislation

On April 5-7, the Minister of EMR introduced for first reading in the House of Commons eight new energy bills in place of Bill C-94, the Energy Security Bill, which had been introduced on February 26. In addition, many provisions in the omnibus bill had been changed in the new bills. The Petroleum Administration Act was changed to provide for lower ceilings on the Petroleum Compensation Charge (PCC), the Canadian Ownership Special Charge (COSC), and the excise tax on natural gas and natural gas liquids. Amendments to the Department of Energy, Mines and Resources Act gave the Government the authority to establish new energy-related Crown Corporations subject to a House of Commons procedure of negative resolution. Many technical amendments were made to clarify the meaning of certain provisions or to remove inconsistencies in the original Bill C-94. In his appearance before the Senate Standing Committee on Banking, Trade and Commerce on June 28, 1982, the Minister of EMR explained the various changes that had been made in Bill C-94 in drafting the eight bills to replace it. After debate in Parliament, including the committee stage, Royal Assent was given and the bills were proclaimed on the following dates and incorporated into the Statutes of Canada, 1980-81-82. Bills C--101, C-102 and C-104 received Royal Assent on June 29, 1982. Bills C-103, C-105, C-106, C-107 and C-108 received Royal Assent on July 7, 1982. Bills C-101, C-102, C-103, C-104, and C-105 were proclaimed in Royal Assent with the exceptions of the compensation provisions of Bill C-103 which were proclaimed on July 23, and Part II of Bill C-104 which was withheld pending

completion of Regulations. Bill C-106 proclamation was also withheld pending Regulations. Bill C-107 was not proclaimed and Bill C-108 was proclaimed on July 23, except for provisions dealing with international power lines and interprovincial power lines which were to be proclaimed effective February 1, 1983:

Statutes of Canada.1980-81-81		Former Bill No.
Chapter No. 105	-An Act to amend the Petro-Canada Act	C-101
Chapter No. 106	-An Act to amend the Dept. of Energy, Mines and Resources Act	C-102
Chapter No. 107	-An Act respecting petroleum incentives and Canadian ownership and control determination and to amend the Foreign Investment Review Act.	C-104
Chapter No. 112	-An Act respecting energy monitoring and to amend the Energy Supplies Emergency Act 1979 and the oil Substitution and Conservation Act.	C-106
Chapter No. 113	-An Act respecting motor vehicle fuel consumption standards.	C-107
Chapter No. 114	-An Act to amend the Petroleum Administration Act and to enact provisions related thereto.	C-103
Chapter No. 115	-An Act to amend the Canada Business Corporations Act.	C-105
Chapter No. 116	-An Act to amend the National Energy Board Act.	C-108

Alberta royalty and grants concessions

On April 13, the Alberta government announced a package of oil and gas royalty cuts and special grants to stimulate oil and gas production in the province over the following five years to 1986 when the federal-Alberta agreement of September 1, 1981 would expire. The incentives had been promised by Alberta when the agreement was signed in 1981 and were estimated to have a revenue value to industry of some \$5.4 billion.

Northern energy initiatives including the Remote Community Demonstration Program

On April 19, the Minister of Indian and Northern Affairs and the Minister of EMR announced a set of energy initiatives to assist off-oil conversion and energy efforts in the Yukon and Northwest Territories, valued at \$19 million. Included was a new program to examine local supply options for remote communities, and extension of energy price subsidies for a further year. In the longer term, the initiatives were to be directed to decreasing demand for energy through conservation efforts, and the increased use of alternative sources of energy. The Remote Community Demonstration Program, budgeted at \$24 million for all remote communities, would allocate \$10 million to the Yukon and N.W.T. In addition, changes were made in the Canada Oil Substitution Program, (COSP), the Distribution System Expansion Program (DSEP), and the two Conservation and Renewable Energy Development and Demonstration Agreements (CREDAs) entered into with the two Territories, to help them to deal with the unique northern conditions and requirements. By the end of the year, Phase I of the Remote Community Demonstration Program had been established and about 450 communities identified in the two Territories and the provinces as potential areas for assessing oil options and related conservation programs directed to reducing the consumption of high-cost oil for power generation and space heating. The emphasis was on areas which did not have access to electricity grids or natural gas distribution systems. Phase II, scheduled to operate between 1983 and 1986, was designed to offer financial assistance for a limited number of demonstration projects which would focus on alternative technologies and conservation measures which could become available for wide-scale application in remote communities.

Atlantic Energy Conservation Investment

During April, the first grants were made to companies in the Atlantic Provinces under terms of the Atlantic Energy Conservation Investment Program (AECIP). Contributions of up to half the capitalized cost of approved energy conservation projects were made available to industry,

Program (AEICP)	business and privately-owned institutions. The program had a total budget of \$40 million for a planned five-year period.
Petroleum Monitoring Agency modifies COR procedures	In April, the Petroleum Monitoring Agency (PMA) issued clarifications and modifications concerning procedures for measuring the Canadian ownership rates (COR) under the Natural Energy Program. Payments under the Petroleum Incentives Program (PIP) were determined in part by the degree of Canadian ownership of an applicant who was required to file supporting documentation with respect to ownership when applying for a PIP grant. A Guidebook including a list of all documentation required to be filed by the various types of applicants was being prepared by PMA. The relevant legislation authorizing the PIP and Canadian Ownership and Control Demonstration Programs was proclaimed on June 29, 1982.
International uranium marketing arrangement court decision on prosecution	On April 23, the Supreme Court of Ontario ruled that Eldorado Nuclear Ltd and Uranium Canada Ltd, being Crown agents and immune to prosecution under the Combines Investigation Act, could not be prosecuted for conspiring to fix domestic uranium prices in connection with an international uranium marketing arrangement which operated in the period 1972-75. The Chief Justice ruled that the Combines Investigation Act must be subject to national policy and not govern it: control over atomic energy has been deemed essential to the national interest and the Act does not specify that Crown agents are liable.
Alsands abandoned notwithstanding major financial support offers by federal and Alberta governments	In April, the Alsands Energy Ltd. consortium abandoned its \$13.1 billion project in the oil sands area of northern Alberta despite a major last-ditch effort by the federal and Alberta governments to improve the economics of the plant for the private investors. In February, five members of the consortium had withdrawn Shell Explorer (209L), Dome Petroleum (4x), Hudson's Bay Oil and Gas (8x), Amoco Canada (10%), and Chevron Standard Ltd. (8%), leaving only Shell Canada (25%), Petro-Canada (17%), and Gulf Canada Resources (8%). A study commissioned by Alsands showed that the \$13.1 billion initial cost for the plant and the \$1.5 billion to be spent on regional urban development at the Fort McMurray site would translate into a major economic impact with \$19 billion being generated during the seven-year construction phase throughout the Canadian economy. At the time the decision was taken by the principals to abandon the project, the federal and Alberta governments had proposed to put up half the money required and had offered government guarantees of loans for 68 per cent of the remainder of the capital cost. In total, the direct and indirect support offered by the two government would have covered 84 per cent of the project cost. Uncertainty about the prospects for world oil prices and the continuation of high interest rates had made private investors wary, not only about Alsands, but almost large synthetic oil, electrical and coal liquification projects in the U.S. and elsewhere.
Energy Supplies Allocation Board -Emergency Test	In April, the Energy Supplies Allocation Board (ESAB) completed a test of Canada's emergency oil allocation plans involving participation by 30 oil and pipeline companies, the ten provinces and the two territories. The test, called the ESAB Allocations systems Test-1982, commenced on February 26 with the objectives of testing the ability of all participants to submit to ESAB the required data accurately, on schedule and in the proper format; the ability of ESAB staff to manage the data and produce appropriate allocation factors for oil products and allocation orders for crude oil; the ability of the Electronic Data Processing system to predict refinery production, and establish product allocation factors; and the efficiency of communications between ESAB and the petroleum industry, and ESAB and the oil producing provinces under simulated emergency conditions. ESAB's emergency oil allocation plans had been developed over several years of consultation with provincial governments and the petroleum industry. Plans had been developed for crude oil allocation, petroleum products allocation, and gasoline rationing. A full report was produced on the 1982 test which concluded that the allocation systems had been well developed and would operate as required under emergency conditions.
Offshore jurisdiction reference to the	On May 19, the Prime Minister announced that the federal government would take the Newfoundland offshore jurisdictional issue to the Supreme Court. The reference related to the Hibernia area of 820 square miles which excluded other major discoveries on the Grand Banks. In

Supreme Court re. Newfoundland	<p>June, the Premier of Newfoundland appealed to the federal government to settle the ownership of offshore resources at the bargaining table rather than in the courts but he rejected the federal government proposal for joint management, with ownership to be settled by the Supreme Court. Instead, he called for joint ownership and an agreed revenue sharing scheme with the whole agreement to be enshrined in the Constitution. On June 22, the Prime Minister's office released letters sent to church officials in Newfoundland, to the Premier, and the Premier of Alberta. In this public correspondence, the Prime Minister indicated that, although the offshore ownership matter was before the courts, the federal government was willing and eager to resume negotiations, without preconditions, with the Newfoundland government, on the issues of resource management and revenue sharing. The letter to the Alberta Premier, who had urged the Prime Minister to reconsider the decision to go to the Supreme Court, explained the federal government's reasons for that action relative to the Hibernia area. The case was heard on November 29 but was still before the Court at the end of 1982.</p>
Conservation and Renewable Energy Offices – CREOs	<p>By May, the Conservation and Renewable Energy Offices (CREOs), which had been in operation for about a year, had become fully functional in each of the provinces and territories in helping to promote and deliver federal conservation and renewable energy programs. Their public information, liaison and evaluation functions covered the full range of programs including the Conservation and Renewable Energy Demonstration Agreements, the Canada Home Insulation Program, ENERSAVE, and the several programs specific to the various regions. They worked closely with provincial conservation agencies.</p>
Natural gas exports - change in NEB formula	<p>On May 14, the National Energy Board (NEB) decided to adopt a more flexible procedure for determining the amount of surplus natural gas in Canada available for export. The formula adopted ensured that established reserves sufficient to meet current Canadian needs and anticipated export volumes for the following 25 years would be set aside before granting new export permits. The change in procedure involved a new surplus determination method. Previously, the reserves test protected total authorized exports whether these volumes were actually taken by U.S. customers or not. The new Deliverability Appraisal method of protection was to be based on forecasted actual exports under existing licences. Because of slower growth in the U.S. market in 1981, actual exports were less than 60 per cent of the maximum authorized level compared with 90 per cent in 1979. The impact of unsold gas authorized for export to a specific market had resulted in considerable shut-in capacity in the Alberta gas industry. The new surplus determination was designed to provide realistic protection for volumes of gas authorized under export licences while freeing up gas that could not be sold in one market for sale in others. The NEB announcement followed a Public Hearing on natural gas exports.</p>
First exploration agreements under the Canada Oil and Gas Act	<p>In May, the federal government announced the signing of six agreements with Esso Resources Canada Ltd. relative to that company's plans for a \$600 million exploration program in the Mackenzie Delta-Beaufort Sea region. They were the first agreements to be signed under terms of the Canada Oil and Gas Act which called for the replacement of all existing exploration rights by new agreements, with the objective of greater Canadian ownership and participation in accelerated frontier development.</p>
New Oil Reference Price (NORP), Special Old Oil Price (SOOP)	<p>The New Oil Reference Price (NORP) program, established on January 1, 1982, was extended to all existing tertiary recovery schemes in receipt of provincial new royalty rates in May when the NEP Update was announced. This price supplement was also made available for wells that had been suspended for three years or more and to a Cold Lake heavy oil project. The NORP supplement was designed to promote the exploration and development of new oil reservoirs, enhanced oil recovery schemes, synthetic oil projects, and oil from Canada Lands. The Special Old Oil Price (SOOP) was implemented on July 1, 1982 as a measure to improve the industry's cash flow and applied to oil discovered after 1973 through to January 1, 1981, for defined classes of wells and specified types of oil. In the early period of the SOOP program, monthly payments to oil companies were totalling about \$20 million while NORP monthly payments were in the range of \$25-30 million.</p>

National Energy Program: Update 1982	<p>On May 31, the federal government issued a report "The National Energy Program: Update 1982", for the purposes of reporting on progress towards the goals of energy security, opportunity and fairness as set in October 1980 when the National Energy Program was announced, and to introduce modifications to the program in the light of changes in domestic and world conditions. In particular, the impact of the world recession on Canada's economy and the uncertainty of world prices was raising serious cash-flow problems for the smaller oil and gas companies and the gas industry in general. The measures adopted at this time were designed to assist in coping with the problems created by faster than expected reduction in oil use, including shut-in capacity in oil fields; to promote greater use of natural gas; to strengthen petroleum industry cash flow for exploration at a time when the recession and softening world oil prices were weakening the industry's financial position; and to lessen the impact of NEP taxes by freezing the Natural Gas and Gas Liquids Tax to ensure that gas continued to be priced at about two-thirds the value of oil in order to encourage off-oil conversion, and by also freezing the Petroleum Compensation Charge. The cash-flow relief measures were expected to provide an additional \$2 billion for exploration between 1982 and 1986 and were to be achieved by a reduction in the effective rate of the Petroleum and Gas Revenue Tax (PGRT); by providing a small producer PGRT exemption of \$250,000; by a one-year suspension of the Incremental Oil Revenue Tax (IORT); by broadening the scope of the New Oil Reference Price (NORP) to cover high-cost oil production; and by initiating a special price for oil (SOOP) discovered after 1973 and before 1981 to encourage firms which explored aggressively for oil after the 1973 oil crisis. Measures were also implemented to lessen the incentive to import oil by changing the method of calculating the Oil Import Compensation Rate. To promote the more rapid substitution of gas for oil, imports of residual fuel oil were to be licensed. Other measures included the provision of funds for engineering and survey work on a proposed natural gas system east of Quebec City, and the financing of 100 per cent of the estimated cost of constructing branch lines associated with the gas trunk line to Quebec City in order to promote rapid growth in gas sales in Quebec. In relation to this branch lines program, the federal government announced its intention to establish a "laterals fund" of \$500 million to pay for constructing lateral gas pipelines in Quebec.</p>
Energy R&D	<p>In May, the federal government announced a \$40 million increase in energy research and development funding, bringing to \$288.8 million the federal energy R&amp;D budget for fiscal 1982-83. This followed an increase of funding of \$35 million in 1981-82. For 1982-83, R&amp;D funds in the amount of \$32.9 million were to be directed to the development of new liquid fuels including hydrogen, alcohols and synthetic fuels. The conservation R&amp;D was budgeted at \$32.8 million. A total of \$61.1 million was available for work on new energy sources including renewable energy, nuclear fusion, oil sands, heavy oils, coal combustion, and related environmental research. R&amp;D on conventional energy sources, including frontier oil and gas and electrical research, had a budget of \$159.5 million and \$2.5 million was allocated for coordination of the R&amp;D program.</p>
Offshore exploration - Scotia Shelf Agreements	<p>In June, the first exploration agreements under the Canada-Nova Scotia Offshore Agreement of March 2, 1982 were concluded. They involved exploration commitments by Shell Canada Resources Ltd. in an amount of \$263 million covering activity on the Scotian Shelf. Exploration agreements established the blocks of land on which a company would work. They also set out the selection process by which exploration agreement lands would be returned to the Crown for future disposition. A company still had to obtain approvals from the Canada Oil and Gas Lands Administration (COGLA) for all phases of its work, including the drilling programs and specific work approvals for each well it wanted to drill. A Canada Benefits plan submitted by a company was a significant feature related to an agreement, calling for a fair and competitive opportunity for local industry to provide goods and services for an exploration program.</p>
Pace of Canadianization too rapid	<p>In June, the Minister of Finance acknowledged that the pace of Canadian takeovers of energy companies in the previous year had been too excessive and, while the 50 per cent target for Canadian ownership of petroleum industry remained, the government did not intend to press the pace of Canadianization of foreign energy holdings in the years immediately ahead.</p>

Dome Petroleum's financial problems	In June, there was speculation that some form of federal assistance might be necessary to help Dome Petroleum out of its financial difficulties arising from its massive debt load and the impact that the cost of servicing the debt was having on its financial results. The company was scheduled to pay off \$2.27 billion in debt within the following 12 months and there was a further long-term debt of \$3.26 billion, and \$1.96 billion in preferred equity outstanding for a total debt of \$7.5 billion.
Petroleum Incentives Administration (PIA) established PIP implemented	On June 7, the Petroleum Incentives Administration (PIA) was established in the Department of Energy, Mines and Resources, to be responsible for administering the Canadian Ownership/Control Status (COR/CS) Program and the Petroleum Incentives Program (PIP). Incentives payments were being made to companies based on the level of Canadian ownership and control of each company as determined by the Federal COR/CS system. The Petroleum Incentives Program Act came into force on June 30 and the program was operational in July with an initial appropriation of \$1.9 billion to cover the calendar years 1981 and 1982 and the first quarter of 1983. The first PIP payment was made on July 5 to Ranchmen's Resources Ltd., in an amount of \$8.8 million, representing 80 per cent of the costs incurred in 1981 by Ranchmen's in the drilling of five wells in the Labrador offshore. Ranchmen's was a member of the 8-company Labrador Group actively drilling off the Labrador coast. Drilling results in this high-cost exploration area did not prove to be encouraging and exploration was abandoned by the mid-1980s.
Supreme Court rejects export tax on natural gas	On June 23, the Supreme Court of Canada rejected the federal government's claim to the right to tax exports of natural gas from provincially-owned wells. The export tax was found to run counter to Section 125 of the B.N.A. Act, which protects one level of government from being taxed by another. The Court ruled that the tax measures did not fall under federal powers of trade and commerce but was in essence a tax provision -- a revenue-raising measure and not a regulatory measure. Under the National Energy Program, the Natural Gas and Gas Liquids tax was imposed on domestic and export sales of gas. Under terms of the September 1, 1981 Federal-Alberta agreement, the federal government agreed to lower the gas export tax to zero through to 1986 after extensive controversy in 1981 about the right of the federal government to levy such a tax. The Supreme Court ruling confirmed the Alberta position.
The Canadianization issue -- a defence	Throughout 1982, the federal government continued to be under attack by the oil industry and various business interests who blamed the outflow of funds, and the related need for high interest rates in Canada, on federal policies such as the NEP and FIRA. A book published in June by David Crane, Toronto Star economics editor, wrote in support of the NEP Canadianization objective, claiming that it was the huge wealth acquired by the multinational oil companies operating in Canada in the 1970s that was hemorrhaging out of the country. In 1979, 14 of the largest foreign-controlled companies paid out \$438 million to non-resident shareholders in dividends and equity reduction, and there was, in addition, a wide range of intercorporate transfers. A projection made on the basis of oil price increases, as projected in 1980, showed cash flow for the oil and gas producing sector rising from \$6 billion in 1979 to over \$16 billion by 1984 if Alberta's proposals for higher oil prices were adopted and the high level of foreign ownership meant that the escalation value of Canada's oil and gas resources would accrue to the non-resident owners of the oil and gas major companies. The price increase projections of 1980 did not materialize but the extensive protective measures of the NEP, put in place in 1980, began to create their own problems which the NEP Update -- 1982 attempted to alleviate
Lepreau nuclear electricity exports approved	In June the National Energy Board approved the issuance of licences to the New Brunswick Electric Power Commission for the export of 205 MW of electricity from Point Lepreau nuclear station in New Brunswick. The federal government concurred with this decision on August 31. This was the first case of a nuclear-based electrical energy export. By the end of 1982 Lepreau, which began producing electricity in July on approval of the AECB, was operating at 85 per cent of full power. Construction of Lepreau began in 1975.

Western electrical grid delayed

In June, the Alberta government decided to defer plans for participating in the proposed electric power grid for a couple of years in order to look into other power development options, including the possibility of plants on the Slave River. In August, the Alberta government announced it was accelerating engineering feasibility work on the Slave River 1500 megawatt hydro project, with a production target of 1991. Under the proposed grid plan, Alberta was to take two thirds of the 1200 megawatts of electricity that would be produced by the Limestone hydroelectric generating station when it was completed in 1988 on the Nelson River in northern Manitoba and power delivered over a 1700 km HVDC transmission line from Limestone through Saskatoon to Calgary. Cost of the entire generation and transmission project was estimated at \$3.5 billion. The project had been stalled since 1977.

Cooperative Energy Corporation (Co-Enerco)

In June, Bill C-116, the Cooperative Energy Act received third reading in the House of Commons and shortly after was approved in the Senate. On proclamation, the legislation made provision for the establishment of the Cooperative Energy Corporation (Co-Enerco) an association of cooperative financial and marketing institutions that would participate in the Canadian oil and gas industry. Up to \$100 million in funds was to be provided by the Government of Canada over the following five years to match investment funds generated by participating cooperative organizations. A total of 20 cooperatives had become members of Co-Enerco, representatives of agriculture, credit unions, Atlantic co-ops, Quebec federations, insurance companies, and of financial and marketing co-ops in each province. The objective was to provide a new source of funds to the petroleum industry and increase the Canadian content of the industry. A "Certificate of Commencement" was signed by the federal government and Co-Enerco on July 16, 1982, marking the beginning of Co-Enerco operations at which time it had committed \$58 million in funds, an amount matched by the federal government.

Oil and gas resources and reserves estimates -frontier potential large but no production

In June, the Geological Survey of Canada presented oil and gas resource estimates, and the 1981 year-end reserves estimates of the Canadian Petroleum Association were also released at this time. The GSC estimates included remaining reserves, discovered resources, and undiscovered potential and these were presented in terms of three orders of probability: high (9590, average expectation, and low (5%). The following tabulation summarizes these estimates, 'resources' referring to the GSC average expectations appraisals, and 'reserves' to the CPA estimates which related to reserves in fully developed fields.

#### OIL

Resources\*- 38 billion barrels  
(6 billion cubic metres)

Reserves\* - 7.26 billion barrels  
(1.15 billion cubic metres)

#### GAS

Resources - 459 trillion cubic feet  
(13 trillion cubic metres)

Reserves - 90.97 trillion cubic feet  
(2.56 trillion cubic metres)

\* excluded non-conventional oil (essentially oil sands) in the resources estimate and included only 1.4 billion barrels in the reserves estimate. The Alberta Energy Resources Conservation Board estimates oil sands resource potential at 250 billion barrels.

The GSC resource appraisals showed that the Western Canada basin, the source of almost all of Canada's oil production, accounted for only 23 per cent of the country's oil resource potential. Almost one-half of the oil resource potential was estimated to be in the Newfoundland offshore and the Mackenzie Delta-Beaufort Sea, and the Arctic regions contained an estimated 43 per cent of the gas resource potential. Such estimates led to the increased emphasis in the National Energy Program on frontier exploration. The first exploratory well was Arctic in 1961 and active exploration got underway off the east coast later in the 1960s, but by the late 1980s there was still no established oil or gas production in Arctic or east coast regions.

Energy Security Legislation

In commenting on the Energy Security legislation on July 7, when final approval was given to the last of the eight energy bills, the Minister of EMR directed attention to some of the principal changes among the 50 amendments that the government had accepted since the legislation was



introduced on April 7. On Bill C-108, An Act to amend the National Energy Board Act, it was noted that there would be a six-month delay in the coming into force of the provision affecting power lines (clause 33) to give the two principals concerned, Quebec and Newfoundland, time to increase their efforts to reach an agreement to allow Newfoundland to transmit hydroelectric power through Quebec to the United States. The NEB Act amendment was designed to make the same provision for interprovincial power lines as for interprovincial pipelines but the issue between Quebec and Newfoundland had remained highly controversial. Changes to Bill C-106 relative to the Petroleum Monitoring Agency made provision for a parliamentary committee to review the legislation after five years (1987). Amendments to Bill C-102 on the Department of Energy, Mines and Resources Act and Bill C-103, the Petroleum Administration Act, included an affirmative/negative resolution procedure allowing members of Parliament the opportunity to endorse or revoke orders of the government authorizing the creation of new Crown corporations or the spending of monies from the Canadian ownership account. Several other key amendments in the legislation were noted but most of the other changes were of a technical nature.

Special price for post-1973 oil discoveries -- SOOP

On July 1, the Special Old Oil Price (SOOP) regime was initiated in which the wellhead price of oil discovered in the period after 1973 and qualifying for provincial royalties at "new oil" rates, but not in receipt of the New Oil Reference Price (NORP), would rise to 75 per cent of the current world price. After July 1, the price would remain at this level (subject to a ceiling of 75 per cent of the world price) until the price of conventional "old" (pre-1974) oil reached this level. Thereafter, all oil discovered before 1981 would again be treated in the same manner for pricing purposes.

Marketing of Alberta crude in eastern Canada to reduce shut-in capacity  
-Domestic Transfer Program

In July arrangements were completed, under provisions of the NEP Update, for Irving Oil Limited to take delivery of Alberta crude oil at its St. John, N.B. refinery. The oil was to be transported to Montreal by the interprovincial Pipe Line system and then to St. John by tanker over a period of July 1982-June 1983 in an amount of 5000 cubic metres (31,450 barrels) per day. It was estimated that savings in oil import costs would aggregate some \$500 million in the one-year period. The federal government provided financial assistance to the company of about \$15 per cubic metre in moving the crude oil east of Montreal to permit it to be delivered to St. John at a competitive price. Assistance was provided under the Domestic Transfer Compensation Program which was renewed every six months through to deregulation on June 1, 1985. In addition to Irving oil, Imperial, Texaco and Ultramar became participants for their eastern refineries. This marketing measure had been implemented to reduce the shut-in capacity in Alberta oil fields.

U.K. criticizes NEP

In early July, the U.K. government Minister of Energy claimed that Canada's energy policy was a mistake as it "snubs the potential value of foreign investment". He was strongly critical of what he described as a nationalistic push on energy through the NEP and the Foreign Investment Review Act (FIRA)

NEP tax impact on the oil industry

In July, the Canadian Petroleum Association (CPA) released its analysis of oil industry financial results for 1981, the first full year under the NEP, and claimed that industry tax payments in the form of corporate income tax and PGRT were 88.6 per cent higher than in 1980. The analysis did not include payments under the Petroleum Incentives Program (PIP) which, when included, resulted in an increase of 44 per cent, about one-half of the CPA estimate. Similarly, cash flow declines as calculated by the CPA were over-estimated as a result of omitting PIP payments.

Suncor (GCOS) expands oil sands operation with federal help  
-Ontario's investment still under criticism

In July, the federal government approved a \$35.5 million federal tax reduction for Suncor Inc. (the former Great Canadian Oil Sands Limited - GCOS) to assist it in a \$690 million expansion program. Suncor planned to spend \$170 million in improving the efficiency of its oil sands plant in the Fort McMurray, Alberta, area and \$185 million to mine a major portion of its oil sands lease. It also planned to spend \$335 million to upgrade its Sarnia, Ontario, refinery. The company adopted a policy to procure most of its goods and services in Canada for this program. Suncor had a reserve of 68 million cubic metres (428 million barrels) of oil in the Athabasca oil sands area, this program having added 14 million cubic metres to its potential. The program was designed to enhance the supply of oil in Canada and reduce the output of heavy fuel oil. GCOS commenced operations in

the Athabasca oil sands area in 1967 at a design capacity of 45,000 barrels a day and had experienced many production delays because of technical problems in mining and processing the Athabasca bitumen. In October 1981, the Ontario government bought a 25 per cent interest in Suncor for \$650 million and, in 1982, continued to be under criticism for the amount paid. A group of professional business investors, sponsored by the Globe and Mail, concluded in a study completed in May 1982 that Ontario taxpayers had paid at least \$300 million more for the shares in Suncor than a prudent investor would have offered. The study, based on price conditions at the time, did not take into consideration the sharp drop in world oil prices that subsequently developed.

Reports on  
alternative energy  
sources

On July 28, the Minister of EMR tabled in the House of Commons the federal government's response to the report of the Special House Committee on Alternative Energy and Oil Substitution, released on May 12, 1981, generally referred to as the Lefebvre Report. The seven-member House Committee had made 65 recommendations concerning the potential for reducing Canada's dependence on oil through the greater use of alternative energy sources. The 56-page response of the Minister observed that there was substantial agreement with the Lefebvre report and that the federal government was already acting on many of the Committee's recommendations. The Committee had focussed on Canada's long-term agency future and the federal response noted that, while the government had to address major short and medium-term concerns, it was also directing attention to long-term energy alternatives, including those favoured by the Committee, such as RED support for such options as hydrogen, alcohol fuels, solar energy and very high levels of energy-use efficiency. The May 12, 1981 and July 12, 1982 reports provide an important record relative to alternative energy and oil substitution views and initiatives of the early 1980s.

Nova Scotia  
off-shore  
exploration

In July, the federal government decided to issue four exploration permits to an all-Canadian consortium comprising Petro-Canada, Bow Valley Industries Ltd. and Husky Oil Operations Ltd. for an exploration program valued at about \$500 million in an area of 1.7 million hectares off the Nova Scotia coast north of Sable Island. The agreements were to run for three years and involve the drilling of up to eight exploratory wells. One of the two semi-submersible drilling rigs used in the program was constructed in St. John and was the first Canadian-built and owned rig used by a Canadian consortium in Canada's offshore. Particular attention was given to meeting the federal government's industrial and regional benefits guidelines published in August 1981.

James Bay LG-1  
delayed and no  
new nuclear  
plants in this  
century in  
Quebec

In August, work on the James Bay LG-3 and LG-4 sites was being completed on phase one, which would add about 5,000 megawatts of capacity to the 5,000 megawatts of LG-2. A Hydro-Quebec study completed earlier in the year had concluded that, over the period 1982 to 1998, the most probable rate of annual load growth would be 4.7 per cent in contrast with a previous forecast of 6.1 per cent because of slower demographic and economic growth, increased energy conservation, saturation of heating markets, and increased penetration of natural gas. In view of the lower electricity demand forecast, only 10,000 MW of additional capacity would be required between 1985 and 2000, rather than 20,000 MW in the previous forecast, and capital expenditures would be reduced by \$50 to \$70 billion over the period. This reduced expansion indicated that there would be no new nuclear plants built in Quebec in this century after Gentilly II was completed in 1983. By August, Hydro-Québec had also concluded that the second phase of the James Bay project would be delayed five or six years, with LG-1 not starting until at least 1988. Only the development of new export markets might change that prospect.

Petroleum  
Monitoring  
Survey, 1981

On August 10, the Canadian Petroleum Industry Monitoring Survey 1981 was released by the Petroleum Monitoring Agency. Analyses of 101 of the largest oil and natural gas companies on their 1981 operations showed that foreign ownership had declined to 67.2% from 73.9% in the previous year. Net income (after-tax profits) on overall operations of the industry declined by \$1.6 billion, or 34 per cent, to about \$3 billion, as total deductions against revenues rose by 31 per cent compared with a revenue increase of 21 per cent on total operations. High interest rates, declining consumer demand, and the impact of NEP tax provisions were said to have cut after-tax profits.

Nuclear Industry

In August, E14R released a report entitled "Nuclear Industry Review - Problems and Prospects

Review problems  
and prospects,  
1981-2000

1981-2000" (66 pages). While the Review suggested that the long-term prospects for the nuclear industry were favourable and that Canada would need an industry capable of building new reactors in the 1990s, it was noted that growth in the demand for electricity had slackened in the early 1980s, delaying new reactor orders. Foreign demand for reactors had fallen as well, creating an intensely competitive and uncertain export market. Consequently, the short-term prospects for the nuclear industry were not bright. Of concern, was the high risk that Canada could lose the ability to build reactors competitively by the late 1980s because of the downturn in activity in the early to mid-1980s. The report found that there were three possible markets for Candu sales: the Canadian domestic market, the electricity export market, and the world reactor export market. In the long term, domestic requirements for nuclear generating capacity would likely be sufficient to sustain the industry, but in the next few years, export sales of reactors and of power from domestic reactors held the most promise for maintaining the country's industrial capabilities in nuclear technology. The report outlined policy options for maintaining manufacturing capability and a variable industry through the 1980s. The most promising options for improving the industry's prospects in the domestic market in the short run were policies aimed at achieving an early commitment by Quebec and New Brunswick to Gentilly-2 and Lepreau 2, respectively. New reactors in Ontario committed at least partially to export might also offer prospects. The export market for Candu reactors appeared to offer some prospects but concessional financing might be necessary to meet competition abroad. The report provides an important record of the status of the nuclear industry in the early 1980s and of the problems facing it through to the 1990s.

Arctic Pilot  
Project (APP)  
-delayed  
indefinitely

In August, the Arctic Pilot Project (APP) shelved plans to build a \$300 million re-gasification terminal for gas shipped out of the Arctic Islands. TransCanada PipeLines had applied to the National Energy Board to build a plant on the Strait of Canso, N.S. or at Gros-Cacouna on the St. Lawrence but with prospects for marketing the gas in the U.S. having diminished, APP was directing its attention to the European market for Arctic gas. The project to transport LNG in ice-breaking tankers from Melville Island to southern markets having been set aside, the APP asked the NEB to revise its hearing schedule so that the companies would have time to investigate European markets, particularly in France and Germany. However, potential U.S. customers advised the NEB they would strongly oppose any alteration of the project. In September, the NEB suspended the APP hearings to give the consortium time to negotiation with European customers. It now appeared that the first shipment of gas from the Arctic would be delayed until 1988. At the same time, the NEB's decision to suspend the APP hearings was taken by industry as a warning that if companies did not have concrete proposals they should not waste the time of the regulatory process. In November, the NEB rejected a request by the APP to review its earlier decision to suspend the hearings, advising the associated companies that the request for review had not indicated any change in circumstances. By the late 1980s, no further progress had been made in the APP project which, for the northern component alone, was estimated at \$2.1 billion by the participants Petro-Canada, NOVA, Dome Petroleum, and Melville Shipping Ltd.

Syncrude Canada  
Ltd oil sands  
plant - oil sands  
resource  
development  
slow

By early August, Syncrude Canada Ltd. had produced 100 million barrels of crude oil since its production start-up in 1978. However, although the project was licensed to produce 129,000 barrels (20,500 cubic metres) per day, its output during the first half of 1982 had only averaged 84,000 b/d, up from 49,400 b/d in 1979, its first full year of operation. The project made its first production application in 1961 following feasibility work that had been initiated at the Mildred Lake property site, 40 km north of Fort McMurray, Alberta, in 1959. When production commenced in 1978, construction costs in the period 1974-78 had aggregated \$2.2 billion. From the start, production was given world-level prices. Provision was made in the Energy Update 1982 initiatives to lower the Petroleum and Gas Revenue Tax on Syncrude and Suncor oil sands production from 12 per cent to 8 per cent for the period January 1, 1983 to December 31, 1984. These were the only plants in production in the Athabasca oil sands. The oil sands deposits were first mapped in 1778. Detailed investigations of mining and separation processes date as far back as 1913 but production did not commence at the Great Canadian Oil Sands plant (now Suncor) until 1967 and at Syncrude until 1978, and by the late 1980s there was still no economic means of in-situ recovery. The Alberta Energy Resources Conservation Board has estimated the oil resource

potential of the oil sands to be of the order of 250 billion barrels (40 billion cubic metres), with ultimate recovery depending on mining and in-situ production technology and economics. The experience of Suncor and Syncrude, and the cancelling of the proposed \$13.9 billion Alsands project in April 1982, has indicated the importance of technological advance and special economic conditions in even operating on the near-surface material of the Athabasca oil sands resource.

Petroleum refinery shut-down in eastern Canada

In September, BP Canada Inc. announced the closure of its Montreal petroleum refinery and Shell Canada Ltd., its Oakville, Ontario, refinery - both effective mid-1983. In October, Texaco Canada Inc. closed its Montreal refinery. Declining demand for gasoline and home heating oil had given rise to considerable surplus capacity in the Canadian refining industry. The need to rationalize the industry came about as a result of energy conservation measures initiated in 1974 and further intensified in the National Energy Program, and the extensive off-oil measures of that program. The fall-off in petroleum demand was also creating problems in the crude oil producing industry in western Canada and modifications in the NEP in 1982 were attempting to deal with that problem.

uranium marketing arrangement – international

In September, the Supreme Court of Canada agreed to review an Ontario Court decision which held that Eldorado Nuclear Ltd. and Uranium Canada Limited, both federal Crown corporations, were immune from prosecution charges of uranium price fixing relative to the international uranium marketing arrangement of 1972-75 -the so-called cartel.

Trillium Exploration formed by OEC and Suncor

In September, the Ontario Energy Corporation (OEC), an Ontario Crown corporation, and Suncor Inc. jointly established Trillium Exploration Corporation which commenced exploration off the east coast. Ontario Energy Corp. had acquired 25 per cent of Suncor in December 1981. The Ontario government was seeking to establish oil and gas reserves within Canada in order to improve the province's energy supply position.

Pre-build of the Alaska Pipeline in full operation

In September, Alberta natural gas began to flow to U.S. markets through the eastern portion of the Alaska Highway Pipeline pre-build project. New exports, arranged by Pan-Alberta Gas Ltd., began in October 1981 through the western leg of the pre-build. The eastern leg was authorized to carry up to 800 million cubic feet a day and the western leg, 240 million cubic feet a day.

Dome bail out by federal government and banks -proposal

On September 30, the Minister of EMR announced a Bank/Government Financing Arrangement for Dome Petroleum which had been experiencing increasing difficulties in managing its debt. This had resulted mainly from its investment of about \$4 billion in 1981 in the purchase of Hudson's Bay Oil and Gas Ltd. from U.S. interests. Because the government had concluded that further loans or loan guarantees would not be suitable under the circumstances, the proposed refinancing package involved a debenture with interest paid in the form of shares to be offered jointly by the federal government (\$500 million) and, on a pro rata basis of their loans to Dome, by the chartered banks (also a total of \$500 million). The company could draw up to \$1 billion worth of the debenture with an effective interest of prime plus 17. being paid in shares upon it. The shares would be obtained at the conversion price for the first two years and at 90% of the prevailing market price thereafter. In addition, the debenture would be convertible into shares for the first 18 months at \$2.50 a share, escalating to \$5.00 by the seventh year. The debenture would also have redemption rights to allow for maximum flexibility of all parties through the life of the debenture. The participants would also receive warrants at \$2.50 a share at the rate of five shares per year per \$1000 of debenture outstanding.

Reaction to proposed Dome bail out

The reaction in October, following the September 30 announcement of a proposed bail out of Dome Petroleum, covered a broad range of views but generally directed to one of two positions. One of these positions was that to let Dome go down would be to risk calamity in the financial system. Any company that made the errors of judgement and timing that Dome did deserved, in a market economy, to fail, but letting Dome fail would have been more costly by far to Canadians than bailing it out. The other view in October 1982 was that had Dome failed to meet its financial commitments, the company would not have vanished into thin air. Its extensive assets would have endured and eventually the company would have been taken over for an amount which more

accurately reflected its true value. Had Dome been allowed to fail, the company would have eventually emerged with a more rational financial structure and without the infusion of public funds.

Federal-Newfoundland offshore jurisdiction issue Newfoundland position

While the Newfoundland offshore jurisdiction was before the Supreme Court of Canada, on a reference of the federal government, and the Appeals Division of the Newfoundland Supreme Court, on a reference of the Newfoundland government, the Premier in October continued putting his case to the public, claiming that the undersea petroleum resources belonged to Newfoundland for historic, moral, legal and constitutional reasons. The Newfoundland view was that the province retained control of its renewable and non-renewable resources when it joined Confederation in 1949, surrendering only responsibility for such matters as defence, money, banking and international trade.

TQM beyond Quebec City postponed

In October, Trans Quebec à Maritimes Inc. (TQM) announced that the gas pipeline would not be extended beyond Quebec City in the foreseeable future.. It was completed to Trois-Rivières in December 1982 and was expected to reach Quebec City before the end of 1983. Engineering work would proceed on the Maritimes section and, by the time it was completed, a decision could be taken on the basis of whether Sable Island, N.S. gas would be available and whether a larger size reversible pipeline would be needed. That question had still not been answered by the late 1980s.

IEA warns energy crisis not over

In October, the International Energy Agency (IEA) warned that, despite the recent glut of oil on the world market, the energy crisis was far from over. IEA's World Energy Outlook Study stated that "rather than eliminating the energy crisis, the current recession has helped conceal it. With oil prices falling, there is a danger that misleading market signals will cause both complacency among energy consumers and hesitation among investors, with the result that problems foreseen for the late 1980s and 1990s are not adequately dealt with in time".

Polar Continental Shelf Project (PCSP) Arctic programs

In October, the Polar Continental Shelf Project (PCSP), a unit of the Department of Energy, Mines and Resources, completed another field season in the High Arctic, its 24th since it was established in 1958. In 1982 projects under the auspices of the PCSP were conducted in the Northwest Passage and the Beaufort Sea. They included gravity surveys, hydrographic and wildlife investigations, bathymetric charting, permafrost and sea ice studies, and programs in offshore sedimentation. During the 1980-81-82 field seasons, more than 160 scientific programs were undertaken by university and government scientists, with the programs being supported by the PCSP from base camps at Tuktoyaktuk and Resolute. Scientific studies undertaken in the Arctic each year range from archeology to geology. In addition to providing financial support for many of these studies, the PCSP coordinates the logistics for almost all research in the Arctic except for oil industry activities. It has also been the prime coordinating agency for Arctic research between Canada and other Arctic powers. PCSP is also directly engaged in its own basic and applied research on such matters as glacier physics, climatology and sea ice studies. The work of the PCSP over the years has greatly advanced the scientific knowledge of the Arctic region, provided basic scientific data for oil and gas industry exploration programs and other resource development activities, and extended Canada's sovereignty in the North.

Radioactive waste disposal -low-level waste, uranium waste, and irradiated fuel waste

In October, the federal government announced the establishment of a low-level radioactive waste management office to ensure that means were made available for the permanent passive disposal of low-level radioactive waste as produced in research facilities, hospitals, industrial plants and in nuclear electricity generating stations. This did not include high-level waste from irradiated nuclear fuel, as the federal government already had a separate research program for the disposal of irradiated fuel wastes from nuclear stations that was being conducted by Atomic Energy of Canada Limited (AECL) in cooperation with Ontario Hydro and was concerned with research on isolating these wastes deep in stable crystalline rock in the Canadian Shield under terms of a Canada/Ontario agreement of June 1978. The new office was to be a separately-funded program under AECL. At the time, most low-level wastes were in safe storage under supervision but permanent disposal would eventually be required. In addition, to carrying out waste disposal research and

management, the new office would seek to coordinate such disposal activities with provincial authorities and industry. The decision to establish the office was based on a study carried out for EMR in 1981 by Hickling Partners Inc. on "Managing Low-Level Radioactive Wastes: Proposed responsibilities and management structure". A third program concerned with radioactive materials had been announced a month earlier, in mid-September, and provided for a five-year study of the potential long-term effects of uranium mine and mill wastes. That program was aimed at accelerating development of technology to reduce harmful effects of waste materials from uranium mining and milling, and followed from a year's study by the federal-provincial National Technical Planning Group on Uranium Tailings Research, established by EMR. A National Tailing Program Office was to be established in Ottawa to administer this federal research program, and make recommendations concerning the management of some 130 million tonnes of tailings in waste-disposal areas at uranium mill sites in Canada, almost all in the Elliot Lake area of Ontario and the Beaverlodge and Rabbit Lake areas of Saskatchewan. With these three programs, the federal government was actively addressing all aspects of the management and disposal of radioactive waste in Canada

Do Governments Take Too Much?	An EMR study completed in October examined the relative contributions of the NEP fiscal regime and the debt burden to the financial difficulties in 1982 of the oil and gas industry. It concluded that the federal government had achieved its objective of a fairer share of oil and gas revenues, but that this redistribution had come about largely as a result of more equitable sharing between federal and provincial levels of government. The fiscal burden on the industry had remained relatively constant. However, for the industry as a whole, and for the Canadian sector in particular, the burden of rising interest rates had increased greatly. Rather than the NEP fiscal regime, the cause of the cash flow problems of the industry related more to the impact of higher interest charges.
Gas Marketing Assistance Program (GMAP) initiated in Quebec	On November 17, agreements between the federal government and Quebec gas distributors, Gaz Métropolitain and Gaz Inter-Cité, were signed, implementing the NEP Gas Marketing Assistance Program (GMAP) to promote the rapid growth of gas sales in the new market areas of Quebec. GMAP removed from the distributor the financial burden of overcontracting for gas supplies in early stages of developing a new market. Each new gas contract entered into between the distributors and the transporters was to be covered by GMAP 'insurance' for the contract's first three years in terms of relief from certain fixed transmission charges. It was expected that almost \$100 million in contributions would be made during the planned five-year period of the program. GMAP was funded from the Market Development Incentives Payments (MDIP) made to the federal government by Alberta in accordance with the November 1981 Canada/Alberta Agreement on Gas Pricing and Market Development Incentives Payments, and was directed to the expansion of markets for Alberta gas in eastern Canada.
NEB domestic gas recommendations	In November, the National Energy Board released its report on the domestic pricing and marketing of natural gas and recommended a number of pricing incentives to promote the greater marketing of natural gas in Canada. The majority of these recommendations were being implemented in the form of the GMAP for Quebec and the \$500 million gas transmission laterals program for that province. Other measures included the setting of eastern Canada gas prices in terms of the Toronto city-gate price, and a number of initiatives directed at reducing the use of heavy fuel oil.
Panarctic exploration in the Arctic Islands region	In November, the federal government concluded 20 Arctic exploration agreements with Panarctic Oils Ltd. acting on behalf of 67 companies operating in the High Arctic. The agreements, involving a total of about \$700 million in continuing exploration activity over the following five years, called for Panarctic to drill 25 wells - 17 offshore and 8 on the Arctic Islands. This was the largest package of agreements ever concluded by the Canada Oil and Gas Lands Administration (COGLA). Under the Canada Oil and Gas Act, proclaimed on March 5, 1982, all interests in the Canada Lands were to be converted to exploration agreements which, among other commitments, involved a Canada benefits plan satisfactory to the federal government.
Further warning	A Cambridge Energy Research Associates study in the U.S. published in November warned that

of oil shortage	OPEC could plunge the world into the third energy crisis as early 1986. "Even a small percentage increase in primary energy consumption could lead to a much larger increase in world oil consumption and ultimately to an explosion in the demand for OPEC oil.
FIRE program revised	Further Forest Industry Renewable Energy Program (FIRE) incentives were given in November to increase the attractiveness of the program and improve its effectiveness in promoting the use of renewable energy. The new measures provided for the inclusion in eligible expenses of the capital cost of biomass systems and the cost of the buildings required to house these systems, up to 20 per cent of project costs. The program, in total, provided incentives to industrial, commercial and institutional establishments to convert and install energy facilities using wood residues, municipal, agricultural or industrial wastes, as well as peat and other forms of biomass fuel.
AECL planning cut-backs including heavy water plants	In November, Atomic Energy of Canada Limited (AECL) reduced its work force in Mississauga and Montreal because of lack of demand for Candu reactors and related services, and indicated the possible closure of its heavy water plants at Glace Bay and Port Hawkesbury in Nova Scotia where heavy water had been stockpiled since 1980 at a cost of about \$100 million a year.
CHIP grant criteria modified	In November, the criteria for making grants under the Canadian Home Insulation Program (CHIP) were changed to achieve more effective conservation activity and to contribute toward the energy budget savings announced in the October 27 federal budget. The CHIP contribution was changed to 60 per cent of materials and labour costs in place of 100 per cent of materials and 33 1/3 per cent of labour costs, but the maximum taxable grant remained at \$500. From the inception of the program in 1977, CHIP grants to September 30, 1982 had totalled \$631.4 million.
Propane Vehicle Grant Program	An analysis of the Propane Vehicle Grant Program made in December showed that applications for 17,400 vehicles had been made under terms of the program since it was initiated in June 1981. Nearly \$6.3 million had been paid for conversion of 15,700 vehicles. The program provided up to \$400 in taxable grants to convert vehicles to propane fuel. The objective was 100,000 vehicles by 1985 which would displace 13,000 barrels of oil per day. The program, available to commercial and farm vehicles, was budgeted at \$38 million for a five-year period.
Trans-Canada pipeline completed from North Bay	On December 2, TransCanada PipeLines Ltd. announced it had completed construction of its \$420 million, 426-kilometre natural gas pipeline from North Bay through the Ottawa Valley to Morrisburg, all in Ontario. The line was built to provide a shorter route to serve new natural gas markets in eastern Canada and provide natural gas service to Ottawa Valley communities.
Dome's Beaufort Sea exploration negative	In December, Dome Petroleum announced disappointing results for its 1982 Beaufort Sea exploration program. No oil had been discovered and, of three gas wells tested, two were dry and one flowed gas at modest rates. At a time when the company was beginning to experience serious financial difficulties, the continuing negative results in its Beaufort Sea program were adding to the company's problems.
Petro-Canada's acquisition of Petrofina criticized by the Auditor General	In his Annual Report, released in December, the Auditor General was highly critical of Petro-Canada's takeover of Petrofina Ltd. at a cost of \$1.7 billion, without providing the federal government with any information to show it was a wise acquisition. The observations relative to Petro-Canada were made in the context of the Auditor General's concern that Parliament lacked control over Crown-owned companies which he viewed as having little or no public accountability.
COSP reaches 16% of its 1990 target	By the end of December, the Canada Oil Substitution Program (COSP), which had been announced in October 1980 as part of the NEP and had been operative for over one and a half years, had assisted in the conversion of over 384,000 residential housing units from oil to other energy sources or had assisted in insulation programs. The targeted number of conversions for COSP of the entire program was 2,341,000 housing units by 1990, and 16 per cent of this target had been met. COSP and other conservation and off-oil programs had resulted in a 10 per cent decrease in oil demand in 1982.

Electrical energy forecasts lowered	The climate of uncertainty with respect to electric utility expansion programs led utilities in December to revise their demand forecast downward for the period 1982-2000. Average annual growth rates were adjusted as follows:												
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Exploration agreements in 1982	By December 31, a total of 47 oil and gas exploration agreements had been completed by the Canada Oil Gas Lands Administration (COGLA) under terms of the Canada Oil and Gas Act, as proclaimed on March 5, 1982. Terms of these agreements ranged from 18 months to six years and covered some 26 million hectares of land with 65 exploratory wells being planned. The agreements were estimated to generate a potential of over \$3 billion of activity. At the end of December, about 150 exploration agreements remained to be negotiated in the Canada Lands. The tempo of activity in the frontier areas was high while the industry in western Canada was facing problems of shut-in capacity and reduced activity.												
Conservation and Renewable Energy Demonstration Agreements	By the end of December, contributions to the Conservation and Renewable Energy Demonstration Agreements (CREDAs) had totalled \$59 million, including \$35 million from the federal government. In 1979 the federal government had begun entering into jointly-funded five-year agreements with the provinces and by the end of 1982 a total of 265 projects were underway. The program was designed to demonstrate new technologies in conservation and renewable energy applications. Agreements were in place in most provinces.												
Urea formaldehyde foam insulation grants (UFFI)	At the end of December, the federal government announced an increase in the financial assistance to homeowners in removing urea formaldehyde foam insulation from their homes. Grants were increased by \$500 to a total of \$5500. In December 1981, an assistance program had been announced, aggregating \$110 million. This announcement had followed from a December 18, 1980 ban, as a health hazard, on the use of urea formaldehyde. A bill authorizing \$5000 tax-free grants for remedial work on homes with this insulation was passed in July 1982, providing for assistance to some 80,000 homeowners who had used this form of insulation.												
Supreme Court approves challenge to pre-build	On December 21, the Supreme Court of Canada ruled that Ian Waddell (MP for Vancouver-Kingsway) could legally proceed with his challenge of a 1980 federal cabinet decision authorizing the pre-build of Canadian sections of the Alaska Highway natural gas pipeline. He had launched a lawsuit to get the courts to rule on Cabinet's right to authorize the pre-build without amending legislation. The B.C. Supreme Court was scheduled to hear the case in May 1983. The suit had been tied up for two years by challenges to his right to launch the case.												
NEP initiatives in review - 1982	From the perspective of the developing energy situation in December, it was apparent that the many initiatives of 1982, including those provided for in the Energy Update 1982 report issued in May, were attempting to deal with problems of declining oil and gas industry activity in western Canada. Considerable shut-in capacity had developed in the region's oil fields due to the fall in domestic demand. That in turn was due in considerable part to the impact of NEP energy conservation and off-oil programs. The softening in world oil prices, in contrast with the expectations of the Canada/Alberta September 1981 Agreement of rapidly increasing prices, had removed the incentive for new exploration ventures except in Canada Lands frontier areas where the smaller companies did not normally operate. Shut-in capacity was also developing in the gas fields of western Canada due in part to decline in demand in the export market, and many price and marketing initiatives were taken by the federal government during the year to try to improve the domestic market for natural gas. Success in these endeavours further diminished the opportunities for oil marketing. Consequently, a number of components of the NEP were working against each other in a declining energy market due to the general economic recession in the early 1980s and progress in the more efficient use of energy. Reference is made in the previous notes for 1982 to												



the many initiatives to increase the use of natural gas in the domestic market, including the following:

- the Canada Oil Substitution Program providing \$800 grants for conversion of oil-based systems to alternative fuels;
- extension of the Trans Quebec & Maritimes Pipeline eastward in Quebec towards the Maritimes;
- the \$100 million Gas Marketing Assistance Program to assist Quebec distributors in promoting natural gas in new franchise areas;
- the \$500 million Quebec natural gas pipeline laterals program;
- the Distribution System Expansion Program to assist utilities to expand into new market areas;the \$25 million Industrial Conversion Assistance Program to assist in converting from heavy oil use to natural gas.

Many initiatives were also taken in an attempt to improve the economics of oil production and marketing, including the following:

- implementation of the Petroleum Incentives Payments (PIP) program, with an initial budget of \$1.9 billion through to March 1983;
- broadening the application of the New Oil Reference Price (NORP);
- creation of the Special Old Oil Price (SOOP) category for oil discovered after 1973, being set at 75 per cent of the world price;
- reduction in the tax incidence - PGRT, IORT, etc from levels originally announced in the NEP;
- special measures to promote the export of heavy crude oils;
- restraint measures, through modification to the oil Import Compensation Program, directed at oil import restraint;
- assistance in moving Alberta crude oil east of Montreal to the Maritimes by the Domestic Transfer Compensation Program.

## THE YEAR 1983

Domestic oil price adjustments	Effective January 1, the Petroleum Compensation Charge (PCC) was decreased by \$16.00/m <sup>3</sup> (\$2.54/bbl), and the average wellhead price was increased by \$25.17/m <sup>3</sup> (\$4/bbl) with this increase being passed through to consumers of petroleum products on March 2. This meant a . 1.6¢/litre drop in prices followed by a 2.3 cents/litre increase 60 days later. Subsequently, on March 15, when the international price of oil was reduced from \$34.00 (U.S.) to \$29.00 per barrel, the setting of domestic prices became the centre of much debate in Canada..
Scotia Coal Synfuels Project	In January, the federal government entered into negotiations with the Scotia Coal Synfuels Project consortium in Nova Scotia for a \$750,000 contract to test Cape Breton coal in a new, high-yield liquefaction process. The contract was part of a one-year, \$1.25 million project planned by the consortium to determine the suitability of Nova Scotia coal for commercial liquefaction. In February, questions arose in Parliament as to whether the former Minister of Energy, Mines and Resources, a principal in the consortium, was a conflict of interest position as federal funds would co from an oil substitution program for which the former Minister had held responsibility. The government's position was that the former Minister had not been granted access or preferential treatment in the previous two years. On February 23 and March 3 all documents relative to the Synfuels project and the related controversy were tabled in the House of Commons. In May, the government announced that it had withdrawn its offer of \$750,000 for the project although Nova Scotia would be provided with funds under terms of the Canada-Nova Scotia Agreement on Oil Substitution and Conservation if it decided to go ahead with the feasibility work to test the proposal on its technical merits. Federal aid in the form of a \$750,000 grant was not provided in 1983 but the consortium, including the Cape Breton Development Corporation, continued some test work during the year.
NEB gas export hearings exports approved	In January, the National Energy Board issued licences authorizing national gas exports of 12.2 exajoules (11.5 million cubic feet), which amounted to about two-thirds of what the NEB had found to be surplus to domestic needs. On March 31, the federal government approved the new licences although the NEB expected that little of the gas approved for export would move to U.S. markets before the end of 1984 because of the gas surplus in that country. The NEB recommendations followed major hearings which commenced in March 1982, the Phase I report having been issued on May 14, 1982 and the Phase II and III reports and recommendations on January 27, 1983. The amount authorized for export was less than half of the 26.5 exajoules requested by the 13 companies that took part in the Gas Export Omnibus Hearing held between March and November 1982. Dome Petroleum was granted a licence to ship 2.4 exajoules of LNG to Japan in the 15-year period 1986-2001 and the remaining 9.8 exajoules was to be exported to existing and new markets in the U.S., mainly in the period 1985-1994. The new exports of 12.2 exajoules were in addition to the 12 exajoules remaining to be exported under existing licences. The previous major export authorizations were made in November 1979 when licences for 4.1 exajoules were issued. The January 27, 1983 Reasons for Decisions report of the NEB provides an important record of natural gas supply and of marketing expectations in the early 1980s.
Oil industry prospects dependent on price trends -exploration low but rigs returning from the U.S.	In reports issued early in <u>January</u> , the Canadian Petroleum Association and the Independent Petroleum Association of Canada predicted somewhat better oil industry prospects for the coming year as federal and provincial oil policy initiatives of 1982 began to take effect. However, the great deal of uncertainty surrounding the international price of oil was having a direct impact on the Canadian pricing regime. In February the drilling industry was reporting its lowest level of activity in seven years and various sectors of the petroleum industry were pressing for changes in the oil-pricing structure and in natural gas marketing policy as means of boosting exploration activity in western Canada. Notwithstanding the uncertain conditions in the domestic industry, a growing number of Canadian oil companies, that had left Canada in the early 1980s for the U.S. when prospects seemed better, were returning their drilling rigs by mid-1983 because of depressed conditions in the U.S. industry and unfavourable exploration results in poor producing areas. The U.S. boom had peaked in mid-1981 shortly after some 300 Canadian companies had moved about

\$3 billion and 114 drilling rigs into U.S. oil development.

The shut-in capacity issue as related to oil trade

The degree of shut-in capacity in western oil and gas fields in January and through 1983 remained a barometer of the viability of the industry. In January, Alberta had 200,000 barrels a day of light crude oil that could not be marketed. In complaining about this situation in February, the Independent Petroleum Association of Canada claimed that 100,000 b/d of shut-in production was costing industry \$1.5 billion, on an annualized basis and recommended that refiners be forced to take all domestic oil nominated in a given month and that short-term exports to the U.S. should be allowed. By April, the Alberta government was complaining that markets for its oil were being lost to costly imports in eastern Canada and it was pressing for the NEB to accept a negotiated price between U.S. buyers and Canadian sellers with the existing domestic price as a floor. By June, initiatives by governments and industry had raised Alberta and Saskatchewan oil production to capacity levels and Canada became a net exporter for the first six months of 1983 as a result of increased exports and cutbacks in imports. This followed in particular from a decision taken by the NEB in February to approve light oil exports for the first time in five years.

Gallup on nuclear energy

In January, a Gallup poll found that only 20 per cent of Canadians surveyed believed that Canada should increase its nuclear power generation. This compared with 31 per cent in a pole taken early in 1982. and 41 per cent in 1976.

Lepreau contract for Saskatchewan uranium and prepares for expansion

In January, the Saskatchewan Mining Development Corporation and New Brunswick Electric Power Commission (NBEPG) signed a long-term contract to supply Saskatchewan uranium concentrate to the Point Lepreau nuclear generating station. At full capacity, Lepreau would use 200,000 lb of U308 per annum and all of this was to come from Saskatchewan. NBEPG had recently received National Energy Board approval to export 335 megawatts of electricity per annum to the U.S., to 1990. In April, Atomic Energy of Canada Limited and NBEPG commenced a feasibility study on a second 600-megawatt Lepreau nuclear reactor primarily to export power to the U.S. early in the 1990s, to determine whether such an expansion would be commercially feasible. First electricity was produced at Lepreau in September 1982 and it was declared in service on January 31, 1983.

Quintette and Bullmoose coal mines, N.E.B.C. -price problem before start-up

In January, Quintette Coal Ltd. signed a \$950 million loan agreement with a group of 55 international banks for the development of its coal-mining project in northeastern B.C. The loan, one of the largest mine project financings ever completed, together with \$350 million put up by sponsoring shareholders, gave the company \$1.3 billion to develop its project which was designed to produce about 5 million tons of coking coal and 1.3 million tonnes of thermal coal annually beginning in 1984 to supply Japanese markets over 15 years. The project involved four surface coking and thermal coal mines, with mining development having commenced at the first pit in 1982. Planning for the Quintette operation and the neighboring Tech-Bullmoose Coal Inc. mine began in 1976. The first electrified railroad in North America would transport coal from the two mines 130 km south to Anzac, 125 km north of Prince George, where the coal would travel along B.C. Rail's main line to Prince George and then westward to Prince Rupert by CN Rail. A coal terminal was being established by Canada Ports Corporation and Federal Commerce and Navigation Ltd. near Prince Rupert where ships could be loaded at a rate of 9,000 tonnes per hour. Quintette was said to have a coal reserve in excess of 5 billion tonnes, representing a reserve life of 40 years at planned production rates. Bullmoose had reserves of 80 million tonnes for its estimated annual production of 2.3 million tonnes. Total capital investment for the two properties was estimated at \$3 billion. It was expected that exports from Quintette and Bullmoose would generate (in 1983 dollars) a balance of payments surplus of \$5.5 billion over the following 20 years. However, by the mid-1980s, mining and marketing difficulties were lowering the expectations for this major regional development. By August, Japanese buyers were indicating that they wanted a price reduction of 15-20 per cent on the negotiated price of \$Cdn 94 per long ton for Quintette coal and \$96 for Bullmoose coal and reductions in negotiated volumes.

Coal markets

While the northeast B.C. coal megaproject was preparing for production in January, there were

decline	<p>already signs that Canadian coal exports projected for the mid-to-late 1980s could be delayed several years as a result of shrinking world coal markets. By March, B.C. coal producers were facing a \$100-million cut in revenues for the next fiscal year, particularly as a result of a cut of \$13 (U.S.) a tonne in Japanese contracts with southern B.C. producers. Japanese steel production had fallen to a 10-year low and coal imports were expected to be down about 30 per cent.</p>
Uranium marketing arrangement international	<p>Two federal Crown corporations, Uranium Canada Limited and Eldorado Nuclear Ltd., contended in the Supreme Court of Canada on January 27 that they were immune from prosecution on charges of conspiring to form a uranium cartel, being servants of the Crown. Their position was that the Crown corporation was the "alter ego" of the Energy Minister and the Cabinet who were carrying out government policy, and nothing more. At the end of the year, in December, the Supreme Court ruled that the two alleged conspirators, Eldorado and Uranium Canada, could not be prosecuted because they were Crown corporations. Shortly after, the Federal Justice Minister stated that the federal government was dropping price-fixing conspiracy charges against four private uranium companies because the continuance of the prosecution would be unfair in view of the charges against the Crown companies being dropped. The companies had been charged under anti-combines laws in 1981.</p>
Newfoundland offshore negotiations collapse	<p>On January 26, the Minister of Energy, Mines and Resources in a news conference stated that he had concluded that the Newfoundland government was not interested in a negotiated settlement of the offshore resources problem. He claimed that Newfoundland had left the negotiations, while Newfoundland advised that talks would not be resumed until the federal government response to 17 major points had been received. The federal position was that the courts must now decide. During House of Commons debate on February 21, related telex messages exchanged between the two governments and the points of agreement before the negotiations collapsed were documented.</p>
Petrochemical industry problems	<p>The Canadian petrochemical industry experienced substantially reduced earnings in 1982 and by January 1983 was in a weakened and vulnerable state. Western Canada gas-based companies starting up new plants, and many established companies in the Sarnia-Montreal producing centres that were dependent on oil-based feedstocks, were hard hit. Earnings were insufficient to cover operating costs in the case of Montreal's primary petrochemical feedstock producer (Petromont), and to cover debt servicing in the case of the larger of the two Sarnia producers (Petrosar). In the 1970s, the industry had been reasonably successful as a result of improved access to foreign markets and significant feedstock cost advantages as oil prices outside of Canada accelerated. World scale plants were built in eastern Canada, and by the late 1970s Alberta's petrochemical boom was underway. During 1983, remedies were being sought following in-depth study of the industry in 1982 by the Interdepartmental Task Force on the Petrochemical Industry.</p>
Canada-U.S. Consultative Mechanism priority on natural gas marketing problems	<p>On February 1, there was a meeting of the Canada-U.S. Consultative Mechanism which was established in March 1979 to provide a means for the two countries to keep each other informed of new developments in their own energy situations and to raise any problems they might have with the other country's policies, and thereby enhance bilateral cooperation in the energy field. It had met several times after being established but had not met since December 1980 although there had been various ad hoc meetings to discuss</p>
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Pressure for  
deregulation

In February, the U.S. Federal Energy Regulatory Commission warned Canada that unless natural gas prices were cut in both countries, up to 10 per cent of the gas market would be lost to cheap, low-grade fuel oil. Legislation was being prepared in the U.S. for natural gas deregulation so that a true market system could ultimately prevail. In a May 18 address to the Independent Petroleum Association of Canada, the Alberta Energy Minister reiterated his government's position on the importance of moving to market pricing of oil and gas, a position taken by Petro-Canada in February. A survey conducted by the Canadian Federation of Independent Business in June showed that 54 per cent supported the concept of allowing domestic crude oil prices to rise to world levels in place of the existing mechanism which set the price of most Canadian oil at a maximum 75 per cent of the world price, except oil classified under the New Oil Reference Price (NORP) system. Interest in deregulation continued throughout the year and a number of measures were taken to modify the pricing system including Volume Related Incentive Pricing for natural gas, initiated in July.

Super Energy  
Efficient Program  
for house  
construction

During February, a number of initiatives were taken to advance energy conservation and renewable energy objectives. On February 5 EMR and the Housing and Urban Development Association of Canada (HUDAC) signed an agreement that would assist in the construction of up to 300 super energy-efficient houses across Canada, this being part of the federal government's Super Energy-Efficient Program (SEE Program), launched in October 1982, which had a budget of \$6 million for training builders in the techniques of constructing and marketing super energy-efficient houses, called the R-2000 Home. Under the SEE Program, builders selected to construct an R-2000 Home would receive a contribution of \$6500 to help offset costs associated with participation in the demonstration program. By September, 270 builders from across Canada had been selected to build R-2000 homes which were designed to provide as much as a 60 to 80 per cent reduction in space heating energy demand and up to a 50 per cent reduction in hot water energy requirements. The program appeared to be quite successful and was having a significant impact on the building industry. HUDAC coordinated the building and demonstration of the R-2000 homes, recommended builders and implemented builder training and educational activities.

- Compressed Natural Gas Program for vehicles
- In February, the federal government announced two new programs designed to support the use of compressed natural gas (CNG) as a alternative to oil as a vehicle fuel. One program provided a taxable contribution of up to \$50,000 for each of some 125 fuel station operators who wished to install a CNG outlet. The second program offered taxable contributions to both commercial users and private consumers of up to \$500 towards the estimated \$1800 cost of converting a vehicle for CNG use. A target of 35,000 conversions had been set for this program, to be in effect from April 1. 1983 to March 31. 1987.
- Natural Gas and Gas Liquids Tax reduced to keep gas competitive in eastern Canada
- On February 1, the federal government reduced the Natural Gas and Gas Liquids Tax (NGGLT) by 18 cents per thousand cubic feet in order to keep the wholesale price of gas from rising above 65 per cent of the cost of an equivalent amount of oil in eastern Canada. The September 1981 agreement between the federal and Alberta governments had provided for an increase in the price paid to natural gas producers every six months in the expectation that the price of oil would continue to rise. Because oil prices had not risen, in order to provide for the February 1 scheduled increase of 25 cents/Mcf the federal government had no alternative but to reduce its NGGLT. This was one of a series of price adjustments that became necessary as the oil price increase expectations of the 1981 agreement failed to be realized. By March, with oil prices in decline, the federal government was foreseeing difficulty in relation to the scheduled increase in the natural gas price for August and was considering the possibility of having to raise the ceiling to 70 per cent of the oil price.
- Banks concerned about oil pricing
- In February, Canadian banks were expressing concern about the \$20 billion lent to Canadian energy companies that were now being squeezed between the NEP policy of holding most oil prices to no more than 75 per cent of world prices and an onerous tax structure predicated on prices much higher than the current levels. While some of the taxes had been rolled back in mid-1982, they were scheduled to be restored in June.
- Newfoundland loses in Court decisions on offshore ownership
- On February 17, the Newfoundland Court of Appeal ruled that Newfoundland does not own offshore resources off its coast. The Court concluded that Newfoundland did not exert control over its claim to offshore areas when it was a sovereign state before joining Canada in 1949, and it did not own offshore resources as the United Kingdom did not pass a law or order-in-council exercising Newfoundland's right to claim ownership. Later in the month the federal government's contention that it controlled the Hibernia oil field area off the Newfoundland coast was being heard in the Supreme Court of Canada on a reference of May 19, 1982. Lawyers for the federal government were urging the Court to reiterate a 1967 ruling that gave the federal government ownership of undersea resources off the B.C. coast, contending that the Newfoundland situation was identical to that of the west coast. On March 8, 1984, the Supreme Court ruled on the federal reference of May 1982. The Court's unanimous decisions were that Canada, not Newfoundland, has the right to explore and exploit the mineral and natural resources in the area of the Hibernia field, and also has the right to make laws in relation to the exploration and exploitation of those resources.
- NEB warns against Scotia Shelf offshore overoptimism
- In February, the chairman of the Natural Energy Board, in a paper given at the Canadian National Energy Forum, warned against high expectations in regard to early benefits from Nova Scotia offshore gas development. He noted that the U.S. gas market was in disarray and moving towards more competitive pricing, and would likely remain volatile for several years. Scotia shelf producers were counting on some export market opportunities. Similar warnings were given in June by the Economic Council of Canada at a time when offshore exploration was at an all-time high. By the late 1980s, Scotia Shelf gas resources remained undeveloped and exploration activity was at a low level.
- Gas and oil resources of the Arctic Islands
- In February, the Geological Survey of Canada updated its oil and gas resource appraisal of the Arctic Islands. It had been 20 years since the first Arctic Islands exploratory well had been completed at Winter Harbour, Melville Island and, in the meantime, industry had expended one billion dollars on exploration programs and had drilled 161 wells, resulting in the discovery of 12

trillion cubic feet of gas reserves and 300 million barrels of oil. Total gas resources were estimated at 92.4 trillion cubic feet while the oil potential was estimated at 4.8 billion barrels, both resource estimates being on an average expectation basis.

Energy  
Monitoring Act  
proclaimed to  
replace PCM Act

The Energy Monitoring Act was proclaimed on February 24, confirming the federal government's mandate embodied in previous Acts to obtain information on the operations of petroleum corporations in Canada. Information collected under the Act is published semi-annually in Petroleum Monitoring Agency reports, providing timely information on the activities and financial performance of the petroleum industry in Canada. Information had previously been obtained under the authority of the Petroleum Corporations Monitoring Act, enacted on June 30, 1978.

Uranium  
resources  
appraisal

In February, the Uranium Resource Appraisal Group (URAG) of EMR released its interim revised estimates of Canada's mineable uranium resources as of December 31, 1981. In price ranges of up to \$110/kg U, measured resources of uranium amounted to 45,000 tonnes U, with an additional 5,000 tonnes for the price range \$110 to \$160/kg U. For the price range \$160 to \$320/kg U, there was an additional measured resource of 24,000 tonnes U, for a total measured resource of 71,000 tonnes. In the indicated resources category, there was a total of 206,000 tonnes U, and in the inferred category, 225,000 tonnes over the price ranges of \$110 to \$320/kg U.

World oil price  
declines by \$4 -  
impact on  
Canadian  
situation and  
price options

On March 14, the 13 OPEC members agreed to cut their official bench mark oil price to \$U.S. 29 from \$U.S. 34 a barrel and to implement a set of individual production quotas in an effort to avert a price war over the shrinking world market. The \$5 cut was the biggest in OPEC's 22-year history. Before the price change, oil had been selling on the spot market for \$U.S. 27.50. OPEC members agreed to reduce their overall production ceiling by one million barrels a day to 17.5 million for the remainder of 1983. Because of the four to six month lag in the calculation in Canada of international prices, the mid-March OPEC price drop would not begin to influence the Canadian price until July and not fully until September. However, the deterioration in the import cost prior to March put the conventional 'old' oil prices (COOP) beyond the 75 per cent ceiling in June, and with it the Special old Oil Price (SOOP) supplement, initiated in May 1982, disappeared. During the spring of 1983, there was debate in Canada as to the price ceiling prescribed by the September 1, 1981 Agreement between the federal and Alberta governments, with the federal government indicating that the \$4.00/bbl price increase that had been scheduled for July 1, 1983 would not occur and that prices could, according to the Agreement, be rolled back. This position was strongly contested by Alberta. By the late spring, it was clear a new agreement, or an amendment, would be required. In an address on April 14, the Minister of EMR reviewed the oil price situation, noting that the 'old' oil price was limited by the 75 per cent cap as prescribed in the September 1981 Agreement, and he referred to the adverse effect that a rollback of prices would have on the producing industry although there would be considerable benefits to consumers. Options included. an extension of the world price to more categories of production, and decontrolling the price of Canadian oil so that the domestic price would be at world levels. These considerations led into Federal-Alberta negotiations which resulted in the 1983 Amending Agreement (see note for June). In the meantime, the oil price increase scheduled for July 1 was cancelled. Inasmuch as the September 1981 Agreement assumed a world oil price in 1983 of \$U.S. 42 per barrel, the actual \$29 price meant a decline in federal tax revenues in 1983 to \$7.8 billion, from \$11.4 billion had prices reached the expected level.

NEB Act  
amendment re.  
power line and  
pipeline  
rights-of-way

On March 1, Bill C-60 an Act to amend the National Energy Board Act was proclaimed to provide new measures to protect the rights of landowners affected by the construction of pipelines across Canada and power lines under federal jurisdiction. New expropriation procedures gave landowners the right to local public hearings and there were also new procedures of negotiation and arbitration to settle questions of compensation arising between companies and landowners. Previously, expropriation of lands for a pipeline route followed under provisions of the Railway Act of 1919. Newfoundland expressed dissatisfaction with the legislation in relation to power lines right-of-way, having wanted more explicit wheeling rights across Quebec for its Labrador power.

National Energy Audit Program (NEAP) starts	In March the federal government signed agreements with Quebec, and with B.C. in April, and later with other provinces, to fund the National Energy Audit Program (NEAP). The agreements, to terminate on March 31, 1984, extended and expanded the National Energy Bus Program which had been operating in several provinces since 1978. The energy buses were equipped to perform on-site energy audits and thereby assist industry in planning for more effective use of energy sources through energy conservation initiatives. Program costs were shared on a federal/provincial 80/20 basis.
Oil refinery closings	In March, Esso Petroleum Canada announced that it would suspend operations at its 80,000 barrel a day refinery in Montreal at the end of 1983 because of the decline in demand for petroleum products. The decision to close the Montreal refinery was based on market studies of the economic future of its three eastern refineries. In September 1982, BP Canada Ltd. had announced the closing of its Montreal refinery and Shell, its Oakville, Ontario refinery, both scheduled for mid-1983. Texaco Canada Ltd. closed its Montreal refinery in October 1982.
Petro-Canada to promote CANMET oil process	In March, Petro-Canada decided to invest \$135 million at its Point-aux-Trembles refinery in the hydrocracking process developed by the Canada Centre for Energy and Mineral Technology (CANMET) of EMR. The CANMET process is designed to extract gasoline and heating oil from heavy crude oil more effectively than traditional processes. The project was scheduled to go into production in 1985. Petro-Canada, in cooperation with the Montreal consulting firm Lavalin, hoped to market the process internationally.
Petro-Canada acquires BP Refining and Marketing Ltd.	Effective March 1, Petro-Canada acquired 100 per cent of the outstanding voting shares and 9.4 per cent of the outstanding non-voting shares of BP Refining and Marketing Canada Limited, subsequently re-named Petro-Canada Products Inc. The shares were acquired at a cost of \$115,781,000. Under the offer, Petro-Canada had to acquire all of the outstanding non-voting shares, not previously acquired in 1984 and 1985 at purchase prices reflecting an escalation in the initial price offered. The estimated total cost of the acquisition was \$416,017,000. Under the purchase arrangement, Petro-Canada acquired 1,640 BP service stations in Ontario and Quebec and BP's refinery in Oakville. BP Resources Canada Ltd. would continue to operate the exploration and production components of the original company while Petro-Canada would acquire the refining and marketing components.
Dome Petroleum's financial woes - debts deferred	Through 1983 Dome Petroleum continued to stagger under its \$6.5 billion long term debt, with its bankers waiving February 28 and March 31 deadlines for repayment of over \$1.1 billion then due while the banks tried to reach a broader refinancing package to save the company from bankruptcy. Loan repayments continued to be rolled-over monthly, from September 1982 when a large debt came due. By November 1983, it amounted to over \$2 billion. In November, Dome prepared debt rescheduling plans as an alternative to the financial assistance offered by the Government of Canada and four Canadian banks in September 1982 (see note for November 1983).
COGLA Annual Report-Canada Lands agreements and exploration activity	In April, the Canada Oil and Gas Lands Administration (COGLA) released its first Annual Report on the administration of Canada Lands under the Canada Oil and Gas Act which was proclaimed on March 5, 1982. During 1982, 47 exploration agreements for rights in the Canada Lands were negotiated under the resource management regime established by the Act, with the agreements covering 26 million hectares in the Arctic and East Coast offshore. The agreements called for 65 wells to be drilled in the period 1982-1988 at an estimated cost of \$3 billion. During 1982, 23 exploratory wells were drilled, one more than in 1981, and three oil discoveries and six gas discoveries were made.
Gas export price cut to hold place in tight U.S. market - outlook uncertain	On April 11, the Minister of Energy, Mines and Resources announced in an address to the Calgary Chamber of Commerce that the export price of Canadian natural gas would be reduced by 11 per cent, from U.S. \$4.94 per million Btu to \$4.40/MMBTu. At this time, the Minister reviewed the circumstances of the declining U.S. gas market and the increasing difficulties Canada was facing in that market. Since 1976, total U.S. natural gas demand had declined from 20 trillion cubic feet to



18 tcf in 1982. Because of supply shortages in the mid-1970s legislation had been enacted in 1978 which provided high incentive prices for new gas. This led to an exploration prices boom in the U.S. which reversed the declining gas reserve situation. At the same time, there was emphasis on fuel switching and energy conservation which began to drive gas demand down while reserves were increasing leading to a surplus condition in the early 1980s. The changing supply/demand situation in the U.S. impacted on Canadian gas exports which in 1982 had fallen about 75 per cent from their peak in 1979. As a result, Canadian companies were able only to export half of the volumes of gas authorized for sale in the U.S. market by the National Energy Board. This situation for Canadian exporters continued to deteriorate in 1983 and other measures were taken (see note for June on Volume Related Incentive Pricing). A common view of the industry in 1983 was that gas producers could face a long wait - possibly until the end of the decade before Americans ordered new contracts because of the U.S. gas over-supply and the gradual declining consumption of energy sources over the long-term. However, there was also a view that Canada should not bow to increasing pressure from the U.S. to reduce gas export prices further, but should maintain flexible policies so that prices could be adjusted upward when demand strengthened.

Labrador offshore exploration	In April, the Labrador Group, with Petro-Canada as operator, completed agreements with the federal government involving an investment commitment of \$500 million for exploration work off the Labrador coast over the period to 1987 and the drilling of 10 wells in an area of over 9 million hectares.
Gallup on Petro-Canada	In April, a Gallup poll indicated that 45 per cent of Canadians would favour de-nationalizing Petro-Canada compared with 22 per cent in 1979.
Federal budget changes re IORT, PGRT, COSC - continuing adjustments to the NEP	The federal budget announced on April 19 included several provisions relative to energy: the Incremental Oil Revenue Tax (IORT) due to be reinstated after a one-year suspension was to be suspended a further year to May 31, 1984; the Petroleum and Gas Revenue Tax (PGRT) would not be payable by the participants in enhanced oil recovery projects on the production revenue until all eligible capital investments had been recovered by investors; the additional income tax relating to aviation turbine fuel used on international flights and the special levy on exported marine bunker fuel would be terminated effective May 1, 1983; and the Canadian Ownership Special Charge (COSC) would be maintained at its existing level with revenues to be used in support of oil and gas exploration and development. The COSC had been initiated to finance Petro-Canada's takeover of Petrofina Canada Inc., and by April had raised enough money for that purchase. The government was facing opposition in its plan to use future revenues for financing exploration, or for any other purpose than for financing an increase in public ownership in the energy sector which was the purpose for the tax as announced in the NEP in October 1980. The COSC was expected to generate \$900 million a year on the basis of a gasoline tax of 0.8 cents per litre.
Pipeline plan for Northern Tier refineries abandoned as shortage changes to surplus	In April, plans to construct a 2500 km oil pipeline, at a cost of \$2.8 billion, to transport Alaska crude delivered to a port on the Washington coast inland to the Northern Tier refineries in the U.S. mid-west, were finally abandoned after more than seven years of negotiations and . hearings relative to the proposal. The proposal had been one of several considered since the mid-1970s to meet an oil deficit situation in the U.S. mid-west after Canada had decided it must phase out exports to that region. By the early 1980s, oil surpluses were again developing in Canada and were available for export, and the oil supply situation within the U.S. itself was improving.
Revenue sharing - result of poll	A poll commissioned by the Council for Canadian Unity, as reported in April, found that 44 per cent of Canadians believed that the federal government and a producing province should divide resource revenues on a 50-50 basis. Another 33 per cent thought that revenue should be shared equally by all governments, and 15 per cent believed the province owning the resource should keep the entire amount. Fifty-two per cent of Albertans and 46 per cent of Atlantic Canadians thought a producing province should have more control over oil and natural gas but only 19 per cent of the residents of Ontario, which has no coal production and only minor oil and gas production, felt the same way.

Skagit River  
hydro settlement

In April, an agreement was reached whereby British Columbia would get \$21.8 million annually over a 35 year term, Seattle would get as much as 300 megawatts of power during the periods of peak use, and B.C.'s Skagit Valley would not be flooded. The agreement, covering an 80 year period, could be terminated by B.C. government on a five years notice after 1996. It ended threatened raising of the High Ross Dam in Washington State, which would have backed the Skagit River into B.C., flooding the valley.

Conservation, oil  
substitution  
trends and  
accomplishments

A detailed survey and appraisal made in April of a number of federal government energy programs in operation during the previous three years indicated the scope and impact of those programs on the country's energy economy. The following notes are representative of the finding of the survey:

- The Canada Oil Substitution Program (COSP) had provided \$250 million in grants, had generated total purchases of equipment and labour of some \$640 billion, and was effecting a reduction in oil use of 10 million barrels a year.
- The Canadian Home Insulation Program (CHIP) had assisted almost 2 million households to make their homes more energy efficient and was reducing heating costs by \$500 million per year.
- The National Energy Audit Program (NEAP), formerly the Energy Bus Program, had identified cost savings of \$152 million in the previous 3 years.
- The Atlantic Energy Conservation Investment Program (AECIP) in a \$40 million program from 1981-82 to 1985-86 was projected to yield savings of 3 million barrels of oil a year.
- The Industrial Conversion Assistance Program (ICAP) to encourage the substitution of gas for heavy oil was projected to replace 5 million barrels by the fifth year.
- The Canadian Industry Program for Conservation, in operation since 1975, had by 1981 improved energy efficiency by 16.3 per cent in relation to 1972, making possible an annual saving of 80 million barrels of oil.
- The Federal Internal Energy Conservation Program (the "Save 10" program) had exceeded its target in federal buildings and by 1982-83 had achieved an accrued energy reduction of 17 per cent per year, resulting in a savings of \$290 million for 1980-82.
- The Federal Internal Retrofit Program, initiated in 1981, had resulted in on-going annual energy savings of \$5 million.
- The Federal Propane Vehicle Program, established in 1981, was expected to effect financial saving of \$4.8 million in government vehicle operation.
- The Conservation and Renewable Energy Demonstration Agreements (CREDA), operated jointly with the provinces, had by its third year, in 1983, initiated \$175 million of projects and was effective in heating cost savings of up to 50 per cent.
- The Forest Industry Renewable Energy Program (FIRE) had provided grants totalling \$58 million, was effecting annual oil savings of 7 million barrels, and had initiated private sector spending of over \$375 million on Canadian equipment and services.

In 1982, these various programs of energy conservation and oil substitution had contributed to a 4.3 per cent decline in energy consumption and a 10.9 per cent reduction in oil consumption. Along with incentives to increase energy production, these demand reduction initiatives made it possible for Canada to reach oil self-sufficiency on a trade balance basis in 1982. For all energy sources, Canada had a trade surplus of \$6.3 billion in 1982 compared with \$3.1 billion in 1981.

NEB Annual  
Report

On May 3, the 1982 Annual Report of the National Energy Board was tabled in Parliament. As part of its regulatory responsibilities during the year, the NEB issued major decisions for authorizations of construction of the North Bay to Morrisburg, Ontario section of the TransCanada Pipelines system and for a new route for the TransQuébec and Maritimes gas pipeline. It completed a major Omnibus Hearing on applications to export natural gas to the U.S. and Japan and commenced a hearing on the Arctic Pilot Project. It also released major decisions on applications to export electricity by Ontario Hydro, New Brunswick Electric Power Commission, and Cominco. Among

its other activities, it co-sponsored with McGill University a conference on the Regulation of Pipelines in an Inflationary Era.

CANDU in Argentina completed	In May, the official opening of a 600 megawatt CANDU nuclear station took place at Embalse, Argentina. Canada had obtained a contract in 1973 for its construction. The marked decline of the Argentina peso during the mid-1970's had created a number of financial difficulties for the project and resulted in a \$130 million loss for AECL due to inflation and the absence of a cost-control clause in the contract. Canada had won a contract for the project with the Italian firm Italmimpiante over seven other bidders.
Wolf Lake oil sands project	In May the federal and Alberta governments announced that federal tax relief granted in the April budget had enabled BP Exploration Canada and Petro-Canada to proceed with their proposed \$200 million Wolf Lake oil sands project. The project was scheduled to be operational in 1985 at 7000 barrels a day and could be expanded. This was the first initiative in oil sands development since the suspension of the Alsands megaproject by the Alberta government on October 30, 1980.
U.S. criticism of NEP	In May, the U.S. Ambassador to Canada made a public statement on Canadian energy policy, describing the "retroactive" measure in the National Energy Program (NEP) as the most divisive issue in Canada-U.S. relations. He directed particular attention to the provision whereby the federal government, through a Crown company such as Petro-Canada, could acquire a 25 per cent interest in a resource development project at any time prior to authorization of a production system for a particular field.
Domestic Transfer Compensation Program extended	on June 7, the minister of EMR announced that the federal government was extending the Domestic Transfer Compensation Program for western Canada crude oil, as introduced in July 1982, to December 31, 1983 in the light of potential shut-in capacity in oil fields during the second half of 1983. The program had enabled the movement of about 8500 cubic metres per day of Canada's crude east of Montreal to refineries in Saint John and Halifax. For shipments to the end of March 1983, about \$36 million had been paid to cover associated transportation costs. For the nine month period ending March 31, 1983, the oil import compensation saving had amounted to about \$125 million, with a compensation ceiling for this ship movement east of the Interprovincial Pipe Line terminal at Montreal being \$20/m <sup>3</sup> . Later in the year, on December 6, the government announced that the program would be extended to June 30, 1984. For the 14-month period ending August 31, 1983, the oil import compensation saving had been about \$200 million as a result of the displacement of foreign crude oil imports. The program to that date had cost ;50 million.
CPA oil reserve estimate	Early in June, the Canadian Petroleum Association (CPA) published its oil and gas reserve estimates, effective December 1982. The amount of recoverable oil in Canada dropped by 4 per cent in 1982 as conventional oil reserves in western Canada declined for the 13th consecutive year leaving 1982 year-end reserves at 6.4 billion barrels. Total reserves of marketable natural gas continued to climb despite a 20 per cent decline in the level of drilling activity associated with gas exploration. Estimates released by the Alberta Energy Resources Conservation Board confirmed these trends for Alberta.
NEP working badly	A C.D. Howe Institute study released in June concluded that the National Energy Program (NEP) was working badly and changes were inevitable. The report, "Lessons from the National Energy Program", claimed that the federal vision for energy had been badly shattered by unforeseen developments in the rest of the world, especially an oil supply surplus and a decline in price. The government was engaged in an exercise in decision-making under conditions of uncertainty, and the design of the NEP did not take uncertainty into account. At the same time, the consulting firm of Currie Coopers and Lybrand stated that the federal government's efforts to regulate energy prices had failed to adjust to market conditions and should be abandoned. Pricing policies based on the outdated assumption that world prices would continue to rise should be replaced by mechanisms that could adapt to price declines as well as increases.

- Oil price forecast to double by year 2000
- A poll published in June by the International Institute for Applied Systems Analysis in Vienna indicated that oil prices would likely double by the end of the century, despite conservation and development of other energy sources. The increase in the 1990s would be much greater than in the 1980s. Forces leading to price increases, such as economic growth and depletion of resources "will be stronger than those exerting downward pressure on oil prices, such as conservation responses to the events of the 1970s and the introduction of alternative forms of energy supply." The World Bank's annual survey released in July predicted that oil prices by the mid-1990s would be 20 per cent above their 1981 peak (\$US 34.00 a barrel)-. OPEC will continue to be the main supplier of oil as crude production declines in other parts of the world and, as a result, OPEC will continue to be influential in setting world oil prices.
- Ontario Hydro to renegotiate uranium contracts
- In June Ontario Hydro indicated its intention of renegotiating major uranium supply contracts signed with Elliot Lake, Ontario, producers in 1978. The contracts secured about 200 million pounds of uranium concentrates from the two high cost mines in that area on a cost-plus basis. Supplies were scheduled to reach 7 million pounds a year in 1993, 2 million pounds above project requirements. The price projected into the 1990s would also be very much higher than the price of contracts signed with Saskatchewan producers in 1983.
- Disposal of reactor fuel wastes
- A Department of Energy, Mines and Resources paper given at the Annual Conference of the Canadian Nuclear Association in June noted that it would be technically possible to build a deep geological repository for the permanent disposal of reactor fuel waste and that it would be cost-effective and would meet reasonable safety goals. However, once built, there might not be any fuel wastes to put into it for 30, 40 or 50 years since the volumes of irradiated fuels produced in Canada are small and utilities are storing them economically. It would likely be several years before a decision was made as to whether the used fuel would be disposed of directly or whether it would be reprocessed and only the radioactive wastes sent to the geologic repository. The Canadian R&D program was therefore using the time available to improve our understanding of geologic disposal so that when the time comes to build a repository Canada would be in a better position to provide effective designs and assurances to the public.
- Slowpoke nuclear reactor
- In June, Atomic Energy of Canada Limited (AECL) in a public statement announced that a new "souped-up"-version of the tiny nuclear reactor, referred to as the Slowpoke reactor and used in research by six universities, could produce two million watts of electricity -- enough for more than 100 homes. It could sell for \$1 million and would cost \$200,000 a year to run. It would heat water up to 90°C, sufficient to turn an electric turbine but not enough to cause concern about high pressure vessels and radioactive steam.
- Upper Churchill Falls power -Newfoundland dispute with Québec
- In June, the Trial Division of the Newfoundland Supreme Court ruled that Newfoundland did not have the right to recall 800 MW of power from Churchill Falls. Newfoundland then appealed the decision to the Appeal Division of the Provincial Supreme Court. Newfoundland had claimed that a clause in the water lease by which the Upper Churchill Falls site was developed gave the Province the right to recall the power. Hydro-Québec then filed in the Québec Superior Court, claiming that any such recall would constitute a breach of the power contract signed in 1969, thereby permitting it to sue Newfoundland for damage. In August, the Quebec Superior Court ruled that Hydro Québec could claim damages against Churchill Falls (*Labrador*) Corporation Ltd. (CFLCo) if the company delivered the 800 MW to Newfoundland that the Province had tried to recall. In September, the two provinces began exploring the possibility of a negotiated settlement and the Supreme Court of Canada agreed to delay until December 31 a decision on the Upper Churchill Water Rights Reversion Act, a Newfoundland bill adopted in 1980 that would have the effect of cancelling the 1969 contract. In December, CFLCo and Hydro-Québec began working on a package deal to reopen the Churchill Falls agreement of 1969 and jointly develop the Lower Churchill and projects on rivers running through both Labrador and Québec to the Gulf of St. Lawrence, with the objective of reaching an out-of-court decision. Until that time, Newfoundland had refused to consider further hydroelectric development with Quebec until Quebec agreed to a significant increase in the price it paid for Upper Churchill Falls power. Quebec's position had been

that it would only re-open the contract as part of a package deal. Negotiations were expected to be difficult because of the wide divergence in the public positions taken by the two provinces.

Amendment of the Sept. 1, 1981 federal/Alberta agreement to provide for price changes

On June 30, the federal and Alberta governments completed negotiations leading to an amendment of the September 1, 1981 Agreement, relating to energy pricing and taxation, covering petroleum pricing through 1986. The effect was to freeze wellhead oil prices at their current level, if world prices remained stable; to guarantee that natural gas prices would not rise above 65 per cent of the price of oil; to redefine oil discovered between 1974 and 1980 and allow it to qualify for the world price; and to allow world prices for oil from "infill" wells drilled to enhance production from existing oil fields. The \$4/bbl price increase that had been scheduled for July 1 was cancelled and future increases were contingent on world oil price trends, while pre-1974 prices were still subject to the ceiling of 75 per cent of the world price. The 65 per cent of oil price ceiling for natural gas provided a continuing incentive to switch from oil to gas. The 65 per cent price relationship was to be maintained by adjusting the federal Natural Gas and Gas Liquids Tax (NGGLT); by federal funding towards pipeline transportation costs, possibly through utilization of revenue from the Canadian Ownership Special Tax (COSC); and, once the NGGLT reached zero, Alberta had agreed to adjust the Alberta border price to maintain the 65 per cent gas/oil- ratio. The provision to allow oil discovered between 1974 and 1981 world prices was expected to generate an additional cash flow of as much as \$250 million in the period July 1 1983 -- December 31, 1984. Since the September 1, 1981 agreement had been signed, several measures had been implemented in the attempt to adjust the NEP and the Canadian industry to conditions not foreseen in 1980-81. In April 1982, Alberta implemented a royalty relief program. In June 1982, the federal NEP Update had provided for considerable tax reductions. The federal budget of April 1983 had implemented further tax concessions. Those three sets of initiatives were possible under the September 1981 agreement but further action, specifically relating to pricing, required an amendment to the agreement which was accomplished on June 30, 1983.

Volume Related Incentive pricing (VRIP) natural gas exports, further modified in November for difficult U.S. market

On July 6, the federal government implemented a volume Related Incentive Pricing (VRIP) scheme for exports of natural gas to the U.S. Under VRIP, Canadian exporters were able to sell gas in excess of an established base level at an incentive price of \$US 3.17/Gigajoule (GJ) -\$US 3.40/million British thermal units (MM Btu). Base volumes exported would continue to be sold at the uniform border price, then at \$US 4.10/GJ (\$US 4.40/MM Btu). The VRIP scheme was scheduled to be in effect .from July 6, 1983 to ..October 31, 1984. Through incentive pricing, the federal government hoped to preserve its share of the highly competitive gas market, and possibly increase sales in certain regions. The pricing scheme was an attempt to respond flexibly to perceived short-term difficulties in regional U.S. markets in the expectation that the U.S. would continue to regard Canada as a stable, long-term source of supplementary gas supply. There was concern in Canada that the major investments made by the Canadian industry, including the pre-build sections of the proposed Alaska Highway gas pipeline, to serve the export market would not be jeopardized. In 1982, gas exports to the U.S. had earned \$4.8 billion. The VRIP initiative followed a decision made in April to lower the gas export price by 11 per cent to \$4.40/MMBtu. The VRIP offered a 23 per cent discount for gas export volumes sold above a base level. It was estimated that these price adjustments would reduce the cost of Canadian gas to U.S. consumers by \$700 -\$900 million over a two-year period. The initiative was taken at a time when legislation was pending before the U.S. Congress which would limit imports of Canadian natural gas unless the price was cut or deliveries were reduced. On November 1, 1983, the federal government implemented a modification of VRIP for the period through to October 31, 1984 whereby individual exporters were allowed to sell each month some component, of the gas exported, at the incentive price, provided that over the course of the year only those volumes above the annual base volume were sold. Under the initial plan, gas could be sold at the incentive price only after the full annual base quantity had been exported. The modification was made in view of the continuing difficult conditions in the U.S. natural gas market. The base volume for the VRIP was defined as the lesser of 50 per cent of the annual export licence quantity, or the actual quantity exported during the period November 1, 1981 -- October 31, 1982.

Syn crude oil sands expansion	In <u>July</u> , Syncrude Canada Ltd. commenced a five-year \$1.2 billion expansion program at its oil sands operation in the Fort McMurray, Alberta, area. The program would increase production capacity to 130,000 barrels of synthetic crude oil per day by 1987 from the existing 109,000 b/d. The company had been assisted by Alberta royalty relief and federal tax concessions.															
Solar energy support program	On <u>July 7</u> , the federal government announced a \$79 million solar energy support program to provide financial assistance to the solar energy industry enabling it to produce cost-effective solar systems by 1988. Of the \$79 million, \$30 million was for research and development managed by the National Research Council; \$45 million was to be used for demonstration programs, mostly as jointly-funded projects with the private sector; and \$4 million would be directed to completing commitments under the Purchase and Use of Solar Heating (PUSH) program which had been initiated in 1978 as part of a \$380 million renewable energy program (see note for July 4, 1978). The new solar energy initiative represented a culmination of efforts by federal, provincial and industry representatives to develop a new policy for solar energy in Canada. The new approach provided federal support for a planned five years in order to produce solar energy systems capable of competing on an equal basis with other forms of energy.															
Domestic natural gas prices remain stable	On July 28, announcement was made of new wholesale prices of natural gas, to take-effect August 1. Little change in the price to consumers was expected through to the end of 1984 under the new pricing arrangement. The small decrease effective in August reflected an increase in the Alberta border price of 23.3 cents, to \$2.63 per gigajoule, giving a \$235 million a year revenue increase to Alberta producers; a reduction in the federal Natural Gas and Gas Liquids Tax (NGGLT) to 15 cents per gigajoule from 45 cents to maintain the natural gas price at 65 per cent of the crude oil price in eastern Canada; and a 5 per cent increase in TransCanada Pipelines Ltd. pipeline transportation charges. Under this schedule, wholesale prices for natural gas in the domestic market remained relatively stable in the period from mid-1982 to the end of 1984.															
Petroleum Monitoring Agency survey	The Petroleum Monitoring Agency (PMA) issued its Monitoring Survey of the Canadian Petroleum Industry for 1982 on <u>July 26</u> , 1983 and reported that, although revenues rose 9 per cent, after-tax profits for the industry fell to \$1.5 billion, 5.2 per cent below the 1981 level. A weak downstream performance accounted for more than one-half of the drop in profits and offset increased net income in the upstream segment. Decreased demand for petroleum products accounted in considerable part for the 69 per cent drop in downstream profits. Upstream profits rose by 21 per cent, with higher wellhead prices for oil and gas and lower provincial royalty rates being the main factors. Higher interest rates and write-downs of foreign assets caused profits of Canadian-controlled firms to drop from \$1.2 billion in 1981 to a small loss in 1982. Canadian ownership of the petroleum industry, based on petroleum-related revenues (upstream and downstream) rose to 34.2 per cent and control to 26.2 per cent, up 1.4 and 0.3 percentage points from 1981, whereas in 1981 ownership and control had risen 6.7 and 7.2 percentage points, respectively. The following tabulation compares upstream petroleum revenue sharing for 1981 and 1982:															
	<table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: right;">1981</th> <th style="text-align: right;">1982</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 40px;">Industry revenue shares</td> <td style="text-align: right;">39.7%</td> <td style="text-align: right;">40.3%</td> </tr> <tr> <td style="padding-left: 40px;">Provincial government revenue share</td> <td style="text-align: right;">37.3%</td> <td style="text-align: right;">32.3%</td> </tr> <tr> <td style="padding-left: 40px;">Federal government revenue share</td> <td style="text-align: right;">23.0%</td> <td style="text-align: right;">27.4%</td> </tr> <tr> <td></td> <td style="text-align: right;">100.0</td> <td style="text-align: right;">100.0</td> </tr> </tbody> </table>		1981	1982	Industry revenue shares	39.7%	40.3%	Provincial government revenue share	37.3%	32.3%	Federal government revenue share	23.0%	27.4%		100.0	100.0
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	The higher federal share in 1982 resulted from higher revenues from energy taxes -- PGRT, NGGLT and IORT. The lower provincial share resulted from lower royalty rates.															
Uranium mining expansion in Saskatchewan Canadian	In <u>July</u> , the Cluff Lake Mining Company, operating in northern Saskatchewan, received environmental approval to proceed with Phase II of its uranium-producing operation involving the exploitation of two open-pit mines and three underground mines. Initial uranium concentrate production at Key Lake, also in northern Saskatchewan, was scheduled for August. Together with															

production grows	<p>the re-opening of the Stanleigh mine in the Elliot Lake area of Ontario, and the two large operating mines in that area, the new production in Saskatchewan would enable Canada to surpass the U.S. in uranium production capacity in 1983. Canada was expected to have a uranium production capability of over 10,000 tonnes U in 1984 with a capability of some 15,000 t U by the early 1990's should market conditions warrant. Uranium production had peaked in 1959 at 15,892 short tons of U308 (12,222 t U) valued at \$331.1 million. After a rapid decline in the 1960's and a slow recovery in the 1970's production had gradually risen to 8075 t U in 1982, with shipments of 8189 t U being valued at \$815 million.</p>
International Energy Agency (IEA) oil sharing emergency test	<p>In <u>July</u>, the results of the International Energy Agency (IEA) test of emergency oil sharing, conducted in the period April 22 - June 15, were being assessed. The test, in which 21 countries and 45 major international oil companies participated, took over a year to organize. This was the fourth international test of the IEA emergency oil sharing system and, as on previous occasions, Canada was a member of a small group comprising representatives of seven governments and six petroleum companies which worked out procedural details and wrote the Test Guide. In Canada, the five oil producing provinces and 23 Canadian oil companies took part in the test under the leadership of the Energy Supplies Allocation Board (ESAB) which reports to the Minister of EMR. The IEA agreement stipulates that when supplies to the IEA as a whole are reduced by 12 per cent or more, IEA member countries must impose a 10 per cent demand constraint and draw on their emergency reserves in order to make oil available for sharing with other member countries. From Canada's point of view, the system under conditions of the test worked well and no difficulties were experienced in the volumetric re-distribution of supplies. ESAB has the mandate to prepare and administer the regulations controlling the allocation of available oil and petroleum products in Canada in the event of a national emergency caused by supply shortages. ESAB's plans are carried out in close cooperation with the provincial governments and the petroleum industry.</p>
Canada Saskatchewan agreement on oil pricing	<p>On <u>August 23</u> the federal Minister of EMR and the Saskatchewan Minister of Energy and Mines announced an amendment to their October 26, 1981 Agreement relating to energy pricing and taxation through to 1986. The Amendment, covering the period July 1, 1983 to December 31, 1984 followed and extended a similar accord between the federal and Alberta governments as signed on June 30, 1983. Previously scheduled wellhead price increases for Saskatchewan oil would not take place if world oil prices remained stable. Oil discovered between 1974 and 1981, previously subject to a limit of 75 per cent of the world price would now qualify for the world price which meant that about 50 per cent of Saskatchewan's production would now receive that price. The Special Oil Price (SOOP) program as announced in the NEP Update of May 1982 was, accordingly, revised so that oil that qualified under the SOOP program with its 75 per cent limit would now receive the New Oil Reference Price (NORP) supplement, effectively raising it to the international price level.</p>
Canada Saskatchewan agreement on a heavy oil upgrader	<p>On August 23, the federal and Saskatchewan governments also agreed to go ahead with the first phase of a Saskatchewan heavy oil upgrading plant involving Consumers' Cooperative Refineries Ltd. (CCRL). Work on the economic and technical analysis of the project was to begin immediately, with each government guaranteeing up to \$4 million to finance the first phase. The proposed upgrader would require an investment of up to \$600 million and it would be linked with the CCRL Regina refinery which would use some of the 7946 cubic metres (50,000 barrels) of upgraded oil produced daily. The federal government undertook to provide loan guarantees for up to 35 per cent of the cost of the upgrader facility. Saskatchewan undertook a similar commitment, in addition to taking an equity position in the project. In December, the planned start-up date was re-scheduled to the fall of 1987 and the project was named Newgrade Energy Inc.</p>
Energy R&D	<p>On <u>August 4</u>, the federal government approved an additional \$31 million in energy research and development funding (R&amp;D) bringing the total federal commitment in 1983-84 to \$333 million. The additional resources were in particular to be directed to the development of alternatives to gasoline, higher energy efficiency, development of new energy sources, and development of new technology and processes to enhance oil production in western Canada and from new discoveries</p>

in Canada's frontier. The increase in funding supported the government's policy of raising the national commitment to R&D to 1.5 per cent of the GNP by 1985. The increase brought to \$154 million the annual budget coordinated by the EMR Panel on Energy R&D. More than two thirds of the Panel's fund were being channelled through 14 managing departments and agencies, for the purchase of goods and services from consultants, industries and universities throughout Canada. The new funding was to emphasize the importance of enhancing the commercialization prospects of technology developed through R&D.

Remote Community Program extended	In August, the applications deadline for Phase 1 of the Remote Community Demonstration Program was extended by six months to March 31, 1984 with the completion date for the phase being September 30, 1984. More than 400 communities across Canada, and agencies responsible for, or directly interested in, their energy supply were eligible to apply under the program. All communities in the Yukon and N.W.T. were eligible as well as communities in the provinces not connected to main electrical or gas supply sources. In Phase I, a limited number of communities were being studied to explore energy; alternatives and conservation opportunities for remote communities. Phase II, scheduled for the period October 1983 - March 1986, would provide funds for a selected number of demonstration projects in remote communities. As of July 1983, 19 studies in remote communities were underway.
Pickering nuclear reactor leaks	On August 1, a radioactive leak was reported at Ontario Hydro's Pickering Unit 2. By the end of the first week of the month, three of the five reactors in the station were shut down following three unrelated incidents. By the end of September, Ontario Hydro had experienced six events with its Candu reactors but only one of the events, the ruptured pressure tube in Pickering 2, was of significance. At Pickering 2, appropriate actions were taken on August 1, before automatic shutdown and emergency cooling systems were called into play. No heavy water was released to the environment and there were no public health consequences. Examination of the pressure tube showed that a series of zirconium hydride "blisters" had formed in one area of the outside surface of the tube and the 2 metre crack in the tube had initiated at one of those blisters. On October 30, unit 5 at Pickering was shut down when it sprang a leak. At the end of the year, both units remained shut down pending decision on the amount of tube replacement that would be required.
Northern Pipeline Agency (NPA) staff reduced as near-term prospects for the Alaska gas pipeline fade	In August, a decision was taken to greatly scale down the operation of the Northern Pipeline Agency (NPA) which had been established to supervise construction of the Alaska Natural Gas Pipeline section within Canada. That project had been in limbo for three years and in May the U.S. General Accounting Office (GAO), in a major study, had concluded that the project was beset by so many financing and marketing problems in both the U.S. and Canada that its completion even by late 1989 was doubtful. By the end of 1983, the NPA would retain a total staff of only 14 in its Calgary and Whitehorse offices. However, U.S. and Canadian sponsors remained confident that the pipeline project would be completed someday.
EDC lifts freeze on CANDU Romanian loan	In August, the Export Development Corporation (EDC) lifted a ban on a line of credit to Romania worth almost \$US 650 million for the purchase of two CANDU reactors which Canada had sold to Romania in 1978 and 1981. EDC had signed an agreement in April 1979 to provide \$680 million at commercial rates to support CANDU sales to Romania. In March 1982, only eight months after the second CANDU agreement was signed, the Crown corporation froze all payments as Romania tried to reschedule a major international debt load.
Petro-Canada completes Petrofina acquisition	In August, the remaining shareholders of Petrofina Canada Inc. voted in favour of giving up their shares to Petro-Canada in accordance with an offer made in April 1981 by Petro-Canada to purchase all of the outstanding shares. By the end of 1983, Petro-Canada had acquired the balance of the outstanding shares for a consideration of \$424,668,000. The aggregate cost to Petro-Canada of acquiring the shares of Petrofina, including related expenses, was \$1,600,476,000. The price paid per share was \$120.
Natural gas	Natural gas service to Quebec City was officially inaugurated on September 6 with the completion



service completed to Quebec City and to many other centres	of the Trans-Quebec & Maritime Pipeline to that city. Construction of laterals to provide natural gas service to Grand-Mère, Shawinigan, Bécancour Industrial Park, and to most major centres in the Eastern Townships including Sherbrooke and Granby was completed by the end of 1983 by Gaz Inter-Cité Québec (GICQ), with financial assistance under the federal Natural Gas Laterals Program. Through this, and other programs available to distributors as well as to consumers, the Minister of EMR estimated that by the end of 1986 federal assistance of more than \$700 million would have been made available to support the establishment of the necessary infrastructure and to encourage the use of natural gas in Quebec.
Report of Task Force on Pipeline Construction Costs	In September, the report of the Task Force on Pipeline Construction Costs was released. The Task Force was set up in August 1982 to recommend how the high rate of pipeline construction costs increases, identified in a National Energy Board staff study published in June 1982, could be brought under control. The Task Force study included the participation of pipeline companies, contractors, material suppliers, labor unions, oil and gas producers, and provincial, territorial and federal government departments and agencies. The report identified several causes of construction cost increases and recommended how their cost impact could be minimized. The cause of cost increases related to delays in project schedules, delays during construction, problems in the availability of human and material resources, contract-labor problems and inadequate incentives for cost control of pipeline owners. The National Energy Board undertook to prepare a complete plan of action in response to the report's recommendations relative to Board responsibilities.
Cold Lake oil sands project to proceed	On September 20, the federal and Alberta governments announced that final agreement had been reached with Esso Resources Canada Limited on the fiscal and commercial terms for the company's \$300 million phased Cold Lake Project. The plan was to build six phases with a capacity to produce 9,500 barrels per day of bitumen each, at a cost per phase of about \$150 million, and the first two phases to be in production by 1985. The capital cost of the six phases would be in the order of \$1.5 billion and the sustaining investment for replacement wells over the 25-year life of the project could add between \$4 and \$5 billion in additional economic benefits. About 800 replacement wells would be built over the 25-year period. The federal government agreed to provide earned depletion and a waiver of payment of the Petroleum and Gas Revenue Tax until the company had recovered its capital costs in accordance with the federal budget provisions of April 1983. Alberta's royalty regime would provide for nominal royalty payments until capital costs had been recovered, including a 10 per cent allowance on invested capital. Production from the plan would receive the New Oil Reference Price (NORP), at essentially the international level. The company noted that although each phase is smaller than the megaproject proposed in November 1977, when a project capacity of up to 140,000 barrels a day was considered, the total project, at some point, might not be different.
West Coast offshore environmental review	In September, a joint federal-provincial environmental review to assess the effects of offshore oil and gas exploration on the west coast, north of Vancouver Island, was announced. The review was necessary before consideration could be given to lifting the federal and provincial moratoriums on exploration in the area.
Uranium export policy	In September, the federal government completed a review of Canadian uranium export policy. It was decided to maintain the basic principles, as announced following a review in 1974, which were designed to ensure that Canada remained a reliable supplier of uranium to world market and to implement several modifications. Attention was directed to three elements of the policy in the 1983 review: security of domestic supply, further processing and commercial terms and conditions. With regard to security of supply, which appeared less urgent than in 1974, Ministers decided that the supply situation should be monitored on a national rather than an individual producer basis. Contracts would be approved for up to 15 years and, in the case of uranium exports associated with CANDU sales, approval could be granted for contracts which provided a uranium supply for up to 30 years for each CANDU exported. In the case of further processing, Ministers reaffirmed the policy that uranium should be upgraded to the greatest extent possible in Canada before export. In practice, this meant conversion to uranium hexafluoride (UF <sub>6</sub> ). The policy provided for the

regulating agencies to consider requests for exemptions from the further processing provision if the Canadian facilities did not have the capacity or if they were not generally competitive in the world scene. Exemptions for other reasons would only be granted in the most exceptional circumstances. With respect to commercial terms and conditions, Ministers decided to reaffirm the requirement for a floor price or similar mechanism that would protect investment and employment in uranium production facilities. At the same time, the terms of sales should equitably balance benefits and risks and should generally be in accord with those being obtained by Canadian and international producers for uranium under contracts of similar duration. It also was agreed that uranium export contracts would continue to be reviewed by the Uranium Exports Review Panel to ensure that they were consistent with Canada's policy and in the national interest. Acceptance by Ministers of the contract terms and conditions would remain a necessary step prior to the consideration by the regulating agencies of applications for export permits.

Forecasts of gas exports

Forecasts made at the World Petroleum Congress in London in September indicated that the U.S. will have a strong need for imported natural gas from Canada and Mexico before the end of the decade. Declining domestic production would leave the U.S. with a natural gas shortfall in the late 1980s. In a forecast published in October, the American Gas Association predicted that gas supplies from domestic and foreign sources could increase by as much as 43 per cent by the year 2000, filling at least 25 per cent of United States' energy needs. The levels of projected Canadian gas supplies to the U.S. market in the year 2000 ranged from 1.5 to 2.4 trillion cubic feet, compared with the 1982 level of 0.8 trillion cubic feet. During a symposium in November sponsored by the American Stock Exchange, forecasts were made that natural gas shortages would appear in the U.S. as early as 1985 and that Canada would establish itself as a "secure source of supply" in that market by the end of the 1980s.

Canada warns U.S. about natural gas trade problems

In an address to the American Gas Association in September, the Canadian Ambassador to the U.S. warned that if there was a successful U.S. attempt to drive the price of Canadian gas still lower, Canadian producers would likely leave the gas in the ground rather than lose money on exports. He noted that the Canadian government had become concerned at some of the punitive measures being put forward in the U.S. Congress against gas exports from Canada. Through price cuts and incentive programs for gas exported to the U.S., Canada had already gone the extra mile to help an American gas industry that was suffering from low demand and pricing problems. Early in the year, in June, the Premier of Alberta told a Western Governor's Conference in Montana that Alberta had suffered badly from two U.S. natural gas policies. In 1976 Canada, at the urging of the U.S. government, had set a common border price for natural gas which made Alberta gas less market competitive. Then, after agreeing to participate in the Alaska gas pipeline pre-build in 1980, Alberta was now shipping its additional natural gas supplies through an "over-built and high cost" transportation system. These matters deserved consideration in current U.S. gas price deliberations.

Provincial Ministers concerned about energy security

At the 40th Provincial Mines Ministers' Conference, held in September, the provinces emphasize the importance of long term energy security for Canada. Ministers called for closer consultation and cooperation with the federal government, particularly in energy conservation and renewable energy development. Noting the dramatic changes that had occurred in the international energy sector since 1981, they expressed concern that "today's situation is characterized by international price uncertainty in the medium term, which may retard efforts to achieve energy security".

Proposal for a natural gas pipeline to Vancouver Island

In September, the B.C. government began hearings to decide which of several applicants should build a natural gas pipeline to Vancouver Island. A decision had not been taken by the end of 1983. The extension of natural gas service had been considered from time to time over a period of many years. A task force report completed in February 1983 had concluded that natural gas would be the most cost-effective future energy option for most Vancouver Island communities, that the net economic benefits of such a project from a national perspective would be \$700 million, and that the federal government should provide financial support for a pipeline to Vancouver Island. The federal government's position was one of support in principle for the extension of gas service but it was prepared to discuss with the B.C. government the possibility of supporting alternatives to such

a plan. In 1982 in the absence of any provincial activity with regard to a Vancouver Island pipeline, the federal government had redeployed \$500 million to the Natural Gas Lateral Program in Quebec as part of the NEP Update provisions. In 1982 and into 1983 there remained uncertainties regarding the market potential and energy prices facing the Vancouver Island gas pipeline proposal. The two major competitors for the project were B.C. Hydro which proposed a southern route at an estimated cost of \$450 million, and a consortium headed by Westcoast Transmission proposing a northern route at an estimated cost of \$600 million including a world-scale fertilizer plant at Powell River, which would double the volume of natural gas sales, and would cost \$675 million. The hearings begun in September were to determine the size of the federal capital contribution necessary to make sure there were no revenue deficiencies associated with the pipeline project. The B.C. government maintained it was still up to the federal government to provide a subsidy as promised in the NEP.

Forecast of offshore economic activity in the oil industry

In a Canada Oil and Gas Lands Administration (COGLA) paper prepared for the September 22 Canadian Offshore Resources Exposition in Halifax, a forecast was made that exploration expenditures between 1983 and 1986 in the Canada Lands could total nearly \$8.2 billion, aside from spending to further develop offshore fields such as Venture and Hibernia. The \$8.2 billion expenditure would be for drilling rigs and drill ships, supply and support vessels (\$4.7 billion); technical, engineering, scientific and environmental services (\$1.4 billion); drilling and wellhead equipment and supplies (\$1.1 billion); and support bases, air and barge transport, and communications (\$1 billion). It was estimated that nearly 55 per cent of this investment would be injected directly into the Canadian economy and that 93 per cent of the jobs (6,900 in 1983, 8,600 in 1984 and over 10,000 in 1985) would be filled by Canadians.

Petroleum Incentives Program (PIP) under attack

During the last four months of 1983, the Petroleum Incentives Program (PIP) was the object of considerable criticism in Parliament and elsewhere. In September, there were accusations that the federal government did not have enough control over the money being handed out, and recommendations that the allowable amount - up to 80 cents on the exploration dollar - should be reduced. By that time about \$2.2 billion had been spent since the program began. There was considerable criticism also regarding the emphasis in the program to the North and offshore at the expense of western Canada. In August, in a move to gain better control of expenditures, the government had implemented regulations calling for companies to obtain prior approval in order to qualify for full PIP benefits on wells expected to cost more than \$50 million because of the government's concern about escalating drilling costs. In October, uncertainty was developing in industry about the future of the program and there were also increasing concerns about the cost of offshore exploration with the result that some companies were withdrawing from exploration programs. In a CBC TV program carried on December 8, views were expressed that frontier exploration was a huge gamble for government and industry; that PIP and the NEP represented an attempt by the federal government to wrest control of oil revenues and oil activity from the provinces, particularly Alberta; that oil companies had found loop holes in PIP; that the taxpayer ended up by paying the shot; and there were questions as to whether the massive PIP expenditures (\$4.6 billion over the period 1981/82-1984/85 and possibly as much as \$8 billion eventually) were really necessary and whether the program was out of control. The matter of PIP's cost effectiveness was debated in Parliament, a debate that escalated with the Auditor General's comments, in his Annual Report, concerning monitoring deficiencies of the program.

Coal industry outlook

Papers presented at the Coal Association of Canada annual conference in October indicated a bright future for Canada's coal industry despite the effect of pressure from export customers to reduce price and delivery volumes. However, views were expressed that a more balanced mix of export and domestic sales should be achieved so that the industry would not be so vulnerable to the ups and downs of the international market.

Iran threatens to block Persian Gulf shipping

In October, Iran was threatening to blockade Persian Gulf shipping through the Strait of Hormuz if France sold fighter jets equipped with Exocet air-to-surface missiles to Iraq. The Iran-Iraq war was then in its third year. Persian Gulf oil shipments had been increasing as a result of the drop in

Middle East oil prices.

Alberta Heritage Fund - still no economic diversification	<p>In a statement in the Alberta Legislature on October 5 on the occasion of the annual examination of the Heritage Savings Trust Fund, the Premier noted that Alberta's long-cherished goal of more economic diversity to lead it away from the vagaries of dependence on resources would not occur "in my lifetime". Alberta would continue to be dependent on markets for its wheat and oil. Whereas there was concern in the 1970s about basing an economy on depleting resources, it was now the case of being faced with the dilemma of too many resources for the short and medium term and too few markets. The province needed to concentrate on resolving marketing obstacles at home and abroad. As of March 31, 1983, the Heritage Fund stood at \$13 billion. For the first year in its history, in 1982-83, investment income outstripped income from non-renewable resources. The Fund had been established in May 1976 to build up a pool of capital in support of the Alberta government's commitment to provide for the diversification of the Alberta economy in the future.</p>
Tidal power Bay of Fundy	<p>In October, the pre-construction phases of the proposed \$6-billion Bay of Fundy tidal power project were set aside in view of the availability of comparatively cheap oil, the lack of long-term planning by power utilities, and in particular the lack of interest on the part of potential buyers of power in the eastern U.S. The Bay of Fundy development could only proceed as an export project.</p>
Coleman mine closes after 80 years of coal production	<p>At the end of October, the Coleman Collieries coal mine on the Alberta side of the Crownsnest Pass closed down after over 80 years of operation. A stagnant international coal market was a principal cause and the mine had lost out to domestic sources closer to thermal power stations on the Prairies. Huge mineable coal reserves remain in the Crownsnest Pass region, available for the time when they become more economic in the domestic market.</p>
CANMET energy RED programs	<p>In view of continuing changes in energy supply and demand, EMR's Canada Centre for Mineral and Energy Technology (CANMET) was continuing its fossil energy R&amp;D work, and in October was in the middle of its 1983/84 \$30 million program. Coal research was covering the whole gamut of technology from mining through processing to combustion for electricity generation. Aspects of new coal washing technology were being transferred to operating coal producers in western Canada through the use of mobile coal-preparation plants. A strong program continued in conjunction with the government industry Canadian Carbonization Research Association in assessing the suitability of Canadian metallurgical coals both for use in the domestic steel industry and in export to Pacific Rim markets. The off-oil policy of the federal government had led CANMET to redirect some of its coal combustion programs towards advanced combustion processes (fluidized-bed combustion) for electricity generation, especially in support of demonstration programs in eastern Canada through the NEP Special Atlantic Initiatives Package, and in support of acid rain initiatives. CANMET maintained a central coordinating role in coal R&amp;D activities in Canada and, internationally, was participating in International Energy Agency programs and other international groups. In oil and gas technology CANMET has traditionally limited the scope of its program to non-conventional sources - oil sands and heavy oils. The energy crisis of 1973 gave impetus to a long-standing R&amp;D program to upgrade bitumens and heavy oil by hydrogen addition under pressure, to improve liquid yields above these obtained from the carbon-subtracting coking processes, as used at the Syncrude and Suncor oil sands plants. The success of this work was leading to the commercialization of the CANMET technology at the 5,000 barrels a day level by Petro-Canada in its Montreal East refinery.</p>
Electricity exports benefits	<p>In an address on October 13 to the Canadian Society of New York, the Minister of EMR reviewed a number of current bilateral energy interests and issues. In referring to Canada's electricity exports to the U.S., which totalled over \$1.1 billion in 1982, he noted that recent advances in electric power transmission technology were making it possible to export electrical energy beyond Canada's traditional market areas in the U.S. For that reason, Canada would like to accelerate the rate of its capacity development in order to meet the needs of its U.S. customers. In turn, for its commitment at the supply level, Canada asked its customers to provide purchase guarantees. The export of Canadian electricity to the U.S. would provide many benefits to both countries including</p>

a reduction in acid rain resulting from the burning of coal. Earlier in the year, a major study carried out by the Canadian Electrical Association in 1982 became available. Under the title of "Potential Benefits and Costs of Canadian Electricity Exports", it quantified costs and benefits of increased electricity exports and recommended a more vigorous electricity export policy. This study became an important reference on marketing, legal, regulatory and other aspects of the electricity exports issue.

Motor Vehicle  
Energy  
Committee and  
fuel consumption  
standards

The first meeting of the Government-Industry Motor Vehicle Energy Committee (GIMVEC) was held in October. GIMVEC drew its membership from automotive industry associations and federal government departments concerned with motor vehicle energy issues, and had been formed by EMR at the request of the North American based segment of the industry. Its chief purpose was to provide an opportunity for the exchange of information on energy issues and developments as they pertained to motor vehicles. Of particular interest to GIMVEC were the issues related to the voluntary Motor Vehicle Fuel Consumption Program. Under that Program, vehicle manufacturers had agreed to meet fuel consumption standards and to affix labels to vehicles which indicated their fuel consumption as determined by government-approved test methods. Bill C-107 "An Act respecting motor vehicle fuel consumption standards" had been debated in Parliament and received Royal Assent on July 7, 1982. Because of the automobile industry's willingness to proceed on a voluntary basis with the implementation of a fuel consumption standard, and company adherence to a satisfactory schedule in this respect, it was decided not to bring the Act into force.

Hydro-Qu6bec  
curtails its  
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electricity plans  
also scaled down

In October, Hydro-Qu6bec presented its 1983 Development Plan to the provincial government and the trends indicated for its future appeared to reflect changes and issues facing utilities elsewhere in Canada. In October 1982, Hydro-Qu6bec forecast a 3.2 per cent annual electricity demand growth over the period 1981-1996. In October 1983, the estimate was lowered to 2.9 per cent, both in contrast with an October 1981 forecast of 6.2 per cent. The 1981, 1982 and 1983 capital investment projections over ten years were \$55 billion, \$33 billion and \$18 billion, respectively. In late 1983, there were indications that Hydro-Qu6bec would defer until after the year 2000 the in-service dates of the following planned additions to base load generation: La Grande Phase II - 2,192 MW, Grand Baleine - 2,986 MW, La Romaine - 1,708 MW, and Nottaway, Broadback & Rupert - 7,030 MW. Hydro-Qu6bec's commercial strategy to sell its current surplus was based on active programs of increased electricity exports, of increased internal sales by accelerating oil substitution by electricity, and of additional use of electricity in industry for new production requirements. Interconnections with neighbouring provinces and the U.S. were to be increased in transmission capacity and, with these increases, Hydro-Québec was forecasting sales to Ontario, New Brunswick and the U.S. to reach 28 billion kWh in 1986 and 36.5 billion kWh in 1988 (the year of critical surplus), compared with 18 billion kWh in 1982. On a national scale, the Canadian Electrical Association, at the end of 1983, forecast that electrical utilities in Canada would spend \$91 billion on construction in the following 10 years, down 45 per cent from its previous estimate of \$164 billion. Canadian utilities were revising their longer-range capital spending forecasts to ensure that capacity was not over-built in future.

Cape Breton coal  
remains  
uneconomic

In November, the Minister of Industry, Trade and Commerce announced a thorough review of the economic situation of the Cape Breton Development Corporation (DEVCO) on being advised that it had lost \$46 million in 1982-83 and was forecasting an operating loss of \$63 million in 1983-84. A loss of \$11 million had been forecast for 1982-83. DEVCO had been established in 1967 to gradually phase down the costly Cape Breton coal industry and to help promote the economic diversification of Cape Breton. The introduction of viable alternative industries in the 1970s was not successful and, with rising oil prices in the mid-1970s, the objectives of DEVCO changed and it again became involved in coal mine development and expansion which continued to be uneconomic as it had throughout most of the previous 50 years.

Forecast of  
Middle East oil  
supply

In November, the Canadian Petroleum Association Executive Director, in quoting a U.S. Department of Energy forecast of a 75 per cent chance of oil supply interruptions in the Middle East before 1990, expressed the view that Canada could be in big trouble if the disruptions

interruptions	triggered another shortage. He further noted that while Canada in 1983 was statistically self-sufficient in oil, it was only because the recession had reduced demand. He felt that Canadians should be using a period of non-crisis to discuss and resolve the energy problems that so drastically limit Canada's potential.
No further acquisitions by Petro-Canada	In November, the Chairman of Petro-Canada stated that the company was finished with major acquisitions and was entering a period of consolidation, productivity and stability. He further noted that for Petro-Canada to become a viable policy instrument, it must have "expertise, people, financial resources and muscle". With completion of the acquisitions of BP Refining and Marketing Canada Limited and of Petrofina Canada Inc. in 1983, he was satisfied that Petro-Canada had a sound organization.
Turkey's intent to acquire a CANDU reactor	On November 3, Atomic Energy of Canada Limited (AECL) confirmed at a news conference that it had received a letter of intent from Turkey to purchase a CANDU nuclear reactor. Sale of a 600 MW reactor would be negotiated by AECL in cooperation with Korea Heavy Industries and Construction Co. which would share in the construction and financing of the proposed \$1-billion project. Seven companies had been competing to sell three reactors to Turkey and reports had indicated that General Electric of the U.S. and Kraftwerk Union of West Germany were other successful bidders. By the late 1980s, details of an agreement with Turkey for the purchase of a CANDU reactor remained to be settled.
Western Grain Transportation Act removes \$2 per ton sales price limit on Dominion Coal Blocks	On November 14, Bill C-155, An Act to facilitate the transportation, shipping and handling of western grain and to amend certain Acts in consequence thereof -- the Western Grain Transportation Act -- was passed by the House of Commons, and shortly after by the Senate. The bill had been debated in Parliament over a number of months. Section 65 makes provision for amendment of the Crow's Nest Pass Act so that coal lands of Canada -- the Dominion Coal Blocks in B.C. -- could now be held, disposed of, or otherwise dealt with in any manner and on any conditions the Government of Canada deemed fit. This had the effect of removing the specification from the Crow's Nest Pass Act that coal must be sold at \$2 a ton or less. During the Parliamentary debate there was extensive reference to the question of ownership of the Dominion Coal Blocks in view of the B.C. government's ownership claims. This issue remained dormant in the mid-1980s as general coal marketing conditions discouraged any concerted effort to promote the development of this large coal resource.
Forecast of the role of renewable energy	In November, the organization Friends of the Earth Canada completed a study for the Government of Canada entitled "2025: Soft Energy Future for Canada" (306 pages). The study concluded that public policy and institutional barriers formed the main barriers to an energy self-sufficient future but that the "soft path" (the use of energy conservation to reduce energy service demands to levels that could be met with renewable, decentralized, ecologically benign sources) was both technically feasible and economically attractive. The study further concluded that, by the year 2025, Canadians could enjoy greater per capita wealth while consuming up to one-third less energy as a nation than in 1978, despite a larger population (up by 50 per cent) and Gross Domestic Product (up 200 per cent real). During this period, the use of renewable sources of energy would rise from 16 per cent of energy used to about 80 per cent. The contribution of refined petroleum products and natural gas would decline significantly over the 50 year period. The study prepared for the federal government did not express views on the likelihood or desirability of the "soft path" but, rather, analyzed the feasibility of such an energy path. Subsequently, the authors published a book, "Life After Oil", which argued that the soft path was desirable and suggested what actions would be necessary on the part of the government and the general public to place Canada on such a path. The forecasts in the study and the book included a 12 to 34 per cent decline in national energy consumption in the period 1978-2025; 95 per cent of transportation energy being supplied by biomass-based fuels; 95 per cent of electricity being hydro power; and renewable energy accounting for 77-82 per cent of all energy by the year 2025. Earlier in the year, in April, the Worldwatch Institute forecast, in a book entitled "Renewable Energy: the Power to Chose," that the energy mix in the year 2000 in the world would be in the proportion of oil -- 26%; renewable energy -- 26%; coal -24%, natural gas

-- 18%; and nuclear power -- 5%.

Pre-build court challenge not upheld	On November 17, the B.C. Supreme Court ruled that Parliament effectively delegated authority to make the amendments contained in the order authorizing construction of the pre-build section in Canada of the Alaska Highway natural gas pipeline. In his lawsuit before the Court, the Member of Parliament for Vancouver-Kingsway had claimed that three federal Cabinet Orders-in-Council of July 17, 1980, which had authorized the construction, were invalid. He, accordingly, lost his pre-build challenge at the B.C. Supreme Court level.
CPA/IPAC brief to Royal Commission on the Economic Union and Development Prospects for Canada	In a combined brief presented to the Royal Commission on the Economic Union and Development Prospects for Canada in November, the Canadian Petroleum Association (CPA) and the Independent Petroleum Association of Canada (IPAC) recommended maximum development of Canada's oil and gas reserves by the private sector and a lessening of government control in favour of market forces. Consistent policy direction from government was important because investments could take decades to pay off. Government tax and royalty structure should reward efficient companies by being linked to profit and investment returns instead of straight production, a criticism of such taxes as the Petroleum and Gas Revenue Tax. The fiscal regime should be sensitive to the various risks and costs of development. On many occasions in the past, the Canadian Petroleum Association, in particular, had called for a fiscal regime that would be supportive of the oil and gas industry in a climate of unrestricted markets. Other oil company briefs presented to the Commission at this time emphasized a non-interventionist approach on the part of government, being particularly critical of a number of measures of the National Energy Program.
Dome Petroleum's debt rescheduling plan	During November, Dome Petroleum prepared a debt rescheduling plan, issued on December 1 to representatives of its lenders and the Canadian government. Under the plan, Dome intended to sell additional non-core assets thereby reducing its debt to about \$5.7 billion; improve its capital structure through the issuance of \$700 million of equity-related securities; and continue to pay interest on all loans and repay principal in full in accordance with a fixed amortization schedule. The company's lenders were asked to extend the repayment schedules of their loans; to provide options for fixing interest rates; and to continue to make available existing operating lines of credit as well as providing a new \$200 million (U.S.) unsecured standby credit. The federal government and four Canadian banks were asked to continue to make available to the Company the support, if required, as provided for in an Agreement in Principle in September 1982, until the new plan could be put in effect. The rescheduling plan was being proposed as an alternative to the financial assistance that had been offered by the federal government and the four Canadian banks. The plan had the objective of restoring the liquidity of the Company and repaying its outstanding indebtedness of \$6.2 billion over a 10 1/2 to 12 year period. It would drop the billion-dollar convertible debenture proposal of the September 1982 Agreement in Principle that would have given the federal government and the four banks a large ownership in Dome. By the end of December, the 29 foreign and Canadian banks were resisting Dome's rescheduling plan but believed a refinancing package could be worked out.
Dome's Western LNG Project delayed	In November, Dome Petroleum decided to delay by a year its proposal to ship liquified natural gas to Japan but still hoped to commence shipments in 1987. Among other problems, it was experiencing delays in reaching agreements on the price of natural gas supplies from Alberta and B.C. producers. In March, the Japanese National Oil Corporation had refused to act as a guarantor for a \$2.4 billion loan to Dome to finance the liquified natural gas (LNG) plant at Grassy Point on the north B.C. coast to supply Japanese utilities. In May, the National Energy Board postponed until October a public hearing on the \$4 billion project at the company's request as it needed more time to file details on financing and pricing agreements with gas producers. In October, the B.C. government indicated its support of the project in principle but by November the Company was unable to complete financial and other arrangements for the pipeline, liquefaction and shipping facilities of the project.
Petrochemical	By November, it was apparent that there had been some improvement in 1983 in the prospects for

problems  
continue

some sectors of the Canadian petrochemical industry. Exports had increased and there were steady production gains for most of the key petrochemical commodities. For western Canada, the competitiveness of its ethane-based industry improved significantly as U.S. ethane prices, which had been severely depressed in 1982, remained 20-30 per cent above Alberta prices in 1983. Although the eastern Canada industry was helped somewhat by improved demand for its products, the two major oil-based olefins producers -Quebec's Pétromont and Ontario's Petrosar -- continued to be unprofitable. In spite of federal and provincial government loans and loan guarantees, the future viability of both of these primary petrochemical producers remained doubtful without substantial restructuring and further government assistance to utilize a broader range of feedstock. A Petrochemical Industry Task Force was established in June to address these various problems and was scheduled to report early in 1984 with also recommendations for a long-term policy. Several small, uneconomic plants were shut down in 1983 while two new plants in Sarnia, Ontario and two in Alberta were started up which would exert additional pressure on more of the older plants to close in a climate of highly competitive markets.

Auditor General's  
report relative to  
the NEP

In his report to Parliament in December, the Auditor General included the following comments for the fiscal year March 31, 1983 relative to the National Energy Program (NEP): 1) "In summary, the implementation of the National Energy Program was a large and difficult task done under rapidly changing circumstances and very strong time pressures". 2) "We believe that the programs have been well implemented, considering the circumstances. Further improvement in procedures is needed and much is under way". 3) "There are about 40 such programs (conservation, renewable energy and oil substitution) that were either introduced or expanded by the National Energy Program ... In our view, the challenge presented by the NEP to public servants at all levels was great. Overall, the challenge of implementation is being met." 4) "PIA is well administered overall, but some key management functions are not yet adequately performed". 5) "We examined the Petroleum Compensation Charge ... Overall, the (Oil Pricing and Compensation Programs) Branch manages its programs well. It has ensured that payments and revenues have been properly administered in the fiscal year ending 31 March 1983". In commenting further with specific reference to the Petroleum Incentives Program (PIP), the Auditor General warned that the program was open-ended because the total of grants to industry were driven by the pace of exploration activity.

Energy  
investment  
forecast to the  
year 2000

In November, a report by Merrill Lynch Canada Inc. forecast that the oil and gas industry would invest more than \$250 billion in Canada in the period 1983-2000 to develop the country's oil and gas reserves. Total energy-related investments would reach \$556 billion when petroleum product processing and manufacturing costs, coal mining, electrical utilities and pipeline investments were included. By comparison, investments in oil and gas exploration and development in Canada totalled \$54 billion between 1947 and 1983.

Canada-U.S.  
natural gas  
relations in 1983

The following extracts from a December 22, 1983 Report to the Congress on Natural Gas Imports sums up the essence of U.S.-Canada natural gas relations in 1983. The report, which also referred to natural gas trade with Mexico and Algeria, emphasized that import contracts must be responsive to changes in the American markets served so that imported natural gas is supplied to American consumers at competitive prices throughout the term of the contract.

"Since over 80% of our gas imports (783 bcf in 1982) come from Canada, U.S./Canadian gas trade is by far the most significant component of our international gas trade. Beginning in 1983, we have had a series of meetings with Canada under the aegis of the Energy Consultative Mechanism (ECM) to discuss bilateral energy trade problems, especially those related to our natural gas trade. There have also been meetings between senior U.S. and Canadian officials outside the framework of the ECM, including a meeting between Secretary of Energy Hodel and Canadian Minister of Energy Chretien. On the U.S. side, we have emphasized that this gas trade should be established on a market-sensitive basis. We believe important progress has been made toward achieving this



objective. During 1983, Canada made substantial adjustments in the form of both price and volume relief for U.S. importers and American consumers to maintain, or prevent further erosion in, Canada's share of American gas markets. These adjustments have included a 11% reduction in Canada's base export price to \$4.40 per MMBtu and the institution of a Volume-Related Incentive Price (VRIP) scheme for gas exports to the U.S., which lowers the price to \$3.40 per MMBtu for purchases exceeding 50% of contract volumes. American buyers and Canadian sellers of gas have also been negotiating short-term volumetric relief settlements."

"Further progress was achieved at the September 28 U.S./Canada Energy Consultative Mechanism meeting in Ottawa. At that meeting, the U.S. formally proposed to Canada that our two countries establish a new framework, a set of principles, designed to put our bilateral gas trade on a market-sensitive basis. We pointed out that because of regional differences in U.S. gas markets, we foresee Canadian gas exports based on buyer-seller negotiations leading to varied gas prices at the U.S./Canada border. Both sides also agreed that Canadian gas would have to be competitive in the long-term in U.S. markets. In meeting this objective Canada indicated that it may have to make further adjustments. On November 1, Canada made an adjustment by broadening its VRIP export scheme to allow U.S. purchasers to take advantage of the lower VRIP price of \$3.40 per MMBtu this winter. We also understand that discussions are taking place in Canada within the Federal Government, within the Provincial Governments of Alberta and British Columbia, and between private industry and the Federal and Provincial Governments on the possibility of further export marketing adjustments over the coming year.

The report to Congress concluded that these developments had moved the U.S. closer to a market-related trade in gas imports, although clearly more remained to be done. However, the adjustments had resulted in savings for Americans of over \$1 billion in 1983 and would result in savings in 1984 of over \$1.5 billion. Since over 80 per cent of U.S. gas imports came from Canada, these savings resulted largely from reductions in Canadian gas export prices.

Speech from the Throne

In the December 7 Speech from the Throne, the following reference was made to energy:

"Energy policy must continue to command the attention of Canadians. The framework for achieving our national goals of energy self-sufficiency and increased Canadian ownership was put in place with the passage of the National Energy Program. It now forms an integral part of the long-term planning of energy companies, large and small. Petroleum Incentive Payments, in particular, encourage both new sources of supply and enhanced Canadian ownership. The Government will continue its strong commitment to the NEP in order to ensure that our goals are reached. Legislation will also be introduced to confirm the Canada-Nova Scotia Energy Agreement -- a stimulus to new large-scale development off Canada's east coast."

OPEC \$29 oil price

In a communiqué issued on December 9, OPEC oil ministers agreed to hold the line on their \$US 29.00-a-barrel price and 17.5-million barrel-a-day production ceiling, which they had adopted in March 1983. There was a determination to tighten internal discipline to force dissident members to honour the price and production freeze despite weak world demand for oil.

Proposed Alaska LNG shipments to Japan in place of Alaska

In December, there was mounting interest in the U.S. in a proposal to ship Alaskan gas to Japan, as LNG, rather than to the lower 48 states via the proposed, but long-delayed, Alaska Highway Natural Gas Transportation System (ANGTS) for which the pre-built sections in Canada had already been completed. A dispute had arisen as to whether the U.S. was legally or morally

Highway gas pipeline	obligated to transport Alaska natural gas through the ANGTS via the pre-built sections to the lower states. Canada strongly maintained that such an obligation existed through a series of U.S. commitments implicit in laws, resolutions, agreements and correspondence on the multi-billion dollar pipeline project that had been delayed repeatedly due to a lack of financial backing. However, Yukon Pacific Corp. the company planning to ship Alaska gas as LNG to Japan, denied there was any obligation to move the gas south, and had asked Congress for an explicit statement that would squash any such obligation.
Arctic Pilot and Polar Gas Projects delayed	In December, Petro-Canada, Dome Petroleum, Melville Shipping Ltd, and NOVA, an Alberta Corporation -participants in the Arctic Pilot Project (APP) - asked the National Energy Board to withhold hearings for 18-months on their proposal to move natural gas as LNG from the Arctic Islands pending development of possible markets in Europe. The hearings had been adjourned by the NEB until the market issue was resolved. The APP hearings before the NEB had commenced on February 2, 1982 and were adjourned on August 31, 1982. On June 8, 1982 NEB directed the APP to submit views by December on the future status of the proceedings and the sponsors submitted it would be in the public interest to maintain the status of the hearings. The Polar Gas Consortium (Tenneco Inc., Panarctic Oils Limited, Ontario Energy Corporation and Petro-Canada) announced in December the intention to apply to the NEB and the Department of Indian and Northern Affairs in 1984 to construct a natural gas pipeline through the Mackenzie Valley from the Beaufort Sea-Mackenzie Delta area to Edmonton over a 2122 km route. Cost of the project was estimated at \$6.1 billion (\$1982). Initially, in December 1977, Polar Gas had applied to the NEB to build a gas pipeline from the Arctic Islands southward along the west side of Hudson Bay to join the TransCanada system at Longlac in northern Ontario.
Changing NORP differentials; NORP for infill wells	On December 22, announcement was made of changes in the New Oil Reference Price (NORP) effective January 1, 1984. A revised method of calculating NORP prices was to be implemented based on results of an extensive review of the method for determining the prices of different qualities of NORP Oil. The review had followed from a commitment made on June 30 when the Amendment to the Canada/Alberta Memorandum on Energy Pricing and Taxation was announced. The objective of this change was to achieve conformity between Canada's new oil prices and the prices of comparable foreign crudes. New oil prices in any month would now be based on prices of equivalent quality foreign crudes during the previous month as compared at Montreal. The change eliminated two problems associated with NORP. By moving away from the use of an average price, it ensured that NORP prices would be more in line with foreign prices. The revised method also did away with the four-to-six month delay involved before foreign prices could affect NORP prices received by domestic producers. The changes announced in December also made provision for the NORP to be extended to oil produced from infill wells drilled within pool boundaries on reduced spacing where it could be demonstrated there would be incremental production. This provision was designed to enhance the recovery of oil from reserves that would not otherwise be produced without the world price.
Canada Lands exploration in 1983 at a high level	Exploration in the Canada Lands was at a comparatively high level in 1983, based on the record to the end of December. A total of 33 exploratory wells were completed: 17 offshore the Atlantic coast, 3 in the Beaufort Sea, 4 on the Arctic Islands and 4 offshore in that region, 2 in the MacKenzie Delta region, and 3 in the MacKenzie Valley south of the Delta. A total of five discoveries were made: 3 gas discoveries off the Atlantic coast, and 1 oil and gas discovery in the Beaufort Sea and one in the offshore from the Arctic Islands. As in 1982, none of the discoveries appeared to have added significant amounts to Canada's inventory of discovered oil and gas resources.

## THE YEAR 1984

Revised NORP System	<p>Effective January 1, a revised system for the New Oil Reference Price (NORP) came into effect. Since the inception of the NORP program in January 1982, the international price had served as the NORP because of the flat world crude prices in 1982 and falling prices in 1983 and because, in terms of the September 1981 Memorandum of Agreement between the governments of Canada and Alberta, NORP was never to exceed the international price. In the NORP program, in each month the average price of imports into Montreal in the fourth, fifth and sixth previous months was the basis for all NORP prices. Prices for crudes whose quality was other than the average import quality were determined using NORP quality differentials which were applied to the average price to yield an entire set of prices, one for each quality level. Because the premium or discount, implied for a crude of 38° API versus 37° API was exactly the same as for a crude of 24° API versus 23° API, discrepancies arose between NORP prices and international prices due to the fact that premiums, or discounts, in the international market did not follow such a pattern. The fact that NORP prices were based on Montreal imports that left their country of origin four to six months earlier introduced a severe time lag problem. Furthermore, domestic NORP production was concentrated where NORP prices exceeded international prices - at the heavy and very light ends. Consequently, the consumer was compensating the producer by an amount that could have exceeded \$175 million in 1984 if left unchanged. After extensive consultation with industry and the provinces, the federal government decided to abandon a formula approach and to proceed on the basis of setting NORP prices of particular qualities of crude in any month directly equal to the actual prices of foreign crudes of equivalent qualities in the previous month. The revised NORP price system provided for the effective elimination of the time lag; greater comparability between NORP and foreign crudes; a condition in which NORP prices would change as foreign crude prices (or exchange rates and transportation costs) changed, not when extraneous factors fluctuated; and a regime in which NORP prices would be based on 52 crudes from 17 different countries compared to as few as three crudes from two countries under the former system</p>
Alberta Energy Resources Conservation Board 25-year forecast - oil sands to offset deficit	<p>In January, the Alberta Energy Resources Conservation Board forecast that declines in the productive capacity of crude oil from conventional sources in Alberta during the next 25 years would be more than offset by a major increase in synthetic oil production. Productive capacity from all sources would drop to 1.08 million barrels a day by 1990 from 1.3 million b/d in 1983, despite new discoveries and tertiary recovery projects. By the year 2007, productive capacity would be 1.35 million b/d, assuming that synthetic oil production from scaled-down oil sands plants in the construction or planning stages in the early 1980s, increased to 875,000 b/d from the 1983 level of 157,000 b/d.</p>
Oil shortage by 1990 unless tax provisions changed	<p>In January, Gulf Canada Ltd. forecast that unless new petroleum sources were found, Canada could be back in a critical supply situation by 1990, with a daily shortfall of some 200,000 to 400,000 barrels. This prediction was made in the context of the company's contention that the federal government should change both its method of taxing oil companies and of making grants available to companies exploring for oil in frontier regions in order to encourage new oil development.</p>
Oil self-sufficiency in 1983 - first since 1974	<p>The record available in January 1984 showed that exports of Canadian crude oil in 1983 exceeded imports for the first time since 1974. The oil trade deficit in 1982 of \$2.26 billion turned into a surplus in 1983 of \$183 million as a result of increased exports.</p>
Nuclear capacity forecast to year 2000	<p>In January, records available from the International Atomic Energy Agency (IAEA) showed that at year-end 1983, there were 209 nuclear reactors with a combined capacity of 194 GWe under construction throughout the world to add to the output of the existing 317 reactors which had a combined capacity of 191 GWe in 25 countries. The IAEA forecast that the total world installed nuclear capacity would amount to 275 GWe by 1985 and would grow to between 370 and 400 GWe by 1990, and to between 580 and 850 GWe by the year 2000. In Canada, there were 18 nuclear power reactors licenced to operate at the end of 1984, with a total capacity of 10.7 GWe.</p>

Canadian  
Ownership  
Special Charge  
to be used for  
other purposes

In January, the federal government indicated its intention of using revenues from the Canadian Ownership Special Charge (COSC) for other purposes now that its initial purpose of increasing Canadian ownership within the petroleum industry through the purchase of Petrofina Canada Ltd. had been accomplished. The legitimacy of this tax was debated several times in Parliament in the early months of 1984 in the context of the gasoline pricing issues.

Pickering nuclear  
reactor leaks

In January, two tubes at Ontario Hydro's Pickering 1 station were found to have blisters similar to those discovered in August 1983 at Pickering 2. The blisters were in an area that had been sagging against the calandria tube for some time. The reactor was shut down and tubes were removed for examination. It was decided to retube Pickering Units 1 and 2, which had been in service for more than a decade, rather than wait till the 1990s as had been originally planned. The alloy chosen as a replacement was ZR-2.5% Nb, the one used in all CANDU reactors after Pickering 1 and 2. The cost estimate for the retubing was \$700 million. There were three contributing factors to the tube malfunction: unexpectedly high corrosion of the inside of the Zircaloy pressure tube in contact with the heavy water coolant and resultant high uptake of released deuterium by the underlying metal late in tube life; precipitation of ZR deuteride platelets within the alloy leading to loss in defect resistance; and displacement of one of "the garter" springs separating the hot pressure tube from the surrounding calandria tube so that the former was able to sag in contact with the latter after several years of operation, resulting in cold spots on the pressure tube with deuterium diffusing to the lower temperature area in the zirconium alloy and precipitating as brittle zirconium blisters. Research had indicated that these three factors would be much less important with the use of the new Zr-Nb alloy pressure tube. The replacement work was scheduled to be completed by October 1986.

Oil and gas  
resource  
appraisal by GSC

In January, the Geological Survey of Canada (GSC) released its latest estimates of Canada's petroleum resources. For the country as a whole, conventional oil resources, at a 50 per cent probability, were estimated at 5,893 million cubic metres, compared to a 1976 estimate of 4,770 m<sup>3</sup>. These estimates included reserves and potential resources but did not include the oil sands of western Canada. Natural gas resources were estimated at 12,522 billion cubic metres. Four regions account for most of the country's oil and gas resources:

	Oil (million m <sup>3</sup> )	Natural Gas (billion m <sup>3</sup> )
Western Canada Sedimentary Basin	1,347	4,615
Eastern Offshore Region	2,102	2,669
Beaufort Sea - Mackenzie Delta	1,464	2,151
Arctic Islands Region	762	2,618
Cordilleran Basin	50	270
Eastern Canada	168	199
	5,893	12,522

The reserves and discovered oil resources constituted 20 per cent of the total discovered and potential oil resource, and the reserves and discovered gas resources, 24 per cent of the total gas resource. While the potential resource is large, it remains potential until it is discovered and can be marketed under existing economic conditions. The remaining established reserves of synthetic crude oil in the oil sands were considered to be in the order of 3,860 million cubic metres, and the potential from enhanced oil recovery in Western Canada, 500 million m<sup>3</sup>, both additional to the estimates in the above tabulation and both subject to considerable uncertainty as to costs and technology.

Consolidation c  
conservation  
programs -  
ENERDEMO,

In January, two conservation and renewable energy programs operating under agreements with the provinces were replaced by more comprehensive federal programs. The Conservation and Renewable Energy Demonstration Agreements (CREDAs) were replaced by ENERDEMO-Canada, a new five-year national program encompassing activities such as the

NEAP	Remote Community Demonstration Program (RCDP) and the existing ENERDEMO program in Quebec, and having an \$80-million budget. The National Energy Audit Program (NEAP), providing on-site energy audits and consulting advice grants to business firms and institutions was replaced by a new energy audit program, providing energy information and advice, but more fully integrated with other related federal initiatives. NEAP was an extension of the National Energy Bus Program implemented in 1978. There was need of more uniform delivery of these several programs across Canada and a better integration of the services on a national basis.
Key Lake uranium mine contaminated water spill	In January, a spill of about 60 million litres of low-level radioactive water from a reservoir at the Key Lake uranium mine in northern Saskatchewan took place. The Key Lake operation officially opened in June and, upon achieving its annual design output level, would become the world's largest uranium production centre.- The spill was contained by dykes set up to keep any contaminated waters out of nearby lakes. However, considerable attention was given to the matter in Parliament with questions as to the cause of the accident, clean-up procedures, contingency planning, and specifics regarding federal licencing of uranium mines. There was also debate over the matter of federal-provincial jurisdiction and whether there was evidence that federal regulations, under the Atomic Energy Control Act, had been violated.
Romanian CANDU contract	In January, two Canadian engineering contractors, selected to supply \$70 million in components for two CANDU reactors for Romania, signed counter-trade agreements. Romania had specified that any Canadian companies winning contracts would have to take Romanian goods of equal value and sell them on the domestic market. It rejected a proposal that a Japanese trading company handle the goods on behalf of Canadian industry on the world market. In August 1983, Atomic Energy of Canada Limited had announced that manufacturing orders would commence on the two-unit CANDU station in Romania.
Canada/U.S. cooperation on oil sands research	At a meeting held in Ottawa on January 26, officials of U.S. and Canada agencies agreed to extend by five years the term of a Memorandum of Understanding for Cooperation in R&D on Oil Sands and Heavy Oil that had been initially signed in 1979. The U.S. had been participating through its Department of Energy, and Canada through EMR (CANMET), the Alberta Oil Sands Research Authority, and the Saskatchewan Department of Energy and Mines. During the first five years of the program, emphasis had been given to resource characteristics and analysis of oil sands and heavy oils; steam injection enhancement by additives; technical information exchange; remote sensing of underground heat and fluid movements; and demonstration of U.S. technology for down-hole steam generation.
Canadian Environmental Assessment Research Council	On January 31, the federal Minister of the Environment announced the creation of the Canadian Environmental Assessment Research Council (CEARC) to review and comment on the needs and adequacy of research related to environmental assessment and its contribution to planning and development in Canada. The Council was to report to the Executive Chairman of the Federal Environmental Assessment Review Office (FEARO) and have twelve members appointed for a rotating two year term. Interest in improving the scientific and technical bases for environmental review, especially within the context of the Environmental Assessment Review Process (EARP), was generated by the publication in 1983 of a report entitled "An Ecological Framework for Environmental Impact Assessment in Canada". The creation of the CEARC was in fact, the implementation of one of the recommendations contained in that report. This initiative was also a partial response to criticism of EARP reviews over the years regarding the lack of scientific quality and systematic approach in dealing with the environmental aspects of federal initiatives, including many energy-related activities - particularly in the frontier.
Polar Continental Shelf Project	In January, assessments of the Polar Continental Shelf Project (PCSP) 1983 field season were being finalized preparatory to the 1984 season. More than 170 scientific parties were supported by the PCSP in the Arctic Islands and the mainland coastal area in 1983, the greatest number of parties in the field in one season since the establishment of the PCSP in 1958. The largest project in 1983 was the Canadian Expedition to Survey the Alpha Ridge (CESAR), with its camp located on

the icepack in the Arctic Ocean as a follow up to LOREX (Lomonosov Ridge Experiment) of 1979. Some 40 scientists and technicians spent almost two months on the ice, representative of many scientific disciplines, but with emphasis on geological and geophysical research into the origin of the Alpha Ridge. Plans were also being made early in 1984 to establish a Canadian scientific station on an ice island in the Arctic Ocean. However, these plans had to be set aside in April until 1985 because of weather-related delays. All of the PCSP and related field studies have a relevance to oil and gas and other resource development plans and activities in the Arctic. Interest in this research was steadily increasing in the 1980s, with 200 scientific parties planned for 1984.

Natural gas prices maintained at 65 per cent of the oil price

On February 1, several changes in the component prices comprising the wholesale price of Alberta natural gas sold in trans-provincial trade came into effect. The changes offset each other, and gas prices remained stable. Since the September 1, 1981 Canada/Alberta agreement, amended in June 1983, the wholesale price of gas had been maintained at a price level of 65 per cent of the price of crude oil at the refinery gate for gas sold in provinces east of Alberta, with the price ratio being set in the most eastern domestic market area - the Eastern Zone, stretching from southwestern Ontario to Quebec City, there being an even more attractive gas/oil price relationship in the more westerly markets. The 65 per cent ratio had been maintained by the federal government by adjustment of the Natural Gas and Gas Liquids Tax (NGGLT). In anticipation of the tax reaching zero, the 1983 agreement provided for continued maintenance of the price relationship through adjustment of the price of gas at the Alberta/Saskatchewan border and the tax change of February 1, 1984 reflected the commitment of the federal and Alberta governments to the 65 per cent ratio. The changes that took place included a drop in the price of gas in the Eastern Zone from \$3.861 to \$3.858 per gigajoule, a rise in the Alberta border price by \$0.156 per gigajoule to \$2.79, and a decline in the NGGLT from 15 cents per gigajoule to zero. The Alberta border price increase was less than the scheduled \$0.233 set out in September 1981 but increased Alberta producers' revenues by \$160 million per year.

Canada Saskatchewan Heavy Oil R, D & D Program

On February 3, the federal and Saskatchewan governments announced a five-year agreement directed towards the development and use of Saskatchewan's fossil-fuel resources. The Heavy Oil/Fossil Fuels Research, Development and Demonstration Program was to be funded equally by the two governments, with each contributing \$15 million over the period 1984-1988, with an option to extend it beyond March 1988. Emphasis would be given to research, development and demonstration (RD&D) of new technologies to promote the recovery and utilization of Saskatchewan's fossil-fuel resources, with particular attention to heavy oil. The Program was to be administered by the Saskatchewan government under the direction of a federal-provincial management committee composed of two representatives from the Saskatchewan Department of Energy and Mines and two from the federal Department of Energy, Mines and Resources. The program would focus on an R&D laboratory program to support applied research and development projects in various research agencies, and a development program to support field demonstrations, pilot projects, and other projects involving the industry. The Heavy Oil/Fossil Fuels R, D and D Program was based on the Canada/Saskatchewan agreement of October, 1981 covering a wide range of provisions, including oil pricing, a plan for heavy crude oil facilities, and the adjustment of Saskatchewan's royalty and tax regimes.

NewGrade Inc. -federal/ Sask. management agreement for a heavy oil upgrading plant

On February 3, the federal and Saskatchewan governments announced arrangements for the management of a Saskatchewan heavy oil upgrading plant to be owned and operated by NewGrade Energy Inc., a joint creation of the Government of Canada, the Government of Saskatchewan and the Consumers' Cooperative Refineries Limited (CCRL), a wholly-owned subsidiary of Federated Co-operatives Limited (FCL). The proposed upgrader would require an investment of up to \$600 million and was to be linked to CCRL's Regina refinery. Under terms of the agreement, as first announced in August 1983, the federal government would fund 40 per cent of the cost of Phase One of the project up to a maximum of \$6 million, and would provide loan guarantees for up to 35 per cent of the cost of the upgrader, with Saskatchewan providing similar loan guarantees and, in addition, taking an equity position. A decision to proceed with the upgrader would depend on results of feasibility studies undertaken in Phase One.

Federal budget suspends IORT for third time	In his February 15 budget, the Minister of Finance announced suspension of the Incremental Oil Revenue Tax (IORT) for the third time, at a total estimated cost to the federal treasury of \$195 million. The suspension was designed to encourage oil companies who were high cashflow reinvestors. The tax was suspended until June 1, 1985. It was to apply to oil discovered prior to 1981, and be payable at a rate of 50 per cent of revenues from oil prices exceeding those scheduled under the NEP after allowing a deduction of federal levies. The Energy Update of May 1982 had suspended the IORT from June 1, 1982 to May 31, 1983, and the April 19, 1983 Budget had provided for a further suspension to May 31, 1984.
Elk Point oil sands project follows Cold Lake and Wolf Lake in Alberta	On February 27, federal-Alberta agreement was reached with Amoco Canada Petroleum Company Ltd. on fiscal and royalty terms for the company's proposed oil sands recovery project at Elk Point, 165 km east of Edmonton. Alberta was to provide for reduced royalty payments until capital costs had been recovered by Amoco, and the federal government was to provide earned depletion allowance and relief from the Petroleum and Gas Revenue Tax (PGRT) as incorporated in the April 1983 budget, and the New Oil Reference Price, essentially the world price, for Elk Point oil. It was expected that the project, along with the Wolf Lake and Cold Lake projects begun in 1983, would help stimulate energy resource development in Alberta. After the first phase of the Elk Point project was completed, at an estimated cost of \$50 million, further work would depend on technical and economic assessments which, if favourable, could lead to expenditures of some \$1.8 billion and the drilling of more than 1000 wells providing for peak production of 4200 cubic metres (26,000 barrels) per day by 1995.
Petrochemical Task Force Report and government response	On February 6, the Petrochemical Industry Task Force submitted its report to the federal government after seven months of study and appraisal as to the future of the industry. The intention to establish the Task Force had been announced in March 1983 at the time an offer of \$50 million in loans and loan guarantees was made by the federal, Québec and Ontario governments to eastern oil-based petrochemical producers (Petromont in Montreal and Petrosar in Sarnia). The Task Force contended that energy pricing policy did not allow Canadian oil and gas prices to respond to the fall in world prices thus making much of the industry uncompetitive during the recessionary period of the early 1980s. Among the Task Force's 15 recommendations was one calling for reductions in the price of industrial gas feedstocks of 15 per cent to save the industry some \$150 million a year. The gas price reduction proposal was not well received in Alberta. The Task Force had attempted to design proposals that would allow both the oil-based and the gas-based petrochemical industries to return to profitability and to resume their growth. The federal government released its response to the Task Force report in June and concurred in the conclusion that, since feedstocks represented up to 70 per cent of production costs, they must be recognized as the critical element in determining the industry's competitive position. It also appeared that further growth in the industry would be gas-based because of Canada's strong gas supply position. The oil-based industry in eastern Canada expressed disappointment with the federal response to the Task Force report. There were calls for a reduction in taxes in both the oil- and gas-based sectors of the industry, and the government was blamed for the proposed closure of the Pétromont plant because it had declined to take a stand on incentive pricing for oil and gas in the manner suggested by the Task Force. In September, the federal and Quebec governments made an offer of \$30 million to Petromont and Union Carbide to offset expected operating losses over the following six months, with the two governments to share equally in this support program. Further initiatives remained pending at the end of the year awaiting the outcome of federal/provincial oil and gas pricing discussions.
Super Energy Efficient Homes Program extended 7 years	In February, the Super Energy-Efficient Home Program (SEE) was extended for a further seven years with a new budget of \$50 million. The federal government believed that additional work was needed to refine and transfer the cost-effective energy-saving construction techniques for R-2000 standards to the entire building industry. In addition to the 300 builders who had received subsidies for building R-2000 homes, another 120 builders were trained in the design, construction and marketing of energy-efficient housing. The R-2000 homes were designed to reduce space-heating costs by 60-80 per cent and hot water and appliance energy costs by up to 50 per cent.

Japan withdraws from Dome's Beaufort Sea program	On February 21, the Japanese government announced it was withdrawing all official backing of Dome Petroleum's Beaufort Sea project because of its doubts of the possibilities of discovering commercial sources of oil. In response, Dome reported a =400 million loan had been made available by the Arctic Petroleum Corporation of Japan (APC) in 1981 and this had been fully spent prior to 1983 in accordance with the agreement. No other Japanese funds had since been involved in Beaufort Sea exploration which in Dome's case was being funded by farm-out arrangements with third parties. After Japan's announced withdrawal, there were calls in Parliament for the federal government to withhold PIP funding in the Beaufort Sea region until there had been a clarification of the Japanese claims that were was no oil in the region.
Medicine Hat Court challenge re. PGRT and NGGLT	t On February 16, the Court of Queens, Bench of Alberta handed down a final judgement concerning a case in which the city of Medicine Hat, Alberta, had sought a declaratory judgement on the basis that the Natural Gas and Gas Liquids Tax (NGGLT) could not be levied on the city in its capacity as a distributor of natural gas because the tax was <i>ultra vires</i> the federal government insofar as it applied to the city. The Court ruled that the NGGLT and the Petroleum and Gas Revenue Tax (PGRT) were not ultra vices in their application to Medicine Hat. Medicine Hat's natural gas and electrical generation operations were found to fall under the category of municipal activities conducted-at its own discretion and not as an agent of the provincial government and, therefore, the city was not immune from federal taxation. The taxes were not found to impair the financial integrity of the city, nor was the federal legislation found to have weakened Alberta's ability to legislate with respect to municipal institutions.
Husky oil upgrade on hold	In February, Husky Oil officials met with federal and Alberta officials concerning fiscal and royalty terms for the company's proposed heavy oil upgrader plant for the Lloydminster area but failed to reach an agreement. By mid-1987, the company was still negotiating government support for its proposed 50,000 barrel-a-day upgrader.
Northern Oil and Gas Action Program (NOGAP)	On February 22, the Minister of Indian and Northern Affairs announced a seven-year, \$130 million planning and research program as the cornerstone of the federal government's northern hydrocarbon development strategy. The Northern Oil and Gas Action Program (NOGAP) was designed to provide the knowledge necessary to respond to various proposals concerning oil and gas resource development in the north. Proposed activities for NOGAP were based on the assumption that oil would be transported either by a small diameter pipeline up the Mackenzie Valley or by tanker through the Northwest Passage. All government departments having responsibilities relative to northern Canada would be participants in NOGAP, with the program's overall management residing in the Department of Indian and Northern Affairs.
U.S. Gas Import Guidelines directed against Canadian gas	On February 16, a U.S. government policy was announced which included guidelines emphasizing three main considerations in determining whether a proposed natural gas import proposal met the public interest test of Section 3 of the Natural Gas Act: the competitiveness of the import, the need for the imported gas, and the security of the imported supply. Importers were required to report to U.S. Economic Regulatory Authority (ERA) by April 16 concerning the conditions of their gas import contracts with Canadian suppliers in relation to these guidelines and the majority responded that their contracts did not conform to the new guidelines with respect to market responsive pricing provisions. A central tenet of the new U.S. policy was that the market, not the government, should determine the price and other contract terms for imported gas. In commenting on this policy, the Canadian Minister of State, Finance, in an address in New York in May, observed that Canada was already committed to a long-term pricing relationship that balanced the needs of producers and consumers but he expressed the hope that the U.S. Administration would, in the short term, show the same kind of flexibility in administering the guidelines that Canada had demonstrated over the previous year in its natural gas export pricing. Through May and June, U.S. importers continued to report to the ERA that there was room for making the contracts with Canadian gas suppliers more market sensitive, and Canadian exporters were experiencing difficulties with a U.S. Federal Energy Regulatory Commission rule-making which was adversely affecting many gas contracts.



Dome's debt rescheduling problems	In February, Dome Petroleum was continuing negotiations with its lenders following its failure to obtain backers by January 31 for its refinancing proposal as announced in December 1983. Dome was asking its creditors to reschedule its \$6.2 billion debt over a 10-12 year period. Later in the year, by October 5, the company was to have finished marketing its equity issue, which was crucial to its debt rescheduling plan, but falling international oil prices were impacting negatively on it and the company's 54 lenders agreed to extend the deadlines to February 5, 1985.
Canada-U.S. energy relations in an uncertain world energy economy	In the context of Canada's continuing close and sometime difficult energy relations with the U.S., a Department of Energy, Mines and Resources paper prepared for presentation at a February 21 conference of engineers and economists associated with the Tennessee Valley Authority reviewed the existing global energy situation and focussed on its implications for Canada and the U.S. Three recommendations were made relative to more effective approaches by the two countries to bilateral energy relations and to energy planning within each country in an atmosphere of great international uncertainty. Canada and U.S. should strive for a consensus concerning the appropriate roles of government and industry. Secondly, the two countries should make better use of existing institutions to explore the opportunity for bilateral energy trade. Thirdly, Canada and the U.S. should extend their search for common purposes beyond North America through the International Energy Agency and agencies concerned with the developing countries. In particular, Canada and the U.S. have the financial and technical resources to assist developing countries and thereby promote world diversification of energy supply.
CHIP grants 1977-1984 totalled ;810 million; eligibility increased	Effective March 1, more than 1.3 million additional homes became eligible for grants under the Canadian Home Insulation Program (CHIP) as a result of moving the qualifying date forward to September 1, 1977. All homes built before that date became eligible, the previous date having been January 1, 1971. Taxable grants of up to \$500 were available for 60 per cent of the combined material and labour costs for improvements completed by a contractor listed with the Canadian General Standards Board. CHIP was initiated in 1977 with the objective of reducing space heating requirements of existing dwellings by 30 per cent, in 70 per cent of the pre-1977 housing stock. In the period 1977 through to February 1984, the federal government had provided 2.1 million grants totalling \$810 million.
Ocean Ranger hearings completed	After 18 months of hearings and 14,000 pages of testimony from 104 witnesses, the formal public hearings of the Ocean Ranger inquiry were completed in March. The Ocean Ranger drilling rig sank in a storm off the Newfoundland coast on February 15, 1982 with the loss of 84 lives. The report of the Royal Commission was submitted later in the year, in August.
Come-By-Chance refinery	In March, Petro-Canada decided to dismantle the mothballed oil refinery at Come-by-Chance, Newfoundland unless a buyer could be found by the end of the year. The refinery went bankrupt in March 1976 after operating for only 28 months. Petro-Canada bought it from its receivers in 1981. Surplus refinery capacity, worldwide, and the unsuitability of the refinery for medium and light crudes appeared to rule out its use in the foreseeable future. The refinery cost \$250 million to construct in the early 1970s. In mid-1987 a new owner, Newfoundland Energy Ltd, was preparing to operate the refinery.
Uranium resources in Canada	In March, EMR published its report "Uranium in Canada:1982 Assessment of Supply and Requirements". Uranium resources were shown to have remained essentially unchanged from the 1980 estimates. Total resources in the measured, indicated and inferred categories amounted to 573,000 tonnes of uranium. Only about 10 per cent of that uranium would be required for the domestic market over the following 30 years to fuel more than 15,000 megawatts of nuclear power capacity in operation or committed for operation in Canada by 1993. Canadian producers shipped 7643 tonnes of uranium valued at \$838 million in 1982. As of January 1, 1983, outstanding uranium export commitments amounted to 60,000 tonnes, about 10 per cent of the country's known resources of uranium. The 1982 report was the eighth in a series that had been published regularly since the establishment in 1974 of the Uranium Resources Appraisal Group (URAG) in EMR. The first seven reports (1974 through 1980) had been released on an annual basis. This eighth report

marked the beginning of a biennial publishing schedule.

Conservation and Renewable Energy offices after three years of operation

In March, the twelve Conservation and Renewable Energy Offices (CREOs) across Canada completed their third year of operation. In that period they broadened their scope of activities in their support of the delivery of EMR's conservation and renewable energy programs. The two operational components of the CREO staffs were the Service to the Public (STP) unit and the Energy Project Management Unit (EPM). In addition, the recent establishment of a management information system enabled the CREOs to provide up-to-date progress reports to program authorities in Ottawa and to improve performance tracking abilities for the various conservation and renewable energy programs they were helping to implement and monitor in the provinces and territories.

Natural Gas Fuelling Station Program

In March, the first federal government payments to private industry under a program to promote development of a natural gas retail network for vehicles were announced. A total of 29 firms across Canada were receiving support under terms of the Natural Gas Fuelling Station Contribution Program. Up to \$40,000 was payable as a grant towards the capital cost of a fuelling station. In early 1984, over 1000 vehicles in Canada were powered by natural gas, most of them operating as fleet vehicles in service industries and the taxi business.

Supreme Court of Canada decision on the Newfoundland offshore jurisdiction issue

On March 8, the Supreme Court of Canada ruled on the federal reference of May 19, 1982 concerning resource ownership and jurisdiction over the Hibernia oil field area. The Court ruled unanimously that Canada, and not Newfoundland, had the right to explore and exploit the mineral and natural resources of the area, and had legislative jurisdiction to make laws in relation to exploration and exploitation of those resources. After the decision, there were calls in Parliament for the settlement of the outstanding political issues blocking an offshore agreement and requests that the federal government promptly resume negotiations with Newfoundland. In April, the Premier of Newfoundland embarked on a cross-country speaking tour to seek public support for a "moral" claim to offshore jurisdiction. In a statement in St. John's on April 5, the Minister of EMR set out details of the federal offer, claiming that it would ensure that for a long time the provincial government would receive more revenue from the offshore resources than if they were provincial resources on land. The management provisions included the establishment of a joint offshore board, with the federal Minister having the authority to resolve any controversies that might arise. In his public statements in April and May, the Premier of Newfoundland maintained that Newfoundland, without ownership of the Hibernia oil resources, would not benefit in the long-term financially from those resources, and he called for a constitutional amendment that would transfer control over the offshore to the adjacent provinces. The matter was not settled until after a new federal government had come to power in September.

NEB approach to the regulation of pipeline tolls and tariffs

In March, as one of a series of information bulletins on its activities and procedures, the National Energy Board published a bulletin entitled "The Board's Approach on the Regulation of Tolls and Tariffs Under Part IV of the NEB Act". The bulletin provides a description of the Board's philosophy concerning its important function of regulating the tolls and tariffs charged by pipeline companies for the transportation of oil and gas interprovincially, internationally, and from offshore areas. Under Part IV of the NEB Act, the Board has the responsibility of ensuring that tolls charged by pipeline companies under its jurisdiction are just and reasonable, and that there is no unjust discrimination in the tolls charged or service provided.

No decision on a second Lepreau nuclear reactor

Consideration had been given for sometime to the possibility of a second nuclear reactor for Point Lepreau, N.B. but, in March, Maritime Nuclear, the company established by the New Brunswick Electric Power Commission and Atomic Energy of Canada Limited to study the feasibility of a second reactor, concluded that there were still a number of hurdles to be cleared before a decision could be made. They related in particular to negotiations of sales contracts for the power, financing of the project, and arrangements to guarantee labour stability.

Market

As a result of the September 1, 1981 Canada/Alberta Agreement on Energy Pricing and Taxation

Development Incentive Payments (MDIP) April/82 March/84 for DSEP, ICAP; GMAP and CNG	and the subsequent Agreement on Gas Pricing and Market Development Payments of November 25, 1981, the Province of Alberta undertook in March to make Market Development Incentive Payments (MDIP) to the federal government for the purpose of encouraging the expansion of natural gas markets in provinces east of Alberta. The program was to extend from November 1981 to January 1987. Four federal programs were funded, in part, from MDIP receipts: the Distribution System Expansion Program (DSEP); the Industrial Conversion Assistance Program (ICAP); the Gas Marketing Assistance Program (GMAP); and the Compressed Natural Gas (CNG) Fuelling Station and Vehicle Conversion Programs. The value of the Alberta incentive payments was determined in terms of the product of 309. of the Alberta Border Price and the quantity of 'new gas' purchased for domestic markets east of Alberta, new gas sales being those in excess of a base quantity established for a given period. MDIP earnings in the period November 1, 1981 to October 31, 1983 were \$31.7 million. A further \$14.0 million was earned by March 31, 1984. Program expenditures in fiscal 1982/83 were \$33.8 million and in 1983/84, \$82.1 million for the above noted programs - DSEP, ICAP, GMAP, and CNG, with the federal government making up the \$5.3 million deficit in 1982/83 and the \$70.1 million deficit in 1983/84.
Canadian Ownership Special Charge -Ownership Account	As of March 31, 1984, the total amount drawn from the Canadian Ownership Account was \$1.65 billion. The only investment that had been financed out of the account was the acquisition of Petrofina Canada Inc. by Petro-Canada. The \$1.65 billion withdrawal was made up of the acquisition costs of 95 per cent of the shares and the related interim financing costs. Funds to acquire the remaining 5 per cent of the Petrofina shares were provided by Petro-Canada. A distinct account was set up in the Public Accounts of Canada over the authority of Energy, Mines and Resources Vote 5C, Appropriation Act No. 4, 1980/81 when the Canadian Ownership Special Charge (COSC) was introduced as part of the NEP in October 1981 for the purpose of financing investments or property acquisitions to increase Canadian ownership of the oil and gas industry. The method of operating the account was clarified in June 1982 by Section 65-61 of the Act to amend the Petroleum Administration Act SC-1980-81-82 C-114. COSC was set, retroactive to May 1, 1981, at \$7.25 per cubic metre (0.8 cents per litre) on all oil processed or used domestically (including imported petroleum and petroleum products), at 0.14 cents per gigajoule on pipeline gas, at \$2.00 per cubic metre for ethane and at \$3.55 per cubic metre for propane and \$3.95 for butane. The total Levies collected to March 31, 1984 were \$2.48 billion (\$786.5 million in fiscal 1981/82, \$889.1 million in fiscal 1982/83, and \$804.5 million in fiscal 1983/84).
Propane Vehicle Program extended to all propane vehicles	Effective April 1, federal government assistance was provided, in the form of taxable grants up to \$400, to owners of private non-commercial vehicles wishing to convert their vehicles to a propane fuel system. The Propane Vehicle Program, introduced in June 1981, had previously been restricted to commercial and farm vehicles. The revised program also covered dual propane and gasoline systems. At this time, there were about 60,000 propane-powered vehicles in Canada and over 5,000 propane fueling stations. A target of 100,000 vehicles had been set for the end of 1985. The cost of converting a vehicle to a propane system ranged upwards from about \$1,200. By using propane, which was little more than one half the cost per litre of gasoline, a saving on 5,000 litres of fuel would amount to about \$950 a year. About 10,000 of the 21,000 cubic metres per day of propane produced in Canada in 1984 were used in the domestic market, mostly for petrochemical feed stock and home heating. The rest was being exported. There was a supply potential to meet up to 10 per cent of the country's transportation gasoline requirements.
Canada/B.C. Agreement of Sept. 1981 on pricing amended	In April, the Governments of Canada and British Columbia completed negotiations leading to amendment of the September 24, 1981 Agreement covering petroleum pricing through to 1986. The amendments applied to the period July 1 1983 to December 31, 1984. Oil from infill wells and production that previously received the Special Old Oil Price (SOOP) were to receive the New Oil Reference Price (NOR), essentially the world price. There was also agreement on the revised method of calculating NORP quality differentials, to ensure that the price for oil of a particular quality did not exceed the price in Montreal for international oil of equivalent quality. The amendments for B.C. followed similar agreements with Alberta in June 1983 and Saskatchewan in October 1983.

Canadian Safeguards Support Program extended to 1989	In April, the Atomic Energy Control Board (AECB) and Atomic Energy of Canada Limited (AECL) announced that the Canadian Safeguards Support Program would be continued until 1989, with a total of \$15.5 million in federal funding. The Canadian government had consistently and strongly supported the safeguards system of the International Atomic Energy Agency (IAEA) since the establishment of the Agency in 1957. The safeguards system had been designed to ensure that all nuclear materials were not used in such a way as to further any military purpose.
Natural gas markets industrial incentives	In April, the Government of Canada and Alberta agreed on an incentive plan designed to maintain and expand natural gas sales in domestic industrial markets. The three-year plan, effective May 1, 1984, included two components: one relating to load retention to protect existing industrial markets; and the other relating to load development, aimed at fostering increased use of natural gas. A discount of \$0.35/GJ was to apply to all gas purchases by eligible industrial customers which exceeded 75 per cent of their "base" quantity in a given year. The base was to be equal to the average of 1982 and 1983 gas purchases, or 100,000 GJ/annum, whichever was greater. The two governments, as well as producers, were to share the costs of the rebate. In addition, the federal government agreed to curtail its revenues from Market Development Incentives Payments (MDIP) in a manner determined by annual agreement (see note for March 1984 on MDIP).
Petro-Canada's 1983 annual report	Petro-Canada issued its annual report for 1983 in April 1984 which recorded funds from operations of \$676 million, up 35 per cent from 1982. After deducting preferred share dividends, funds available for re-investment and debt retirement rose 55 per cent to \$590 million, the improved results being mainly due to increased production of conventional and synthetic crude oil which more than offset a drop in natural gas sales and lower refining and marketing profits.
COGLA's 1983 annual report	The Canada Oil and Gas Lands Administration (COGLA) issued its annual report for 1983 in April 1984. It recorded that oil industry spending offshore and in the Arctic rose by 45 per cent to \$1.75 billion in 1983 compared with \$1.2 billion in 1982. During 1983, COGLA signed an additional 73 agreements with oil companies for terms of 3 to 5 years, which would involve the drilling of about 88 wells at a cost of \$4.7 billion. In 1983 COGLA authorized the drilling of 1.01 new wells -- 21 in the East Coast offshore, 14 in the Beaufort Sea and Mackenzie River delta, 62 in the mainland northern territories and 4 in the Arctic Islands. Off the East Coast, 17 active drilling units completed 20 wells compared with 11 completed by 13 drilling units in 1982.
Conservation and Non-Petroleum Programs 1984-85	Commencing the fiscal year 1984/85, on April 1, there were 26 federal conservation and non-petroleum programs in operation, some of which had been in operation since the 1970s but most having been introduced as part of the National Energy Program in October 1980. These programs in total had a 1984-85 budget of \$570,374,000, with the Canada Home Insulation Program (\$210 million) and the Canada Oil Substitution Program (\$140.4 million) accounting for 60 per cent of the total budget. The programs were classified under eight headings: Electrical, Coal, Renewable Energy, Transportation, Industry, Home Energy, Federal Energy Management, and Building Energy Technology. This did not include the largest NEP component, the Petroleum Incentives Program, nor funds for heavy oil upgraders, some major transportation programs, other R&D programs, or for Petro-Canada International. For the four-year period, 1981-82 to 1984-85, the total NEP budget, as announced in the NEP Update of May 1982, was \$9.1 billion. Later in 1984, the new federal government announced in its Economic and Fiscal Statement of November 8, 1984 a number of program adjustments and reductions which would result in savings of \$613.4 million in the EMR budget alone, in the 1985-86 fiscal year.
Douglas Point nuclear reactor to be shut down	In April, Atomic Energy of Canada Limited (AECL) announced that the Douglas Point nuclear plant, which went into operation in 1966, would be closed because it had become uneconomic. AECL owned the plant and Ontario Hydro operated it. AECL reported that the plant lost \$1.1 million in 1983. It was being decommissioned in 1985. It was Canada's first full-scale nuclear power station and had a capacity of 200 MW(e).
Canadian	In April, the Canadian Petroleum Association of Canada (CPA) presented a brief to the Senate

- Petroleum Association brief to Senate Committee on Energy Standing Committee on Energy. The Association claimed that without any net revenue loss, the federal and provincial governments could help stimulate a national economic recovery by offering world prices for oil and gas, plus new tax and royalty concessions. The CPA believed that those measures would generate so much additional drilling activity and such an increase in overall industry revenues, that the two levels of government could collect just as much revenue, even with lower income tax and royalty rates. The Senate Committee was on record as being skeptical of the Association's claim. In its presentation in June, the Independent Petroleum Association of Canada also called for lower taxes and royalties and world prices for oil, but flexibility in natural gas pricing to encourage the sale of the existing gas surplus resulting from a tight U.S. market.
- Canada/USSR Agreement on Scientific Cooperation in the Arctic On April 15, a protocol was signed between Canada and the USSR for joint scientific work in Soviet and Canadian Arctic regions. Canada's objective was to negotiate a modest collaborative program under four themes: Geoscience and Arctic Petroleum, Northern and Arctic Environment, Northern Construction, and Ethnography and Education. Five projects constituted the geoscience component of the program as agreed to in April: regional geological mapping of the Arctic land areas; compilation of a tectonic map of the Amerasian sub-basin of the Arctic ocean and adjacent shelves; joint geological field studies of platform structures (Precambrian) and Arctic sedimentary fold belts; compilation of stratigraphic correlation charts for Cambrian and Phanerozoic deposits; and geological and geophysical studies of Arctic natural gas hydrates and their physical properties. The agreement was signed under the auspices of the 1971 General Exchange Agreement between Canada and the USSR. The Geological Survey of Canada coordinated Canada's participation in Theme I, Geoscience and Arctic Petroleum, of the new agreement.
- Quebec Newfoundland power dispute -- Supreme Court decision On May 4 the Supreme Court of Canada ruled that it was unconstitutional for Newfoundland to try to cancel a long-term contract that provides Labrador hydroelectric power from the Upper Churchill Falls to Quebec. In an unanimous 8-0 ruling, the Court struck down a 1980 Newfoundland provincial statute that the Newfoundland government had intended to use to reclaim all of the water-power rights on the Upper Churchill River. The judgement found the province's Water Rights Reversion Act to be ultra vires of the Newfoundland legislature on the ground that it was a "colourable attempt to intervene with extra provincial rights". The Court concluded that, although the 1980 legislation appeared to deal only with property matters and civil rights within Newfoundland, there was need to look beyond the wording of the statute to determine its true character. Following the Supreme Court decision, the Premier of Newfoundland asked the Prime Minister to intervene in his province's dispute with Quebec over the long-term power contract which had been signed in 1969. The Premier offered his support for a parliamentary declaration making the power development "a work for the general advantage of Canada", as long as provincial powers to manage resources were safeguarded. The federal government was also asked to consider amending the National Energy Board Act to extend the "common carrier principle to electrical power lines".
- Beaufort Sea still considered promising In May Imperial Oil Limited's chairman stated that despite growing disenchantment in the financial community about the result of Beaufort Sea exploration, the company had found about two-thirds of the oil needed to start development. Later in the year, in October, he referred to the promising Amauligak offshore discovery in the Beaufort, and noted that oil from the region could be most effectively transported by pipeline along the Mackenzie River valley to Norman Wells, a distance of 400 miles. A pipeline from the Norman Wells oil field to northern Alberta was completed in 1984. Other companies active in the Beaufort-MacKenzie Delta region also remained optimistic about its production potential despite concerns in the financial community about high costs.
- Persian Gulf hostilities continue to disrupt shipping During May, oil traffic in the Persian Gulf continued to be disrupted. In one week six tankers were sunk as the Iran-Iraq war continued unabated. However, the International Energy Agency (IEA) reported that attacks on Persian Gulf shipping had had no significant impact to that time on world oil supply and that price trends reflected a general perception that supplies were more than adequate to meet demand in the short term. Nevertheless, there were increasing concerns among the world oil and shipping industries about continued operation in the Persian Gulf.

Quebec Hydro's electricity exports	<p>In May the National Energy Board rejected a request by Newfoundland to adjourn hearings on Hydro-Quebec's application to export power in an amount of up to 24 billion kilowatt hours to the New York Power Authority which the Board had approved in March. Newfoundland took the position on this and other export applications in 1984 that it should have the right to buy surplus power from Quebec before it is exported. It also asked the Federal Court to grant it leave to appeal the March 1984 NEB decision authorizing the export of power to New York State. Later, in September, the NEB approved an export of seven billion kilowatt hours to New England, annually, of interruptible power between 1986 and 1995, and four billion kilowatt hours annually between 1995 and 2002 but, in response to Newfoundland's concerns, reduced by 50 per cent the terms of one of the licences and denied an application to construct a 120 kilowatt transmission line to export 150 megawatts of firm power to Vermont. Newfoundland served notice of its opposition to this 10-year export contract, and indicated its intention of opposing all Quebec power export proposals until Quebec agreed to "explore the ways Newfoundland Labrador hydro's electricity needs can be met".</p>
Supreme Court decision on B.C. inland waters jurisdiction	<p>On May 17, the Supreme Court of Canada established some limits on the federal government's rights over the offshore, awarding British Columbia ownership over inland waters between the mainland and Vancouver Island. While the Court had confirmed federal government control of the B.C. offshore in 1967, the earlier decision had left the question of the inland sea unsettled and the May 17 decision confirmed a 1976 ruling by the B.C. Court of Appeal. Although the Supreme Court had said the inland waters would have passed to federal jurisdictions at Confederation because they were British Territory, it noted that the British government had awarded them to the Colony of Vancouver Island and British Columbia through the 1866 Imperial Act. That earlier judgement had said: "-As of 1866, the waters and submerged lands between Vancouver Island and the mainland were part of the United Colony of n r, '.</p>
NEB opposed approval-in-principle of large energy projects	<p>In an appearance before the Senate Standing Committee on Energy and Natural Resources in May, the Chairman of the National Energy Board stated that the Board opposed any approval-in-principle approach for the regulation of large energy-related projects. Early approval left applicants at risk because later components of a project might be approved only in a manner unacceptable to the applicant. In addition, intervenors in hearings on later project phases would bear the onus to demonstrate, not only why the project should not be built, but why it should be stopped.</p>
Cape Breton Coal area expansion	<p>In May the federal government confirmed its commitment to the Nova Scotia coal mining industry with the announcement that it would spend over \$300 million on development. An amount of \$237 million would be available through the Cape Breton Development Corporation for the immediate start-up of the Lingan-Phelan colliery and the extension of the Victoria junction coal preparation plant. An additional \$24 million was allocated to complete an exploratory tunnel in the Donkin-Morien Coal reserve, and \$64 million to construct a wash plant and railway loading dock at the Prince mine in the Sydney coal field area.</p>
James Bay hydro -Phase 1 nearing completion surplus power forecast to the 1990s	<p>On May 27, the Premier of Quebec officially opened the LG-4 generating station, and its first turbine began to produce power at this James Bay site. The ceremony marked the near completion of the last station included under Phase 1 of the La Grande Complex. On completion of the LG-4 station in mid-1985, the total installed capacity of the three stations comprising Phase 1 would be 10,269 MW (LG-2:5,328 MW; LG-3:2304 MW; LG-4:2637 MW) with an annual energy capability of 62.2 TWh (62.2 billion KWh). Phase 1 would be the second largest hydroelectric development in the world after the Itaipu project in Brazil. The LG-2 is the largest in Canada, followed by the 5,224 MW Churchill Falls station. The estimated cost of Phase 1 in 1984 was in the order of \$14.6 billion. The initial estimate made in 1972, when the site of the La Grande development was selected, was \$5.8 billion, with estimates being continually revised upward as the project proceeded. In 1978, the LG-1 site was eliminated from Phase 1 in favour of additional generating units at the LG-3 and LG-4 sites. In 1971 when the project was announced, a long-term electricity growth rate of 7.4 per cent per annum was forecast. Subsequent downward revisions led</p>

to an 1983 estimate for the long-term of 3.2 per cent per annum, leaving an estimated surplus after completion of LG-4 in 1985 of some 7,600 MW and between 45 and 50 TWh per annum. In 1984, the projected surplus for 1990 was 30-32 TWh, indicating that the output of Phase 2 would not be needed until well into the 1990s.

C . D . Howe  
Institute  
proposals for  
replacement of  
NEP pricing and  
tax measures

In a presentation to the Senate Standing Committee on Energy in May, the C.D. Howe Institute claimed that a more market-oriented energy policy than the NEP would best achieve Canada's economic and energy objectives. The dimensions of such a policy would include: a single price for Canadian oil production determined by the international oil price; phased de-regulation of natural gas prices; an integrated federal-provincial tax system, with tax rates graduated for oil and gas from different sources; a mechanisms for dealing with future energy supply or price shocks; and a greater reliance upon market, prices instead of differential government subsidies as incentives for exploration and development. After the change in government in September, several of these provisions were implemented.

Canada-N.S.  
offshore  
legislation  
approved

On May 31, legislation was tabled in Parliament to establish formally in law the major elements of the Canada-Nova Scotia Offshore Oil and Gas Agreement of March 2, 1982. Parallel legislation was being introduced in the Nova Scotia legislature. The major elements of the legislation included the establishment of a permanent Canada-Nova Scotia Oil and Gas Board; provision for the province to receive all offshore revenue except federal corporate income tax until its per capita fiscal capacity reached 110 per cent of the national average; 50 per cent of any Crown share in a natural gas field; a \$200 million development fund for infrastructure; and protection of equalization payments for up to ten years. The two governments agreed to a package of delegation of authority to the Oil and Gas Board which would manage petroleum activities in the offshore Nova Scotia area. The provincial government would have ultimate authority for management of the Bay of Fundy, Sable Island and an area around the island, while the federal government would have the same authority in other offshore areas. Bill C-43, the Canada-Nova Scotia Oil and Gas Agreement, received Royal Assent on June 29, 1984 and it was proclaimed, effective July 29, 1984. At the time of proclamation, companies had committed spending of about \$2.4 billion over the duration of 33 new exploration agreements.

Husky Oil Ltd.  
upgrader  
proposal  
supported by the  
Alta., Sask. and  
federal  
governments

In June, a federal-provincial agreement to proceed with a \$3.2 billion bi-provincial heavy oil upgrader and field development project was announced by the federal, Alberta and Saskatchewan governments and Husky Oil Operations Ltd. The upgrader, to be located near Lloydminster at the Saskatchewan-Alberta border, would be designed to convert heavy oil and crude bitumen into synthetic crude oil suitable for refining in Canada. Scheduled for completion in 1989 at an estimated cost of \$2.3 billion, including oil resource development costs, the upgrader would have a capacity of 8,571 m<sup>3</sup> (54,000 barrels) a day. The federal government agreed to provide financial guarantees of \$780 million and each of the provinces, \$390 million, for a total of \$1.56 billion. In addition, the federal government offered a \$50 million grant to help defray start-up costs. The provinces offered significant royalty benefits to encourage the project. In September, Husky Oil, in cooperation with the Saskatchewan government, the documents required to commence an environmental assessment of the proposed upgrader facility.

Federal  
Environmental  
Assessment and  
Review Process  
(EARP)

The Federal Environmental Assessment and Review Process (EARP) was established by Cabinet decision on December 20, 1973 and amended by Cabinet on February 15, 1977. Since its creation, the EARP has been involved in a range of energy development matters, most dealing with nuclear issues, and hydrocarbon development in the frontier. EARP calls for the screening by line departments of all initiatives that have a potential for environmental impact, and for referral of these to the Minister of the Environment for public review. For a number of reasons, the EARP has been criticized by government departments, industry and the general public virtually since its inception. Some of this criticism related to the need for increased "formality" of the system, for improved procedural and scoping operations on the part of public review panels and for more visibility of the screening phase. In response to these criticisms, Cabinet passed an Order-in-Council on June 20, outlining new guidelines for the EARP. The Order-in-Council directed the initiating department for a proposal to consider "the potential environmental effects of the proposal and the social effects directly related to those environmental effects". Provision was made to further expand the scope of the EARP to consider general socio-economic effects, technology assessment and the need for the proposal. This had the effect of enabling the EARP to consider a much broader range of issues than was originally conceived. However, such an expanded scope would only be considered on the recommendation or with the approval of the initiating Ministers. On other occasions, the consideration of social issues would be limited to those matters directly resulting from the environmental changes associated with the project.

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Uranium and  
nuclear energy  
outlook

The 24th Annual Conference of the Canadian Nuclear Association held in Saskatchewan in June, together with the 5th Annual Conference of the Canadian Nuclear Society and the participation of the Uranium Institute of London, England dealt with the theme of electricity and uranium - a brighter future, and included a number of uranium and nuclear energy forecasts. The outlook for uranium for the short to medium term was one of pessimism, with some degree of optimism beginning in the 1990s. The annual increase in uranium requirements to 1990 was expected to be 6 per cent worldwide, but there was concern about the increased use of spot-market price indicators in uranium contracts which would contribute to the destabilization of the market. Note was taken of the major uranium resource development underway in Saskatchewan where very high grade deposits were being developed and the Key Lake Mining Corporation operation would be the largest uranium producer in the world by the end of 1984. In electrical generation, assuming Canada's economic growth averaged 3 per cent per annum, this country would need new capacity by the mid-1990s which would require decisions soon on new plants or plant expansion because of the long lead-times involved. For the longer-term world outlook, forecasts of energy requirements were presented by way of demonstrating that every energy supply system the world can develop will be needed and, from this perspective, nuclear energy appeared to be an imperative, not an option.



Dome's Western LNG Project	<p>On June 29, Dome Petroleum announced it was abandoning management of its proposed liquefied natural gas plan (Western LNG Project) for the shipment of LNG to Japan from a plant on the B.C. coast near Prince Rupert. The project had been under development since 1980. At this time, Dome dropped its interest in the project from 80 per cent down to 10 per cent. This left a committed participation of only 30 per cent in the project - the other two participants with 10 per cent each being Union Oil Co. of California and NIC Resources, a subsidiary of Japan's Nissho Iwai Corp. While the B.C. government had authorized the export of one-half of the 3.2 trillion cubic feet of natural gas called for in the agreement, Alberta had indicated it would not authorize any new gas exports pending the negotiation of a pricing agreement with the U.S. In October, Union Oil and NIC Resources formed a third company, Canada LNG Corporation, to endeavour to meet an October 31 deadline set by potential Japanese buyers. In November, Japanese utilities extended the project deadline a further 60 days to see if their proposed purchase of 2.9 million tonnes of LNG, annually, could be met over a 15-20 year period. The annual value of such a shipment would be \$1.2 billion. In December, the Alberta government gave approval for the export of up to 1.5 trillion cubic feet of natural gas, as LNG, to Japan over 20 years, with the proviso that producers would get either a weighted average price based on exports to the U.S., or the Alberta border price, whichever was greater. Negotiations on the project continued in 1985.</p>
Petroleum Incentives Program -- PIP payments of \$2.4 billion in 1981-1983	<p>On June 21, the first report of the Petroleum Incentives Administration (PIA), covering the first three years of the Petroleum Incentives Program (PIP) and the Canadian Ownership and Control Determination (COCD) Program was issued. Under PIP, incentive payments were being made to petroleum firms exploring for new sources of oil or natural gas, and COCD certified the level of Canadian ownership and control of firms applying for PIP payments, thereby determining their degree of eligibility. The report, "Petroleum Incentives Administration Report -January 1, 1981 to December 31, 1983", described the establishment of the two programs and their operations to the end of 1983. Total PIP payments by the Government of Canada to December 1983 was \$2.4 billion, of which \$1.1 billion went to the Atlantic offshore and \$990 million to the Beaufort Sea region, the areas of major activity. Dome Petroleum and Petro-Canada received about half of the \$2.4 billion total. Alberta administered its own program, adding a further \$800 million in grants for the three-year period.</p>
Concerns about the Petroleum Incentives Program	<p>In June, with the publication of the Petroleum Incentives Administration report for 1981-1983, a great deal of attention was being directed to questions of cost, effectiveness and discriminatory nature of the program. PIP grants were discriminatory with respect to the type of activity conducted, its location, and the ownership and control status of the recipient. The grants were concentrated in the hands of a few players. An increase in resource activity had occurred in the Canada Lands but no new production had yet resulted. The interventionist nature of PIP had been challenged by those who claimed there was too much bureaucratic discretion. PIP had not been available for certain type of expenditures which might also be desirable such as the oil sands and heavy oil projects.</p>
Pickering nuclear station repair costs	<p>In June, Ontario Hydro estimated it would cost \$400 million more than expected to repair the two nuclear reactors at the Pickering Station, thereby raising the total estimate to \$1.1 billion. Tube replacement would cost as much as \$650 million, and the cost of coal-fired replacement power linked to the loss of the two 500 MW Pickering reactors until 1987 would cost \$483 million.</p>
Gasoline pricing	<p>During June, as in previous months of the year, gasoline pricing remained a contentious issue and was raised a number of times in Parliament. There were complaints that prices were being maintained at artificially high levels due to unfair practices employed by the major companies to the detriment of smaller, independent dealers. There was also criticism that the government created artificially low prices via the Petroleum Compensation Charge. The oil industry was subjected to criticism concerning the price variance between leaded and unleaded gasoline.</p>
PC Energy Policy Statement	<p>On July 5, the Leader of the Progressive Conservative Party of Canada released an energy policy statement which subsequently became the basis of the federal government's energy program after</p>

the change of government in September. The policy statement set out five goals: self-sufficiency and energy security, fair treatment for consumers and producers, enhanced Canadian participation, energy as an engine of growth, and federal/provincial/industry cooperation for a stable planning environment. The statement also included specific policy initiative proposals relating to taxation, oil and natural gas pricing, industrial off-oil programs, oil sands projects, electricity exports, the Petroleum Incentives Program, and the Crown share. These and other proposals were subsequently developed and included in programs announced later in the year and in 1985.

Panarctic Oil Lt  
activities in the  
Arctic Islands  
-Bent Horn oil  
shipment  
proposal

In July, Panarctic Oils Limited warned that frontier exploration and drilling would be in jeopardy unless the federal government permitted companies to make some money on the high-risk activity associated with frontier development. The company was seeking approval to ship 100,000 barrels of crude oil from its Bent Horn oil field in the High Arctic. Without some indication of the possibilities of near-term income, Panarctic partners who had spent more than \$1 billion in the previous 10 years would withdraw from northern oil and gas search. Since the drilling in 1961 of a well on Melville Island, 171 wells had been completed in the Arctic Islands, 31 of them from reinforced ice platforms in offshore area of the Sverdrup Basin. Panarctic had reported 18 oil and gas discoveries since its first gas discovery at Drake Point on Melville Island in 1969. Plans for development of Arctic island hydrocarbons originally centred on the Polar Gas Pipeline proposal to transport gas to southern markets along a route west of Hudson Bay but minimum threshold gas reserves of 25 trillion cubic feet (708 billion m<sup>3</sup>) had never been reached. Later, emphasis shifted to transporting LNG by tanker from the Drake Point field to eastern Canada or European markets but that proposal, the Arctic Pilot Project, remained suspended in the 1980s pending improvement in price and markets. In 1984, Panarctic was attempting to market oil from the Bent Horn field on Cameron Island by moving one 10,000-barrel tanker shipment per year, in the summer season commencing in 1985, as a demonstration project in preparation for production from larger fields.

Peace River oil  
sands project

On July 9, the federal and Alberta governments announced that agreement had been reached with Shell Canada Resources Limited on the royalty and fiscal terms for the company's proposed 1,600 cubic metre per day (10,000 b/d) Peace River oil sands project. Alberta would provide for reduced royalty payments until capital costs had been recovered, and the federal government would provide earned depletion allowance and relief from the Petroleum and Gas Revenue Tax (PGRT) until payout. At an estimated cost of \$200 million, the commercial project would involve the drilling of about 200 wells and expansion of steam generation and production facilities. Replacement wells and field facilities over the 30-year life of the project would involve an additional \$500 million investment at the Peace River site, 55 km northeast of the town of Peace River. Shell had been operating a pilot project at this site for five years, and it had demonstrated successfully the technology required to extract bitumen from deep oil sands as a basis for the first commercial in situ project in Alberta's Peace River region.

Petroleum  
Monitoring  
Agency report for  
1983

In July, the Petroleum Monitoring Agency released its report for 1983 which showed that cash income from total petroleum industry operations (internal cash flow) rose by 16 per cent to \$8.5 billion in 1983 compared with 1982, while net income overall decreased 11 per cent to \$1.5 billion. Total capital expenditures by the industry declined 13 per cent to \$10.2 billion. A rise in upstream expenditures, the first year-to-year increase since 1980, was more than offset by a drop in downstream spending and lower outlays abroad. Spending on provincial lands rose 4 per cent while increasing by 34 per cent on Canada Lands. Federal Petroleum Incentive Program (PIP) grants financed \$1.2 billion of the \$2.2 billion of Canada Lands exploration. Total revenue available for sharing among industry and governments rose \$1.4 billion to \$21.8 billion in 1983 with the industry and provincial governments both participating in the increase while the federal government received a smaller share. The federal government's portion decreased from 26 per cent to 21 per cent - primarily due to lower revenues from the Natural Gas and Gas Liquids Tax; the provincial governments' share increased 2 percentage points to 30 per cent; and the industry's share rose 3 per cent to 49 per cent. Canadian ownership of the petroleum industry, based on

upstream revenues, rose 1.5 percentage points to 40.5 per cent while Canadian control declined 0.5 percentage points to 37.8 per cent. Based on petroleum-related revenues (upstream plus downstream), Canadian ownership and control rose 2.5 and 2.3 percentage points, respectively, to 37.2 per cent and 27.8 per cent.

New Canadian natural gas export pricing policy -negotiated prices	On July 13, the federal government announced that exporters of Canadian natural gas would be free to negotiate prices with their customers, for implementation as early as November 1. Under the new policy, exporters could hold to the existing two-tiered administered price, or they could negotiate a price that would be subject to review by the National Energy Board, based on established criteria, and to subsequent approval by the Government of Canada. Where the negotiated price replaced the existing government-administered price, the exporter was required to demonstrate that the negotiated price, in combination with other contract provisions, would provide an enhanced economic return to Canada compared with the existing Volume Related Incentive Price (VRIP) program, as implemented in June 1983 and modified in November of that year. In many ways, the new Canadian export policy mirrored the U.S. gas import policy guidelines issued earlier in the year, in February. Both policies contemplated competitive, market-responsive, flexible contracts.
Cost of the NEP to Ontario	In a submission to the Standing Senate Committee on Energy and Natural Resources in July, the Ontario government claimed that abrupt oil and gas price increases under the NEP had cost the province 90,000 jobs and reduced Ontario's total real output by 3 to 4 per cent, and were responsible for about one-third of the province's inflation as experienced between 1979 and 1983. The wholesale cost of oil and gas to the province almost doubled to \$9 billion in that period. Ontario claimed that the real beneficiaries of the NEP were the federal government and the oil industry.
In praise of the CANDU	In a July 25 article, the Wall Street journal found much to praise in Canada's nuclear power industry, in contrast with the U.S. experience. The Canadian nuclear program had been so successful because the nation devoted its efforts to perfecting one product: the CANDU reactor. Confidence also stemmed from the fact that Canadians tended to be more trusting of their utilities and because Canadian industry had not suffered as many problems as that in the U.S.
Distribution System Expansion Program grants in 1983-84 and 1984-85	An appraisal available in July showed that under the Distribution System Expansion Program (DSEP), total payments in 1983-84 were \$45.9 million and in 1984-85, an estimated \$123.9 million. These payments related to total capital costs of projects supported by DSEP of \$143 million in 1983-84 and an estimated \$243.8 million in 1984-85.
The Heatline - a home energy conservation service	A review prepared in July showed that there was continuing interest in the 'Heatline', a national toll-free telephone advisory service providing practical economic advice on ways to save energy and money in the home. The Heatline was part of the Home Energy Programs Division in the Department of Energy, Mines and Resources which, in 1984, was continuing to deliver the Canadian Home Insulation Program (CHIP), the Canada Oil Substitution Program (COSP), and the Enersave Analysis for Home Insulation which through the Enersave Questionnaire provided a free written information service to home owners on the most economical ways to make homes more energy efficient. Records on the telephone Heatline information centre showed that in its first year, starting in September 1977, it provided information to 2,290 callers which increased to an annual total of 118,850 in 1981. A decline to 55,990 in 1983 reflected the general shift in 1982 and 1983 in public concerns away from energy matters. A pickup to an estimated 89,400 in 1984 was due to a change in the eligibility date for CHIP, announced in March, and advertising programs which referred householders to the Heatline for program and technical information.
Earth Physics research in EMR -G.S.C.	In a review in July of energy research programs conducted by the Earth Physics Branch (now part of the Geological Survey of Canada) in EMR, attention was directed to programs that had been conducted in the previous five years in response to national requirements. These included

evaluation of Canadian geothermal energy resources and methods for their economic exploitation, the constraints posed by permafrost and gas hydrates to petroleum development in the north, and the management of nuclear fuel wastes by their disposal in deep, stable geological formations. The Earth Physics Branch was also extensively involved in 1983 and 1984 in conducting and assessing the results of the CESAR-83 multi-disciplinary Arctic geoscience expedition which studied the Alpha Ridge. The goal of that program was scientific understanding, which might eventually lead to energy sources. On-going research was being conducted of earthquake patterns in various regions across Canada including areas having hydrocarbon potential. This research permits reliable calculations of the risk posed by seismic ground motion to eventual oil and gas production installations.

EMR Research  
Agreements  
Program

In July, announcement was made of EMR research grants of \$1.4 million for 1984-85. These funds were to be used in support of 158 research projects in the natural, physical and social sciences and in engineering in 40 research centres across Canada. Included in the research projects to be supported were 16 for energy technology research, 19 in energy policy, and several in support of energy conservation research, and also for economic studies concerned with petroleum resource development. The EMR Research Agreements Program had been operated on an annual basis since the mid-1970s.

Frontier  
Geoscience  
Program

In August, a major program to gather frontier geoscience information was announced by the Minister of Energy, Mines and Resources with the objective of stimulating increased energy exploration and development and helping to achieve long-term energy efficiency. The program proposal in preparation over a three-year period, was designed to establish a geoscience data base from which the oil and gas potential of the East and West Coast offshore regions, the Arctic Islands and the Western Arctic could be more precisely determined. A budget of \$20 million a year was planned. The increase in Canadian territory, due to the extension of offshore jurisdiction to 200 miles, and the emphasis on frontier exploration had increased the demand by both industry and government for more geoscience information.

Royal  
Commission  
Report on the  
Ocean Ranger  
disaster

On August 13, the first report of the Royal Commission on the Ocean Ranger Marine Disaster was made public. The Royal Commission presented 60 recommendations concerned with marine safety and oil industry operations in Canada's difficult and challenging offshore conditions. Release of the report was followed in August by a conference on safety in the Canadian eastern offshore, held at Memorial University in St. John's. Public hearings on the report were scheduled for Halifax and St. John's and, after that consultation process had taken place, the Royal Commission would prepare a final report for the Newfoundland and federal governments by March 31, 1985. In its first report, the Commission's findings blamed both the design of the drilling rig and the training of its crew on the loss of the rig, as well as the severity of the storm. The findings were similar to those of the U.S. National Transportation Safety Board and the U.S. Coast Guard. All three inquiries criticized the rig's owner, Ocean Drilling and Exploration Company of New Orleans, for failing to provide safety equipment and training. The Ocean Ranger semi-submersible drill ship sank in a storm, 175 nautical miles east of St. John's on February 15 with the loss of 84 lives.

Syncrude fire  
causes 4-month  
shut-down

A fire in the Syncrude Canada Ltd's oil sands plant at Fort McMurray, Alberta, on August 15 badly damaged the plant's two cokers. As a result this oil sands operation was shut down until late December. After four months and over \$300 million in lost revenue and \$50 million in repair costs, Canada's largest synthetic crude oil producer was back in full production at the end of the year at 109,000 barrels a day. The shut-down was caused by a rupture in a steel pipe which resulted in an explosion and fire.

Petro-Canada  
withdraws from  
Scotia Shelf  
project

In August, a consortium of Petro-Canada and three other companies withdrew from a half-billion dollar exploration program on 1.6 million hectares adjacent to the Venture gas field on the Scotia Shelf. The companies relinquished their rights one year early after drilling two dry wells. Results did not warrant the drilling of the additional wells which would have been required in order for the

companies to maintain their leases.

PIP payments 1/1/81-31/8/84	To the end of August, total payments under the Petroleum Incentives Program (PIP) since its inception on January 1, 1981 amounted to \$3,485,900,000.
Privatization recommendation for Petro-Canada	In August, the former chairman of Petro-Canada recommended that the federal government should start selling off the Crown Corporation to the private sector because it was now a major force that was Canadian-owned and that was responsive to Canadian interests. If that responsiveness could be maintained, there would be nothing wrong with privatizing the company. It could be split into a holding company controlled by the federal government and an operating company owned by public shareholders and run on a commercial basis.
Arctic Pilot Project NEB application dismissed	On August 2, the National Energy Board dismissed the application of the Arctic Pilot Project (APP). The APP had applied for approval to proceed with a project to ship liquified natural gas (LNG) from Melville Island, in the High Arctic to an eastern Canadian port where it would have been transformed back into the gaseous state and transported to Canadian and U.S. markets. The application was dismissed because the APP had agreements with U.S. buyers but the agreements expired on August 4. NEB hearings on the APP application had commenced on February 2, 1982 and were adjourned by a decision of August 31, 1982.
Dome Petroleum's debt rescheduling problems	On August 1, Dome Petroleum reached an agreement with the lenders to re-scheduled \$5.2 billion of its \$6.3 billion debt. However, the agreement, signed by 53 of Dome's 54 lenders, was contingent on the success of a planned \$250-million share issue which was to be marketed by October 5. This was not accomplished and in December Dome asked its lenders to release it from the promise to raise \$250 million in new equity because of poor market conditions. At the end of the year, the company was renegotiating a waiver of the equity requirement in the August 1 agreement and some, other revisions. In September, the federal government had advised Dome that it would not renew the agreement in principle of 1982 when the government and four Canadian banks put together an emergency bailout package. The agreement was due to expire on October 1, 1984 and Dome had asked that it be extended until its new debt rescheduling plan was completed. The agreement with the federal government lapsed on October 1.
Conservation and Renewable Energy Demonstration Agreements (CREDAs) evaluated	In August, an evaluation was made of the Conservation and Renewable Energy Agreements (CREDA) program which had been initiated in 1979. CREDA, a demonstration and information program, was designed to overcome barriers to wider adoption of conservation and renewable energy technologies by directly demonstrating the technical and economic viability of alternatives in practical situations, and communicating the results. CREDAs, or similar agreements, were signed with most provinces. The program introduced new state-of-the art technologies into the commercial setting by developing and expanding new markets for existing technologies and by the selected demonstration of new, developing technologies. The projects proved to be cost-effective in demonstrating conservation and alternative energy technologies and provided excellent funding leverage in that \$215 million worth of projects were implemented with a federal share of \$40 million. CREDA agreements were closed as of March 31, 1984, with allowance for a one-year wind-down to March 31, 1985. As a result of a Cabinet decision of December 1983, a new national program ENERDEMO-Canada replaced the CREDAs and integrated other energy demonstration programs.
Annapolis tidal power project opened	The \$56 million Annapolis Tidal Power Project, the first tidal power project in North America, was opened in August to test the efficiency of the Canadian-built STRAFLO turbine and the feasibility of full-scale tidal power projects in the Bay of Fundy. The Bay of Fundy project began in 1980, following approval in late 1979. It is located at Annapolis Royal, on the lower reaches of the Annapolis River. This pilot plant has a capacity of 50 million kilowatt-hours a year. The STRAFLO turbine, which was developed in Switzerland and manufactured in Montreal, may also be adaptable to low-head river sites in many parts of Canada and abroad. The project is administered by Tidal Power Corporation, a Nova Scotia Crown Corporation, which received a

\$25-million federal grant towards the construction of the plant to cover the difference between estimated direct benefits and the total cost of the project.

The benefits and costs of oil price declines

As world oil prices began to decline instead of continuing sharply upwards, as expected in the early 1980s, two opposing viewpoints were being expressed. A New York Times article of early August noted that as oil price cuts were filtering through the world economy, they were reducing inflationary pressures and spurring expansion in the U.S. and abroad. With faster economic expansion foreseen in many nations, the growth in world trade, initially forecast by the International Monetary Fund at 5 per cent for 1984, was now expected to increase by almost 8 per cent. The oil price shocks of the 1970s ignited rampant inflation and intensified the global economic decline of 1981-83, the worst downturn since the depression of the early 1930s. The softening in the world oil price structure was, accordingly, seen as a very favourable development. The opposite view was being expressed by some spokesmen for the investment community who pointed to the risk factor in declining oil prices which could reverse conservation initiatives and retard energy resource development projects. "What we don't want to do is get back on the rollercoaster".

P.C. government elected

on September 4, a Progressive conservative government was elected and during the remaining months of the year many changes in federal energy policy were initiated.

NEB Energy Supply and Demand Report, 1983-2005

In September, the National Energy Board published its report, "Canadian Energy Supply and Demand 1983-2005". The report updated an earlier study published by the Board in mid-1981. The Board's first major energy forecast was published in 1969. The new study reflected changing perceptions of future energy prices, economic activity, the availability of energy supplies, and changes in government policies. The report warned of a great deal of uncertainty about the future domestic supply of crude oil because of a number of unknown elements related to the development of frontier areas and the oil sands. It emphasized the importance of examining separately the balances for light and heavy crude oil. The Board's projected world price reflected the view that the world oil market will be characterized by an excess supply for the following four years but, later, world oil demand would increasingly press against productive capacity and real oil prices would rise. World oil prices would remain relatively steady for a few years and then prices would rise at an annual rate of about 2 per cent in excess of the rate of inflation. Total energy demand in Canada was expected to increase at an average annual rate of 1.6 per cent through 2005, compared with about 5 per cent for most of the 1960s and 1970s. Oil demand would decline both in absolute terms and as a percentage of the total energy market, but Canada would still have to import some light crude. Natural gas would take a greater share of the energy market. Electricity demand would increase at almost double the rate of energy demand in general but excess electrical generating capacity would remain into the 1990s, and the industry would become more export-oriented. The share of nuclear power in total electricity production would rise from 11 per cent in 1983 to 22 per cent in 2005. Alternative fuels, such as solar power and waste wood, would remain significant energy sources but their share in the overall energy total would not exceed about 8 per cent.

Lepreau II environmental impact study

An environmental impact study released in September concluded that the proposed 600-megawatt Lepreau II nuclear power plant could be operated safely and would generate significant economic benefits, including \$1.4 billion in gross domestic product across Canada. However, the report did not address the economic viability of the plant or the effects of the plant's debt on New Brunswick power consumers. Those deficiencies drew criticism from government agencies and private organizations. The study had been commissioned by Maritime Nuclear, a joint Atomic Energy of Canada Limited - N.B. Power Commission venture.

Manitoba Hydro's Limestone power project

In September, Manitoba Hydro, a provincially-owned utility, announced that tenders would be called immediately for construction of its proposed \$3-billion Limestone generating station. The Limestone dam project had been mothballed in 1977 but a \$3.2-billion power sale to Northern State Power Co. of Minneapolis earlier in 1984, if approved, would bring the project on stream

one year before it was needed for domestic power needs. Manitoba Hydro had filed an application with the National Energy Board in August for a licence to export firm power and energy over a 12-year period to Northern States Power. The public hearing was completed on November 16 and a decision was expected in early 1985. Manitoba Hydro was proposing to export a maximum of 500 MW of firm power and up to 4,392 kWh of energy in each 12-month period from May 1, 1993 through to April 30, 2005, using existing power lines with the power and energy exports coming from the Limestone project. Manitoba is interconnected with electrical systems in North Dakota and Minnesota via two 230 kV lines - one to Grand Forks and the other to Duluth - and a 500 kV line to Minneapolis, and in 1984 it held three licences to export firm energy and two licences to export interruptible energy. In the event of approval of the Limestone project, Manitoba Hydro's total electrical export revenue would increase from \$89 million in 1984 to about \$400 million in 1993.

The frailties of forecasting - Ontario Hydro

In September, Ontario Hydro stated that the province could face power shortages by the mid-1990s and initiated a study to investigate how the utility could best deal with customer demand patterns that were getting more difficult to predict. The prediction of a shortage by as early as 1992 was in sharp contrast to forecasts in the 1970s that had led to cancellation of some projects, postponement of others and the mothballing of power plants. The over-building in the 1970s and the concerns over shortages in the 1990s were being attributed by some observers to the "frailties of forecasting".

Beaufort Sea Environmental Assessment Report

In September, there was further comment on the Beaufort Sea Environmental Assessment Panel Report which had been released at the end of July, four years after an industry proposal for hydrocarbon development in the Beaufort Sea-Mackenzie Delta region had been submitted to the Minister of Indian Affairs and Northern Development. Dome Petroleum Limited, Esso Resources Canada Limited and Gulf Canada Inc. had proposed a two-phase development plan for the region, involving the confirmation and development of commercial reservoirs of oil and construction of an oil transportation system in Phase I, and production activities from 1987 onward for Phase II. The Panel had been directed to "identify major developmental effects, both positive and negative, upon the physical, biological and human environments and recommend ways and means of dealing with them". The Panel made 83 recommendations to the Ministers of Indian and Northern Affairs, and the Environment and, in particular, stated that "upon application, only small scale production and transportation of oil and gas resources from the Beaufort Sea region be authorized". The overall tone of the report was one of cautious advocacy of hydrocarbon development in the Beaufort. Development could take place without unacceptable environmental and socio-economic impacts provided that the development was small-scale and was phased in at a pace which could be controlled by northern residents. The report was favourably received, with the Canadian Petroleum Association noting that it fit the industry's scaled-down projections for Beaufort-Mackenzie Delta development.

World Court decision on Georges Bank Canada/U.S. dispute

On October 12, a Chamber of the International Court of Justice in the Hague issued its decision in the case between Canada and the U.S. concerning the Maritime boundary in the Gulf of Maine, confirming Canadian jurisdiction over a substantial part of Georges Bank which contains major fishery resources and potential hydrocarbon resources. The dispute had begun in 1969 when the U.S. protested Canada's issuance of oil and gas exploration permits on Georges Bank. The dispute expanded in scope in 1976 when the two countries unilaterally extended their fisheries jurisdiction to 200 nautical miles. In 1979, the two governments signed a Treaty to submit to Binding Dispute Settlement the Delineation of the Maritimes Boundary in the Gulf of Maine area: The U.S. boundary proposal would have given the U.S. total jurisdiction over Georges Bank, while Canada was asking for one half the disputed area. While the ruling only gave Canada about one-sixth of the Georges Bank, it left Nova Scotia fishermen with enough territory to maintain a viable fisheries industry. Moreover, the boundary line drawn by the Court left Canada almost all of the western part of the Scotian Basin. The main hydrocarbon potential of the eastern part of Georges Bank is associated with the area retained by Canada.

Syncrude oil sands expansion	<p>In October, the Alberta Energy Resources Conservation Board announced approval of a plan to expand production at the Syncrude Canada Ltd. oil sands plant near Fort McMurray. Annual synthetic crude oil production would rise to 8 million cubic metres from 7.5 million cubic metres and the enlarged plant would also produce 370,000 cubic metres a year of naphtha. The \$600-million expansion was to be part of a 5-year, \$1.2 billion proposal to improve and expand production at the Syncrude Mildred Lake plant.</p>
Uranium resource appraisal shows large surplus available for export	<p>In October, EMR issued its interim-year Uranium Resource Appraisal Group (URAG) assessment. Compared with the 1982 resource assessment, there was a 22 per cent increase in Indicated resources by the end of 1983 in contrast to the 10 and 7 per cent decreases in the Measured and Inferred resource categories, respectively. The major increase in the indicated category reflected the favourable results of continued exploration and development work in the uranium areas of northern Saskatchewan. The sum of Measured, Indicated and Inferred resources, within all three price categories, was 591,000 tonnes U, slightly higher than the 1980 estimate despite production of 23,000 tU in the intervening three-year period. Recoverable reserves at the end of 1983 were 237,000 tU, for which there were domestic commitments of 80,000 tU, leaving an available surplus of 152,000 tU with 67,000 tU of this having been committed to export markets. The Canadian uranium industry continued to be characterized by a very large potential resource capacity.</p>
Outlook for N.E B.C. coal	<p>In October, Tech Corp. one of the two new coal producers in northeast B.C., agreed to a \$10 reduction in the price of a tonne of coal from its Bullmoose mine after extensive negotiations with its Japanese buyers. The new price of \$88 per tonne, retroactive to April 1, 1984, would apply for a two-year contract period. The Quintette mine, which had completed a contract with Japanese buyers in 1981 at \$97 a tonne, was also having to renegotiate its price, with the current world price being only \$69. In addition, this new mine was having start-up problems and there were forecasts that its 1985 production might only be three million tonnes, well short of its target. Notwithstanding price and production problems confronting the new northeast B.C. coal producers in 1984, the Chase Manhattan Bank of N.Y. had predicted in January that, while the new coal area would develop a capacity far in excess of demand until the end of the decade, during the 1990s Canada would have a seller's market because of the growing world demand for coal, particularly in the Pacific Rim countries. Much of Canada's coal export growth would be at the expense of U.S. coal which would suffer from an erosion in its foreign markets, according to the U.S. bank forecast.</p>
OPEC oil price under downward pressure	<p>On October 18, Nigeria reduced the price of its oil by \$2 a barrel to \$28, becoming the first OPEC member to break the official price structure set 18 months earlier. The Nigerian action followed the October 17 price cut by Britain for North Sea oil. The same sequence of cuts prompted the March 1983 slide in world oil prices when the OPEC official price was cut 15 per cent. A continuing price declining in the spot market and persistent over-production by OPEC producers was creating downward pressure on oil prices. Notwithstanding this trend, OPEC continued to hold to the \$US 29 a barrel price level through the remaining months of the year although Nigeria and Algeria continued to defy OPEC pricing policy, particularly in relation to price differentials between heavy and light crudes. By the end of 1984, a definite downward trend was in process.</p>
Scotia Coal Synfuels project	<p>In October, the federal and Nova Scotia governments provided \$750,000 to the Scotia Coal Synfuels project to finance further tests of the feasibility of producing synthetic crude oil from Cape Breton coal and low-grade oil. Tests had produced about 3 1/2 barrels of synthetic oil from a tonne of coal - 5 barrels per tonne being the benchmark for commercial viability. If that level was reached, the next step would be construction of a plant at the site of Gulf Canada's mothballed oil refinery at Point Tupper.</p>
Oil and gas price deregulation planned	<p>On October 29, announcement was made that the Amending Agreement of June 30, 1983 between the federal and Alberta governments on energy pricing and taxation would be extended one month beyond the termination date of December 31, 1984 to give the new federal government more time</p>



to prepare for major price and other policy changes. Since the mid-year, there had been a preference in both major political parties for market-based rather than administered prices. By the time the new government directed particular attention to oil pricing in the fall of 1984, there was a considerable degree of concurrence in Canada on the main issues. Discussions among Energy Ministers were held in October and it became evident that market pricing was the mutual goal. In an address given on October 28, the new Minister of Energy, Mines and Resources highlighted the benefits of deregulated oil and gas pricing, and indicated that the federal government would take the lead in building a consensus among governments, producers and consumers on the concept of market sensitive natural gas pricing. A commitment was also made to ensure that Canadian consumers would never pay more for their natural gas than their American neighbours.

Business Council  
on National  
Issues report on  
energy

In October, the Business Council on National Issues (BCNI) released its policy proposals for oil and gas, based on two "Energy Summits" held on November 6-7, 1983 and on June 4-5, 1984. BCNI, composed of chief executive officers of 150 leading Canadian Corporations, had been formed in 1976 to contribute to the development of public policy and to the shaping of national priorities. Both of the Energy Summits were attended by the Premiers of Ontario and Alberta. BCNI recommended three broad directions for energy policy: deregulation of oil and natural gas pricing; restructuring and lowering of taxes and royalties; and an improved balance between Canadian participation and foreign investment. Crude oil prices would be negotiated between producers and refiners, and natural gas prices would be decoupled from crude oil prices. Resource taxation would be based on profits instead of revenues, and exploration and development incentives, if necessary, would be based on a profits tax system rather than on grants. This would mean the elimination of the Petroleum and Gas Revenue Tax (PGRT) and the Canadian Ownership Special Charge (COSC) among other changes. The 25 per cent back-in provision for the Crown on Crown lands would be eliminated and the Petroleum Incentive Program (PIP) would be allowed to expire. Higher than 50 per cent foreign equity participation in future oil and gas development on Canada Lands would be permitted, provided "best efforts" had been made. Many of these recommendations were among those subsequently implemented by the new federal government.

Northern oil and  
gas exploration  
since 1919

In an October 25 address, the Administrator of the Canada Oil and Gas Lands Administration (COGLA) reviewed and appraised oil and gas developments in northern Canada. Since the first well was spudded at Norman Wells in 1919, about 1150 wells - most of them in the Mackenzie River valley - had been drilled in northern regions, resulting in 74 significant discoveries of oil and gas. Exploration costs, including geophysical surveys and drilling, had amounted to about \$6.5 billion, 60 per cent of which had been spent for exploration in the Mackenzie-Beaufort region. In recent years, Esso, Gulf and Dome had drilled 187 wells in the Mackenzie-Beaufort region at a cost of \$4 billion. Benefits to Canada of northern exploration programs were indicated from 1984 estimates of total expenditures of \$850 million, of which \$660 million, or 77 per cent, was invested in Canada.

Negotiated gas  
export prices  
initiated abolish  
NEP provisions

On November 1, the federal government approved natural gas export licence amendments to allow six Canadian companies to export gas to U.S. buyers at negotiated prices which was expected to result in exports of an additional 11.3 billion cubic metres of gas (400 bcf), earning \$US 1 billion more in export revenue than would have been possible under government-prescribed export prices. This marked the beginning of a new era in Canada-U.S. natural gas trade and it was hoped that competitive export prices would help Canada regain export sales lost in the previous several years. The average negotiated prices were in the \$U.S. 3.25-\$3.35/MMBtu range, comparing favourably with the Eastern zone price (\$Cdn. 4.15/MMBtu or \$U.S. 3.15/MMBtu) as available to Canadian consumers. In December the federal government approved natural gas export licence amendments for three more companies.

Speech from the  
Throne

In the Speech from the Throne, on November 5, marking the opening of the thirty-third Parliament, the new government announced that it would launch a "new era of national reconciliation, economic renewal and social justice"; simplify the taxation system; convene a

national economic summit; and continue to improve relations with the U.S. and internationally.

Economic and Fiscal Statement -changes in energy policy instruments

on November 8, the Minister of Finance delivered his inaugural Economic and Fiscal Statement, aimed at reducing the federal deficit by \$4.2 billion in the 1985-86 fiscal year. In order to achieve that goal, some major changes were announced relative to a number of established government programs, and to fiscal measures including those affecting Canada's energy sector. The intention was to adopt a less interventionist approach to government and, in this direction, the Economic Statement highlighted actions that would reduce federal energy expenditures, regulations, and direct Crown involvement in the national energy economy. With regard to pricing, the domestic price of oil and gas would be no longer set administratively but, rather, would be based on market forces, although a "safety valve" would be put in place to deal with any major price shocks. There would be consultation with the provinces and industry on a more market-responsive system for domestic natural gas sales. In an attempt to reduce federal expenditures on energy demand and supply programs -which amounted to \$3.5 billion in 1983-84 - a number of established policy instruments were to be modified or abandoned, as detailed in the following note, and this was expected to result in a \$613.4 million saving in EMR expenditures alone in fiscal 1985-86. Publications released with the Finance Minister's Economic and Fiscal Statement included: "A New Direction for Canada: An Agenda for Economic Recovery"; and the President of the Treasury Board's "Expenditure and Program Review", which detailed federal program reductions and modifications.

Energy program changes and terminations the end of the NEP

In the Economic and Fiscal Statement announced on November 8, and in a statement by the Minister of Energy, Mines and Resources on November 9, detail was provided concerning the changes and abandonments of energy programs, most of which had been implemented in October 1980 with the announcement of the National Energy Program (NEP). The statements gave notice of the following intentions:

"The Petroleum Incentives Program (PIP), the cash grant program introduced in 1980 to encourage exploration activity in the frontier, and to provide assistance on the preferential basis to Canadian-owned firms, will undergo a comprehensive review, after which a decision will be made about what incentives -- if any -should replace PIP. In the interim, the Program's spending levels for 1985-86 will be reduced by \$250-million from currently approved reference levels of \$1.8-billion. The Canada Lands regime -- including the PIP 25% Crown share incentive -- will also be closely reviewed by the federal government.

"To offset the \$1-billion in the Petroleum Compensation Account, which subsidizes crude oil imports to achieve a Canadian blended oil price, the compensation charge on oil has been increased by 1.81 per litre at the refinery gate. This will result in Canadian consumers paying the world price for oil. A short exemption period from this price increase has been provided to farmers, fishermen, loggers and mine operators, who will be eligible for the fuel tax relief until oil prices are decontrolled. The petrochemical industry will also be exempted from payment of this price increase.

"In view of the major changes in the energy price outlook and the need for more appropriate investment incentives, a comprehensive study of current federal energy taxation has been scheduled. Announcement has been made of changes to the Petroleum and Gas Revenue Tax. The federal government has extended for one year the lower rate of PGRT that applies to integrated oil sands projects, and will double the threshold level of the small producers' credit from \$250,000 to \$500,000 effective January 1, 1985. A Ways and Means motion to formalize this action until appropriate legislation can be passed in Parliament, was introduced on November 8. Major changes will also be made to the fiscal regime regulating oil sands production, to expedite development of that important source.

"The Canada Oil Substitution Program will be terminated on March 31, 1985, effecting a savings of \$95-million in 1985-86. (COSP was to have ended in December 1990.)

"The rate of federal contribution for grants under the Canadian Home Insulation Program will be reduced from 60% to 33 1/3% by the end of 1984, and the program itself will be terminated on March 31, 1986, resulting in an \$84-million savings in 1985-86.

"The federal government has deferred new commitments under the Natural Gas Laterals Program, which was designed to support the construction of lateral pipelines off the main TQM gas line from Montreal to Quebec City (\$85-million saving).

"As a result of TQM extension deferrals, Maritime Engineering, a program designed to perform engineering work for the Maritime leg of the gas pipeline, has been cancelled, at an \$8-million savings.

"Canertech, the Petro-Canada subsidiary concerned with investing in conservation and renewable energy projects, will wind-down, and its assets sold (\$30.6-million).

"The interdepartmental Energy Research and Development Program will be reduced by \$60.8-million during 1985-86.

"Plans to establish an Institute of Electrochemistry at Shawinigan, P.Q. will not proceed.

"Approximately \$8-million will be cut from the budget of the Northern Oil and Gas Action Plan, which provides funding to a number of federal departments to accelerate studies in connection with Northern oil and gas production."

The government also announced that it would provide no equity to Petro-Canada in 1985. A figure of \$275 million had been earmarked by the former administration.

CHIP and COSP  
total grant  
payments

The November 9 statement of the Minister of Energy, Mines and Resources noted that over its seven years of existence, the Canadian Home Insulation Program (CHIP) had paid \$775 million in grants, generally \$500 per household. Canadian Oil Substitution Program (COSPP) grants since the inauguration of the program in June, 1981 had aggregated almost \$500 million, with grants of up to \$800 being paid. More than 890,000 residential units had been converted from oil, resulting in an oil displacement of 6,100 m<sup>3</sup>/day (28,400 bbls/day). The focus of government activity in support of residential energy conservation would now shift from direct incentives to consumer education, industry support, and the demonstration activities in cooperation with the private sector and provincial utilities.

Auditor General  
seeking Petrofina  
acquisition  
documents  
through the  
Federal Court

In November, the Auditor General announced that he would proceed with his case before the Federal Court of Canada in an attempt to gain access to federal records pertaining to Petro-Canada's purchase of Petrofina. He had launched his action in the Court in July after the former government had rejected his bid for access to government files regarding the acquisition. In his annual report, tabled in Parliament on December 12, the Auditor General warned that his ability to act as Parliament's watchdog over government spending was imperilled by the refusal of some departments and agencies, not only Petro-Canada, to provide him access to information. In a statement in mid-December, the former Chairman of Petro-Canada claimed the acquisition had been a good deal, based on a policy decision to get into refining and marketing. "If you look at the alternative ways of implementing that decision, there's no question that the Fina acquisition was cost effective".

B. C. coast  
exploration plans  
Petro-Canada  
withdraws

In November, Petro-Canada withdrew from an inquiry into the resumption of oil and gas exploration off B.C.'s coast. It withdrew following the federal-B.C. environmental inquiry's request to interested companies, and various government departments and agencies, for additional information about exploration procedures, environmental impact, and contingency plans to handle emergencies. The company had already spent about \$1 million to produce the initial environmental evaluation and considered the additional requirements too onerous.

Canada-N.S. Development Fund Agreement	On November 21, the federal and Nova Scotia governments announced the signing of the Canada-Nova Scotia Development Fund Agreement and the approval of the first four projects under the Agreement. It provided for up to \$200 million to help fund projects to create an infrastructure enabling the development of the petroleum resources off the coast of Nova Scotia. The Development Fund was part of the Canada-Nova Scotia Agreement on Offshore Oil and Gas Resource Management and Revenue Sharing signed in March 1982. The Fund was confirmed in legislation passed by Parliament and the Nova Scotia Legislature in June 1984.
Vancouver Island gas pipeline dependent on federal subsidy	In November, the Minister of EMR asked the B.C. government to develop a new proposal for funding of the Vancouver Island gas pipeline. B.C. had asked the federal government for \$528 million over 20 years to cover the capital costs and anticipated operating deficits of the proposed 74 km link from Roberts Bank, south of Vancouver, to Cedar on Vancouver Island. In July, the B.C. government approved a proposal of the B.C. Hydro and Power Authority to build the line provided the federal government guaranteed a subsidy over 20 years.
Cold Lake heavy oil project	In November, Esso Resources Canada Ltd. accelerated the work on its Cold Lake heavy oil project and budgeted an additional \$225 million for it. The first two phases of the project were scheduled for completion in mid-1985 and two more early in 1986, each pair producing 18,500 barrels of oil a day. All six phases, with a total capacity of about 56,000 b/d, were scheduled for completion by 1988.
Petroleum Compensation Account deficit	In November, the 1983-84 annual report of the Petroleum Compensation Board became available and showed a deficit in the Petroleum Compensation Account (PCA) at the end of March 1984 of \$482 million, with the deficit expected to reach ;1 billion by the end of 1984. Volumes of oil eligible for New Oil Reference Price (NORP) payments had been increasing beyond expectation and the decline of the Canadian dollar from 80 cents early in January to 74.9 cents in mid-July, which was the most important factor, were creating major problems. Other factors also contributed to the deficit including the fact that there was a net cost to the PCA even when new oil backed out imported oil because the average NORP compensation \$10-\$12/bbl was greater than the flat-rate compensation (\$6-\$8/bbl). In the November 8 Economic Statement, the federal government increased the Petroleum Compensation Charge by the equivalent of 1.8 cents/litre to arrest the growing PCA deficit and began looking for sources of revenue to offset it.
C.D. Howe report; Canada's Energy Policy	In November, the C.D. Howe Institute published a report in which it recommended the adoption of world oil prices and the development of a new national energy program. However, it cautioned against complete deregulation. The Institute claimed that the 1980 NEP was a failure because it was based on an expected increase in world oil prices. A new energy program should be designed to anticipate upheavals in the world price and supply of oil. The adoption of world prices would prompt market adjustments to changes in price and supply without bureaucratic intervention, as the public would probably cut consumption as prices rose and use energy more efficiently. Included in the report, "Canada's Energy Policy, 1985 and Beyond", were six other papers in addition to the C.D. Howe overview paper: The International Context (M.A. Adelman); Canadian Energy Policy after 1985: Lessons from the Past (L. Waverman); Energy Revenue Sharing (B.W. Wilkinson); Managing Canadian Energy Demand and Supply (R.G. Wirick); Financing Energy Development, 1985 and Beyond (J. Grant); and Energy Issues in a Public Policy Context (T. Kierans).
U.S. electricity imports from Canada a best alternative	At a meeting in November of the International Association of Economists in San Francisco, purchase of electric power from Canada was recommended as a better alternative than expansion of power generation facilities within the U.S. in view of the significant change underway in the energy economy of that country. As a result of increasing electricity rates in the U.S., large amounts of energy were being "released" from the industrial sector through the decline of electricity-intensive industries steel and aluminum, etc. The electricity supply "bubble" may last well into the next decade. As inter-regional access to gas and electrical transmission facilities is increased, the definition of responsibility for assuring future supply will become diffuse and unclear. With consumers providing little or no assurance of takes, utilities will be reluctant to make

the investments necessary to assure long-term supply. Consequently, utilities should recognize that the risk of extended capital investment far exceeds its reward. Utilities must seek solutions for long-term energy supply other than through construction of large central generating plants. In this regard, the conclusion was that purchase of power from Canada makes eminent good sense.

<p>Mesures to assist oil sands projects Suncor and Dome Lindbergh</p>	<p>In December, the federal government announced that, effective January 1, 1985, the Incremental Oil Revenue Tax (IORT) on production from Suncor's Fort McMurray oil sands plant would be eliminated in order to facilitate the Company's planned \$500 million project to improve productive capacity and reliability. That project would increase the plant's daily productive capacity by 6,500 barrels (1,030 H3) of synthetic crude oil and gas liquids. For the Dome Lindbergh \$300 million oil sands project, 65 km northwest of Lloydminster, the federal government offered to facilitate construction by applying Petroleum and Gas Revenue Tax relief and earned depletion, approving any crude oil export licences recommended by the National Energy Board, and giving the project's production the New Oil Reference Price (NORP). The Lindbergh project was designed to produce 2,380 m3 (15,000 bbls) per day of crude oil.</p>
<p>Cooperative Energy Development Corp (Co-Enerco)</p>	<p>In December, Co-Enerco announced it had successfully completed the sale to the public of 1.7 million Class A shares at \$7.00 per share. The Canadian/Cooperative Energy Investment Agreement was signed between a group of co-operatives and credit unions (17 in total) and the Government of Canada in December 1981, and Co-Energy was formed with a mandate to explore for and develop oil and gas and other energy sources to thereby contribute to the goals of security of supply and Canadian ownership of the petroleum industry. The Cooperative Energy Act was enacted by Parliament on July 9, 1982. Co-Enerco purchased the assets of Sabine Corporation of Dallas in September 1982 for \$103 million, a producing operation which provided Co-Enerco with reasonable cashflow. Co-Enerco continued to explore and in 1983 participated in 29 successful oil wells and 6 gas wells. The federal government invested \$58 million in the company in its early stages of incorporation.</p>
<p>Ocean Drilling Program</p>	<p>In December, the federal government announced that Canada would participate with the U.S. National Science Foundation in a 9-year international Ocean Drilling Program. It would be a multi-disciplinary scientific research program to gather information on the geology of the deep ocean and continental margins. Participation in the ODP would provide access to information important to offshore oil and gas exploration and it would also improve knowledge of mineral-deposit formations on the seafloor. Canada committed \$15 million to the program for its first four years. Germany, France and Japan also announced the intention to participate in the ODP. Of particular importance to Canada, with the longest coastline in the world, is the need to acquire advanced geoscience information about its continental shelf. Support for establishing Canada's offshore boundary, where the continental shelf extends beyond 200 miles, will rely heavily upon this information.</p>
<p>Polar Continental Shelf Project 1984 field season</p>	<p>An assessment completed in December of the Polar Continental Shelf Project (PCSP) 1984 field season showed that Arctic research is continuing to increase, with the 210 scientific field parties in the field being the greatest number since the PCSP was established in December 1958. In 1984, several significant discoveries were made as part of the geophysical, hydrographic, geological and other program activities. A canister was found in a cairn on the west coast of Brodeur Peninsula left by W .E. Parry in 1819. Several geological discoveries were made to further confirm that the Canadian Arctic at one time was tropical in nature and that there was a land bridge between North America and Europe. The exhumation of the body of John Torrington, a sailor who died on the Franklin voyage to discover the Northwest Passage and was buried on January 4, 1846, and pathological studies on the fully preserved body, which had been buried in permafrost, provided important medical findings about the level of carcinogens in the population in the mid-1800s. As in past PCSP field seasons, the geological and geophysical research contributed to an increased knowledge of the oil and gas resource potential of the Arctic region.</p>
<p>Canada Lands oil</p>	<p>Results of the 1984 oil and gas exploration program in Canada Lands, as examined in December,</p>

and gas exploration in 1984	indicated that 11 significant discoveries had been made in the drilling of 43 exploratory wells - 2 oil discoveries, 3 oil and gas discoveries, and 6 of gas or gas condensate. The program also included 10 delineation wells. It was concluded that follow-up drilling would be required to determine the commercial potential of the fields. In the Mackenzie-Beaufort Sea region, 10 exploratory wells were completed resulting in 4 discoveries - 1 of oil, 1 of oil and gas, and 2 of gas. The other 1984 discoveries were made in the Atlantic Offshore.
Electricity surplus capacity - increasing interest in exports	Although there was a major growth in electricity demand in 1984, the conclusion in December was that Canada would continue to have a substantial electricity generation surplus capacity, and in most provinces, except Manitoba, generation expansion plans were being set aside. The Hat Creek coal-fueled station and the Site C hydro station in B.C. had been indefinitely postponed. In Alberta, the Slave River hydro site studies had been delayed and coal-fueled generation under construction at Sheerness had its in-service dates postponed. Ontario had announced no plans after the Darlington nuclear plant, and had mothballed a number of oil and coal-fired units surplus to existing needs. Hydro Québec had postponed the commitment of new generation in the James Bay area. Export marketing efforts were being intensified, with increasing interest being shown in B.C., Manitoba, Ontario, Quebec, and New Brunswick in longer term firm contracts in place of the interruptible or short-term contracts governing most of the export sales. Nearly all sales were from plants built to supply Canadian customers in the context of the higher demand forecasts of the mid-1970 which did not materialize.
Canadian coal supply and demand - major increases in 1984	Coal supply and demand data for 1984 available in December showed that the year's production was up 27 per cent from 1983 to 57 million tonnes; domestic coal utilization reached 50 million tonnes, up 13 per cent; exports increased by an unprecedented 48 per cent to 25.2 million tonnes, up 27 per cent from 1983. The production and export increases were primarily the result of the first full year of production for five new coking coal mines in B.C. including the two large operations in northeast B.C., and a new thermal coal mine in Alberta also contributed to the production increase. The increase in imports, and in domestic consumption, was due in considerable part to Ontario's increased imports and greater use as a result of the Pickering nuclear station shutdown.
Natural gas in Quebec -expansion financed by federal programs, NGLP, DSEP, GMAP	In December, a new natural gas pipeline, funded by the federal government in an amount of \$175 million, was completed over a 333 km route between Grand-Mire and La Baie in Quebec to connect the Saguenay - Lac Saint-Jean region with the province's natural gas network. The project was financed by the federal Natural Gas Laterals Program, established in 1982, which paid the total cost of all laterals built in Quebec in the period 1982-85, including those to Trois-Rivières, Shawinigan, Grand-Mire and Bécancour, as well as Sherbrooke and other centres in the Eastern Townships. Within these towns and cities, the federal government's Distribution System Expansion Program (DSEP) and Gas Marketing Assistance Program (GMAP) assisted gas distributors to extend their services.
Domestic Transfer Compensation Program extended to 31/6/85	In a federal government decision taken in December, the Domestic Transfer Compensation Program, introduced in July 1982 and assessed semi-annually, was again extended six months, this time to June. 30, 1985. From July 1982 to October 1984, about \$97 million had been paid by the federal government to subsidize the transportation of crude oil east of Montreal to Quebec City, St. John and Halifax as part of an overall effort to utilize Canadian crude oil more fully. Since the start of the program, the displacement of foreign crude oil imports had resulted in a reduction in oil import compensation expenditures of \$282 million.
Northern Pipeline Agency closing down - no prospects for Alaska Pipeline, and "pre-build" under-utilized	In December, the Northern Pipeline Agency (NPA) released its report for the fiscal year ending March 31, 1984. The NPA was established with the proclamation of the Northern Pipeline Act on April 13, 1978, for the purpose of overseeing the planning and construction of the Canadian portion of the Alaska Highway Gas Pipeline to provide access to the substantial Arctic natural gas reserves of both Canada and the United States. In addition to creating the Agency, the Act provided the legislative authority to implement the bilateral agreement of September 20, 1977, (between the two nations) which governs the joint undertaking of the 9,000-km (5,500-mile) system. The NPA

was established to provide a "single window" for the conduct of virtually all dealings at the federal level with the Foothills Group of companies, which was authorized under the Act to undertake the project in Canada. In 1980, Canada and U.S. authorities approved the early construction of the Western and Eastern Legs - the "pre-build" - of the Alaska Highway Gas Pipeline Project. The NPA 1983-84 Annual Report notes that the pre-build sections operated substantially below authorized volumes of some 32.1 million cubic metres (1.14 billion cubic feet) of gas a day and explains this in terms of the substantial drop in natural gas demand in the U.S. resulting from such factors as economic recession, conservation, a series of mild winters, and competition from residual oil and electricity, as well as a significant surplus of gas supplies from U.S. sources in response to increased wellhead prices. Planning for the section of the Alaska Pipeline from Prudhoe Bay, Alaska, to join with the pre-build section proceeded at a much reduced pace in 1983-84 because of poor market prospects and incomplete financing. By 1984, the NPA had reduced its staff to 15 from a peak of 100 in 1982 and closed its Vancouver and Whitehorse regional offices, with little prospect of Alaska Pipeline activity in the foreseeable future.

The rationale for frontier oil exploration expenditures

At the December 6 meeting of the Parliamentary Public Accounts Committee, which was examining energy program expenditures, a question was raised as to why taxpayers' money, in the form of Petroleum Incentives Program (PIP) payments, was being spent on frontier exploration when Canada had large reserves in the oil sands and heavy oil areas. The response pointed to the fact that the amount of oil being discovered in the traditional areas of western Canada will be smaller in the future than the amount of oil used in the country, with the proportion of supply to demand declining from 100 per cent in 1970 to about 40 per cent in the year 2000. The cost of producing and upgrading oil from the oil sands and heavy oil areas is likely to remain considerably above the cost of conventional oil although that oil will become more costly as reserves decline. The investments being made by taxpayers to support frontier exploration were directed to determining how economic frontier oil and gas production might, or might not, be in relation to the megaproject expenditures required to bring the oil sands into large-scale production (about three times that of conventional oil production). The rationale for public investment in frontier exploration was thus explained in terms of the importance of acquiring the knowledge that would enable economically sound decisions to be made about which resources areas (oil sands or frontier oil, or both) should be developed and produced in the future to offset the declining conventional production in Alberta and Saskatchewan.

## THE YEAR 1985

Oil Price  
deregulation  
negotiations

During January, federal-provincial negotiations towards oil-price deregulation continued and, to permit more time, the Amending Agreement of June 30, 1983, which had been extended to January 31, 1985, was further extended to March 31, 1985. As an interim measure, the federal government agreed to a more flexible system for the price of crude oil exported to the United States which, along with changes in the National Energy Board's crude oil nominations and licensing system announced in December, was designed to minimize the need to shut in crude production from Alberta and Saskatchewan oil fields. The need for decontrol was becoming increasingly evident as distortion developed in the Canadian administered pricing system. In January, the blended price for light crude oil in Montreal was about \$29 a barrel; the export price was \$34; the Conventional Old Oil Price was \$30; and the New Oil Reference Price was \$40 while the market price was about \$35 a barrel.

OPEC oil price  
decline in 1985

In January, OPEC was still attempting to defend its US\$29 per barrel oil reference price while Norway was abandoning official prices for its North Sea crude in favour of negotiating agreements with its customers. Both Norway and Britain had cut their North Sea prices in October 1984 and Nigeria, an OPEC member, had lowered its price unilaterally forcing OPEC to curb production in a vain attempt to shore up unstable world oil prices. At the end of January, OPEC Oil Ministers agreed to cut their oil prices, with the top-price oil declining from \$30.50 to \$29.90. However, some OPEC members refused to be part of the agreement. In May, Norway reduced its price for North Sea crude by \$1.00 to about \$26.50 and Britain followed in June with a reduction in its price of \$1.25 reflecting steadily falling rates on the European spot market where buyers were offering \$26.20. By November, virtually all 13 members of OPEC were selling oil at prices below official levels and producing as much oil as they chose. On December 10, OPEC Ministers confirmed that the organization was shifting its strategy from one of maintaining a specific price to that of increasing production in an effort to retain one-third of the over-supplied world market. Britain's North Sea price immediately dropped to \$U.S.22 per barrel, and it was generally accepted that the OPEC reference price which was still being posted at \$28 would soon drop to \$20. By July 1986, the spot price had declined to below \$10 per barrel and the average OPEC price for 1986 was \$14 compared with \$27 in 1985 and \$31 in 1980.



Standing Senate  
Committee on  
Energy - NEP  
inquiry

In January, the Standing Senate Committee on Energy and Natural Resources resumed its inquiry into all aspects of the National Energy Program (NEP), including its effect; on energy development in Canada. The Committee had opened its investigation in January 1984 but had not met since June. With a renewed authorization, the Committee commenced a series of hearings in Ottawa and Calgary from January to April. Attention was directed to proposals of new pricing and fiscal regimes. Industry witnesses spoke strongly in favour of a reduced governmental fiscal and regulatory burden, citing the Petroleum and Gas Revenue Tax (PGRT) and provincial royalties as being too onerous, and calling for tax incentives in place of the Petroleum Incentives Program (PIP) payments. The Committee was skeptical of some industry claims that a lower fiscal burden would automatically lead to greater oil industry activity and found that most witnesses were not very specific as to the precise measures they wanted to see in a new energy system. Some witnesses supported the demand reduction programs that had been part of the NEP and expressed concerns about the impact of the reduction of conservation, renewable energy and RED programs. The Senate Committee released an interim report on August 21 after conducting 34 sessions, and hearing from many witnesses including those from government, industry, the academic community, and public interest groups. The report included recommendations concerning the petroleum industry and concerning the national interest. The Committee supported deregulation of crude oil prices; market sensitive pricing for natural gas; phasing out of all transportation subsidies; a phased withdrawal of the PGRT and the PIP; special incentives for both petroleum exploration and development of Canada Lands to encourage Canadian participants; and the continuation of the 50 per cent Canadian participation requirement on the Canada Lands. In matters concerned with the national interest, the Committee recommended that the federal government's energy conservation and oil substitution efforts be expanded; that alternative energy R&D be maintained to enhance the leading position that Canada had achieved in this field; that an interim floor price for oil sands and enhanced oil recovery production be maintained; and that there be interim protection for consumers against a sudden large increase in the price of oil.

Quebec endorses  
oil price  
deregulation

In January, the Quebec Energy Minister announced endorsement of oil price deregulation and flexible natural gas pricing. "The cumbersome social and bureaucratic policies that have been in place since 1973 should be abolished."

Environmental  
Studies Revolving  
Funds - Canada  
Lands

In January, the 1984 annual report of the Environmental Studies Revolving Funds - ESRF (EMR) and ESRF (IAND) was issued, covering activities since the Funds were established in mid-1983 under Section 49 of the Canada Oil and Gas Act for environmental and social studies. The Funds were set up to address issues necessary for decision-making relating to petroleum exploration and development on Canada Lands. The revenue for the program was to come from the interest owners on these lands while the administration was to be done by the federal government (COGLA for EMR and the Northern Affairs Program for IAND). To the end of 1984, 18 studies had been completed covering a broad range of subject areas including oil spill research, icebergs, ice scour, waves, and social issues. The studies were of three basic types: scoping studies, laboratory work and field studies. Study commitments to the end of 1984 were budgeted at a total of \$8.9 million. member of this international energy organization. In January, the WEC International Executive Council, meeting in Algeria, provided an overview of studies then underway. They were representative of the ongoing work of the WEC and included a number of projects of the Conservation Commission concerned with the long-term outlook for energy supply and use, and such other special studies as those directed to energy consumption in industrial processes, the growing role of electricity in the energy spectrum, acid rain deposition, methanol from coal, and energy terminology.

Canada-U.S.A. Energy Consultative Mechanism	In January, a meeting of the Canada-U.S. Energy Consultative Mechanism was held and, as in the case of past meetings, covered a broad range of bilateral energy issues. For Canada, the emphasis was on securing and maintaining access to U.S. markets. For the U.S., the balance was between its free market philosophy, and prevailing protectionist attitudes in the U.S. The emphasis in the discussion was on crude oil and petroleum product trade and trends in the refining and petrochemical industry. As Canada moved to freer trade in oil, the abandonment of export controls was raising concerns about access to competitive feedstock for central Canadian refiners due to U.S. oil export controls. The U.S. side agreed to review the discretion available to the Administration in U.S. legislation controlling exports in order to address the Canadian concern. Both sides agreed to study difficulties confronting their refining and petrochemical industries. With the beginning of new terms of office at the federal level in both countries, there was a desire to promote amiable bilateral relations in the energy economy.
Task Force on use of western Canada coal in Ontario	In January, the Task Force on Expanded Use of Low Sulphur Western Canadian Coal in Ontario was formed, chaired by Environment Canada with representation from EMR, Transport Canada, and the Ministries of Environment for Alberta, B.C., Ontario and Saskatchewan. The mandate of the Task Force's work was to focus on Ontario Hydro's use of low sulphur thermal coal from western Canada, in place of U.S. imports, as this would provide a major market outlet for Canadian coal while offering the opportunity for significant reduction in acid gas emissions. Appointment of the Task Force had been preceded by a United Mine Workers study in 1983 which outlined employment benefits through the greater use of western Canada coal in Ontario, and an Alberta-Ontario study in 1984 which had examined the potential for the expanded use of western coal in Ontario. Ontario Hydro had decided to diversify into the use of higher-priced western Canadian coal as early as 1970 and, because of coal quality constraints, to blend it with U.S. coals. The main constraint to greater Canadian coal use had always related to the long transportation distances resulting in a price premium in comparison with the delivered price of U.S. coal to Ontario Hydro's Nanticoke generating station. In early 1985, the premium was \$21/tonne (\$69/tonne for U.S. coal versus \$90/tonne for Canadian coal). The Task Force examined alternatives for coal supply in terms of flue gas desulphurization (FGD) alone, a combination of low sulphur western coal and FGD, and western Canadian coal alone. It completed its report at the end of the year. (See note for December).
World Energy Conference studies	The World Energy Conference (WEC), a private international organization devoted to promoting a nonpartisan exchange of information and views among energy experts to further the peaceful development of world energy resources, maintains a continuing program of studies on a broad range of energy topics. The Department of Energy, Mines and Resources, along with provincial government agencies and companies, provide annual financial contributions to support the activities of the Canadian National Committee of the WEC (CANWEC), which is an active member of this international energy organization. In January, the WEC International Executive Council, meeting in Algeria, provided an overview of studies then underway. They were representative of the ongoing work of the WEC and included a number of projects of the Conservation Commission concerned with the long-term outlook for energy supply and use, and such other special studies as those directed to energy consumption in industrial processes, the growing role of electricity in the energy spectrum, acid rain deposition, methanol from coal, and energy terminology.
St. Pierre and Miquelon boundary dispute	At a Canada-France meeting held on January 10 in Paris, the two countries failed to reach an agreement on the long-standing territorial dispute over the waters surrounding the two small islands of St. Pierre and Miquelon off the south coast of Newfoundland. France claims an economic zone of 200 miles around the islands while Canada maintains that, under international law, the islands are entitled to only the 12-mile territorial sea.

Benefits to Ontario of nuclear power

In January, the chairman of Ontario Hydro forecast that, by the late 1980s and the 1990s, when all nuclear plants under construction in the early 1980s were completed, they will save Ontario \$1 billion a year over the alternative casts of coal. Ontario Hydro's commitment to nuclear power in the 1970s will then start paying off in a development that has been of immense economic importance to Ontario.

CANMET Hydrocracking Process being tested at Petro-Canada refinery

The CANMET Hydrocracking Process was developed to upgrade Western Canadian oil sands bitumen and heavy oil and refinery petroleum residues to transportation and home heating fuels. The process is able to cope with the relatively high levels of heavy metals present in these feedstocks and can convert more than 9476 of the feed to synthetic crude. The yield of distillate product generated by CANMET Hydrocracking is greater than that produced by any other existing commercial process. The process uses an inexpensive coal additive to suppress coke formation, and by January 1985, 39 patents had been issued in Canada, the U.S.A. and eight other countries. During the period 1980-85 more than 30 004 hours of operation had been achieved in two pilot plants at CANMET's Energy Research Laboratories on Canadian, Venezuelan and Middle East feedstocks. In October 1979 a licensing agreement was signed whereby EMR granted Petro-Canada exclusive rights to develop and market the process. Petro-Canada in turn chose Lavalin Inc., a major Canadian engineering company, as its joint venture engineering partner to undertake further engineering development and marketing of the technology. Partec Lavalin, with input from the Ralph M. Parsons Company, conducted scale-up and engineering design work for a 5000 barrels per day commercial demonstration unit. Petro-Canada's Board of Directors approved the project in November 1981, and the decision to proceed with the construction of the demonstration unit at its Montreal refinery was announced in January 1982. The construction phase of the CANMET Hydrocracking residual oil upgrading unit at Petro-Canada's Montreal refinery was inaugurated on September 15, 1983. As of January 1985, the construction of the plant was on schedule for start-up by the end of 1985.

Economic Council of Canada report on energy

In January, following three years of study, the Economic Council of Canada (ECC) released its 207-page report "Connections: An Energy Strategy for the Future", with 29 recommendations in four major categories strategic goals, the oil and gas sector, the electricity sector, and conservation and substitution. The analysis in the report focused on the supply and pricing of oil, natural gas and electricity in support of the position that economic efficiency should govern Canada's energy policy. The Council proposed a new framework for energy policy with provision for new pricing and taxation policies. As part of this strategy, it urged federal and provincial governments to establish clear principles for revenue sharing and management of resources. The report argued that provinces should have the right to manage and collect surplus revenues from development of their resources but the federal government should have an agreed share of those funds. The Council strongly endorsed deregulation of oil and gas prices and a more efficient tax and incentive system. Allowing the domestic oil price to rise to world levels, gradually freeing domestic gas prices and changing federal energy taxes would help stimulate oil and gas exploration, increase natural gas sales, and generally promote other energy projects. With regard to electricity, the ECC suggested that subsidies for domestic prices be eliminated because they lead to over-consumption and waste. Capital is drained from other economic areas into the low-return electrical investments. Power companies should gradually introduce a new rate system which would encourage consumers to use electricity in off-peak hours. This would spread demand more evenly and reduce the need for additional excess capacity. The federal government should give significant support to the nuclear power industry to keep the CANDU reactor technology alive for at least the next five years. In the interim, there should be a thorough inquiry into the industry to weigh the costs and benefits of future backing.

U.S. natural gas prices to remain low under deregulation

In January, price ceilings were being lifted in the U.S. on about one half of the country's natural gas after 30 years of strict federal control. Surplus supplies of gas and falling oil prices were expected to keep consumers prices stable, in addition to federal regulations that prevented pipeline companies from making rate adjustments based on anticipated changes in the price of decontrolled gas. Consequently, it appeared unlikely that Canadian gas exporters could count on a turn-around in the depressed U.S. gas market.

A NEP critique

In the period 1981-85, many critiques in the form of articles and books directed attention to the National Energy Program (NEP), particularly to what were perceived at the time to be its failures. Much of the criticism was concentrated on the NEP as an economic policy only, or on particular aspects of it such as the 25 per cent Crown interest provision which attracted strong criticism from the international oil industry. Among the studies which provided a broader perspective of the NEP was a book released in January (completed in October 1984) entitled "The Politics of Energy - the Development and Implementation of the NEP" (Doern and Toner). The authors found the NEP to be primarily an exercise in political power intended to restructure relations between the federal government and Alberta and between the federal government and the oil and gas industry, and they assessed it in this light and in relation to all of its objectives: Canadianization, security of supply and self-sufficiency by 1990, and fairness in the distribution of wealth and in the burden of price increases. The NEP was considered to have been successful in restructuring political power in that the industry could no longer take the federal role for granted nor automatically assume that industry interests would be the same as those of the Alberta government. The producer provinces also saw that the federal government could act decisively. Progress towards the three objectives of Canadianization, security, and fairness in revenue sharing and in pricing indicated partial success but each of the goals fell short of expectation because each goal was at times in conflict with the others and involved trade-offs. A price was paid in terms of short-term efficiency in expectation of the benefits of longer-term efficiency in the form of a more competitive energy economy operating in the Canada Lands as well as western Canada. Detailed conclusions are set out in the book with respect to the objectives and consequences of the NEP and the general conclusion reached was that "it is neither as bad a policy as its critics believe, nor as good as its main political sponsors say it is. There are some successes, some failures, and some areas of the policy where one cannot gauge effects in the short term, or perhaps at all".

Canada LNG Core. proposal to ship LNG to Japan

In February, Osaka Gas Co. of Japan withdrew from a sales contract with Canada LNG Corporation (formerly the Western LNG Project) which was planning to export liquefied natural gas (LNG) to Japan, citing continuing delays in finalizing the project. The proposal to ship LNG to Japan had originally been developed by Dome Petroleum which subsequently withdrew from management of the project and, on November 1, 1984, the National Energy Board approved assignment of export Licence GL-76 to Canada LNG Corporation, the licence previously held by Dome. Applications for facilities were consolidated into one project and assigned to Canada LNG Corp. In March 1985, the Minister of EMR stated that while the federal government would like to see the project to sell LNG to Japan go ahead, it would not provide any financial guarantees to the proposed LNG plant on the B.C. coast. In March, the Japanese purchasers who were still committed to the project indicated that they were supportive of it and eager to make as many concessions to the Canadian side as possible, but no decision on the project's fate was taken by a March 31 deadline they had previously set. Later, in May, the restructured Canada LNG consortium (Mobil Oil Canada Ltd. and Petro-Canada each having a 30 per cent interest, Nissho-Iwai Corp. of Japan - 15 per cent, Westcoast Transmission Company - 15 per cent, and Suncor Inc. - 10 per cent) continued negotiations with Japanese customers but by the end of the year no further progress had been made. The NEB hearing on the project had taken place late in 1983 and, at the end of 1985, remained adjourned pending successful negotiations of gas pricing and financing for the proposed \$2.5-billion project.

Bent Horn crude oil shipped from the Arctic	In February the federal government announced that approval had been given to Panarctic Oil Ltd to proceed with its Bent Horn oil field demonstration project - the first movement by tanker of crude oil from the High Arctic to southern markets. In August, the company shipped its first crude oil from the Bent Horn oil field on Cameron Island in the MV Arctic, with the crude oil arriving in Montreal on September 10. Panarctic hoped that this first shipment of 16,000 cubic metres (1100,000 barrels) would eventually lead to continuing supply from the Arctic in an amount that would replace all of Canada's imports of light crude oil.
Dome's debt problems	In February, after three years on the edge of bankruptcy, Dome Petroleum Ltd signed an agreement with its creditors whereby they waived an earlier requirement that the company raise \$350 million on the open market as part of the overall debt-restructuring plan. However, the company remained vulnerable to a debt squeeze if interest rates increased as most of its debt was still at floating rates. The company was also vulnerable to plummeting oil prices. In April, Dome filed documents with regulatory authorities for a worldwide public offering of equity-related securities in the amount of \$100 million, in compliance with a requirement of an agreement with the lenders who had agreed to reschedule the \$5.2 billion debt. Dome's debt problems remained unresolved and, by February 15, 1987, the lenders were in position to begin legal action that would put the company into bankruptcy proceedings but by late 1987 they had not done so.
Quebec-Newfoundland Churchill Falls power dispute	In February, the Quebec Court of Appeal ruled that additional recall above the 300 MW specified in the Quebec-Newfoundland power contract of 1969 would be tantamount to breaking the contract and would therefore be illegal. The contract allowed recall only of 300 MW whereas Newfoundland was seeking at least 800 MW in addition to that amount. Later in the year, on October 28, the Newfoundland Supreme Court also found in favour of Quebec. In 1976 Newfoundland had requested 800 MW from the Churchill Falls power plant and in September of that year launched legal action before the Supreme Court of Newfoundland, seeking to recall Churchill Falls power. Quebec countered with its court action in 1977.
The Atlantic Accord Federal-Newfoundland agreement on offshore oil and gas resource management	Following the June 14, 1984 Agreement-in-Principle between then Leader of the Opposition Brian Mulroney and Newfoundland Premier Brian Peckford, and the subsequent election of Mr. Mulroney's Progressive Conservative government on September 4, 1984, negotiations took place between the Ministers of Energy for Canada and Newfoundland to finalize an agreement for joint management and revenue sharing of the petroleum resources offshore Newfoundland and Labrador. These negotiations culminated on February 11 with the signing of the Atlantic Accord. Both governments undertook to introduce necessary legislation to their respective legislatures within one year to implement the substance of the Accord. Under terms of the Accord, both governments share responsibility for management of offshore exploration, development and production through equal membership on the Canada-Newfoundland Offshore Petroleum Board (three from each side with a neutral chairman). The Board-assumes the functions and operations of COGLA and the Newfoundland and Labrador Petroleum Directorate (NLPD) for the Newfoundland and Labrador offshore. Where necessary, one minister retains paramountcy for approval of fundamental, reviewable Board decisions where consensus is not obtained. Before Canada has achieved (or when it loses) self-sufficiency and security of supply, decisions relating to the pace and mode of exploration and the pace of production will be approved by the federal minister. Following attainment of self-sufficiency, the provincial minister will have paramountcy. The province has responsibility in any case for decisions relating to the mode of development providing self-sufficiency and security of supply would not be unduly delayed as a consequence of such decisions. The Accord provides Newfoundland with the right to establish and collect royalties and other provincial-type resource revenues and taxes as if the resources were on land. In addition, the province will receive equalization offset payments over a period of 14 years after the start of production. A development fund of \$300 million (75% federal, 25% provincial) is to be established to allow for the preparation of necessary infrastructure in advance of offshore development and production. There is provision for constitutional entrenchment of the Accord should the necessary provincial support be achieved.

Background to the Atlantic Accord

The Atlantic Accord, signed by the federal and Newfoundland governments on February 11, followed a long history of exploration off the Newfoundland coast and extensive efforts on the part of the previous federal government in the 1970s and early years of the 1980s to reach an agreement with Newfoundland on offshore jurisdiction. Exploration for oil and gas in the Newfoundland and Labrador offshore region began in 1964 and, in 1979, the first major oil discovery was made at Hibernia P-15, 165 nautical miles (300 km) east-southeast offshore St. John's. Hibernia P-15, the 42nd well drilled on the Grand Banks, had a calculated flow rate of 20,000 barrels of high quality oil per day. Following that discovery, 17 new exploratory wells had been drilled by early 1985, nine of which resulted in significant discoveries. At that time, 45 exploration agreements were in effect in the Newfoundland and Labrador region covering 26 million hectares, with drilling program commitments valued at \$2.8 billion for the period 1982-90.

Purposes of the Atlantic Accord

The Atlantic Accord, signed by the Government of Canada and the Government of Newfoundland on February 11, included the following statement as to the purposes of the Accord:

- "to provide for the development of oil and gas resources offshore Newfoundland for the benefit of Canada as a whole and Newfoundland and Labrador in particular;
- "to protect, preserve, and advance the attainment of national self-sufficiency and security of supply;
- "to recognize the right of Newfoundland and Labrador to be the principal beneficiary of the oil and gas resources off its shores, consistent with the requirement for a strong and united Canada;
- "to recognize the equality of both governments in the management of the resource, and ensure that the pace and manner of development optimize the social and economic benefits to Canada as a whole and to Newfoundland and Labrador in particular;
- "to provide that the Government of Newfoundland and Labrador can establish and collect resource revenues as if these resources were on land, within the province;
- "to provide for a stable and fair offshore management regime for industry;
- "to provide for a stable and permanent arrangement for the management of the offshore adjacent to Newfoundland by enacting the relevant provisions of this Accord in legislation of the Parliament of Canada and the Legislature of Newfoundland and Labrador and by providing that the Accord may only be amended by the mutual consent of both governments; and
- "to promote within the system of joint management, insofar as is appropriate, consistency with the management regimes established for other offshore areas in Canada."

Canada Centre for Remote Sensing -in support of energy programs

The technology of remote sensing has been developed to serve a broad range of applications and as a result many of the activities of Canada Centre for Remote Sensing (CCRS) contribute indirectly to the success of energy programs in both the public and private sectors. The most easily identified such application is the use of radar imagery for the ice and ocean surveillance which is considered to be essential for safe navigation in arctic waters. Because of the diverse resources required to conduct significant experiments offshore, most of the related projects are carried out in close collaboration with other government agencies. GCRS is the lead agency in a large interdepartmental program to launch a Canadian satellite, RADARSAT, whose primary mission is to provide ice information in support of Arctic and East Coast shipping. The principal sensor on RADARSAT is a Synthetic Aperture Radar which will provide high resolution, all weather imagery of sea ice and open oceans. On a daily basis, the radar will map shipping corridors from the Beaufort Sea, through the Northwest Passage, Lancaster Sound, Baffin Bay and into the Labrador Sea. Sea ice, icebergs, wave patterns and even ships themselves will be visible in the imagery, allowing the vessel's master to plan the overall strategy to reach his destination as well as updating him on the local conditions. RADARSAT will also carry a microwave scatterometer with which to measure the surface wind speed over the ocean. An optical imager, similar in some respects to that carried on the LANDSAT series of satellites, will be used mainly for land applications. In February, RADARSAT was in Phase B, the stage in which the detailed design of the sensors and the satellite was being completed, the costing of the entire program refined and prototypes of the high risk subsystems being built. RADARSAT is scheduled for launch late in 1990. The principal source of remotely sensed data of Canada has been the optical imagery from the LANDSAT series of satellites. Although the major benefits for the use of this data lie in agriculture and forestry, the systems and methodologies now in place are being used in a wide variety of mapping applications which are an essential element of energy exploration and development programs.

Ernst & Whinney report on PetroCanada's acquisition of Petrofina Petro-Canada's 1984 annual report

In March, the federal government released a report prepared by Ernst & Whinney, a Toronto accounting firm, on the 1981 Petro-Canada acquisition of Petrofina Canada Inc. In its major findings, Ernst & Whinney reported that the price paid for Petrofina by Petro-Canada, while above fair market value, represented a fair price because of the special benefits that were expected to accrue to Petro-Canada; the premium paid for the Petrofina shares was comparable to those paid in similar situations in the private sector; the steps in the acquisition process were completed in accordance with usual business practices, except that a thorough investigation was not undertaken but Petro-Canada did have a warranty that there had been no material adverse change in the net assets of Petrofina between December, 1979 and the acquisition date. Ernst & Whinney was unable to determine whether the value established in the pre-evaluation represented fair market value because insufficient pre-acquisition information was located. The internal post-acquisition valuations undertaken by Petro-Canada were not comprehensive and not undertaken using the most appropriate method for determining fair market value. Petro-Canada did give due regard to economy, received value for money upon purchase of Petrofina, and considered future capital requirements in\* the pre-acquisition evaluation. No economic benefit would be realized by Petro-Canada arising from the accounting treatment of the bridge financing loan interest cost, a conclusion based on the assumption that the present value of the future tax savings of these interest costs would be immaterial. The report was made available by the Minister of EMR to the House of Commons Standing Committee on Public Accounts and the Auditor General.

## THE YEAR 1986

Overview : High oil prices since 1979 led to increased energy conservation and exploration and development of new low-cost petroleum resources. By 1986, this had led to an excess of available world oil supply over demand. In early 1986, at the insistence of Saudi Arabia, OPEC drastically decreased its prices to protect its market share. The slump in world oil prices had the immediate effect of causing a severe recession in the Canadian oil and gas industry. Over the longer-term, it hastened the deregulation of the industry, and the greater reliance on market forces in Canadian energy policy.

The world's most serious nuclear accident, at Chernobyl, Ukraine SSR occurred in April, 1986. Although the Chernobyl reactor was of an inherently more unsafe design than those used in the West, the accident gave added impetus to anti-nuclear lobbyists, and ultimately led to the virtual cessation of new reactor deployment in all but a few countries.

The February 26, 1986 federal Budget announced a three-year phased-in reduction of the corporate income tax rate, starting in 1987, that would result in a basic rate of 33 percent by 1990. The tax on manufacturing income (already taxed at a preferential rate of 30 percent) would be further reduced to 26 percent. The budget also phased out the general investment tax credit, but retained the 20 percent credit for the Atlantic region, and extended it to offshore investments, for property acquired after February 25, 1986. High-cost exploration activities continued to be eligible for a 25 percent credit. The Budget also introduced a 3 percent surtax on corporate income tax payable, but extended the existing \$10,000 PGRT deduction from production revenue - heretofore available only to individuals - to corporations as well. Finally, the Budget included wind energy equipment in the accelerated Class 34 capital cost allowance class, making such equipment eligible for a three-year write-off.

Flexible energy policy  
in oil price decline

The oil price decline in January, which continued through to August, resulted from two major factors: the behaviour of the OPEC cartel particularly Saudi Arabia seeking to maximize its oil revenues, and the existence of a large and enduring low-cost oil production capacity worldwide; with these two opposing factors making for a very volatile market. While it was generally expected that international oil prices would strengthen considerably in the 1990s as world oil demand rose, it was impossible to predict its price trends in the near term. In a time of price uncertainty, the federal government ensured that its energy policy framework was as flexible as possible. There was a dramatic fall in future oil prices on the world market from \$US 27 early in January down to \$US 20.50 by January 21, West Texas Intermediate crude oil was selling for about \$US 14 a barrel at the end of February, down from \$US 31.70 in late November 1985

.Agreement on Natural  
Gas Markets and Prices.

In January the National Energy Board approved many short-term gas export contracts, new export prices for a number of longer-term contracts, and extended sunset clauses in a number of existing export contracts. The first post-Agreement direct sale of Saskatchewan natural gas to an Eastern Canadian purchaser was made in January and the NEB ordered TransCanada PipeLines Limited to carry those volumes at tolls set by the Board. The October 31, 1985 federal/provincial Agreement on Natural Gas Markets and Prices provided for the decontrol of natural gas prices for all contracts beginning November 1, 1986. During the interim period (November 1, 1985 to November 1, 1986), the Agreement provided for negotiated prices for new gas contracts (direct sales) and for special competitive marketing programs for gas moving under existing contracts.

Nuclear power reactors  
- international

The International Atomic Energy Agency (IAEA) reported that, as of January 1, 1986, 374 nuclear power reactors, with a combined generating capacity of some 250 electrical gigawatts (GWe) were on-line in national grids in 32 countries. A further 157 reactors with a combined capacity of 142 GWe were under construction at the beginning of 1986.

Coal trends -

Records available in January showed that Canadian coal exports had doubled in the period



- international between 1975 and 1986. However, the production and growth trends worldwide in the early 1980s masked an international industry involved in major structural, technological and institutional changes. The world shortage of coal in the late 1970s was replaced with oversupply, falling prices and expanding capacity. The global recession of the early 1980s accentuated the structural and other changes already underway in coal-using industries around the world, leading to reductions in overall demand for coal. By 1986 there was unprecedented excess capacity in world coal markets, resulting in downtrends in the domestic coal industry in that year.
- Canada-Newfoundland Atlantic Accord On February 11, the governments of Canada and Newfoundland introduced parallel legislation in the House of Commons and the provincial House of Assembly implementing the Atlantic Accord, the offshore oil and gas agreement signed on February 11, 1985. Entitled the Canada-Newfoundland Atlantic Accord Implementation Bill, the comprehensive legislation incorporated the management and revenue-sharing provisions of the Atlantic Accord, the Canada Petroleum Resources Bill, and the Oil and Gas Production and Conservation Act dealing with exploration, drilling, production and transportation of petroleum in the Newfoundland offshore. Elements of the legislation include the establishment of a 7-member Canada-Newfoundland Offshore Petroleum Board with responsibility for decisions on all matters relating to the management of offshore oil and gas resources; provision for the government of Newfoundland and Labrador to establish and collect royalties and all provincial-type resources and taxes of general application; a joint offshore development fund of \$300 million, which is financed 75% by the federal government and 25% by the provincial government, to be used to help the province meet the demands of oil and gas development to ensure that it benefits economically from such development; the establishment of an equalization offset payment formula that ensures there will not be dollar-for-dollar loss of equalization payments as a result of offshore revenues accruing to the province; and the establishment of a public review process of any prospective development to be carried out by the Board. To ensure the Canada-Newfoundland Offshore Petroleum Board is accountable in terms of resource management powers provided under the Atlantic Accord Bill, the Bill provides for joint ministerial review and direction of certain fundamental decisions. A major issue that would give rise to continuing controversy was the question of industrial and other benefits accruing from major projects, in particular the level of government that was responsible for developing and implementing benefits requirements for major projects to be approved.
- Conservation and Alternative Energy Agreements. The first of a series of federal-provincial Agreements on Conservation and Alternative Energy Programs was signed on February 11 by the federal Minister of Energy, Mines and Resources and the Newfoundland Minister of Mines and Energy. The two governments planned to spend \$7.5 million for conservation and alternative energy programs over the succeeding two years in the following sectors: existing housing, new housing, renewable energy, transportation, and in industrial/commercial/institutional projects. The Agreement was a key element of the National Conservation and Alternative Energy Initiative, announced on May 24, 1985, which provided a \$300 million federal government commitment across Canada over three years. On February 13, the federal Minister of EMR and the Quebec Minister of Energy and Resources signed a Memorandum of Understanding on energy conservation and alternative energy, with the two governments planning to spend up to \$31 million by March 1988 on conservation and alternative energy initiatives to make them more effective and to improve services to consumers. Similar agreements on conservation and alternative energy were signed with Nova Scotia on May 14, with Manitoba on June 27, with Ontario on September 17 and with New Brunswick on December 10, 1986.
- Pickering and Bruce Nuclear Stations On February 20, at Ontario Hydro's four-reactor Pickering "B" Nuclear Generating Station east of Toronto, unit 8 was declared in service. Units 5 and 7 of the Bruce "B" nuclear generating station, near Kincardine, were declared in service on March 1, 1985 (unit 5) and

on April 10, 1986 (unit 7).

Petroleum and Gas Revenue Tax Amendment	An Act to amend the Petroleum and Gas Revenue Tax Act (PGRT) and the Income Tax Act was assented to <u>February 13</u> , 1986 (S.C. 1986, Vol. 1, Ch.2). It provided for certain deductions from taxes otherwise payable under the PGRT, particularly in the form of the Small Producer's Credit and for special oil recovery projects certified by the Minister of Energy, Mines and Resources.
Energy policy environment	In a government statement in the House of Commons on <u>March 9</u> , it was noted that the cornerstones of the new energy policy environment were the Atlantic Accord announced on February 11, 1985; the Western Accord, March 28, 1985; the deregulation of oil prices, as of June 1, 1985; the Frontier Policy statement of October 30, 1985; and the Agreement on Natural Gas Markets and Prices of October 31, 1985. These new policies had been developed in consultation with provincial governments and with the oil and gas industry. The stated goal was to free the industry from excess regulation and taxation so that it could adjust and compete in a free market.
Oil price collapse	In the four months from early December 1985 to <u>March 31</u> , 1986 posted prices for light crude oil in Edmonton fell 60%. With reductions in cash flow, industry responded quickly with reductions in investment plans ranging from 25 to 50%.
Petroleum Incentives Program Act	An Act to amend the Petroleum Incentives Programs Act was assented to on <u>March 26</u> , 1986 (S.C. 1986 Vol II Ch. 14). Companies would be entitled to a Crown share incentive in the amount of 25% of the specific portion of the eligible exploration expenses, and 10% of the eligible development expenses incurred on or after April 1, 1986 and before January 1, 1988 in respect of prescribed activity on Canada Lands. If the company was Canadian controlled, the entitlement would be 40% of eligible exploration expenses and 15% of eligible development expenses.
Uranium and Nuclear Energy Industry	As of <u>March 31</u> , there were 8 uranium mines licensed to operate in Canada - 5 in Ontario and 3 in Saskatchewan. Three uranium mining facilities were being decommissioned. The only refinery licensed to convert yellowcake (uranium concentrate) to uranium trioxide (UO <sub>3</sub> ) was that of Eldorado Resources Ltd. at Blind River, Ontario. Other ERL facilities at Port Hope, Ontario, converted the product of the Blind River plant into UO <sub>2</sub> , fuel for CANDU reactors, and UF <sub>6</sub> for export to other countries that use it in the manufacture of enriched uranium. At this time Atomic Energy of Canada Limited was discontinuing the production of heavy water at Glace Bay and Port Hawkesbury plants in Nova Scotia and the licences for those plants were subsequently revoked. As of March 31, one heavy water plant was licensed to operate at the Bruce Nuclear Power Development. As of March 31, 10 nuclear waste management facilities were licensed to operate - five in Ontario, one in New Brunswick, two in Quebec and two in Alberta. At this time there were 18 nuclear power reactors in operation - 16 in Ontario, one in Quebec, and one in New Brunswick. There were two reactors under construction and two were being decommissioned. All uranium mining operations, refineries, heavy water plants, and nuclear power reactors operated only under license of the Atomic Energy Control Board.
Agreement on Natural Gas Markets and Prices	In <u>April</u> , the federal government released information showing that a competitive gas market was developing in Canada following signing of the Agreement on Natural Gas Markets and Prices on October 1985 which enabled buyers and sellers of natural gas to negotiate prices for new gas contracts in direct sales. The Agreement also provided for competitive marketing programs (CMPs) allowing distributors, shippers and producers of natural gas moving under existing contracts to negotiate market competitive prices. In April, a total of 17 CMPs were in place, with benefits to industrial firms in the petrochemical, manufacturing, pulp and paper and mining sectors, providing potential savings of \$50 million a year. Effective November 1, 1986, distributors, as the largest

purchasers of natural gas, were to be able to negotiate on behalf of their customers attractive gas prices on their full gas supply.

Oil company tax relief program

In April, the government of Canada announced a relief program worth \$175 million to the end of 1988, to help Canadian oil and gas producers having major difficulties under conditions of falling world oil prices. The action was targeted at small, active, independent producers. The changes made in the federal Petroleum and Gas Revenue Tax included an increase in the small producers PGRT credit to \$2 million, from \$500,00 for the life of the tax. This effectively eliminated the PGRT for most small producers. The federal government also suspended the PGRT for the Syncrude and Suncor oil sands plants to the end of 1986.

Chernobyl nuclear accident

On April 26, a severe reactor accident occurred at Chernobyl, USSR. The graphite-moderated Chernobyl reactor was an older and inherently more unstable design than the water-cooled reactors used in the West and later by the USSR. The combination of design instability, poor operator training and human error caused the seriousness of the Chernobyl incident. Canada's Atomic Energy Control Board studied causes and consequences of the accident to determine if there were any indications that the design or operation of reactors in Canada should be modified and the results were published in its report "The Accident at Chernobyl and the Implications for Safety of CANDU Reactors." Although several recommendations for follow-up action were included in the report, the overall conclusion was that no fundamental changes were necessary in the design or operation of CANDU reactors

Low-level radioactive waste management policy

On April 25, the Minister of State for Mines released a statement outlining the federal government's policy on the management of low-level radioactive wastes. The statement also defined the respective responsibilities of the federal government and the producers of waste material. The policy is to ensure that low-level radioactive wastes will be dealt with in such a way that human health and the environment will be protected now and in the future, and that social as well as economic factors will be taken into account in many different industrial, medical and research operations. The major radioactive waste quantities are produced from the manufacturing and power generating stages of the nuclear fuel cycle.

Flexi fuel vehicle programs

On April 5, a new \$1.4 million vehicle research program was launched by Ford of Canada and Shell Canada with financial assistance from the Ontario Ministry of Energy and EMR Canada. The goal was to develop automobiles that would be able to run on gasoline and methanol, and a mixture of the two. The flexible fuel vehicle program was designed to help reduce barriers to alternative fuels technology in Canada.

Natural gas exports - NEB surplus determination

In May, the National Energy Board released the Reasons for Decision on the hearing that had been initiated late in 1985 on gas exports concerned among other matters with the procedures the Board used in determining the surplus of natural gas available for export. In its report, the NEB decided to adopt a new surplus determination - the Reserves to Production Ratio Procedure. The calculation of the maximum potential surplus in the procedure was to be based on maintaining a ratio of 15 between reserves and total annual production, with the procedure incorporating estimates of annual additions to reserves and forecasts of both Canadian demand and exports under existing authorizations. It also involved an assessment of future annual production capacity. In October 1986, the Minister of EMR asked the NEB to advise him of the implications for its surplus determination procedures of changing conditions in Canadian natural gas markets and the action the Board was prepared to initiate in respect of those procedures. In a November 4, 1986 letter, the NEB informed the Minister of its decision to undertake a comprehensive review of its established natural gas surplus determination procedures. By NEB letter of December 18, 1986, the Board announced the issues that it would like addressed and the dates for written submissions for a review it planned in 1987. The Board's initiative taken in May 1986

meant that it was abandoning its 25-year domestic protection formula in favour of a 15-year gas reserves-to-production formula to determine whether an exportable surplus of natural gas existed. The new formula and procedure placed more reliance on the price responsiveness of supply and demand, and less on established reserves in gauging protection for future domestic natural gas needs.

Availability of TCPL's services

In May the National Energy Board ruled on the availability of TransCanada PipeLines' services. Its ruling put an end to the double demand charge practice which had arisen when a customer made a direct gas purchase that displaced previously contracted supply from a distributor. That customer would then have to pay TCPL for the transportation service, and indemnify the distributor for charges paid to TCPL for volumes no longer taken. In July, TCPL challenged this ruling in Canadian courts, and in November the Federal Court of Canada ruled that NEB's May 1986 ruling on aspects of the availability of TCPL's transportation services was within the NEB's authority, thus rejecting TCPL's challenge.

COGLA 1985 Annual Report

On May 5, the Minister of EMR and the Minister of Indian Affairs and Northern Development tabled in the House of Commons the annual report of the Canada Oil and Gas Lands Administration (COGLA) covering the year 1985. Highlights included the signing of the Atlantic Accord, the announcement of a new frontier energy policy, and the subsequent introduction of the proposed Canada Petroleum Resources Act, Bill C-92. The report provided a comprehensive review of oil and gas activity on Canada's frontier lands in 1985 and noted that 65 exploratory and delineation wells were drilled in that period, with 15 new discoveries - six in the east coast offshore and nine in the north. The first oil shipment from the High Arctic took place in August 1985 when 16,800 cubic metres of Bent Horn oil were shipped from Cameron Island to Montreal refineries.

Competition in the Canadian Petroleum Industry - Restrictive Trade Practices Commission Report

On May 16, the Restrictive Trade Practices Commission submitted its report "Competition in the Canadian Petroleum Industry" to the Minister of Consumer and Corporate Affairs. The Commission's inquiry was concerned with an effective competition as related to the petroleum industry in Canada, and particularly with the pricing behaviour of the Canadian industry. In February 1973, the Consumers' Association of Canada requested the Director of Investigation and Research, acting under authority of the Combines Investigation Act, to determine whether the gasoline and fuel oil price increases made a month earlier by a number of Canadian oil companies were the result of a conspiracy, and to determine more generally whether or not vertical integration had contributed to higher prices for gasoline and fuel oil. The Director launched a private and confidential investigation and subsequently, on February 27, 1981, submitted a 7-volume report entitled "The State of Competition in the Canadian Petroleum Industry" as a record of the investigation relating to "the exportation for, and the importation, production, supply and sale of crude oil, petroleum, refined petroleum products and related products". The Director concluded that there were conditions and practices in each sector of the industry that were undesirably monopolistic and restrictive, and he proposed 12 recommendations to the Commission that in his view were required to deal with the monopolistic conditions and practices in restraint of trade he found. The Restrictive Trade Practices Commission then commenced a hearing related to the Director's study and also concerning post-1981 developments. Following the Director's report in 1981 there was much publicity concerning the allegation that Canadian consumers had been overcharged some \$12 billion by the oil industry in the period 1958-1973 and that the overcharge was continuing. Following a pre-hearings conference held in July 1981, the RTPC held hearings in various centres across Canada from December 1981 to February 1982 followed by hearings in Ottawa for a total of 200 days of hearings from over 200 witnesses. In the 700-page report, released on May 16, 1986, the Commission concluded that there was no proof that the Canadian petroleum companies overcharged consumers by \$12 billion, or that any measurable excess costs were passed on in any significant degree. The Commission found no evidence of collusion in any sector of the industry. The Commission made 12 recommendations directed to bringing about the better

functioning of the petroleum market. They are included in a 78-page summary report of the Commission's inquiry .

NEB environmental guidelines

In June, all companies under the National Energy Board's jurisdiction were sent new guidelines outlining environmental information required to be provided in applications for gas plant approvals and other facilities including liquified petroleum gas, natural gas liquids, and butane transfer plants. These new guidelines were prepared in response to a request from industry, and were to be used for such applications instead of Part VI of Schedule II to the Board's Rules of Practices and Procedures.

Energy Administration Act - Amendments gas price deregulation

In June, the House of Commons and the Senate passed Bill C-112, An Act to amend the Energy Administration Act. The main focus of the Bill was to provide flexibility in the setting of approved or prescribed prices for sales of natural gas within or without a producing province. At the time of the amendments, the Energy Administration Act permitted the setting only of specific or prescribed prices. Among other things, the new legislation permitted as well: the setting of a range of prices; the setting of a price ceiling; the setting of a price through some sort of formula (e.g. relating it to heavy fuel oil); and the setting of a price by reference to a contract. Bill C-112 was assented to on June 27, 1996 (S.C. 1986 Vol II Ch. 39).

World oil price declines

During the first half of 1986, oil prices suffered a sharp decline of unexpected proportion, with far-reaching effects on income and employment in both oil producing and oil consuming regions. Spot prices of international crude oil dropped from \$US 28.00/bbl in 1985 to \$US 15.00/bbl in June 1986.

Hibernia Decision Report

On June 24 the federal Minister of Energy, Mines and Resources and the Newfoundland Minister of Energy expressed agreement with the Decision Report on the Development Plan and the Benefits Plan for Hibernia. The report had been approved with terms and conditions by the Canada-Newfoundland Offshore Petroleum Board allowing Mobil Oil Canada Ltd. and partners to proceed with the development of the Hibernia oilfield, offshore Newfoundland, a world-class discovery on the Grand Banks. To begin developing the field, the companies were required to obtain Development Plan approval from the Board; approval from the Board in consultation with both governments, of a Benefits Plan for employment of Newfoundland residents and other Canadians and the participation of Newfoundland and other Canadian companies in the project; and to reach a satisfactory agreement with the governments of Newfoundland and Canada on fiscal matters. The expectation was that the Decision Report would provide a major impetus for bringing Hibernia on stream in the early 1990s.

Research Agreements Program, 1986-87

On June 13, the Minister of State for Mines announced that research grants totalling \$ 1.398 million would be provided in 1986-87 under the EMR Research Agreements Program in its 15th year. The funds were to support 161 projects in 41 research centres across Canada in the natural, physical and social sciences, and in engineering. Included were funds for research projects to study increased efficiency in combustion and the use of alternative fuels, and studies relating to energy self-sufficiency, taxation policy, export markets, pipeline technology, synthetic additives, and deregulation. The Program is designed to increase the flow of technology transfer between the private sector and government.

Senate Committee report on Oil Marketing

In June, the Standing Senate Committee on Energy and Natural Resources presented a report entitled "Oil Marketing: 1986". The Committee had been authorized to review all aspects of the National Energy Program, including its effects on energy developments in Canada. One of the motives for conducting the study was to help the public understand the new environment of Canadian oil supply, demand and trade. The Committee began its study of oil marketing in Canada in January when the posted price of light crude oil in Edmonton was \$30.00 a barrel, down from a peak value of \$39.90 in mid-December 1985.

By mid-May 1986, the price was \$19.72 up from a low of \$16.70 in mid-April. During its public hearings from March to May, the Committee heard 15 organizations and received additional submissions from other interested parties. Its report dealt with security of oil supply, price stabilization, upstream issues, and downstream issues. The Committee made four major recommendations, accompanied by detailed explanations:

- That financial assistance, limited in amount and duration, be extended to producers of conventional oil through a program which will ensure that smaller producers receive the principal benefit.”
- “That financial assistance be extended to producers of nonconventional oil. This assistance could take the form of a floor price for all existing production and limited loan guaranties for new projects.”
- “That the federal government monitor Canadian posted prices to identify any significant deviations from Chicago posting. If Canadian producers consistently receive lower values for their oil, the government should consider instituting an administered price.”
- “That a monitoring group be charged with scrutinizing petroleum product prices in the interest of maximizing competition and minimizing costs to the consumer. Findings should be made public on a regular basis.”

Exploration program  
cutbacks - low oil prices

In July the consortium of Husky Oil and Bow Valley Industries announced that it was ending its East Coast Offshore exploration program. In the following months Gulf Canada announced the suspension of its operations in the Beaufort Sea; Dome Petroleum and Esso Resources Canada curtailed their Arctic exploration activities and Esso ended its involvement in East Coast offshore exploration; Shell Resources Canada announced that it was terminating its exploration program offshore from Nova Scotia; and Panarctic relinquished to the Crown a very large Arctic islands acreage. In all projects, low world oil prices were given as the main reason for these decisions.

Darlington Nuclear  
Station

In July an Ontario government Select Committee on Energy, studying the future of the four-reactor Darlington Nuclear Generating Station, recommended that the plant be completed. This recommendation was accepted by the Ontario Cabinet in August.

PMA Report - 1985

In July, the Petroleum Monitoring Agency (PMA) reported that the financial performance of the Canadian petroleum industry improved in terms of internal cash flow and capital expenditures in 1985 compared with 1984, with cash flow up 8% and expenditures up 15%. However, the report noted that the generally positive results in 1985 provided only limited insight into the industry’s health in 1986 because of the collapse of oil prices in the early months of 1986 and the resulting disastrous impact on petroleum-related employment and investment. Canadian ownership of the petroleum industry, based on upstream revenues rose in 1985 to 48% against 42.5% in 1984. Canadian control of upstream revenues increased 7.9 percentage points to 48.4%.

Western Canadian coal  
use in Ontario

In August a report “Western Canadian Low Sulphur Coal - The Expended Use in Ontario” was released. Prepared by a federal-provincial Task Force, the report focused on the role western Canada coal could play in reducing acid gas emissions from Ontario Hydro’s coal burning power plants. Ontario Hydro was required by provincial legislation to reduce its annual emissions of sulphur dioxide by more than 15% by 1994. The increased use of low-sulphur western Canadian coal would reduce acid gas emissions and had the potential to create up to 205,000 person years of employment over the following 15 years and to generate \$4.1 billion in income. The report recommended that governments and the private sector actively pursue the increased use of coal mined in western Canada by exploring ways of lowering the mining and transportation costs of bringing coal from that region to Ontario, and by initiating funding for the development and demonstration of new, more effective technologies for upgrading western Canadian coal. Of the total amount of coal consumed

by Ontario Hydro, about 70% was bituminous coal from the USA, about 20% bituminous coal from Alberta and B.C., and almost 10% lignite coal from Saskatchewan. Forecasts indicated continuing declines for the following years as new nuclear units came on stream but possibly some increases in coal use after the mid-1990s.

Alternative fuels industry

In addressing the Gaseous Fuels for Transportation Conference on August 8, the Minister of EMR expressed confidence that the alternative fuels industry would respond aggressively to the challenges associated with low oil prices. The federal government had taken a decision to expand its R&D efforts to include methanol, ethanol, hydrogen and synthetic fuels.

Government aid in support of the oil industry

In August it was apparent that Canada's oil and gas industry would lose between \$4.5 and \$5.5 billion in cashflow in 1986 as a result of the dramatic decline in world oil prices. In support of the industry, the federal government had initiated measures in April to relieve small oil producers and high-cost oil sands producers of taxes levied under the Petroleum and Gas Revenue Tax, changes that would input nearly \$300 million into industry cashflow. Federal and provincial government measures in place by mid-1986 were expected to restore about \$1 billion of the approximate \$5 billion cash flow loss forecast for 1986 due to lower world oil prices.

Canada-Nova Scotia Offshore Petroleum Resources Accord

By an Accord dated August 26, 1986, Canada and the Province of Nova Scotia agreed that oil and gas in the Offshore must be developed in a manner that would harmonize the interests of all Canadians, with the interests of those Canadians living in Nova Scotia so that together they may build lasting social and economic structures and thereby take advantage of these new opportunities. The Parties agreed by this Accord to establish, through mirror legislation, a unified administration and fiscal regime for Petroleum Resources in the Offshore Area. This regime was to be founded on the same basis of parity and fairness as existed between the Federal Government and the other petroleum-producing provinces of Canada, and yet be designed to meet the unique circumstances of the N.S. Offshore area. Federal legislation implementing this Accord was assented to July 21, 1988, as recorded in the Statutes of Canada 1988, Ch. 28. (see July 1988 entry). The Accord extended to Nova Scotia essentially the same terms as those extended to Newfoundland in the Atlantic Accord.

Energy Administration Act-Amendments gas price deregulation

In August 1986, following June amendments to the Administration Act itself, the Natural Gas Prices Regulations, 1981, and the March 1986 Saskatchewan Natural Gas Prices Regulations were revoked, and replaced with the Alberta Natural Gas Prices Regulations, and the Saskatchewan Natural Gas Prices Regulations, 1986. The major effect of these new regulations was the elimination of the need for Governor in Council approval to prescribe every regulated price if the price did not exceed the maximum price established in the regulations. The prescribed prices then took effect upon the filing of the executed contract with the NEB and the acknowledgement of its receipt by the Board. As well, in August, more generalized General Orders issued by the Board provided a more expeditious method of approving prices for purchasing gas within a province for removal and consumption outside that province. The new orders established a maximum price which essentially allowed the automatic approval of all prices in a contract so long as those prices did not exceed the maximum. In accord with the October 1985 Agreement on Natural Gas Markets and Prices, further changes near the end of 1986 were made to facilitate negotiated gas prices with the removal of the administered price system. The Energy Administration Act Part III Regulations, which established the filings of prices and contracts negotiated between buyers and sellers, and the costs of services to be deducted in calculating prices, were revoked. In addition, sections 53 to 65 of the Energy Administration Act were suspended relative to legislative authority to prohibit the movement and sale of natural gas in Canada without NEB approval. Accordingly, the necessity for administered pricing of natural gas was obviated and, as of November 1, 1986, the NEB no longer issued orders approving gas prices under section 53 of the Act, nor did it administer the Alberta Natural Gas Prices

Regulations, 1986, and the Saskatchewan Natural Gas Prices Regulations, 1986, both of which were revoked. The NEB's role in domestic gas pricing under the Energy Administration Act ended in November 1986. As of November 1, domestic gas prices were determined in negotiation between buyers and sellers. Industrial and large commercial customers and distributors were free to negotiate directly with gas sellers.

Elimination of the  
Petroleum and Gas  
Revenue Tax (PGRT)

On September 8, the federal government announced it would eliminate the Petroleum and Gas Revenue Tax, effective October 1, 1986. It had been planning to phase out the tax by 1989. The accelerated elimination of the PGRT was considered to add a potential of hundreds of millions of dollars to industry cash flows over the succeeding two and one half years. Soon after coming to power in September 1984, the federal government had signed the Western Accord and eliminated the Natural Gas and Gas Liquids Tax, the Incremental Oil Revenue Tax, the Canadian Ownership Special Charge, the Crude Oil Export Charge and the Petroleum Compensation Charge, and had agreed to progressive phase-out of the PGRT by January 1, 1989.

Husky Upgrader - tax  
relief

On September 5, the federal government announced that its support for the current phase of the Lloydminster Husky Oil Upgrader would be delivered through tax relief to Husky Oil Operations Ltd. On April 8, 1986, the governments of Canada, Alberta and Saskatchewan had agreed to share in the estimated \$90 million cost of completing pre-construction engineering work related to the proposed \$3 billion upgrader project at Lloydminster. The tax relief offered in September was to apply to \$36 million of PGRT payable on Husky revenue from production on or after April 1, 1985.

Conservation and  
Alternative Energy  
Agreement

On September 18, the federal and Ontario governments signed the Canada-Ontario Conservation and Alternative Energy Agreement. The 18-month, \$30 million joint initiative represented a clear commitment by the two governments to energy conservation and alternative energy technology. The Agreement was designed to help the federal and Ontario governments coordinate energy conservation and alternative energy programs delivered in Ontario. Funding was to support research, development and demonstration programs, technology transfer, consumer education programs, training courses, and the development and implementation of energy conservation standards. The agreement covered energy conservation projects for the residential, industrial and commercial sectors, and was designed to promote the development of renewable energy technologies, alternative energy and transportation fuels. The federal government invested \$15 million in this joint program, and a further \$25 million in other conservation and alternative energy initiatives in Ontario. At this time, it had entered into similar agreements with five other provinces, a seventh agreement being signed in December with New Brunswick.

IAEA Conventions on  
Nuclear Safety

On September 26, Canada signed two international conventions designed to contribute to greater nuclear safety throughout the world. The first convention would commit nations to provide early notification and information about nuclear accidents with possible transboundary effects; the second would commit countries to endeavour to provide assistance to nations which suffer a nuclear accident, and which require assistance. The convention was drafted by a group of government officials convened by the International Atomic Energy Agency (IAEA) as a result of the April 26, 1986 accident at the Chernobyl nuclear reactor in the Soviet Union

URAG uranium  
resource assessment -  
1985

On September 3, the Uranium Resources Appraisal Group (URAG) of EMR published the results of its assessment as of the end of 1985, noting that Canada had continued as the world's leading producer and exporter of uranium. At the end of 1985 total recoverable resources in the measured, indicated and inferred categories were estimated at 545,000 tonnes of uranium. Output from Canada's seven production centres reached a total of 10,800 tonnes of uranium in 1985. The most significant change from the 1984 estimates was the 19% increase in measured resources, largely the result of continued exploration and



development work in northern Saskatchewan.

Nuclear power - the public perception

A September report prepared for Japan's Ministry of international Trade and Industry stated: "The CANDU developed in Canada is an economically field-proven reactor. It is the most efficient of all existing reactors in utilizing uranium resources." However, as noted by the President of Atomic Energy of Canada Limited in the company's annual report for 1986-87, the fact that in 1986 less than 20% of the general public in Canada was absolutely in favour of future nuclear development and that 40% was opposed, denigrated the success Canada's nuclear program had achieved internationally, and demonstrated that the industry must communicate more effectively with the public. In the AECL report, the President registered concern about the erosion of popular support for nuclear power.

Atomic Energy Control Board 40th Anniversary

October 12, 1986 marked the 40th anniversary of the Atomic Energy Control Board, created on October 12, 1946 with the passage of the Atomic Energy Control Board Act. Some 4500 corporations and institutions were currently authorized to operate in the nuclear field in Canada in 1986. The absence of unfortunate accidents for the 40 years was seen to be clear testimony to the effectiveness of regulations devised and implemented by the Board.

Gas exports price test replaced by price monitoring

In October, with the Petroleum and Gas Revenue Tax removed, the federal Minister of Energy, Mines and Resources took further initiatives in natural gas deregulation by agreeing to replace the border price test for gas exports by a price-monitoring process. It was accepted that in a deregulated market environment, Canadian gas prices would fluctuate and, consequently, a rigid one-time border pricing test for gas exports would be inappropriate. The price-monitoring process to replace it would seek to ensure that export gas prices would not remain below prices paid by Canadians, over sustained periods. The federal government would intervene in situations where that condition was not met. This provision was part of an agreement among the federal, Alberta, British Columbia and Saskatchewan governments. It applied to both short-term and long-term export licences. A committee of federal and provincial government officials was given the responsibility to monitor domestic and export prices on a quarterly basis to ensure that Canadians were not placed at a disadvantage on gas export pricing.

NEB "Canadian Energy Supply and Demand 1985- 2005"

In October the National Energy Board provided a detailed examination of Canada's energy-prospects in its report "Canadian Energy Supply and Demand 1985 – 2005" as a component of its ongoing study and monitoring of energy matters for which it has a responsibility under the National Energy Board Act. In the Board's higher oil price case, Canada would remain a net oil exporter beyond 2005, while in its lower price case Canada would become a net oil importer in the mid-90's, importing as much as two thirds of its light and medium crude oil requirements.

Natural gas price deregulation - major policy development

As of November 1, domestic natural gas prices were determined by negotiation between buyers and sellers. The transition over the course of 1986 to the deregulation of domestic natural gas prices on November 1, in accordance with the Agreement on Natural Gas Markets and Prices signed on October 31, 1985, was seen as the major development in domestic energy policy in 1986. Effective November 1, the governments of Canada, Alberta, British Columbia and Saskatchewan also withdrew from administering interprovincial natural gas prices.

Natural gas deregulation process

In a November 24 appearance before the House of Commons Standing Committee on Energy, Mines and Resources, the Minister of EMR noted that November 1, 1986 marked the end of government-administered wholesale gas prices in Canada. In addition, governments had taken major steps to reduce regulatory barriers to gas trade, both inside Canada and in Canada's export market. By freeing producer access to markets and ensuring access to supplies, governments had created the framework for a competitive and prosperous Canadian natural gas market. In the space of 12 months, federal and provincial

governments amended legislation to allow for their withdrawal from price setting; regulators held hearings to review and resolve the complex issues associated with access to transmission and distribution systems; price provisions for long-term system gas supply were re-negotiated, a process that involved about a dozen distributors, and buyers and over 700 producers and sellers, and hundreds of individual contracts; and producers and large volume end users moved rapidly to establish direct sales agreements. From then on, gas prices were to be market-driven to meet the needs and expectations of producers and consumers.

NEB gas surplus procedures

In November, the National Energy Board commenced a comprehensive review of its established gas surplus procedures, as planned in May of this year.

Canada Petroleum Resources Act

An Act to regulate interests in petroleum in relation to frontier lands, to amend the Oil and Gas Production and Conservation Act, and to repeal the Canada Oil and Gas Act, cited as the Canada Petroleum Resources Act, was assented to November 18, 1986. The Act is comprised of the following parts:

- Part I - General;
- Part II - Rules Relating to Issuance of Interest;
- Part III - Exploration;
- Part IV - Production;
- Part V - Canadian Ownership;
- Part VI - Royalties;
- Part VII - Environmental Studies Research Fund;
- Part VIII - Transfer Assignment and Registration;
- Part IX - Administration and Enforcement;
- Part X - Transitional, Consequential and Commencement.

In the Interpretation section, A Frontier Lands means

- lands that belong to Her Majesty in right of Canada situated in the Yukon Territory, the Northwest Territories or Sable Island or the submarine areas, not within a province, adjacent to the coast of Canada and extending to the outer edge of the continental shelf or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea of Canada is measured, whichever is the greater.
- Nothing in this Act shall be construed as to abrogate or derogate from any existing aboriginal or treaty rights of the aboriginal peoples of Canada under section 35 of the Constitution Act, 1982.

This Act, and related Regulations, became as of November 18, 1986 the definitive legislation governing all oil and gas activities on frontier lands as defined (S.C. 1986, Vol. II, Ch. 45).

NEB inquiry -regulation of electricity exports

In November, the National Energy Board commenced an inquiry into the federal regulation of electricity exports, to report to the Minister of Energy, Mines and Resources on the changes that might be made to reduce and simplify the regulation of electricity exports.

NEB toll design - TransCanada PipeLines System

Effective November 1, the National Energy Board implemented a new system of toll design and cost allocation based on the establishment of "operational demand volumes" (ODV) for the purposes of determining demand tolls in the operation of TransCanada PipeLines Limited's system. This was part of the NEB's initiative to implement the federal and provincial governments' Agreement on Natural Gas Markets and Prices of October 31, 1985. Other measures taken with respect to TransCanada included the NEB decision that the so-called displacement provision in the company's transportation toll schedules should be removed. The displacement provision had provided transportation services from being made available to direct purchasers of natural gas when the volumes shipped by those direct purchasers would displace volume previously supplied by TransCanada.

Pickering pressure tube replacement	In <u>November</u> the sudden failure of a pressure tube in a Pickering nuclear reactor led to a decision by Ontario Hydro to replace all of the pressure tubes in Pickering A' Units 1 and 2.
Energy trends in 1986	Canadian primary energy demand in 1986, as reviewed in <u>December</u> , grew by only 1.1% despite the sharp decline in oil prices over the course of the year. Natural gas and oil consumption declined slightly, while total electricity consumption rose by 2%. The level of crude oil production remained unchanged from 1985. The increase in crude oil exports was balanced in 1986 by an increase in imports. Lower export volumes of natural gas were the major factor in the decreased production of natural gas. Primary electricity generation from hydro and nuclear sources rose by 8% during the year. Total exports of oil, gas and electricity were 1% below 1985 volumes. The value of these exports was down sharply by 34% to \$9.6 billion, and Canada's energy trade surplus declined from close to \$10 billion in 1985 to \$5.9 billion in 1986. Strong gains of 12% in the volume of petroleum exports were offset by declines of 20% in natural gas exports and 15% in electricity exports.
Coal trends in 1986	Information available in <u>December</u> showed that for the first time since 1974, Canada's coal industry did not grow in 1986. The key indicators of production, consumption, exports and imports all registered decreases as a result of international as well as domestic constraints. The decrease in thermal coal consumption was due to decreases in the demand for coal for the generation of electricity. The decline of thermal coal exports reflected the oversupply situation in international coal markets. A determine factor in future growth of the thermal coal market in Canada would be the rate and success of coal research and development on new, more efficient and more environmentally benign utilization technologies.
High sulphur coal use in a thermal power plant	The commissioning in <u>December</u> of a federally-financed circulating fluidized bed (CFB) boiler in a Chatham, N.B. power plant began as part of a program to demonstrate that simultaneous combustion of a high sulphur coal in combination with oil shale could be achieved in a CFB boiler in an economical and environmentally acceptable manner.
Uranium and nuclear power outlook	At the end of <u>December</u> , 18 CANDU nuclear reactors with an aggregate net output capacity of some 11,000 megawatts (MWe) were in service in Canada and a further five reactors with a capacity of some 4,400 MWe were either in the pre start-up phase or under construction. Nuclear generation in Canada reached 57 terawatt hours the year previously in 1985, an increase of 16% from 1984, accounting for 13% of total Canadian electricity generation and 40% of the total electrical energy generated by Ontario Hydro. At the end of 1986 forward commitments under all active uranium export contracts were estimated at 62,000 tU. Forward domestic commitments exceeded 73,000 tU. Actual exports in 1985 had approached 8,300 tU compared with 6,937 tU in 1984. In 1986 it was expected that installed and committed nuclear capacity in many countries would require increasing supplies of uranium well into the next century. The International Atomic Energy Agency (IAEA) estimated that, by the year 2000, total uranium requirements in OECD countries were expected to exceed 60,000 tU, significantly more than the 1986 world production. It was expected that annual uranium production in Canada would average about 12,000 tU through the 1990s, compared with 11,720 tU in 1986. In 1986, Canada accounted for about one third of the western world's uranium supply.
B.C. uranium moratorium lifted	In mid- <u>December</u> , the British Columbia government announced it would lift the moratorium, effective February 28, 1987, on uranium exploration and mining that had been put in place in early 1986 on the basis of environmental concerns.
NEB oil export monitoring	Further to the June 1, 1985 Western Accord, the National Energy Board in <u>December</u> continued to monitor actual oil export volumes. The practice of authorizing oil exports continued but the authorizing orders specified neither volume nor prices.

Oil and gas exploration in decline	Oil and gas exploration and drilling results available in <u>December</u> indicated a major decline in 1986 with only 6, 450 wells drilled throughout Canada in the year compared with the 1985 record of 12,560 wells. As in the previous five years, drilling activity was directed mainly towards the finding of oil rather than natural gas. Cash flow in the Canadian oil and gas sector fell by some \$5 billion in 1986 from 1985 levels as a result of the collapse of world oil prices in early 1986.
New electrical transmission lines	By <u>December</u> , one new international power line had been put in service in 1986. Hydro-Quebec's 450 kilovolt high-voltage direct current (HVDC) interconnection with the New England States became operational. In addition, a new 500-kilovolt interprovincial transmission line between TransAlta Utilities Corporation and B.C. Hydro and Power Authority was put in commercial use.
Natural gas-diesel truck fuelling station	In <u>December</u> , the federal government announced an important advance in the introduction of natural gas fuel into the commercial diesel transportation industry. Under the Enerdemo Program, Energy, Mines and Resources would fund up to 36% of the estimated \$975,000 cost of demonstration which was to include the creation of Canada's first highway truck gas-diesel fuelling and conversion station in Burnaby, B.C. The purpose of the natural gas/diesel demonstration project was to test the conversion of various engine types, under commercial operating conditions, specifically for converting diesel trucks to natural gas-diesel fuel operation, and to identify market barriers.
Canada-U.S.A MOU on Energy R&D	On <u>December 6</u> a Memorandum of Understanding (MOU) was signed between the Department of Energy, Mines and Resources and the U.S.A. Department of Energy on "Collaboration in Energy Research and Development". The two countries believed that initiatives such as sharing task facilities, scientific and technical information, costs, and human resources could result in their energy R&D objectives being reached more efficiently, including achieving greater results at existing levels of expenditures. Collaboration under this MOU was provided for in energy conservation and energy efficiency, renewable energy technologies, alternative transportation fuel, fossil energy, and environmental protection and health research relating to energy technologies.
Petroleum and Gas Revenue Tax repealed	<p>An Act to amend the Petroleum and Gas Revenue Tax (PGRT) and the Income Tax Act and to repeal the Petroleum and Gas Revenue Tax was assented to <u>December 19</u>, 1986. The PGRT was repealed at the time it ceased to apply, by reason of section 79.1 of the said Act in respect of income or loss from a source referred to in paragraphs 82(1)(a) to (b.1) of the said Act. The Petroleum and Gas Revenue Tax Act was amended by adding thereto immediately after section 79 thereof the following section:</p> <p style="padding-left: 40px;">79.1 - This Part does not apply in respect of income or loss of a taxpayer from a source that is (a) the production after September 1986 of petroleum or gas, (b) the processing in Canada after September 1986 of petroleum to any stage that is not beyond the stage of crude oil or its equivalent; or (c) any amount received or receivable by the taxpayer as, on account of or in lieu of payment of, or in satisfaction of, a production royalty computed by reference to the amount or value of production after September 1986 of petroleum or gas (S.C. 1986, Vol.II, Ch. 58).</p>
IEA 1986 Review - Canadian Energy Policies and Programs	As stated in a November 6 address by the Minister of EMR, the federal government had progressively reduced, and eliminated 2 1/2 years earlier than planned, the sole remaining tax specific to the oil and gas industry, the Petroleum and Gas Revenue Tax, returning some \$500 million to the industry. The PGRT was eliminated as of October 1, 1986.
	In its 1986 review of International Energy Agency countries' energy policies and programs, the IEA report included a number of observations and recommendations concerning the Canadian energy economy. It was noted that the deregulation of the oil and gas sector

marked the most fundamental policy change towards a market-based approach, with Canadian consumers by December receiving unimpeded signals sent by world oil market prices. Producers and consumers became free to conclude contracts on the basis of buyer-seller negotiated prices as opposed to prices administered by government. The changes in taxation on oil and gas production by the federal government, with royalty tax changes by provincial governments, had resulted in a fiscal regime for the oil and gas industry which reflected the low world oil price environment. Those initiatives had eased the financial burden of low oil prices by increasing the amount of cash flow to industry for re-investment in oil and gas initiatives. The cessation of controls over oil and gas exports marked another move towards the maximization of energy trade by Canada.

The IEA noted some areas of concern. With low energy prices, the achievement of energy policy objectives would be more difficult, particularly in relation to new oil and gas projects in the offshore and other remote areas. In 1986 lower energy prices had led to decreases in the balance of trade. The availability of abundant domestic energy and relatively low consumer prices might not provide enough incentive to capture the remaining economic potential for conservation. Consequently, very close monitoring of energy demand developments would be required, and appropriate policies would need to be identified in order to achieve the remaining economic potential for energy conservation. In relation to future electricity supply, there would be particular need to consider various options including more orders for nuclear stations, greater interconnection of electricity systems between Provinces, increased use of coal and of hydro resources - all with respect to energy security and economic and environmental objectives. The funding of developments in oil sands, bitumen recovery and co-processing would require special attention in the context of low oil prices.

In its recommendations concerning the Canadian energy economy, the IEA report called for the Canadian government: to continue policies ensuring the stimulation of oil and gas exploration and development of conventional, frontier and unconventional oil and gas projects on an economic basis; to encourage the efficient use of energy; to promote interprovincial trade in electricity and electricity exports; to monitor funding of energy R&D in high risk technology areas and in synthetics fuels to ensure its continuation; and to work for high level federal-provincial cooperation toward energy objectives.

#### Implications of 1986 oil price collapse

As a result of the collapse of international oil prices in 1986, resource development opportunities, as viewed in December; had become limited by price, with important implications for regional economies. Alberta lost over 25,000 jobs in 1986. Energy during this period was not a revenue generator. Oil self-sufficiency was in doubt with implications for energy security in total, and resultant greater international reliance.

## THE YEAR 1987

Overview: Negotiations on the Canada-U.S. Free Trade Agreement (FTA), started in 1986, were completed. The draft agreement provided for the removal of bilateral tariffs, beginning with the entry-into-force of the FTA on January 1, 1989. The two governments agreed to prohibit most restrictions on energy exports and imports, within the framework of the General Agreement on Tariffs and Trade (GATT).

In the February 18, 1987 federal Budget, the Minister of Finance announced the government's intention to proceed with tax reform. Under reform, the corporate income tax would be lowered while tax preferences, such as subsidies or accelerated capital cost allowance write-off rates, would be eliminated. The budget also increased the excise tax on motive fuels by a cent a litre.

Energy Ministers' Conference	A Federal-Provincial-Territorial Conference of Ministers of Energy - the first of its kind since 1978 - was held <u>January 30</u> . Note was taken of the serious downturn in Canada's oil and gas industry, a matter of national as well as regional concern because of a net decline in private investment, significant job losses in the energy sector and a reduction in energy's contribution to Canada's trade balance. A continuing period of low oil prices could lead to a significant increase in Canada's dependence on light oil imports with implications for energy security. Accordingly, it was agreed to review energy security prospects including assessments of the role of conservation, oil substitution, oil and gas transportation infrastructure, electricity and means to accelerate the development of new energy projects. A working group was established to assess these and related security matters and report to Ministers in three months. Particular attention was to be directed to the large gap still existing between Canada and other industrial nations in terms of the efficiency of energy use. Energy Ministers had agreed that conservation activities needed to be pursued more vigorously so as to extend the life of existing energy reserves and to enhance economic competitiveness and energy security. They had further agreed that "adherence to market mechanisms is important in ensuring that the most efficient decisions are made regarding energy supply and demand."
Energy in Canada: An Overview	A Discussion Paper (32 pages) under the title "Energy in Canada : An Overview" was issued in <u>January</u> by Energy, Mines and Resources Canada. It was prepared as a background reference for the Energy Ministers' Conference held in that month. It provided an important record on the evolution of the Canada's energy sector to the end of 1986 and a broad perspective on current energy issues. Having been made widely available, it served as a contribution to public information and discussion following a year of considerable change in the global and domestic energy scene highlighted by major oil price declines, the Chernobyl nuclear disaster, and the increasing debate about the environmental costs of energy production and consumption. For Energy Ministers, the report suggested the following items as being common to the agendas of both federal and provincial levels of government: <ul style="list-style-type: none"> <li>• protecting our energy security;</li> <li>• maintaining access to foreign markets;</li> <li>• sustaining the nuclear option;</li> <li>• easing restructuring in the petroleum sector;</li> <li>• encouraging energy conservation and alternatives;</li> <li>• supporting energy research and development; and</li> <li>• facilitating greater integration of environmental impacts in energy investment decision-making and policy.</li> </ul>
EMR-Environment Federal Ministerial Committee	In <u>January</u> , Energy, Mines and Resources Canada and Environment Canada established a federal Ministerial Committee for the purpose of integrating energy and environmental issues. The purpose was to ensure that environmental factors would be addressed as thoroughly as economic and engineering factors in energy-related activities.

N.E.B. gas surplus procedures	In <u>January</u> , the Alberta Energy Minister threatened to declare all current Alberta gas removal permits null and void by June if the surplus test issue was not resolved in a way acceptable to the province.
Megaproject development	A federal government statement in <u>February</u> indicated its intention to continue to examine on a case-by-case basis the appropriateness of extending assistance to economically marginal megaprojects including Hibernia, Amauligak and the Husky oil upgrader.
Energy security	In a <u>February 12</u> public statement, the Minister of Energy, Mines and Resources, in reference to the Energy Ministers' Conference of January 30, noted the divergence in views concerning energy security. In the Maritimes, distant from pipeline delivery systems, the concern was availability if a major disruption occurred in the world oil economy. In industrialized Central Canada, the concern was more about the effect of price shocks and their impact on the economy. In the producing areas of Western Canada, the question was whether there would be the infrastructure, the people and the capital available to allow the oil and gas sector to make a contribution to Canada's energy security in the future.
Canada Petroleum Resources Act	On <u>February 16</u> , the Canada Petroleum Resources Act (CPRA) was proclaimed in force providing for the management of oil and gas resources on Canada's frontier lands. The Act gave legal force to the federal government's frontier energy policy first announced in October 1985 and established a framework for the oil and gas industry on frontier lands. It was not proclaimed in force in the Newfoundland and Nova Scotia offshore areas, those areas being governed by separate legislation implementing the Atlantic and Nova Scotia Accords but essential elements of the CPRA were to be incorporated in both versions of the accord implementation legislation, thereby providing consistency for the oil and gas industry throughout the frontier lands. The Crown share, or back-in provisions of the replaced Canada Oil and Gas Act, which provided for a 25% share for the federal government in all interests held in the frontier lands was eliminated but the requirement for a 50% Canadian ownership level at the production stage was maintained.
Natural gas discovery-Caroline, Alta.	In <u>February</u> , Shell Canada announced that it had made one of the largest natural gas discoveries in recent years. The field situated near Caroline, Alberta was believed to contain as much as 2 trillion cubic feet of natural gas. Development plans were to be formalized in late 1988.
Western Canadian coal use in Ontario	In <u>March</u> , the Action Committee on Western Canadian low-sulphur coal to Ontario was established under the chairmanship of the Deputy Prime Minister, with the Premier of Ontario as Vice-Chairman and the Premiers of British Columbia, Alberta and Saskatchewan as members. The main objective of the committee was to undertake technical research designed to reduce the delivered cost of western Canadian coal to Ontario and to expand its use in that province. It was established as a result of a recommendation from a federal/provincial task force on low-sulphur coal to Ontario. The intent was to increase the contribution of coal to the economic development of the western provinces and encourage the greater use of low-sulphur coal in Ontario's thermal power plants.
Alberta oil production prorating ended	In <u>March</u> , the Alberta Energy Resources Conservation Board announced a modified system of production allocation for light and medium crude oil. This marked the termination of the oil prorating system, first enacted in December 1950. The modified system, allowing producers to sell all available products subject only to limits determined by engineering allowable criteria, replaced prorating after a trial period thereby ending the 37 year old production control system.
Canadian Exploration and Development Incentive Program (CEDIP)	In <u>March</u> the Minister of Energy, Mines and Resources announced the creation of the Canadian Exploration and Development Incentive Program (CEDIP). The program offered a cash incentive of one-third of eligible exploration and development expenses to firms in the oil and gas industry. The incentive was to be available on up to \$10 million of expenditures, per company, per year, for expenditures made after March 31, 1987. It was estimated at the time of the announcement that the program could inject an additional \$350 million per year into the industry cashflow and

lead to over \$1 billion of additional investment and up to 20,000 person-years of new employment.

Canada-  
Newfoundland  
Offshore  
Development Fund

In March the Minister of Energy, Mines and Resources reported on expenditures made from the Canada-Newfoundland Offshore Development Fund established as a \$300 million fund under the Atlantic Accord signed by the Governments of Canada and Newfoundland on February 11, 1985. The Development Fund was designed to finance training programs and to help put in place facilities and services needed for Newfoundland offshore oil and gas development. Financing totalling \$66.6 million for eight new projects was announced at this time, following five projects totalling \$37 million that had been previously approved under the Fund. Later in the year, in June, the Minister reported that 60% of the Fund had been committed to offshore-related training programs and facilities.

Terra Nova oil field -  
Newfoundland  
offshore

In March Petro-Canada announced its intention to develop the Terra Nova oil field, situated offshore from the Newfoundland coast, with an estimated cost of up to \$1 billion.

Energy research,  
including PERD

For the fiscal year ending in March 1987, the overall level of energy research and development (R&D) expenditures in Canada was \$940 million, of which \$470 million was spent in industry, \$380 million by the federal government, and \$90 million by the provincial governments. Federal government expenditures consisted of funding of nuclear R&D through Atomic Energy of Canada Ltd (AECL) - 52%; expenditures coordinated by the Interdepartmental Panel on Energy Research and Development (PERD) - 27%; and other expenditures by several government department and agencies - 21%. Under PERD, about \$90 million annually was to be allocated over the succeeding five years, compared with a high of about \$170 million in 1984. The main PERD funding areas were oil sands/heavy oils, coal supply and combustion, oil/gas/electricity, new liquid fuels, energy conservation, renewable energy and nuclear energy (fusion). The PERD program continued to be planned, coordinated and reviewed by an interdepartmental panel linking the energy-related activities in all sectors of the economy through relevant federal departments and agencies. Within the provinces, R&D priorities followed their particular interests. Alberta, accounting for about 70% of all provincial expenditures, focused on fossil fuels R&D, as did Saskatchewan. Quebec's program related to further electrification of the economy, particularly in the Institut de Recherche d'Hydro Quebec (IREQ). Other provinces concentrated on energy efficiency and renewable energy R&D.

Canadian Exploration  
and Development  
Incentive Program  
(CEDIP)

Effective April 1, the Government of Canada implemented the Canadian Exploration and Development Incentive Program, providing about \$350 million a year in direct assistance to the oil and gas industry. Assistance was directed to the smaller and medium-sized companies who were having difficulties in raising equity capital as a result of the serious impact of uncertain world oil prices on the oil and gas industry and on the economy of western Canada in particular. The federal government also allowed the oil and gas industry to use flow-through shares to finance some of its activities. With the CEDIP, this permitted 33a% of eligible expenditures to flow through to share purchasers in the form of income tax deductions.

The Energy Options  
Process - A Canadian  
Dialogue

In April, the federal government announced the formation of an Advisory Committee to preside over "Energy Options-A Canadian Dialogue". The process was designed to comprise a series of conferences, seminars and studies to review and assess Canada's energy prospects and options in the 21<sup>st</sup> Century. Widespread public participation was to be encouraged in this dialogue on Canada's energy future. The Committee's report was released in August 1988 under the title of "Energy and Canadians into the 21<sup>st</sup> Century" being A report on the Energy Options Process.

Canada-  
Newfoundland  
Atlantic Accord  
Implementation Act -

On April 4, the Canada-Newfoundland Atlantic Accord Implementation Act was proclaimed, thereby putting into place the long-term federal-provincial agreement on the joint management of offshore oil and gas development set out in the Atlantic Accord signed on February 11, 1985. The Act established the Government of Canada and the Government of Newfoundland and Labrador



proclaimed	as equal partners in the management of offshore oil and gas resources. The provisions of the Canada Petroleum Resources Act are incorporated into the Atlantic Accord Implementation Act, thereby ensuring a consistent legislative framework throughout the frontier lands in Canada. Under the Accord and its implementing legislation, an independent Canada-Newfoundland Offshore Petroleum Board was given the authority to administer all aspects of offshore exploration and development. The implementing legislation also brought into force the revenue-sharing provisions of the Atlantic Accord, under which revenues were to be split between the two governments on the same basis as between Canada and other oil and gas producing provinces.
Natural Gas Vehicle Program	In <u>April</u> , the federal government announced its intention to continue support for natural gas vehicles beyond 1987 through the Natural Gas Vehicle Program which had been in place since 1983, with more than 11,000 vehicle having been converted to natural gas operation. The support program, sponsored by the federal, B.C. and Alberta governments provided financial incentives to encourage the use of natural gas as a vehicle fuel and was taking the form of contribution of \$500 towards the cost of converting a vehicle to run on natural gas; or toward the purchase of a factory-equipped natural gas powered vehicle.
EMR Research Agreements Program	On <u>April 16</u> , the federal government announced that Energy, Mines and Resources Canada would provide \$1.39 million in 1987-88 under its Research Agreements Program in support of 171 projects in 40 research centres throughout Canada in the natural, physical and social sciences and in engineering. About 29% of the 1987-88 funds were to be used for energy research on such subjects as increased energy efficiency in combustion and the use of alternative fuels, energy self-sufficiency, taxation policy and deregulation.
U.S.A. barriers to Canadian gas imports - FERC Order 256	An appraisal of natural gas exports to the United States made in <u>April</u> indicated that although Canadian natural gas on the basis of price was competitive with U.S. gas in the U.S. market, Canadian gas market share had declined in 1986 due to market barriers, chiefly those imposed by the U.S. Federal Regulatory Commission's (FERC) Order 256. That order removed from "the proposed demand charges, costs that would not be included therein under the Commission's rate making principles", which meant that if the fixed costs incurred in Canada for transportation facilities to deliver Canadian gas to U.S. markets on a firm basis were not structured by Canadian regulators according to the FERC's preferred rate design, recovery of those costs would not be assured. Thus barriers, other than price, were impeding Canada's gas export sales notwithstanding the initiatives taken by the federal government and the provinces in the process of deregulation and the removal of various constraints on Canadian natural gas trade.
U.S.A. barriers to Canadian gas imports-FERC decision	On <u>May 27</u> , the U.S.A. Federal Energy Regulatory Commission (FERC) reached a decision on the question of recovery of fixed transportation costs incurred in Canada for Canadian exporters of natural gas which put recovery of those costs in Canada at risk. The U.S.A. action was viewed in Canada as a serious setback in joint efforts of the two countries to move towards market-oriented energy trade, in that the ruling would interfere with contracts which had been freely negotiated in accordance with guidelines established by the two governments. Implementation of the ruling was seen to extend U.S. regulation into Canada with the resulting extraterritorial effect on Canadian toll design.
COGLA 1986 annual report	On <u>May 28</u> , the fifth annual report of the Canada Oil and Gas Lands Administration (COGLA) was tabled in Parliament providing a comprehensive review of oil and gas activity on Canada's frontier lands covering the 1986 calendar year. A total of 56 exploration and delineation wells were drilled, resulting in 14 significant discoveries - 11 in the north and 3 in the east coast offshore. The most important exploration results were obtained at the Amauligak structure in the Beaufort Sea. About 50,400 cubic metres of oil produced in a test well were marketed in Japan - the first shipment of Beaufort Sea oil.
PMA report on PGRT removal	In <u>May</u> , the Petroleum Monitoring Agency (PMA) concluded in a study of the petroleum industry's investment intentions that increased cash flow accruing to the petroleum industry as a

result of the early elimination of the Petroleum and Gas Revenue Tax (PGRT) would go to exploration and development expenditures and employment creation. The increased cash flow was estimated to be about \$1 billion, assuming an average oil price of U.S. \$15/bbl, following removal of the PGRT effective October 1, 1986, 27 months ahead of schedule. The removal of the tax helped to cushion the impact of major declines in the international oil price.

Beaufort Sea oil field development

In May, Gulf Oil announced plans for a \$4.6 billion oil field development in the Beaufort Sea. The Amauligak field would be developed in partnership with Husky Oil and Norcen Energy Resources following successful 1986 drilling results.

Energy Security in Canada - A Discussion Paper

Published in June, this 96-page Discussion Paper included results of an Energy Ministers' Conference held in January 1987. That Conference reflected concern about security of oil supply in a period of low world oil prices. The paper examined the nature of the problem of energy security and identified and assessed the domestic and international options available to enhance security of supply. It concluded that, given the largely international dimensions of the problem, an effective path to enhance oil security existed through greater collective security with the country's trading partners. Canada could contribute to collective security by pursuing economic opportunities to conserve oil, substitute alternative energy sources and enhance oil production. Further efforts could be effectively directed to breaking down those institutional and technical barriers, which prevent energy and conservation efforts that are economic, from being realized.

Megaprojects - status in mid-1987

An assessment made in June indicated that most expansion projects and new ventures had been put on hold pending a return to more attractive oil prices. A decision to proceed with the Hibernia oil development appeared imminent although there was some concern about future oil prices and technological risk as well. Favourable results were being obtained by Petro-Canada in its Terra Nova offshore drilling development and by Gulf oil in its Amauligak Beaufort Sea pre-development drilling. A \$90 million engineering study funded by the federal, Alberta and Saskatchewan governments on the Lloydminster Upgrader was complete and discussions by Husky Oil with the three governments were continuing as to the next stage in that development. The NewGrade heavy oil upgrader in Regina was the only major project certain to be completed within the following two years. The \$600 million in costs had been more than half committed, equipment was on site and the estimated completion date was late 1988. Construction of Phases 7 and 8 of ESSO's in-situ heavy oil project at Cold Lake was planned to start in 1988, bringing 23,000 b/d on stream in 1989. Principals of the Syncrude oil sands operation had had discussions with the federal government on an 80,000 b/d expansion program, a third expansion that could be completed in 1993 at a cost of \$4 billion. Pre-approval of the project was being sought from the Alberta Energy Resources Conservation Board but a decision to proceed based on such factors as world oil prices, conventional crude oil reserves and fiscal and royalty arrangement would not be made before early 1989. B.P. and Petro-Canada were considering a \$200 million expansion of their Wolf Lake oil sands project to triple its capacity to 20,000 b/d but were awaiting the results of tax reform. At this time the Minister of EMR announced that the federal government would examine requests for assistance to megaprojects on a case-by-case basis according to the following criteria:

- projects must be backed by significant private sector equity;
  - they must be capable of producing oil or natural gas at a reasonable cost;
  - any assistance must be delivered outside the tax system;
  - the projects must be of national or regional importance; and
- environmental impacts must be taken into consideration.

Moratorium on B.C. offshore drilling lifted

In a public statement on June 8, the Minister of EMR announced that the federal and British Columbia governments had decided to proceed with the lifting of the federal and provincial moratorium on exploration drilling on the west coast offshore which had been in place since 1971. The decision followed from a report and recommendations of a five-member panel appointed in June 1984 which, in its Offshore Exploration and Environmental Assessment report, made 80 recommendations to serve as a basis upon which to plan and manage renewed offshore oil and gas activity on the west coast.

Canadian gas export guidelines re. U.S.A. barriers

On June 24, the Minister of EMR released a letter to the Chairman of the National Energy Board regarding Canada's natural gas export policy, the letter being prompted by decisions of the U.S.A. Federal Energy Regulatory Commission (FERC) which put the recovery of fixed transportation costs in Canada at risk. The Minister asked the NEB to provide information on whether the criteria, set out in the 1985 federal-provincial Agreement on Natural Gas Markets and Prices, were being met and, if not, what action would be appropriate. The specific criterion in question required that the price of exported gas must recover its appropriate share of the costs incurred. It was noted that the criteria contained in the 1985 Agreement continued to provide the Canadian industry with clear guidelines in formulating negotiated agreements that would be in the broad public interest. The other criteria were that the price of exported gas shall not be less than the price charged to Canadians for similar types of service in the area or zone adjacent to the export point; export contracts must contain provisions which permit adjustments to reflect changing market conditions over the life of the contract; exporters must demonstrate that export arrangements provide reasonable assurance that volumes contracted will be taken; and exporters must demonstrate that producers supplying gas for an export project endorse the terms of export arrangements and any subsequent revisions thereof. Accordingly, the NEB was asked by the Minister to review all contract amendments and new contracts and to provide advice on whether the revenue generated by each export licence on an annual basis was sufficient to recover the intraprovincial and interprovincial transportation costs in Canada and to netback an acceptable price to the producers supplying the gas.

White Paper on Tax Reform

The White Paper on Tax Reform issued by the Minister of Finance on June 18, included changes affecting the energy industries. The special 33a% earned depletion allowance, which had been phased out for conventional oil and gas investments, was to be phased out for all petroleum investments by June 30, 1989. The flow-through shares provisions were retained but the rules governing their use were tightened. The 25% resource allowance and the 25% rate of tax credit for high-cost exploration were not modified and continued as a benefit in particular to investment in conventional oil and gas activity. As with other industries, there was to be a reduction in certain capital cost allowance rates in the petroleum sector from 30% down to 25%, effective January 1, 1988, but this measure did not apply to exploration and development expenses. There was to be no change to the 100% write-off for Canadian exploration expenses and the 30% write-off for Canadian development expenses. The special "Class 34" fast write-off incentives for investments in energy conservation and renewable energy was retained. In recognizing the important contribution which enhanced oil recovery and in-situ projects can make to domestic oil supplies, the White Paper states: "The Government will consider what new forms of assistance might be required by such activity in light of industry economics and our future energy needs".

Petroleum Monitoring Agency Report-1986

In July the Petroleum Monitoring Agency reported on the results of its assessment of petroleum industry operations in 1986, indicating that the industry experienced the worst financial downturn of its 40 - year history as a result of the dramatic decline in crude oil prices, from an average of \$33/bbl in January 1986 to an average of \$14.60/bbl July, and stabilizing in the range of \$20-22 by the end of the year. Compared with 1985, net income dropped 190%, or \$5.5 billion, to a loss of \$2.6 billion. Cash flow from operations declined 34%. Net capital expenditures were down 33% to \$6.7 billion.

Oil industry activity rebounds

In July, drilling rig activity in Western Canada was up about 125% and well completions were almost double the number of July 1986. Following the oil price declines of 1986, the industry had become more efficient and was also benefitting from the early abolishment of the Petroleum and Gas Revenue Tax, the introduction of the Canadian Exploration and Development Incentive Program, and adjustments in the provinces royalty regimes.

NEB inquiry - regulation of electricity exports

In July the National Energy Board reported to the Minister of EMR on changes that could be made to simplify the regulation of electricity exports and international power lines. The report followed from a public inquiry held in November and December 1986. The issues examined:

- the rationale for regulations;

- the existence of any overlap of federal and provincial regulation;
- the method used to determine whether electricity to be exported was surplus to Canadian requirements;
- the appropriateness of the Board's price guidelines;
- the terms of licences being limited to 25 years;
- transmission access for Canadian exporters not having direct access to potential American purchasers;
- the question of prebuilt facilities; and
- the criteria applicable to certification of international power lines.

The Board's full report was published in July and was reviewed by federal and provincial energy ministers later in the year.

Profile of EMR	A 77-page report entitled "Profile of EMR" was issued in <u>July</u> providing an overview of the organizations and responsibilities of the Department of Energy, Mines and Resources at that time, along with the Crown Corporations and Committees. The Energy Program component of the Department consisted of the Energy Programs Sector, the Energy Policy Sector, the Energy Commodities Sector, and the Canada Oil and Gas Lands Administration. Together with additional resources in the Office of Energy Research & Development, and in Personnel, the Energy Program employed about 1,025 person-years in developing appropriate strategies, policies and programs to ensure that Canadians were supplied with, used and conserved energy resources efficiently, in the context of other social and economic goals.
Electricity export review process	In <u>August</u> , the Minister of EMR announced there would be a federal-provincial and public review of the existing system of electricity export regulation. This decision followed from a report in July of a National Energy Board panel on changes that could be made to simplify the regulation of electricity exports and international power lines.
First wind farm	In <u>August</u> , announcement was made that Canada's first wind farm would be connected to a diesel-supplied electricity network at Cambridge Bay in the Northwest Territories. The project was intended to demonstrate the feasibility of installing wind farms in remote communities served by diesel-generated electricity networks.
Energuide Program	In <u>August</u> , the federal government announced that the regulations prescribed under the Consumer Packaging and Labelling Act pertaining to the Energuide program would be maintained until March 31, 1988 and the Energuide Program would be transferred from Consumer and Corporate Affairs Canada to EMR in order to integrate it with the Department's program to improve residential energy efficiency. The regulations require that major household appliances manufactured and imported for sale in Canada undergo the appropriate Canadian Standards Appliance Test procedure, and that an Energuide label indicating the measured level of energy use be affixed to the appliance.
Council of Provincial Energy Ministers' meeting on energy security	On <u>August 24</u> , the Council of Provincial Energy Ministers met in St. John's, Newfoundland, with the Minister of Energy, Mines and Resources Canada participating in the deliberations. The joint meeting fulfilled an undertaking made at the intergovernmental meeting of Ministers of Energy in Ottawa on January 30 to maintain progress towards energy security, including the future of Canada's crude oil pipeline system in that regard. Ministers noted the progress that had been made in defining and addressing energy security issues and indicated a desire to continue the constructive dialogue which had been established on those issues. It was acknowledged that an adequate policy directed at maintaining energy security required long-term measures aimed at enhancing supply, reducing demand, maintaining and improving infrastructure and increasing supply from alternative sources. In addition, it required emergency measures to cope with possible supply disruption.
Natural gas price	On <u>August 27</u> , the first report was released on the relative performance of export and domestic

monitoring	prices for Canadian natural gas following the elimination of government administered prices, effective November 1, 1986. The October 1985 Agreement of Natural Gas Markets and Prices had required that the price of exported natural gas was not to be less than the price charged to Canadians for similar types of service in the area adjacent to the export point. The initial information indicated that Canadian consumers were in general paying less than the price charged on export sales. The monitoring was positive for Canadian consumers of natural gas because it provided evidence of generally equitable pricing in export and domestic markets, and useful to producers in indicating overall commodity price trends.
Electricity export limits	Governor-in-Council approval was given on <u>August 20</u> to amendments to National Energy Board part VI Regulations permitting an increase in the limits of new firm export orders for electricity from 50 to 60 megawatts, and from 250 to 400 gigawatt hours. For new interruptible energy, the limit was increased to 1000 gigawatt hours. The term of these exports was to be three years.
N.B. Chatham CFB generating station	In <u>August</u> , the official opening took place of a 20 MW circulating fluidized bed (CFB) demonstration project at the New Brunswick Electric Power Commission's Chatham generating station. The project was designed to promote the expanded use of coal resources by reducing acid gas emissions while allowing for more flexibility in coal quality than traditional pulverized coal firing. The Chatham station was the first unit in North America to generate electricity for an electric grid using CFB technology.
N.E.B. gas surplus determination procedure	In <u>September</u> , the National Energy Board issued its Reasons for Decision adopting a new procedure, the Market-Based Procedure, for determining the surplus of natural gas available for export. This replaced the reserves to production (the R/P Ratio) procedure. During the year, written submissions had been received by the Board and it had held oral hearings in April and May. Under the new procedure, the Board decided it would act in two ways to ensure that natural gas licenced for export would be surplus to reasonably foreseeable Canadian needs. One way would be in the context of public hearings to consider applications for licences to export natural gas. The other way would be by monitoring Canada's energy markets on an ongoing basis. As part of its monitoring function of the new procedure, the NEB would undertake to publish every two years its staff assessment "Canadian Energy Supply and Demand". This assessment would consider, among other things, the evolving shares of the energy market served by various energy forms - electricity, oil, natural gas, petroleum products, coal and renewables - over a projected period of some 20 years. Also, on an ongoing basis, the Board would publish natural gas market assessments, analysing natural gas supply, demand, and prices.
Canada's renewable energy industry - NCAEI support	In a <u>September 28</u> address to a Canadian Wind Energy Conference, the Minister of Energy, Mines and Resources provided an overview and assessment of Canada's renewable energy industry which was contributing 7% of the country's total primary energy supply representing an equivalent oil value of about \$1,6 billion annually. More than 2000 companies employing about 7000 people were involved in the industry with sales of more that \$500 million annually. In the period 1985-1988, EMR was providing \$127 million for renewable energy projects. The government was supporting the renewable energy industry through research, development and demonstration projects under the National Conservation and Alternative Energy Initiative (NCAEI) that had been announced in May of 1985.
House of Commons Committee report: Oil Scarcity or Security?	In <u>September</u> , the Standing Committee on Energy, Mines and Resources reported to the House of Commons on the oil supply situation as recorded in its report "Oil: Scarcity or Security?" At the time the Commons Committee reported, the 1986 collapse of crude oil prices had left its mark around the world. Demand for oil had increased in most countries as consumers responded to the lower cost of petroleum products while exploration expenditures were down, resulting in lower reserve additions for the future. While Canada enjoyed an aggregate self-sufficiency in oil, it was a net importer of light gravity oils and lower prices would accelerate the decline in the productivity of those oils. The Western Hemisphere, with only 17% of conventional world reserves, had produced 29% of the 55.9 million barrel/day in 1985. This unbalanced output, measured against

the share of oil reserves held, almost guaranteed that the Middle East would eventually dominate the production of conventional crude oil again. In the medium term, Canada would be forced to import larger quantities of light crude oil which would increase the country's vulnerability to any curtailment in offshore supplies. Accordingly, a mechanism was required to offset this rising dependence until long-term changes could be made to rectify Canada's light oil supply/demand imbalance.

- From this baseground, the House of Commons Committee made recommendations that:
  - the Federal Government establish a government-owned strategic oil reserve equal to 90 days of light-oil imports, financed by a tax on oil products at the refinery level;
  - the Federal Government establish a stable corporate tax regime so that investment in domestic exploration and development would not be restricted due to uncertainty regarding government policy;
  - production royalties should be kept low in the initial years of petroleum production;
  - the federal government should complete the planning for a transportation corridor along the Mackenzie Valley in anticipation of pipeline construction to provide a transportation link with the Mackenzie Delta;
  - the Federal Government should encourage the U.S.A. government to promote the development of petroleum resources in Alaska;
  - the role of Canada's foreign assistance agencies be continued in promoting the development of conventional resources in developing countries, particularly in the Western Hemisphere;
  - the Federal Government should increase its financial support for research and development directed to increasing the domestic supply of oil, with particular emphasis on the extraction and upgrading of bitumen and heavy oil, and on frontier development, but also including conventional light oil through such means as enhanced oil recovery;
  - the Federal and Provincial Governments should forego taxing natural gas, propane and methanol when used as motor fuels.

The response of the Minister of EMR to the "Oil Scarcity or Security?" report was recorded in February 1988.

Pickering nuclear generating station

In October, unit 1 of the Pickering nuclear generating station re-entered commercial service after replacement of all of its pressure tubes. This was said to be a demonstration of the unique CANDU feature which allows full transplant of the heart of the reactor. In collaboration with Ontario Hydro, AECL was devoting considerable resources to improving the longevity of pressure tubes.

FTA agreement

On October 4, Canada and the United States agreed in principle on the elements of the FTA.

Methanol-powered truck demonstration

In October, the first North American demonstration of methanol-powered trucks was initiated. The result of the demonstration in Vancouver would contribute to meeting strict emission standards in North America. The \$8 million program, initiated by Energy, Mines and Resources Canada in cooperation with the transportation and methanol institutes, was designed to demonstrate the viability of methanol as a fuel in large trucks and buses in "Project Mile" which also included fleet tests in two other cities.

Megaprojects - status

An appraisal of the status of megaprojects in October indicated some progress since mid-year. Syncrude had decided to proceed with a \$650 million expansion of its existing oil sands facility. Petro-Canada and British Petroleum had declared their intention to proceed with their \$200 million Wolf Lake project. Suncor planned to spend \$150 million to expand its Fort MacMurray oil sands plant.

New electricity policy principles - related

In a public statement on November 26, the Minister of Energy, Mines and Resources outlined the principles that would govern Canada's new electricity policy. The new electricity policy was to

regulation	<p>have two objectives: the Government of Canada should work with the provinces to ensure that the supply of electricity to Canadians is reliable, flexible, provided at minimum cost and with environmental safeguards; and the new policy should optimize Canada's export opportunities. These objectives were to be achieved in the following ways:</p> <ul style="list-style-type: none"> <li>• working with the provinces to develop mutually acceptable environmental standards applicable to electricity generation and transmission;</li> <li>• encouraging greater cooperation among provinces with regard to systems planning, the development of new facilities, and the sharing of excess transmission capacity;</li> <li>• encouraging the expansion of interprovincial trade; and</li> <li>• encouraging increased research and development in electricity technologies.</li> </ul> <p>Regulation of the electricity policy was to be governed by three broad principles: regulation should be used only where there is clear evidence that its benefits exceed its costs; the regulatory process should create incentives for self-regulation by industry; and regulation by the Government of Canada should not duplicate provincial regulation.</p>
Energy in Canada: A Background Paper	<p>Prepared in <u>November</u> by Energy, Mines and Resources Canada, this 56-page publication "Energy in Canada: A Background Paper" provides information about Canada's resource potential, the contribution of energy to the Canadian economy, Canada's place in the world energy market and the outlook for the development of Canadian energy resources as viewed at the end of 1987. The report also provides background information on several key energy issues: energy and the environment, energy security, Canadian ownership of energy resources, energy R&amp;D, and energy conservation. It concluded with an assessment of some of the major challenges facing the energy sector. The report was intended as a reference document for those participating in the review of Canada's energy options (see August 1988 note on "Energy and Canadians into the 21<sup>st</sup> Century", as well as to inform the general public.</p> <p>The report refers to evidence that Canada was entering a new energy era in which a wide variety of energy sources would compete to meet the energy needs of individuals, businesses and industry for heat, light, power and transportation, in contrast to energy markets of the past which had been characterized by a single dominant source of energy. In a market-oriented environment, Canada's future energy mix would largely be determined by millions of separate decisions made by consumers and producers, based to a large extent on relative energy prices. The report concludes that in the long run technologies such as photovoltaics, superconductors, or nuclear fusion may be perfected resulting in the emergence of a new dominant energy form that is abundant, cheap and environmentally benign. One third of the report provides an important statistical record of energy pricing and fiscal regimes, and of energy supply, demand, environmental and economic indicators.</p>
Douglas Point nuclear station	<p>Decommissioning of the Douglas Point nuclear station was completed in <u>December</u> and its spent fuel was stored at the site in above-ground silos occupying a surface area about the size of a hockey rink.</p>
CANDU marketing	<p>As of <u>December</u>, the continuation of the nuclear power option - the CANDU reactor - remained Atomic Energy of Canada Limited's main objective, although once again the year ended with no new commitments at home or overseas, leaving the corporation for the first time in 10 years with insufficient income to meet future product marketing and development requirements. AECL remained convinced that the CANDU 300 development, as the flagship of its advanced CANDU concept, would provide new opportunities in the domestic and international market place. The Federal Government had agreed to advance funds to AECL towards completion of the design, thus confirming its confidence in the future of Canada's nuclear power alternative. AECL continued to maintain offices in Korea, Holland, Turkey, Yugoslavia, Romania, and the U.S.A.</p>
FTA legal text published	<p>The legal text of the Free Trade Agreement was published on <u>December 10</u>.</p>

Nuclear power operation	In <u>December</u> , 18 commercial CANDU reactor units, with an aggregate output capacity of some 12,000 megawatts (MWe) were in service in Canada. Four additional reactors, under construction in 1987, were to enter service between 1988 and 1992, contributing 3500 MWe to the Ontario Hydro grid. Over 15% of Canada's electric power was nuclear-generated in 1987 while in Ontario it was over one-half. There were no firm plans to commit more nuclear capacity before 2000.
Uranium mining foreign ownership policy	In <u>December</u> , Canada's new policy on foreign ownership in Canadian uranium mining was announced, specifying that Canadians must own at least 51% of an individual uranium property when production begins. If a project was Canadian controlled, a reduction from 51% would be permitted. Only in cases where Canadian partners could not be found would exemption to the policy be considered, and this would require a special Cabinet approval. The new policy was designed to encourage investment in Canada's uranium mining industry and to promote economic development, exports and jobs for Canadians.
Acid rain abatement agreements	By <u>December</u> acid rain abatement agreements had been signed between the Federal Government and the governments of Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, and Newfoundland. The agreements were to limit sulphur dioxide (SO <sub>2</sub> ) emissions in these jurisdictions to 50% of its 1980 base case levels by 1994.
Western Canadian Coal use in Ontario	In <u>December</u> , an Intergovernmental Secretariat supporting the Action Committee on Western Canadian Low-Sulphur Coal completed a report identifying a number of initiatives which focussed on improvements in mining capabilities, the development of more competitive coal products, alternative transportation systems, and the removal of regulatory impediments as ways of promoting the greater use of Western Canadian Coal in Ontario.
Coal industry growth	Records available to the end of <u>December</u> indicated that the growth of the thermal coal industry in the previous 10-year period had been significant. Production in that period grew from 15.6 million tonnes in 1977 to 38.6 million tonnes in 1987. Imports declined slightly to 8.9 million tonnes from 9.3 million tonnes, while exports grew from 859,000 tonnes to 4.3 million tonnes. Domestic consumption of thermal coal in the 10-year period grew from 24.2 to 43.8 million tonnes. A new National Transportation Act, enacted by the federal government in December, was seen to benefit the coal industry as it aimed to encourage a more economic and efficient transportation system.
Low-level radioactive waste disposal facilities	<p>In <u>December</u>, a task force report on low-level radioactive waste management, after a year's study, identified five essential principles in site selection that emphasized cooperation and voluntary participation by communities to ensure that the public would play a key role in deciding what should constitute an acceptable facility and how its impacts should be managed. The principles identified by the task force for a "socially responsible facility siting process" included the following:</p> <ul style="list-style-type: none"> <li>• the community should be able to volunteer itself as a location for a disposal facility and have the right to opt out of the siting process at any time, rather than being selected at the project sponsor's discretion;</li> <li>• the community should be a partner in problem solving and decision making throughout the siting process;</li> <li>• the community should receive compensation to offset unmitigable impacts and to enhance local benefits;</li> <li>• the community should have the right to select, from given technical options and impact management measures, the ones that are acceptable to it; and</li> <li>• the siting task force responsible for the implementation of the process must ensure that the safety of the environment and human health are not compromised for any reason.</li> </ul>
	The task force report recommended that the development of waste management options should be guided by the concept of long-term storage rather than permanent disposal. It also recommended



a more meaningful classification system for radioactive wastes to gain better public understanding of the problems and potential solutions for radioactive waste management.

Energy production, consumption and trade in 1987

The statistical record to the end of December showed that primary energy demand in Canada in 1987 grew by 1.7%, due mostly to increased use of oil and hydroelectric power. While net export volumes of petroleum decreased slightly, net export revenues increased from under \$2 billion in 1986 to about \$3 billion in 1987 resulting from higher prices, and larger net exports of higher-valued material. Electricity exports rose substantially during 1987 to reach a record of 163 PJ, although the export revenue increase was modest as export prices per unit were still being affected by low world oil prices. While gas export volumes increased to just over 1000 petajoules from 800 PJ in 1986, continued competition in the U.S.A. led to lower export prices and only a minor increase in export revenues. Net exports of petroleum, natural gas and electricity in 1987 totalled 1,986 PJ valued at \$5.5 billion compared with 1,718 PJ valued at \$5.4 billion in 1986.

IEA 1987 Review - Canadian Energy Policies and Programs

In its 1987 review of International Energy Agency countries' energy policies and programs, the IEA report on Canada commented on the progress that had been made in the deregulation of the oil and gas sectors and noted the initiatives taken to ease the financial burden of low oil prices for the producing industry by increasing the cash flow for re-investment in oil and gas exploration and development activity. The IEA repeated the concerns expressed in its 1986 report relative to energy intensity, conservation, future electricity supply, R&D, and the need for a more competitive railway system for coal transportation. Its recommendations concerning the Canadian energy economy reiterated those made in 1986, particularly in relation to oil and gas resource development, efficient use of energy, energy R&D, and a high level of cooperation between federal and provincial governments in order to ensure that nation-wide objectives would be achieved. The report covered the 12-months period through to December 1987.

## THE YEAR 1988

**Overview:** The Progressive-Conservative government of Prime Minister Brian Mulroney was re-elected following an election dominated by controversy over the Canada-USA Free Trade Agreement (FTA) signed in January.

The February 10, 1988 federal Budget revised the regulations governing the calculation of resource allowance to treat income from tar sands production in the same manner as production from an oil well. The budget also restricted access to Class 34 accelerated capital cost allowance on energy conservation equipment to taxpayers who use that equipment for the purpose of earning income from their own business or property. The government also announced its intention to reform the federal sales tax system. .

Canada-U.S. Free Trade Agreement (FTA)

On January 1, major reforms to the tax system went into effect. Capital cost allowance rates were reduced, as were the number of CCA classes. In addition, most of the accelerated capital cost allowances were rescinded; the only exceptions were Class 34 (energy conservation) and Classes 24 and 27 (water and air pollution control equipment, respectively).

On January 2, the Prime Minister of Canada and the President of the United States of America signed an agreement relating to trade in goods and services between the two countries. Chapter 9 of the Agreement deals specifically with energy trade. It includes broad provisions to assure non-discriminatory access for the United States to Canadian energy supplies and secure market access for Canadian energy exports to the United States. The main thrust of the FTA in the field of energy is to apply GATT rules to oil, gas and electricity trade. For oil and gas trade, the Agreement strengthens the role of market forces, seeks to prevent the imposition of trade restrictions and to restrict the number of cases where governments could depart from these principles without inviting countervailing measures. GATT rules permit the imposition of export controls in the event of short supply of a strategic commodity, and the FTA acknowledged this restriction. In the event of the imposition of such controls by one FTA party, it was obligated to allow the other access up to its historical proportion for energy commodities, and could not discriminate on price. However, there was no *obligation* to supply by the exporting country. Finally, the IEA oil allocation system in the event of significant disruptions to world oil supplies would take precedence over the terms of the FTA. The Agreement preserved the balance between the need to encourage foreign investment while providing for a strong Canadian presence in the oil and gas sector. This was evidenced in relation to Canada's rules on foreign ownership of upstream oil and gas developments on frontier lands, with the rules being "grand fathered in the Agreement". Accordingly, the 50% Canadian ownership requirement for issuance of a production licence on frontier lands is maintained, and existing policies preventing take-overs of financially healthy petroleum companies that are Canadian controlled are retained. During 1988, legislation to implement the Agreement in both countries was being prepared, an Act to implement the FTA being assented to on December 30, 1988. The Free Trade Agreement came into force on January 1, 1989.

Canada-U.S. Free Trade Agreement and Energy-An Assessment

The Minister of Energy, Mines and Resources Canada released a 52-page report on January 26 entitled "The Canada-U.S. Free Trade Agreement and Energy : An Assessment". The immediate effects of the Agreement on the energy sector in Canada were expected to be modest but, in the longer term, the effects would be progressively more important. The report provides an overview of the macroeconomic impacts of the FTA with particular reference to the energy sector; background notes on each commodity component of the sector; reference to elements of the FTA in terms of tariffs, energy, investment, and dispute settlement; and an assessment of the FTA impact on the energy sector as related to market access, investment climate, megaprojects, industry costs, energy security, energy prices, Canada's ability to pursue an independent energy policy, and the impact on each energy commodity. The long-term benefits of the Agreement as assessed in the report include the following:

- More secure access to the U.S. market for Canadian energy exporters will increase the likelihood that the energy sector will realize its full potential to generate revenues and

create jobs throughout Canada.

- Enhanced investor confidence will result from a more stable trading environment, and more investment capital will be available to assist in the development of Canadian energy resources. This will increase the supply of energy to Canadians and to the export market.
- By improving economies of scale through access to U.S. markets, the Agreement could facilitate the development of certain megaprojects, such as pipelines, and reduce the costs and financial risks of these projects to Canadian consumers.

The immediate effects:

- The removal of existing U.S. import tariffs could increase industry revenues from crude oil by up to \$16 million a year, and from refined products by at least \$10 million annually. The elimination of the customs user fee could bring an additional \$10 million a year.
- Because Canada will be exempt from U.S. restrictions on enrichment of foreign uranium, Canada's position in the U.S. uranium market would improve considerably should the U.S. restrictions continue to apply to uranium from other countries.

New coal research and development plans

In January announcement was made that the Canada Centre for Mineral and Energy Technology (CANMET) and the Coal Association of Canada would fund a study to jointly recommend new coal research and development plans to ensure that the spending of all research dollars was closely linked to industrial needs. It was noted that technologies to upgrade low-sulphur western Canadian coal before shipment to Ontario would reduce transportation costs per unit of energy and help to produce a more competitive position for Western Canada coal. Some technologies were nearing the stage of commercialization which would allow high-sulphur coal mined in Atlantic Canada to substitute for imported coal in an environmentally acceptable manner. Canada's coal export industry needed to continuously seek new technologies to become more efficient in a highly competitive world coal market.

Report: "Oil Scarcity or Security"

In his response, in February, to the report "Oil Scarcity or Security", prepared in September 1987 by the House of Commons Standing Committee on Energy, Mines and Resources, the Minister of EMR expressed general agreement with the Committee's observations, particularly in relation to the need for a fair and efficient fiscal system, the importance of security of supply, and the role of energy R&D. However, there was disagreement over the ways in which those objectives were best pursued. Whereas the Committee suggested that strategic intervention must be directed at oil markets because they did not function in a normal economic fashion, the federal government's approach had been to improve the functioning of domestic energy markets and, internationally, to cooperate with Canada's trading partners in initiatives designed to improve the stability of international oil markets. The government's policy was reflected in such actions as the dismantling of the National Energy Program; the deregulation of oil and natural gas pricing; and the widening, via the Canada-U.S. Free Trade Agreement, of secure energy markets available to Canadian producers.

Cameco - A Canadian Mining & Energy Corporation

In February, the Canadian and Saskatchewan governments agreed in principle to merge and subsequently privatize Eldorado Nuclear Limited and Saskatchewan Mining Development Corporation, their respective Crown companies involved in the uranium business. The merger became effective September 30, 1988, creating a large, world-class, integrated uranium mining and processing corporation, known as Cameco-A Canadian Mining & Energy Corporation, with assets of \$1.6 billion and annual sales of some \$500 million. Cameco would be a strong competitor in the international uranium market, with control of 15% of existing world production. The company would control 40% of Canada's known uranium resources of economic interest and it would also control Eldorado's uranium plants in Ontario. Initially the Canadian government was to own 38.5% of Cameco and the Saskatchewan government, 61.5%. These share holdings would be reduced through privatization by 30% within 2 years, 60% within 4 years, and 100% within 7 years. No individual Canadian shareholder was to be entitled to more than 25% of voting

rights, and no individual non-Canadian shareholder would be entitled to more than 5%.

Nuclear power reactors in Canada

As of March 31, there were 18 nuclear power reactors with a licence to operate in Canada - 4 Bruce >A' reactors and 4 Bruce >B' reactors near Kincardine, Ontario; 4 Pickering >A' and 4 Pickering >B' reactors near Toronto; 1 at Gentilly near Trois Rivières, Quebec; and 1 at Point Lepreau, near Saint John, N.B. Three reactors were shut down - the Gentilly 1 reactor near Trois Rivières, the Douglas point reactor near Kincardine, and the NPD near Ralphton, Ontario. Those reactors had been completely defuelled and were in the early stages of decommissioning. The NPD reactor was removed from service after 25 years of operation because the pressure tubes were determined to be no longer fit for service. In March there were 4 power reactors under construction at Darlington, Ontario.

Replacement of pressure tubes in nuclear reactors

As of March 31, Ontario Hydro had decided that replacement of pressure tubes would be required during the life of all nuclear reactors. The sudden failure of a pressure tube in a Pickering reactor led to a decision by Ontario Hydro to replace all of the pressure tubes in Pickering >A' Units 1 and 2. This replacement was completed in Unit 1 in July 1987 and in Unit 2 in mid-1988. Replacement of tubes in Pickering >A' Units 3 and 4 was scheduled to start in 1989 and 1991, respectively. Other reactors were to be re-tubed as soon as it was evident that the pressure tubes were not suitable for service.

Natural gas prices lower after deregulation

It was announced in March, in a second of a series of reports on the performance of domestic and export gas prices, that Canadian consumers were paying less for natural gas since the Federal Government introduced price deregulation in November 1985, and Canadian consumers continued to benefit from prices lower than those available to export buyers. Both domestic and export prices were lower on average in the second half of the 1986-87 year than in the first half. The generally lower prices for all categories of natural gas reflected the high degree of competition in energy markets since deregulation began.

Cape Breton Development Corp. - coal grants

In the fiscal year ending March 31, 1988, grants by Cape Breton Development Corporation to the region's coal industry totalled \$58 million, the equivalent of \$17 per tonne of coal produced. The grants covered operating losses and assumed depreciation of fixed assets. In calendar 1987, Nova Scotia produced 2.2 million tonnes of thermal coal almost all of which was used for power generation in the province.

Conventional Oil Resources of Western Canada

On April 13, a 150-page report was released under the title of "Conventional Oil Resources of Western Canada", containing the result of a 3 - year study by a team of EMR petroleum geologists and economists led by the Geological Survey of Canada Institute of Sedimentary and Petroleum Geology in Calgary. The report described the oil and gas resource environment of Western Canada and provided an economic analysis of the undiscovered light and medium oil resources. The analysis concluded that the outlook for exploration and development of light and medium oil resources was favourable and that a high proportion of the undiscovered resource was indicated to be profitable at existing oil prices and under long-term assumptions for costs, royalties and taxes. The report did not assess the larger resource potential of heavy oils and the oil sands. The report constitutes an important record in oil resource appraisal history.

Georges Bank drilling ban

In April, the Federal Government imposed a 12-year drilling ban on the Canadian portion of Georges Bank, offshore from Nova Scotia, a decision not well received by the oil and gas exploration industry.

Uranium and Thorium Mining Regulations

On April 21, new Uranium and Thorium Mining regulations were approved by the Governor in Council pursuant to Canada's Atomic Energy Control Act. Establishing firmly in law what had previously been applied mainly through licence conditions, the new regulations reflected the Canadian Government's commitment to the health and safety of workers and protection of the environment. They did not impose significant new obligations on mine operators and, with

certain exceptions, formalized what had become standard practice.

Emergency Preparedness Act, 1988; oil emergency program

An Act to provide for emergency preparedness and to make a related amendment to the National Defence Act was assented to April 27, 1988. The purpose of Emergency Preparedness Canada, presided over by the Minister (being such member of the Queen's Privy Council for Canada as is designated by the Governor in Council as the Minister for the purpose of this Act) is to advise on civil preparedness in Canada for emergencies of all types, including war and other armed conflict, by facilitating and coordinating among government institutions and in cooperation with provincial governments, foreign governments and institutional organizations the development and implementation of civil emergency plans (Statutes of Canada 1988, vol 1, chapter 11, 36-37 Eliz. II). The framework of Canada's oil emergency program is based on the Energy Supplies Emergency Act of 1979 and the Emergency Preparedness Act of 1988. The main elements of the program are demand restraint measures through crude oil and product allocation and a system of gasoline and diesel fuel rationing, as administered by the Energy Supplies Allocation Board.

Canadian Exploration Incentive Program

On May 3, announcement was made of a new Canadian Exploration Incentive Program (CEIP) designed to assist the financing of mineral and oil and gas exploration through the use of flow-through shares, effective October 1, 1988 when the incentive rate under the Canadian Exploration and Development Program (CEDIP) was to be reduced from 33a% to 16b% and to zero by December 1989. The new program was to provide up to \$3 million in incentives per corporation or associated group of corporations for each calendar year, based on 30% of eligible expenditures to a ceiling of \$10 million a years. The CEIP rate was set at 30% until December 31, 1990, after which the rate could be adjusted up or down according to market conditions. The program was designed to improve the ability of junior exploration companies to raise equity in the market place and contribute to economic development of Canada's regions. It represented some tightening of the rules on flow-through shares, as first announced in the June 1987 tax reform measures.

Research Agreements Program, 1988-89

In May Energy, Mines and Resources announced \$1.4 million in research grants for 1988-89 under the Research Agreements Program - for research in the natural, physical and social sciences and in engineering. About 47% of the 1988-89 funds were to be used for studies in earth sciences, 29% in energy research, and 24% for mining and minerals research. Eleven energy technology research projects were to study increased efficiency in combustion and the use of alternative fuels. Thirty other studies were to relate to energy self-sufficiency, taxation policy, export markets, and deregulation.

R-2000 Home Program

In May, the Canadian Home Builders' Association (CHBA) and members of the R-2000 Board decided to extend the R-2000 Home Program beyond 1991, when the contract between EMR and CHBA was scheduled to terminate. The R-2000 Home Program was launched in 1980 by Energy, Mines and Resources Canada to improve the energy efficiency of new homes. The Program involved transferring the best available energy technology for homes throughout the Canadian building industry, developing associated construction skills, and creating informed consumer demand for energy-efficient housing. Experience had shown that compared with conventional homes of the same design and floor plan, R-2000 home had achieved reductions of more than 50% in the energy needed for space heating. By mid-1988, there were almost 3000 certified R-2000 homes in Canada. At the time of the announcement, the Minister of EMR in a public statement welcomed the initiative taken by the Canadian Home Builders' Association and members of the industry's R-2000 Board to extend the R-2000 Home Program beyond 1991.

Action Committee on Western Canadian Coal

In May, the Action Committee on Western Canadian Low-Sulphur Coal, which was established in 1987 and included the Premiers of Ontario, Saskatchewan, Alberta and British Columbia under the chairmanship of the Deputy Prime Minister, agreed to support the development of new technologies to increase the competitiveness of Western Canadian coal in Ontario markets and thereby to assist in reducing acid gas emission. A report prepared by the committee's Intergovernmental Secretariat had identified several research, development and demonstration initiatives to be undertaken in cooperation with the private sector, to which funds would be

directed. Costs were to be shared by the two levels of government and the private sector. Fourteen projects to cost \$81 million were tentatively identified as having the potential to enhance the competitiveness of western low-sulphur coal in Ontario thermal power markets. They included technologies to reduce mine site and transportation costs, increased coal beneficiation and the enhancement of combustion characteristics of Western Canadian coal. The Intergovernmental Secretariat was to continue to oversee the detailed development of the projects. The Federal Government was prepared to contribute up to \$27 million for the initiatives from the Western Economic Diversification Fund.

Nuclear power and public consultation; the Hare Commission

In a May 26 statement by the Minister of Energy, Mines and Resources, the Government of Canada's belief that nuclear power has an important role in Canada was reiterated. The energy situation being what it was at the time, there was considerable evidence that in the future Canadians would support increasing reliance on nuclear power, but it was recognized that disposal of radioactive wastes and reactor safety would probably be the two most significant issues that would condition public support for nuclear energy. The Hare Commission in Ontario had just completed a study of CANDU safety and had concluded that CANDU reactors were safe, and the risk of an accident having an effect on the public was very remote. The need to communicate to the public the factors concerning the safety and feasibility of nuclear energy was emphasized by the Minister in order that informed decisions would be made in the future on the desirability of pursuing a nuclear option.

Free Trade Agreement Implications

In an important public statement made on May 18, the Minister of Energy, Mines and Resources reviewed the debate that had occurred prior to the signing of the Free Trade Agreement with the United States; outlined the main provisions of the Agreement relating to energy; and surveyed the implications in terms of the Canada-U.S. energy trade at that time, the future prospects, and the energy policy objectives and authorities of the Canadian Government. In a review of outstanding energy concerns, assurance was given that Canadian producers were under no obligation to sell, and sales would only occur if the price obtained through negotiations was satisfactory to them. On the matter of energy security, it was noted that there is no obligation under the Agreement of either country to supply energy to the other. Under normal commercial circumstances, market forces would determine the magnitude of energy sales. However, under the Agreement, if exports are restricted for GATT-related reasons of short supply, conservation or price stabilization, the country imposing the restrictions must ensure that customers in the other country have access to the same proportion of total supplies as they had been purchasing.

EMR's Environmental Action Plan

On June 6, the Minister of Energy, Mines and Resources announced EMR's Environmental Action Plan which included six major objectives:

- using science for the benefit of Canadians;
- broadening the scope of the EMR field of decision;
- consulting with the provinces;
- providing industry incentives;
- reaching out to Canadians;
- examining practices used in the past.
- 

Under the Action Plan, EMR would enhance its R&D activities in pollution prevention, efficient use of energy resources, wastes management in industrial and fossil-fuel processes, and in climate change. Environmental impacts were to be taken into account systematically in decision-making and program evaluation. Strict environmental protection was to be emphasised in EMR's regulatory role. Overall, the Action Plan was to focus on the integration of environment and economy.

Long-Term Energy Outlook, 1987-2005

An 82-page report "Long-Term Energy Outlook 1987-2005" was made available in June, as prepared in EMR's Energy Market Analysis Division. The individual components of the report contained analyses of :

- long-term trends in the world oil market;

- associated implications for domestic energy prices;
- macroeconomic assumptions, and demand for major types of energy by sector and region within Canada to the year 2005; and.
- supply and net trade projections for each of the major fuels.

Two sets of summary tables were included in the study: one set based on a world oil price case, with a WTI at Cushing oil price range \$US18-32, and the other with a \$US15-24 per bbl range. The outlook for the various fuel sectors of the Canadian economy did not reveal the emergence of any major disturbing imbalances under either of the price scenarios. It indicated a tendency to rely more extensively on light oil imports, to increase substantially heavy oil production and to use up surplus supply capabilities in the natural gas sector. On the demand side, past conservation efforts and off-oil switching trends were expected to continue, though at a much slower pace in the electricity sector. No major discontinuities in demand growth or fuel input shares appeared in evidence. For coal the long-term outlook was relatively favourable though with some major uncertainties.

High-Level  
Radioactive Waste in  
Canada -  
Parliamentary  
Committee Report

On June 30, the Minister of Energy, Mines and Resources tabled a report by the House of Commons Standing Committee on Environment and Forestry entitled "High-Level Radioactive Waste in Canada". The Minister noted that most of the Committee's 15 recommendations had been accepted and many of them were being implemented. Many of the recommendations were to be addressed by a thorough environmental and regulatory review of long-term nuclear fuel waste management issues in Canada, including AECL's waste disposal concept. The review process was to be carried out by a Federal Environmental Assessment Review panel being established by the Minister of the Environment. The government response noted that the recommendation on renewable energy was being actively undertaken through assessing how various renewable energy sources could meet Canadian demand for energy in its various forms. On the recommendation calling for a moratorium on nuclear plant construction, the Minister agreed with the objective of reduced energy consumption but was not prepared to impose a moratorium on the construction of nuclear power plants in Canada as the Federal Government saw nuclear power as a useful part of Canada's energy mix, and believed that the option should remain available to the provinces who make the decision on sources of electricity generation. He further noted that there is every reason to believe that safe and fully adequate disposal methods for spent nuclear fuel will be available when needed.

Canadian  
Environmental  
Protection Act

The Canadian Environmental Protection Act, being an Act respecting the protection of the environment and of human life and health, was assented to June 28, 1988. (Statutes of Canada 1988, vol. 1, ch. 22). The Act includes in Section 47 provision to make Regulations prescribing, with respect to any fuel used for any purpose, the concentration or quantity of any element, component or additive that, in the opinion of the Governor-in-Council, if exceeded, would on the combustion of the fuel in ordinary circumstances, result in significant contribution to air pollution, and to make other Regulations directed to environmental control in the production or use of fuel. The Minister of Environment Canada is the Minister responsible for this legislation.

Wind Energy  
Demonstration  
Program

On July 27, the Minister of Energy, Mines and Resources announced the signing of a contribution agreement with Newfoundland Light and Power company for the establishment of a wind farm demonstration project to be constructed on Bell Island, Newfoundland. The two machines planned for the installation could produce an estimated 1.5 million kWh. electricity, supplying electricity at an estimated cost of 15 cents/kWh. The project would provide experience in operating grid-connected wind energy systems.

Pan- Alberta Gas  
export licence-NEB  
landmark decision

In July, the National Energy Board issued a licence to Pan-Alberta Gas Ltd authorizing the export of 59.7 billion cubic metres (2.1 trillion cubic feet) of natural gas over the 24-year period, November 1, 1988 to October 31, 2012. This was the first decision under the market-based procedure which the Board adopted in 1987 for use in considering natural gas export licence applications. Although Pan-Alberta may not have had enough gas under contract at the time to

meet sales obligations over the entire period, any shortfall was expected to be met by future exploration and development activities.

Canada-Nova Scotia  
Offshore Petroleum  
Resources Accord

An Act to implement an agreement between the Governments of Canada and Nova Scotia on offshore petroleum resource management and resource revenue sharing and to make related and consequential amendments was assented to July 21, 1988 (Statutes of Canada, 1988, ch. 28 Bill C-75 Implementation Act). This Act applies within the offshore area. Notwithstanding the Canada Petroleum Resources Act and the Oil and Gas Production and Conservation Act, but subject to Section 103 of this Act, those Acts and any Regulations made under those Acts do not apply within the offshore area. Part I of the Act-Joint Management - establishes the Canada-Nova Scotia Offshore Petroleum Resources Board with two members appointed by the Federal Government and two by the Nova Scotia Government, and the Chairman of the Board to be appointed by both governments, and details its functions and responsibilities. Other parts of the Act deal with the following matters:

- Part II - Petroleum Resources;
- Part III - Production and Conservation;
- Part IV - Revenue Sharing;
- Part V - Fiscal Equalization Payments and Determination of Per Capital Fiscal Capacity;
- Part VI - Canada - Nova Scotia Development Fund;
- Part VII - Drilling Fund; Part VIII - Crown Share Adjustment Payments;
- Part IX - Corporate Income Tax;
- Part X - Transitional, Consequential, Repeal and Coming into Force.

The Petroleum Resources Accord, signed by the Federal and Nova Scotia Governments on August 26, 1986, and formalized by this legislation, was directed towards the following goals: early development of oil and gas in the Nova Scotia offshore; preservation and advancement of national security of energy supply: a stable consistent administration regime reflecting the equality of both governments in the management of the resources; enhancing employment and business opportunities; allocation to Nova Scotia of responsibility for, and control of revenue from fiscal instruments as if the resources were on land; and provision of financial benefits to Nova Scotia equivalent to those it would have received had it exercised its Crown Share option.

Canadian Exploration  
Incentive Program  
Act

An Act to provide for incentives to assist in financing exploration for mineral resources and hydrocarbons in Canada and to amend the Canadian Exploration and Development Incentive Program Act was assented to July 21, 1988 (Statutes of Canada 1988 vol. 1, ch. 34). Section 5(1) specifies that a qualified corporation that agrees to issue flow-through-shares, other than prescribed shares, to one or more persons who are not related to the corporation, is entitled to an incentive of 30% of the amount determined in accordance with subsection (2) in respect of eligible exploration expenses.

Eldorado Nuclear  
Ltd. Reorganization  
Divestiture Act

An Act to authorize the reorganization and divestiture of Eldorado Nuclear Limited and to amend certain Acts in consequence thereof was assented to July 28, 1988. For the purposes of this Act the Minister may submit to the Governor in Council, for approval, contracts under the Canada Business Corporation Act. Under such terms as the Governor in Council may approve, Eldorado or a subsidiary of Eldorado may enter into any transaction providing for the sale, assignment and transfer of its assets, business, works and undertakings, including the shares of a subsidiary of Eldorado, to the new corporation or to a wholly-owned subsidiary of the new corporation for such consideration as the Governor in Council may approve (Statutes of Canada, vol II, 1988, ch. 41).

COGLA 1987 report

On July 5, the sixth annual report of the Canada Oil and Gas Lands Administrations was tabled in Parliament, providing the official record of oil and gas activity on Canada's frontier lands for the calendar year 1987. During that year, 10 exploratory and 4 delineation wells were drilled on frontier lands, 42 fewer than in 1986. Drilling activity on the east coast was concentrated near Sable Island, offshore Nova Scotia, and near the Hibernia oilfield, offshore Newfoundland.



Hibernia oil development to proceed, “Statement of Principles”

On July 18, the Prime Minister and the Premier of Newfoundland signed a “Statement of Principles” with the members of the Hibernia consortium to proceed with development of the 525-650 million barrel offshore oilfield. The field was expected to reach full production in 1996, at an average production rate of 110,000 b/d of light crude oil, representing 7% of Canada’s projected light oil requirements in the year 2000. The Government of Canada agreed to contribute 25% of the pre-production capital costs (up to a maximum of \$1.04 billion) to be disbursed as actual cost are incurred and guarantee loans for 40% of the pre-production capital costs, to a maximum guarantee of \$1.6 billion, together with other measures designed to reduce risks of default of the guaranteed loan. It was anticipated that the Government of Newfoundland would earn net revenues of between \$2.6 billion and \$5.1 billion (at oil prices between \$U.S. 20 and 25 per lbl in \$ 1987), while Canada would receive between \$2.4 and \$4.7 billion. The project was expected to diversify the regional economy, enhance regional oil security and strengthen the provincial government’s economic base. The impact of Hibernia was also expected to be felt across Canada as fabricating yards in eastern and central Canada were to be used for equipment supply, and engineering firms in Canada as well as petroleum service suppliers in western Canada would have opportunities to bid on major contracts.

History of the Hibernia oilfield

At the Newfoundland Ocean Industries Conference in July, the Minister of Energy, Mines and resources reviewed the history of the Hibernia oilfield development:

- 1979 - Hibernia field discovered by Chevron in a farmout from Mobil and its partners;
- 1980 - 85 - the consortium carried out an extensive program of delineation wells to firm up their estimate of the reservoir’s size, with reserves ultimately proved to be in excess of 500 million barrels; Feb.11, 1985 - the Federal and Newfoundland governments signed the Atlantic Accord which ended years of federal-provincial disagreement over offshore energy management;
- June 1985 - the Federal Government removed controls on domestic oil and natural gas prices and relaxed existing export controls on oil, changes made in cooperation with the energy-producing provinces to deregulate Canada’s energy sector and to lay the basis for energy development geared to market opportunities;
- October 1985 - Mobil, and its partners submitted a proposed development plan to the Canada-Newfoundland Offshore Resources Board and made proposals to government regarding fiscal terms for the project;
- February 1986 - the Federal Government announced the extension of the 20% investment tax credit to the offshore;
- June 1986 - the Federal Government offered to provide an important loan guarantee to the consortium against the costs of the project. In the spring and summer of 1986, there was a major decline in the international oil price to \$10/bbl in July;
- November 1986 - the consortium returned with a counter-proposal, not acceptable to the government;
- March 10, 1987 - the Federal and Newfoundland governments make a second offer to the consortium;
- June 18, 1987 - the White Paper on Tax Reform was tabled, outlining a number of measures which were broadly beneficial to the conventional oil and natural gas industry;
- June 19, 1987 - the Minister of EMR explained principles for dealing with very large projects which recognized that megaprojects like Hibernia posed a special case, recognizing that there are times when public authority has to be actively involved;
- October 18, 1987 - the consortium returned with a new proposal, but it still sought incentives that were beyond what could be managed by the Federal and Newfoundland governments;
- March 25, 1988 - the two governments tabled a new proposal with the consortium which had problems with it because cost estimates for the project had been extensively revised upward by the companies;
- June 1988 - the two governments indicated that the March proposal was the best offer they could make and the Federal Government took the position that if the Hibernia

sponsors were not prepared to negotiate on the basis of that proposal, the project be put on the shelf indefinitely. Throughout, the Federal Government made clear to the sponsors that the Hibernia project must result in a high level of industrial benefits for the people of Canada and Newfoundland;

- July 18, 1988 - agreement was reached to proceed with the Hibernia oilfield development, as noted in the preceding July 18 entry.

Energy Ministers meeting - Quebec	On <u>August 29</u> , Energy Ministers from the Federal, Provincial and Territorial governments met in Quebec to discuss a wide range of energy issues with a view to ensuring better cooperation in achieving mutual energy policy objectives. The focus of attention was on the continuing importance of energy conservation, energy research and development, and the effects of energy production and use on the environment. The Conference established a task force to consider the recommendations of the Conference on the Changing Atmosphere held in Toronto in June 1988, and to determine the options available to reduce CO <sub>2</sub> levels in Canada and the impacts of those options.
Trans Mountain Pipe Line expansion	In <u>August</u> , the National Energy Board approved an application by Trans Mountain Pipe Line Company to expand its facilities to transport increasing volumes of heavy crude oil while being able to continue to meet its commitment to supply light crude oil to Vancouver refineries. The estimated cost of the program was some \$57 million.
TransCanada Pipelines expansion	In <u>August</u> , the National Energy Board completed hearings on TransCanada Pipelines Limited's proposed system expansion, and approved two major expansions estimated to cost \$713 million designed to increase deliveries to the domestic market in eastern Canada and to export markets in the northeastern United States.
New Onshore Pipeline regulations	In <u>August</u> , the Governor in Council approved the National Energy Board's new Onshore Pipeline Regulations, providing for the safe design, construction and operation of onshore oil and gas pipelines. The new Regulations placed a greater emphasis on the Canadian Standards Association standards as the accepted criteria for the design, operation and maintenance, and abandonment, of oil and gas pipelines.
Energy Options report "Energy and Canadians into the 21 <sup>st</sup> Century"	On <u>August 4</u> , the Minister of Energy, Mines and Resources released a report on the energy options process entitled "Energy and Canadians into the 21 <sup>st</sup> Century" which outlined a set of principles to guide future Canadian energy policy. The Advisory Committee on Energy Options had been appointed in April 1997 to involve Canadians in a public dialogue on Canada's energy prospects and to report on the results of the consultation. The process incorporated a series of conferences and seminars, commissioned research papers, and invited responses from the public. The report outlined a set of principles which the Committee recommended the Government of Canada adopt to guide future Canadian energy policy. It covered all aspects of energy in Canada, including development, security, environment, markets, the fiscal system, efficiency and technology. The report included observations on trade, northern development, federal-provincial matters, megaprojects, and nuclear power generation. Its conclusions provide that all energy resources-including conservation and efficiency gains - should be developed and used to their economic potential to increase energy choices rather than seeking increased energy security by hoarding or by governments forcing uneconomic developments such as support for megaprojects. The report proposed that nuclear power should be maintained as a component of Canada's energy mix. Environmental goals were accorded the same importance as other social and economic goals. Energy efficiency and research, development and management of energy technologies were seen as critical to enhancing Canada's energy choices and their impact on the environment. The 127-page report has, in addition, a series of Appendices outlining the energy options process and listing participants and written submissions.
"Nuclear Energy: Unmasking the	In <u>August</u> , the House of Commons Standing Committee on Energy, Mines and Resources released its report entitled "Nuclear Energy: Unmasking the Mystery". The report notes that over the

Mystery”

preceding 45 years, the scientific and engineering achievement of harnessing the nuclear chain reaction had been transferred in Canada into a unique reactor system with the world’s best lifetime operating record. Despite that engineering success, Canada’s nuclear power program continued to be challenged on various grounds. Public concern about reactor safety and environmental contamination was sharpened, first by the 1979 Three Mile Island incident in the U.S.A. and then by the 1986 Chernobyl accident in the Soviet Union. Questions regarding the economic viability of nuclear-electric power generation were being raised regularly. The Standing Committee on EMR therefore adopted the following mandate under Standing Order 96(2):

That the Committee conduct an examination of the economics of Canadian nuclear power and any matters pertaining thereto.

The Committee made its position clear from the beginning: “maintaining the nuclear power option is vital to Canada’s interest”. The Committee took the view that there is a compelling case to be made in support of continued nuclear development, a case based upon the future inadequacy of conventional petroleum resources and upon the environmental degradation arising from burning coal in progressively greater quantities for electricity generation. Unfortunately, in Canada neither the Federal Government nor the nuclear industry had articulated that case very well over the years and the public attitude had become ambivalent. The nuclear debate has been too narrowly focussed in Canada. It was not simply a question of whether to continue generating electricity with nuclear reactors. It was also a question of diminishing alternatives in electricity production, of the environmental consequences of not using atomic energy, of national energy security, of acquiring scientific and engineering expertise, and of employment for many Canadians. One of the Committee’s foremost concerns was with the domestic program of radioactive waste management. Spent fuel must ultimately be disposed of in some final repository. The Committee concluded that the concept of siting a final repository deep within stable geological formations was an appropriate approach for Canada to take. Public concern over radioactive waste management remained the greatest single threat to the Canadian nuclear program, in the Committee’s view. The public is not reassured when the deadline for concept verification is allowed to slip by a decade since the joint federal-Ontario radioactive waste management program was launched in 1978. The Committee made 14 recommendations: 2 with respect to high level waste disposal; one on increasing insurance coverage on Canada’s nuclear facilities; 4 on strengthening the role of Atomic Energy of Canada Limited; 6 on strengthening the role of the Atomic Energy Control Board; and one on the need for greater federal-provincial cooperation in identifying the opportunities for efficient use of electricity.

Vancouver Island  
natural gas Pipeline

On September 22, the Governments of Canada and British Columbia agreed on a funding formula designed to assist in the construction of a 511- kilometre Vancouver Island natural gas pipeline to make gas available to over 20 communities on Vancouver Island and the Sunshine Coast on the mainland. The \$485-million project covering the transmission pipeline, local distribution facilities and conversions was to have private sector investment of \$255 million. The Federal Government was to contribute \$100 million towards the capital cost and a \$50 million interest-free loan, with the B.C. government to provide \$55 million to assist in energy conversions and an interest free loan of \$25 million and, in addition, a \$70 million repayable rate stabilization facility designed to backstop project work in the early years. The private sector sponsor of the project was Pacific Coast Energy Corporation. Following the agreement, engineering and environmental studies and public hearings were to be implemented.

New electricity  
export policy

On September 6, the Minister of Energy, Mines and Resources announced a new policy regarding the regulation of electricity exports and international power lines, the objective being to simplify and reduce regulatory requirements for electricity exports and power lines. Under the new policy, applicants would normally secure authorization for their proposal in the form of an NEB permit which would not require a public hearing nor Governor in Council approval. If for any reason the proposal might not be in the Canadian public interest, the Governor in Council, on the advice of the NEB, could require that a public hearing be held. Regulation by the Government of Canada, through the NEB, was to concentrate primarily on those special aspects of a proposal that may not

have been sufficiently dealt with by provincial regulatory policies and procedures, in order to ensure specifically that:

- export and international power line proposals do not have unacceptable environmental or other impacts outside of the sponsoring province; and
- Canadians wishing to purchase electricity to serve their own domestic requirements are given fair market access to electricity at prices no higher than the price being offered to export customers for electricity being proposed for export.

In December, the NEB issued a memorandum of guidance informing interested parties of the steps that would be followed to implement the new policy. The NEB adopted the fair market access concept of the new policy to assist in safeguarding itself that exports were in the public interest. Amendments to the NEB Act were required for full implementation of the new electricity export policy.

Uranium assessment-  
1987

On September 23, results were released of the annual assessment, for 1987, of Canada's uranium supply. Canada remained the world's leading producer and exporter of uranium and was the centre of worldwide exploration activity. In 1987, output of Canada's 5 uranium producers reached an all-time high of 12,456 tonnes of uranium. At the end of 1987, known uranium resources were estimated at 559,000 tonnes of uranium, down slightly from 1986. About 85% of the country's annual uranium output was being exported to electrical utilities, primarily in Japan, Western Europe and the U.S.A.. The Athabasca Basin in northern Saskatchewan continued to be a focus of international uranium exploration, being the principal target for the discovery of very high-grade low-cost uranium deposits.

Husky Oil Ltd -  
upgrader

On September 2, the Governments of Canada, Alberta and Saskatchewan jointly signed a binding agreement with Husky Oil Limited of Calgary to finance, build and operate the \$1.267 billion crude oil upgrader near Lloydminster on the Alberta-Saskatchewan border. The upgrader was to be owned by a joint venture of the three governments and Husky with the interests being: Government of Canada - 31.67%; Husky - 26.67%; Alberta - 24.17% and Saskatchewan - 17.5%. Construction was to begin in 1988 and start-up was scheduled for 1992. The upgrader was designed to produce 46,000 b/d of crude oil from Saskatchewan and Alberta heavy oil and bitumen resources.

EMR Research  
Laboratory at  
Varenes, Que.

On September 9, announcement was made of the establishment in Varennes, Quebec, of a new laboratory of the Canada Centre for Mineral and Energy Technology (CANMET) of Energy, Mines and Resources, with an initial budget of \$3 million a year. The research at the new centre was to be directed primarily to technologies relating to energy systems, heat pumps, natural gas conversion, and to the use of biomass, hydrogen, solar and wind energy.

Nuclear fuel wastes  
disposal

In September, the Federal Government announced an environmental assessment and review of the concept of deep geological disposal of nuclear fuel wastes, along with a broad range of nuclear waste management issues. The review was to be carried out by a Federal Assessment and Review Office Panel, and would provide opportunity for full public discussion of those issues.

Energy R&D and  
EED programs

In September, details of two new energy R&D related programs were announced: the Energy Efficiency and Diversity Initiative (EED), and the Energy Research and Development Program (ERDP). Under the ERDP, the Government of Canada planned to allocate through the interdepartmental Panel on Energy Research and Development (PERD) more than \$450 million to support energy research and development in the period 1988-1993. Over the same period, the Federal Government planned to contribute about \$250 million towards supporting energy efficiency and the use of new sources of energy under the new EED program. Any action taken under the EED program was to be planned in close cooperation with the provinces and would request the involvement of the private sector. The new policies including those on R&D and energy diversity were to be based on new parameters including industrial productivity, technological assessment and regional economic development. The EED program replaced the

National Conservation and Alternative Energy program which had been implemented as a 3-year program in 1985. The EED program was to place particular emphasis on information programs aimed at heightening awareness of new opportunities, R&D, and demonstrations of existing and new technologies. It was to focus on the industrial sector and the environment, and to stimulate new investments through market driven-initiatives.

Energy Options  
Report-parliamentary  
review

On September 20, the Minister of Energy, Mines and Resources appeared before the Standing Committee on Energy, Mines and Resources of the House of Commons to speak about the "Energy Options" Report which he had released in August under the title of "Energy and Canadians: into the 21st Century." He asked for comments from the Committee to aid in his formal response to the Energy Options Report. In reviewing the report for the Committee, he drew attention to the seven broad principles to guide energy policy formulation, as recommended in the report, and as related to energy resources, energy security, environmental goals, market mechanisms, the use of the fiscal system, energy efficiency, and energy technology.

NEB report  
"Canadian Energy  
Supply and Demand  
1987-2005"

Completed in September, the National Energy Board report "Canadian Energy Supply and Demand 1987-2005" projected the Canadian supply of all major energy commodities, including electricity, oil, natural gas, and their by-products, and the demand for Canadian energy in Canada and abroad. The analysis in the report was conducted under two scenarios of economic growth and energy prices. In the high case, economic growth averaged about 3% per year and crude oil prices were assumed to increase to U.S. \$30 (1987 dollars) per barrel by 2000 and remain unchanged thereafter. In the low case, economic growth averaged only 2% per year and crude oil prices increased much more slowly to U.S. \$20 (1987 dollars) by 2005. The report projected that domestic energy demand would grow more slowly than economic growth as a result of continuing energy conservation and technological progress. The use of alternative energy forms including wood, wind and solar power would also increase but their share of total energy use declined marginally in both cases, given the relatively low prices of fossil fuels and electricity. While the report projected growing net exports of coal, electricity, natural gas and natural gas liquids (propane, butane and ethane), continued net export growth of crude oil and oil products would depend on economic growth and oil prices. In both cases, Canada was projected to continue exporting heavy crude oil throughout the period. In the high case, net exports of crude oil and oil products would increase substantially but, in the low case, Canada would need large quantities of imported light crude oil and products. In both scenarios, natural gas supplies would be adequate to meet increasing domestic requirements and also to provide for higher exports, but at increasingly higher prices. Field gate gas prices in Alberta in the high case were projected to more than double in real terms by 2005. Low case gas prices would increase more slowly to about 70% of the high case level projected for 2005. In spite of incentives to encourage users of electricity to reduce demand, the report projected the need for substantial construction of new electricity generating plants to meet both domestic and export demand. The report suggested that increased interprovincial cooperation could result in more hydroelectric development, displacing some nuclear and fossil fuel-fired generation. Coal production was expected to increase over the review period as a result of increasing demand for the thermal generation of electricity and higher coal export levels.

IEA Emergency Oil  
Sharing System Test

In October, continuing into November, Canada took part in the sixth test of the International Energy Agency (IEA) Emergency Sharing System, designed to test mechanisms to ensure an adequate and equitable distribution of oil should an international shortage occur. The Canadian portion of the IEA test was directed by the Energy Supplies Allocation Board (ESAB), reporting to the Minister of EMR. ESAB is the federal agency responsible for preparing and administering regulations controlling the allocation of oil in Canada in the event of a national emergency caused by an oil supply shortage. Under terms of the Canada-U.S.A. Free Trade Agreement, Canada's obligation to share oil under the IEA Emergency Oil Sharing System would take precedence over the provisions of the Free Trade Agreement.

NEB Natural Gas

Completed in October, the National Energy Board Natural Gas Market Assessment provided an

Market Assessment Report	<p>appraisal of the functioning of the Canadian natural gas market and a review of the short-term outlook for the supply and demand of natural gas. The report focused on the period subsequent to the Agreement on Natural Gas Markets and Prices, signed on October 31, 1985. The report found that producers now had a wider range of market opportunities while users could choose from a wider variety of supply options. The numbers of gas producers selling directly to end users had increased dramatically. This had generated competition in some markets for natural gas which, together with lower oil prices, had resulted in a large decline in well head prices. On average, Canadians had been paying prices generally no greater than those paid by export customers. High-volume industrial customers had received substantial reductions over the previous two years and had fully benefitted from competitive pricing at the wellhead. A degree of flexibility existed in the market which had not been possible a few years earlier. With respect to the outlook for supply and demand, annual productive capacity would continue to exceed demand over the following few years, although the excess might be small on a peak day basis. The NEB report concluded that limited pipeline capacity might pose the most serious concern in the near future. The report provided an important record of the evolution of the natural gas industry and the status of regulation in Canada in 1988.</p>
P.C. election	<p>In <u>November</u>, the Progressive Conservative party was returned to power in a federal election.</p>
Petroleum Monitoring Agency 1988 financial assessment	<p>Results available in <u>November</u> of the Petroleum Monitoring Agency's financial assessment of the Canadian petroleum industry for the first half of 1988 indicated a 29% decline in net income to \$1.3 billion from \$1.8 billion in the comparable 1987 period. Cash flow declined 3% to \$4.4 billion. These declines were the result of crude oil and natural gas price declines due to lower international prices, along with higher operating costs and increased federal sales and excise taxes. Capital employed in the industry remained relatively unchanged at \$61.4 billion.</p>
NEB Pipeline regulatory matters	<p>In <u>December</u>, there were 46 pipeline companies under the National Energy Board's jurisdiction, two of which owned two pipelines each. The 45 operating oil and gas pipelines were classified as follows: Group 1 contained the ten major pipelines, and Group 2, the remaining smaller pipeline companies. While the NEB could undertake on its own initiative a review of the tolls of any company under its jurisdiction, the tolls of Group 2 companies were normally reviewed only on receipt of a complaint. The monitoring of these companies consisted primarily of reviewing their financial performance. For Group 1 companies, their monitoring process consisted of the review of quarterly surveillance reports filed by the companies and the periodic audit of their operations.</p>
NEB oil export orders	<p>To <u>December 31</u>, the National Energy Board had issued 125 orders for short-term oil exports (up to 12 months for light crude oil and petroleum products and 24 months for heavy crude) in 1988. The orders did not limit the volume exported but permitted the NEB to monitor volumes and prices.</p>
Nuclear power capacity-1988	<p>In <u>December</u>, there were 18 CANDU reactors in service in Canada with a total generating capacity of some 12,000 MWe. Four additional reactors were under construction in 1988, and were to enter service between 1989 and 1992, adding 3500 Mwe to the Ontario Hydro grid. In 1988, about 16% of Canada's electric power was nuclear-generated, while in Ontario it was one half and in New Brunswick about one third. East of Toronto, Ontario Hydro's Pickering Unit 2 was recommissioned in November, a year after Unit 1 was recommissioned, following retubing of both reactor vessels. Ontario Hydro's Darlington Unit 2 was being commissioned and was scheduled to enter service in mid-1989.</p>
An Act to implement the Free Trade Agreement-related NEB amendments	<p>On <u>December 30</u>, an Act to implement the Free Trade Agreement between Canada and the United States, entitled the Canada-United States Free Trade Agreement Implementation Act, was assented to and the Agreement entered into force on January 1, 1989. In the Act, Amendments were made to Part VI of the National Energy Board Act. These amendments require the NEB to give effect to the Free Trade Agreement when exercising its power and performing its duties, and provide for the Governor in Council to make orders of general application respecting the</p>

interpretation of the Agreement and the manner in which the Board shall perform its duties to give effect to the Agreement. The amendments set out requirements which must be met before exports can be restricted for the reasons referred to in Article 904 of the Free Trade Agreement. The amendments also allow the Governor in Council to make regulations exempting oil or gas that is exported to the United States from the application of any export prices which might be prescribed by regulation.

Energy production, consumption and trade in 1988

The statistical record to the end of December showed that primary energy demand in 1988 rose by 5%, with natural gas and coal contributing most to the increase. Oil exports grew by 18% and imports increased by 12%. Natural gas exports rose by 28% over 1987. Electricity export sales declined by 34% to their lowest level since 1980, the decrease in sales to the United States being due in particular to the availability of oil at relatively low prices in the U.S. Crude oil production was up 7%. Direct sales of natural gas in the domestic market increased very rapidly, reflecting the adjustment of markets to deregulation of the natural gas industry and competition among gas producers. Net natural gas sales grew by nearly 18%. Natural gas export prices fell to an average of \$2.20 per gigajoule in 1988 compared with \$2.43 in 1987, reflecting the gas-to-gas competition in the U.S. market. In 1988, Canada was the world's fifth largest coal exporter as a result of a 20% increase in export shipments during the year.

Oil and gas activity and reserves - 1988

As assessed in December, exploration and drilling in the Canadian oil and gas industry was higher in 1988 than in 1987. The increase was evident in the conventional areas of Canada and, to a lesser extent in frontier areas. Exploration and development expenditures in 1988 totalled \$6.7 billion. The National Energy Board's year-end estimate of remaining established reserves of conventional crude oil was 666.2 million cubic metres, 39.3 million cubic metres less than the estimate for year-end 1987. Crude bitumen reserves totalled 566.5 million cubic metres for developed projects only, as estimated by the Alberta Energy Resources and Conservation Board. The NEB did not include oil discovered in the frontier regions in its established reserves estimate because of uncertainty as to the economic viability of those reserves. Estimated established reserves of marketable natural gas at 1988 year-end were 1,839.2 billion cubic metres in conventional areas and 308.5 billion cubic metres in the Mackenzie Delta/Beaufort Sea area for a total for Canada of 2,147.7 billion cubic metres.

IEA 1988 Review-Canadian Energy Policies and Programs

In its 1988 review of International Energy Agency countries' energy policies and programs, the IEA report on Canada assessed accomplishments, and problems yet to be dealt within the Canadian energy economy and made recommendations for the following initiatives: to continue regular consultations and cooperation with provincial governments on energy matters to promote the achievement of nation-wide energy objectives;

- to continue to pursue market-oriented energy policies;
- to continue to promote and support exploration and development of energy resources;
- to remove barriers to interprovincial and international energy trade to allow lowest cost energy supply alternatives;
- to make special efforts - in cooperation with the provinces - to increase energy efficiency;
- to ensure that all options to meet future electricity demand are adequately considered - in particular, the nuclear energy option should be maintained;
- to maintain, at least, energy R&D at current levels;
- to continue efforts to pursue both energy and environmental policies in a harmonious manner and promote further R&D to that end.

The IEA report covered the 12-month period through to December 1988.

"Energy: The Power of Canada"

In 1988 a 99-page book entitled "Energy: The Power of Canada" was published by Fitzhenry and Whiteside Limited in cooperation with Energy, Mines and Resources Canada and the Canadian Government Publishing Centre, Supply and Services Canada, with a Preface by the Minister of Energy, Mines and Resources. The book, illustrated with seventy colour photographs, briefly

traces the history of energy use in Canada, analyzes the positive and negative aspects of the various energy sources available to Canadians, and deals with energy use throughout the economy. New techniques for producing and conserving energy are noted. The record in the book is carried through to December 1988.



## THE YEAR 1989

Overview: 1989 marked the beginning of the disintegration of the Soviet Union and its Eastern European sphere of influence. By the end of the year, Communist governments had either lost power, or were well on the way to doing so in all the Eastern European satellites. This had potential impacts on world energy markets in several ways. First, oil production in the USSR had been declining for some years, at first causing concern about the stability of world oil supplies and prices. Thus, when the Soviet economy started to become more open to Western investment, oil firms began to increasingly pursue investment opportunities in Russia. Western technology and investment in the vast Siberian oilfields of Russia was seen as a guarantee of both Russian political stability (because of the importance of oil and gas as earners of foreign-exchange) and long-term assurance of stable oil and gas supplies to Europe. Second, the restructuring of Eastern European and Russian industry would result in the closure of inefficient and polluting coal-fired industries, and their replacement with modern facilities using oil or natural gas. This would lead to further declines in coal use, and increased demand for oil, gas and petroleum products.

1989 also saw the entry-into-force of the Canada-USA Free Trade Agreement. Under the FTA, tariffs would be reduced annually, and completely eliminated by 1998. The Agreement had been the subject of considerable public controversy.

The continuing federal budget deficits resulted in a number of measures in the April 27, 1989 federal Budget. A new tax, the Large Corporations Tax (LCT), was introduced on capital in excess of \$10 million, at a rate of 0.175 percent. While the LCT was creditable against the existing 3 percent surtax on corporate income, it became the cause of some controversy because it was not based on profit; *i.e.*, it was payable even if the corporation was unprofitable in a given year. The budget also increased the (hidden) federal sales tax on manufactured goods from 12 to 13.5 percent, as well as the excise tax on gasoline and aviation fuel by 1 cent a litre on April 28, 1989, and an additional cent a litre on January 1, 1990. In addition, expenses incurred after April 27 would no longer be eligible for CEDIP, which continued to be effectively discontinued on December 31, 1989. The Budget also reduced the National Conservation and Alternative Energy Initiative by \$8 million, and confirmed the cessation of the Initiative by the end of 1990-91. The Budget also reduced the operating funds of the Canada Oil and Gas Lands Administration (COGLA) by 10 percent, or \$1.5 million. Finally, the budget announced the replacement the (hidden) Manufacturers Sales Tax with a visible Goods and Services Tax, effective January 1, 1991.

Canada-U.S. FTA	The Canada-United States Free Trade Agreement came into force on <u>January 1</u> , 1989.
Uncertainty in the uranium market	In <u>January</u> , some 4700 employees worked in Canada's uranium producing operations, a decline of more than 20% in four years. Throughout the 1980s, the decline in uranium prices and the efforts to constrain production costs had led to the reduction in the industry's workforce. Uncertainty persisted in the world uranium industry, clouding the near-term market outlook. Factors affecting the market for Canadian uranium and other major producers were the offerings in the west of natural and enriched uranium, or enrichment services, from the People's Republic of China and the USSR; the sell-off or loaning of excess inventories, both in Western Europe and the U.S.A.; and the relaxation of Australia's uranium floor-price policy. In Canada, the marketing uncertainty had led to curtailment of refining and conversion activity and to two mill closures. All of these uncertainties had contributed to a continuation of the uranium price decline, leading to an all-time low of U.S. \$9.00/lb. of U <sub>3</sub> O <sub>8</sub> by the end of 1989. However, production capability from Canada's existing mining operations was expected to remain at about 12,000 tU/year through the early 1990s.
Cameco privatization	In <u>January</u> , Cameco indicated that privatization would be deferred for at least a year due to the depressed state of the uranium market. On September 30, 1988, the Canadian and Saskatchewan governments had merged Eldorado Nuclear Limited and Saskatchewan Mining Development Corporation, their respective Crown companies involved in the uranium business. Formation of the new company, Cameco, was the first step in the privatization of both governments' mining industries.
U.S.A. exempted from Canadian uranium upgrading policy	With the implementation of the Canada-U.S. Free Trade Agreement on <u>January 1</u> , Canadian uranium producers gained enhanced access to the large U.S. market. In December 1988, the Minister of EMR had advised the uranium industry that "Canada will, on request from a Canadian vendor, grant an exemption from the further processing policy for a particular export contract in cases where: the Canadian uranium will be refined and converted in the United States and will be actually consumed in a reactor in the United States; or the Canadian uranium will be refined, converted and enriched in the United States prior to export to a third country". The two provisions covered the refining and conversion of some 70% of Canada's uranium exports.
Remote Community Demonstration Program, R-2000 home	In <u>February</u> , five energy efficient houses with wood-fired heating systems were completed in Hay River, N.W.T. to demonstrate benefits of energy efficient housing and the advantages of wood as a replacement of fuel oil. One house was an R-2000 super energy efficient home, the first of its kind in Hay River. The other four met R-2000 energy efficient standards of air tightness, but utilized passive ventilation systems rather than heat recovery ventilation systems as required in R-2000 homes. The project was funded under the EMR Remote Community Demonstration Program. The performance of these homes was to be monitored for a year. During that period, the wood, fuel oil and electrical consumption was also to be monitored and the project results included in future EMR initiatives regarding wood heating and energy efficient construction in similar communities.
Hon. Jake Epp	The Hon. Jake Epp became Minister of Energy, Mines and Resources Canada on <u>February 1</u> , 1989.
Natural gas monitoring report	In <u>March</u> , EMR's fourth report on the performance of domestic and export prices for natural gas, covering the period May-November 1988, was released showing that Canadian consumers continued to benefit from natural gas prices below those available to export buyers. The monitoring process was established to measure general market compliance with a Canadian export policy that "the price of exported natural gas shall not be less than the price charged to Canadians for similar type of service in the area adjacent to the export point". The monitoring procedure divided both domestic and export gas sales into 3 categories: long-term firm; short-term firm; and interruptible sales. Markets for Canadian natural gas registered increased sales for both Alberta

and B.C. gas.

Hibernia oilfield	In <u>March</u> , considerable progress was reported in the final legal agreement to develop the Hibernia oilfield, with all parties fully committed to the development of the project as agreed to in the Statement of Principles signed in July 1988. Additional engineering studies remained to be completed and passing the federal and provincial legislation necessary to put in place the package of contributions, loan guarantees, and royalties was still required. Plans were underway to establish an operating company to manage the development of the Hibernia offshore field.
AECL-CANDU 3	In <u>March</u> , Atomic Energy of Canada Limited completed the first year of a standard product design program for a new 450 MWe nuclear reactor - the CANDU 3. The expectation was for significant capital cost reduction from enhanced power output, world-leading reactor control technologies, modular construction techniques, and high quality manufacturing processes. The federal government was supporting AECL's new thrust. AECL expected to build at least three CANDU 3 reactors in the 1990s.
Nuclear fuel waste management	In <u>March</u> , Atomic Energy of Canada Limited reported considerable progress in the development of technology for the deep geological disposal of used nuclear fuels, a concept which had been investigated by AECL during a 10-year research and development program. The construction phase of AECL's Underground Laboratory, near Lac du Bonnet, Manitoba, was completed, with the shaft extending 443 metres below the surface, and shaft stations providing access for experiments at several levels. Cooperative R&D in Canada supported by Sweden and Japan continued, as did Canadian participation in the OECD/NEA (Organization for Economic Cooperation and Development/Nuclear Energy Agency) Stripa Project in Sweden.
PERD funding	<u>In March</u> , the federal government approved funding of \$89 million per year for the following three years for the interdepartmental Panel on Energy, Research and Development (PERD). The main PERD funding areas were oil sands/heavy oils, coal supply and combustion, oil/gas/electricity, new liquid fuels, energy conservation, renewable energy and nuclear (fusion). Some shifts in emphasis from fossil fuels to energy efficiency, alternative energy sources and the environment had been evident in the program since the mid-1980s.
Energy Options Report - follow-up	In <u>March</u> , the Hon. Jake Epp met with the Chairman of the Energy Options Advisory Committee and indicated his intention of asking the House of Commons Standing Committee on EMR to study the report, a process that had been disrupted by the federal election following referral of the report to the Committee in August 1988. In the interval, EMR had activities underway in response to the Energy Options Report in matters concerned with megaproject policy, nuclear energy, energy and the environment, natural gas transportation, interprovincial electricity trade, oil stockpiles, energy and technology, Canadianization, and northern development and Native Peoples.
Termination of CEDIP	On <u>April 28</u> , details were released of the decision announced in the federal budget to immediately terminate the Canadian Exploration and Development Incentive Program (CEDIP), expected to result in \$80 million in savings to the Government of Canada. CEDIP had been introduced, effective April 1, 1987, to provide cash incentives on oil and gas exploration and development, and was designed to assist the petroleum industry to overcome the impact that rapidly declining world oil prices were having on upstream employment and investment. Since then, world oil prices had recovered and the overall health of the upstream sector had improved. CEDIP provided over \$1 billion in incentives for exploration and development activities over its 2-year period of operation, \$400 billion in excess of the federal governments original forecast. The program initially provided a cash incentive of 33a% on eligible exploration and development expenses incurred in Canada. The incentive rate was scheduled to drop to 16b% on October 1, 1988 but on September 3, 1988, the federal government announced a revised phase-down schedule to assist smaller oil and gas companies: the CEDIP rate was fixed at 25% effective October 1, 1988, the 16b% rate was rescheduled to take effect July 1, 1989 and CEDIP was to have been terminated on

Dec. 31, 1989.

Hydro-Quebec Manic 5 power station	In <u>April</u> , the first generating unit with 535 MW went into service at Hydro-Quebec's Manic 5 PA power station.
AECL restructuring	In <u>April</u> , The Hon. Jake Epp announced a 90-day action plan aimed at addressing the nuclear industry's problems. A consultant was appointed to examine how Atomic Energy of Canada Limited might be restructured to ensure the cost of maintaining its operation was more equitably shared between the federal government, the Ontario government and industry.
Perspective on energy policy reform	In public statements made in <u>April</u> , the Minister of Energy, Mines and Resources noted that the first phase of the energy policy reform promised by the federal government in 1984 had been largely completed. Much had been done in terms of deregulation of the oil, gas and electrical energy industries, in eliminating various taxes and in removing programs that discriminated against foreign investors. The objective was to complete the agenda of energy policy reform in such matters as electricity trade deregulation with appropriate amendments to the National Energy Board Act; megaproject negotiations on final amendments with Hibernia and OSLO project sponsors; frontier energy policy reform directed to extending the current Accord framework, providing for joint management of offshore oil and gas to British Columbia and the northern territories; and the privatization of Petro-Canada at a time when markets were favourable.
Emission reduction plan	In <u>April</u> , the Government of Canada announced a federal action plan to assess emission reduction opportunities that would be possible from mobile sources and motor fuels. The objective of the plan was to put in place, within five years, the most stringent regulations that technology would allow in order to control emissions from internal combustion engines that burn fossil fuels. Initial attention was to be directed to the management of nitrogen oxides and volatile organic compounds.
Demand Side Management	On <u>May 10</u> , a detailed report "Demand Side Management for Canada", prepared jointly by EMR and the Canadian Electrical Association, was made public. The report, together with an accompanying electronic database, provided a description of the vast range of demand-side management programs and services that Canadian electrical utilities would be using to free up existing capacity to help meet future electrical requirements. The report forecast that over the following 20 years, Canadian Electrical Association member utilities would invest more than \$2.5 billion in demand-side management programs focussing on all sectors of the economy and expected to save more than 10,000 megawatts of power use by those sectors. The report was developed under EMR's Energy Efficiency and Diversity (EED) initiative, announced in October 1988 to support energy efficiency and the use of new sources of energy including wind, small hydro and solar energy. Demand-side management was defined at the outset as the efficient management of electrical use that allows utilities to meet future requirements without having to rely completely on the construction of new generation facilities.
EMR Research Agreements Program 1989-1990	On <u>May 16</u> , EMR announced that it would provide research grants totalling \$1.39 million in 1989-90 under its Research Agreements Program. The primary purpose of the program continued to be to support EMR research priorities through the use of expertise outside the government, and thus encourage the exchange of information and technological innovation between the private sector and government. For the designated period, the funds would support 178 projects in 38 research centres throughout Canada in the natural, physical and social sciences, and in engineering. About 29% of the 1989-90 funds were to be used for energy research. Ten energy technology research projects supported by CANMET were to be directed to increased efficiency in combustion and the use of alternative fuels. The energy program sponsored 25 studies related to energy self-sufficiency, taxation policy, export markets, synthetic additives and deregulation.
OSLO oil sands project	On <u>May 29</u> , the Minister of EMR, the Alberta Energy Minister and the OSLO project consortium re-confirmed that work was proceeding to develop the \$4.1 billion OSLO oil sands project, with

all parties continuing to work towards the signing of a binding agreement. All parties remained fully committed to the development of the project and to the signing of the financial agreement as expeditiously as possible. The project was being designed to produce about 77,000 barrels of oil daily, with production scheduled to start in 1996 or 1997.

IEA meeting-EMR  
Minister's statement

In a May 30 statement at the International Energy Agency Governing Board Ministerial Level meeting in Paris, the Minister of EMR presented Canada's position on key energy issues, outlined Canada's commitment to take necessary action to counter global warming and encouraged the development and commercialization of new energy efficient technologies. He further noted that the emphasis was now on environmental issues, particularly those issues of trans-boundary or broad impact, such as global warming, that were placing a new direction on energy policy and energy security issues. The Canadian Minister recommended that the IEA act in a concerted manner on significant issues by :

- identifying the way in which energy policies could be made environmentally sustainable;
- continuing new technology development as a critical contribution to energy efficiency;
- further developing market-oriented energy policies as a contribution to the resolution of energy and environmental issues; and
- exploring possibilities for improving technologies to prevent and treat oil spills.

IEA meeting-  
Governing Board at  
Ministerial level

The Communique issued by the International Energy Agency, following its May 30 meeting of the Governing Board at the Ministerial level, noted that energy security, both for IEA countries and for the world at large, had improved considerably as a result of policies and programs implemented in the 1970s and 1980s in such areas as efficiency and conservation, fuel diversification, indigenous resource development, emergency preparedness, natural gas security and enhanced R&D collaboration, as well as market pricing, deregulation and reduction of trade barriers. Looking ahead to the 1990s and beyond, Ministers called attention to two aspects of particular importance which they viewed with deep concern:

- growing world-wide oil consumption, particularly for transportation, with its eventual medium-term consequence of tighter supply/demand balance and renewed vulnerability to supply disruptions; and
- the environmental aspects of energy supply and consumption, including both the more conventional and better-known pollutants and the growing atmospheric concentration of CO<sub>2</sub> and other "greenhouse" gases and its long-term consequences of global warming and climate change.

NEB survey of  
current issues

In a May 4 address to the Federal Energy Bar Association in Washington, the Chairman of the National Energy Board directed attention to the process by which the Board performs its functions and to some current issues, particularly those related to natural gas. Of two prominent issues, the first was described as follows: "Given that there is substantial commercial interest in increased Canadian gas exports from Canada, that existing export pipeline capacity is effectively fully utilized, and that conventional natural gas supplies are not unlimited, where should the next major capacity expansion(s) take place and on what scale?" It was noted that the options, in the order of probable application-timing were the U.S.A. Northeast, Midwest, and California. The NEB had made no decision at the time but the Chairman noted that NEB consideration of supply, markets, incremental costs and risk allocation issues would be particularly searching. The second major gas issue was expressed as "To what extent should the NEB grant licences for long-term gas exports where the proponent is unable to make the traditional demonstration of adequacy of supply and markets?" It was noted that the Board always carefully examines a company's supply and markets, looking for a sound commercial arrangement. In one recent case, the Board's reserve estimate was 70% of the volume licenced but approval was given because the exporter provided a corporate guarantee that the gas would be delivered. On the first question as to whether Canada should export gas to the Northeast or elsewhere, this would be a commercial rather than a regulatory question. Canadian producers' and American buyers' sales and purchasing/contracting decisions would determine the disposition of the gas. The NEB carefully assesses the pipeline projects' cost and benefits but does not try to allocate or optimize markets for

the gas.

COGLA- 7<sup>th</sup> Annual Report

On June 1, the seventh Annual Report of the Canada Oil and Gas Lands Administration (COGLA) was tabled in Parliament, reviewing oil and gas activity in Canada's frontier lands in the 1988 calendar year. In 1988, 18 wells were active on frontier lands, one more than in 1987. The highlight for the Newfoundland offshore in 1988 was the signing of a Statement of Principles between the Governments of Canada and Newfoundland and Mobil Oil Ltd. and its partners to develop the Hibernia oilfield. The Newfoundland offshore remained the most active area on the frontier lands. On the Nova Scotia offshore, one exploratory well was drilled and discovered natural gas. Exploratory and delineation drilling continued in the Amouiligak area of the Beaufort Sea. In September 1986, the Government of Canada signed separate agreements with the N.W.T. and Yukon governments on the negotiating principles for a future Northern Accord on oil and gas resources.

Nuclear energy confidence

In a June 6 address, the Minister of Energy, Mines and Resources repeated a statement he had made at the IEA Ministers' meeting in Paris on May 30 that: "Nuclear energy is an option which I strongly support, which I believe can be safe and environmentally sound and for which there is significant potential for further development in Canada and in many countries of the industrialized and non-industrialized world. We must take whatever steps are necessary to ensure confidence in nuclear power."

Natural gas as a vehicle fuel

In a June 19 address, the Minister of Energy, Mines and Resources noted that in the environmental context, two specific uses of natural gas deserved special mention: as a transportation fuel and for producing electricity in either combined cycle or cogeneration plants. With strong support of the Canadian Gas Association and the provinces, a North American beachhead had been established in Canada for natural gas vehicles. Over 20,000 vehicles had been converted to natural gas, and about 115 refuelling stations had been established across the country. While close to achieving the target of 35,000 NGVs, an impediment had been the lack of a sophisticated fuel management system, comparable to those available for gasoline-fired engines.

CEDIP benefits to small producers

Information presented on June 20 in the House of Commons Legislative Committee, in the form of Bill C-19, to terminate the Canadian Exploration and Development Incentive Program (CEDIP), showed that 56% of the \$1.25 billion in incentives to the oil and gas industry over the period April 1, 1987 to December 31, 1989 was directed to small and medium sized firms and applicants. CEDIP was designed as a temporary measure to assist the petroleum industry overcome the impact that rapidly declining world oil prices had had on upstream employment and investment. Although the program was terminated effective April 27, 1989, exploration and development programs in progress, or committed, were allowed to qualify for incentives.

IEA praise for Canadian energy policy

In June, the International Energy Agency praised Canada for its market-oriented energy policies and initiatives in the area of energy exports, particularly the Free Trade Agreement with the U.S.A. The Canadian report was part of the "Energy Policies and Programs of IEA Countries" report reviewing member countries on energy supply and pricing, trade, research and development, energy efficiency and conservation, and energy and the environment. On other issues, the IEA praised Canada for the "quality, professionalism and excellence" of its research and development programs.

Emerging pressure points in energy policy - principal issues

In a public statement of June 7, the Deputy Minister of Energy, Mines and Resources identified emerging energy issues that would require a considerable amount of attention in the near and mid-term future, as perceived in 1989. Included in the issues were the following emerging pressure points in Canadian energy policy:

- the precise timing of northern oil and gas development in view of recently completed NEB gas export hearings on applications by three companies hoping to commence the shipment of some 1.2 billion cubic feet a day of Mackenzie Delta gas to the United States in the latter half of the 1990s;

- the interaction of energy and the natural environment and, specifically, the implications for the energy sector of the recommendations concerning CO<sub>2</sub> reductions arising from the 1988 Toronto Conference on the Changing Atmosphere, and more broadly attempting to define what sustainable economic development means for the energy sector and Canadian energy policy; the privatization of Crown Corporations, specifically when and how Petro-Canada should be privatized;
- the restructuring and rejuvenation of the Canadian nuclear industry to take advantages of the opportunities available to it and to achieve a sharing of costs and benefits more equitably between all levels of government and the private sector;
- greater cooperation among provinces in the area of interprovincial electricity trade;
- the proper balance between energy supply and demand initiatives and whether the magnitude of support provided by the federal government was proportionate to the public interest involved, specifically in relation to several new project proposals in the oil and gas sector including megaproject proposals;
- the challenge of working more closely with the provinces and industry in demand-side actions, including the federal government's Energy Efficiency and Diversity Initiative, to ensure that programs designed to demonstrate technologies, improve consumer information, or otherwise break down market barriers will be as effective as possible; and
- the objective of designing an appropriate program for energy research and development.

Canadian  
Transportation  
Accident and Safety  
Board-re: pipelines

On June 20, Parliament passed Bill C-2, an Act to establish the Canadian Transportation Accident and Safety Board and the Bill was given Royal Assent. The purpose of the Board is to conduct independent investigations and public inquiries, if necessary, into any commodity pipeline occurrence within the legislative authority of Parliament, to thereby identify safety deficiencies and make recommendations in order to eliminate or reduce them. The Canadian Transportation Accident and Safety Board would have concurrent jurisdiction along with the National Energy Board to investigate and report on all pipeline incidents.

Nova Scotia offshore  
development

In July, the Canada-Nova Scotia Offshore Oil Board announced its intention to issue exploration rights for three parcels offshore Nova Scotia. The successful bids included those of LASMO, a British company with interests in over 20 North Sea fields and a newcomer to the Nova Scotia offshore. Mobil and Shell, for the first time, joined forces to bid for a parcel. Successful bids totalled nearly \$20 million.

Natural gas vehicles

In July, Energy, Mines and Resources, the Government of B.C., B.C. Transit, B.C. Gas and IMW Industries announced support for a \$1 million Natural Gas Bus Demonstration Project, with federal government support in the amount of \$400,000. The project involved converting 5 transit buses from diesel to dual-fired operation and the installation of a high-speed fueling facility. The federal government also extended the Natural Gas Vehicle Program for B.C. to March 31, 1990.

Pro-Trucker  
Interprovincial Fuel  
Economy Challenge

The third annual Pro-Trucker Interprovincial Fuel Economy Challenge was held in Winnipeg in August. This annual meeting, initiated in 1985, continued to provide important information for the trucking industry across Canada on the efficiency of fuel use. The objective was to encourage fuel conservation in the trucking industry which accounts for 40% of all petroleum used in transportation, and consumes more than one quarter of all petroleum used in Canada, about 5 billion litres a year. The program tests the skills of truckers in making the best use of their fuel through good driving and maintenance practice. The program is one of the initiatives of the Energy Efficiency and Diversity (EED) program.

CANMET/Alberta  
Research Council  
research collaboration

On August 15, a Memorandum of Understanding (MOU) to create a formal framework of collaboration in research, development and technology transfer was signed between representatives of Energy, Mines and Resources and the Alberta Research Council. The MOU covered areas such as coal gasification and combustion, heavy oil upgrading, catalysis, materials for pipelines, and down-hole tubular goods. The MOU recognized the industrial role that EMR's Canada Centre for Mineral and Energy Technology (CANMET) and the Alberta Research Council

play in contributing to coal and synthetic fuels research, other energy-related research and development, metal research as well as mineral processing research and development. The work performed under the MOU would be designed to strengthen science and technology in Canada and give Canadian industry an edge in the international market place.

TransCanada  
Pipelines system  
expansion

On August 21, the National Energy Board issued its decision on an application by TransCanada Pipelines Limited, initiated in December 1988, for expansion of its system. Following several revisions of its application, the company received approval for its proposal comprising 407 kilometres of pipeline, four meter and five compressor units for service to begin November 1, 1990 at a total cost of \$573 million.

1989 Energy  
Ministers'  
Conference - Task  
Force Report on the  
Changing  
Atmosphere

In August, the Energy Ministers' Conference agreed to pursue national and regional initiatives in a number of areas including energy conservation and efficiency, and R&D aimed at reducing greenhouse gas emissions. Ministers also agreed with the conclusion of the federal/provincial Task Force, established following the 1988 Toronto Conference on the Changing Atmosphere, that the Toronto Conference recommendation on CO<sub>2</sub> emissions was ambitious but encouraged everyone to work towards a 20% reduction. The Task Force Report had concluded that the changing global atmosphere was a matter of serious concern and that action should be taken immediately. However, the report pointed to the international nature of the issue, continuing scientific uncertainty regarding its magnitude and timing, and the need for additional analysis to fully assess the implications for Canada of measures to reduce CO<sub>2</sub> emissions. In light of those considerations, it recommended a "risk management" approach of taking those policy measures that make economic sense on their own merits while reducing CO<sub>2</sub> emissions. The report identified a number of specific initiatives for such measures, most of which were in the area of energy efficiency improvements.

AECL and Ontario  
Hydro - pooling of  
efforts

In a September 13 address, the Minister of Energy, Mines and Resources announced that plans were underway to provide for closer cooperation and pooling of efforts by Canada's two major participants in the nuclear industry - Atomic Energy of Canada Limited, Canada's leading scientific expert in the nuclear field, and Ontario Hydro, the country's biggest electrical utility and owner and operator of the majority of Canada's nuclear power stations. At the time, Ontario was getting about half of its electricity from nuclear power and there were four more reactors under construction. The two companies were to team up to design new reactors and to pursue sales. A new reactor, the CANDU 3 with 450 megawatts capacity, was under development, a smaller reactor that would reduce up-front costs which would lower the threshold of size at which nuclear reactors could be competitive with coal in smaller generating stations.

Natural gas  
monitoring report

On September 15, the fifth biannual monitoring report on the performance of domestic and export natural gas prices was released covering the period November 1988 - April 1989. The report showed that prices paid in the domestic market for Canadian natural gas continued to be lower than export prices. For Alberta, the weighted average price of all categories of gas sold in the domestic market fell 7 cents per gigajoule from its value in the same November - April period a year earlier. In the export market, the weighted average price of Alberta gas sales showed little change from the previous year. Decline in domestic long-term prices during the year improved the Canadian price advantage.

Uranium supply  
capabilities

In September, Energy, Mines and Resources Uranium Resources Appraisal Group (URAG) completed its 15<sup>th</sup> annual assessment of Canada's uranium supply capabilities. Uranium exploration in 1988 increased to \$59 million from \$37 million in 1987 due mainly to test mining programs in two uranium projects in northern Saskatchewan. At a uranium price of \$100kgU, Canada's uranium measured resources were 41,000 tU compared with 46,000 tU a year earlier. Total resources with prices up to \$300kgU were 544,000 tU in 1989 compared with 567,000 tU in 1987.

NEB requirement of

In September, the National Energy Board issued a draft guideline requiring applicants for new



prior notice re: new projects

facilities and certain energy exports to give early public notification of what they proposed to do. The purpose of the guideline was to promote early consultation between the public and proponents of energy projects on matters of public concern particularly environmental matters. Those concerns would be taken into account by applicants and the Board, and mitigative measures put in place.

World Energy Congress – “Energy for Tomorrow’s World”

The 14<sup>th</sup> Congress of the World Energy Council was held in Montreal in September. The World Energy Council, founded in 1924, is a non-commercial, non-governmental and multi-energy international organization which exists to promote the sustainable supply and use of all forms of energy for the greatest benefit of all of its 100 member countries. A Congress has been held once every three years in recent years, Canada through the Energy Council of Canada, being the host in 1989. During the Montreal Congress the principal energy questions addressed, as recorded in the Congress Proceedings, related to the adequacy of economic energy resources to support the socio-economic needs of both the developing and the industrial countries; whether energy resources in the forms needed would be available at reasonable prices to all countries wanting them; would research and development produce new energy supply options and more efficient use of energy and when would such development be likely to be applied on a significant scale; and would energy be produced, transported and used in an environmentally acceptable manner-and at costs which allow for economic health and growth? One of the most important initiatives of the World Energy Council at the Montreal Congress was to establish a Commission “Energy for Tomorrow’s World” with international representation, which issued a 320-page report in 1993 directed to the realities, the real options, and the agenda for achievement. The Commission’s findings included the following:

- the overall message is the need for change of attitudes, systems, and development planning;
- at least 85% of the global energy consumption increase anticipated over the next few decades is expected to come from the developing world;
- the more rational world-wide use of energy on a cost/benefit basis is an immediate priority;
- the development and diffusion of the technology necessary for meeting global energy requirements and mitigating environmental impacts is of crucial importance
- fossil fuels will continue to provide the bulk of energy needs for the next few decades. Nuclear power is faced with a dilemma. Public and political concerns with safety and proliferation curb expansion, and even maintenance of current output, in many countries. Beyond 2020, there is likely to be recognition that nuclear power and coal are two options most readily available in substantial quantities, with new renewable energy and alternative fuel sources making a steadily growing contribution;
- despite the aspiration of the Rio Declaration in 1992, there is no realistic possibility, under current policies, of the developed countries in aggregate containing man-made greenhouse gas emissions at 1990 levels by the year 2000.

MDIP Agreement - federal/Alberta natural gas vehicle program

On October 2, the federal and Alberta governments announced an agreement to provide more than \$28 million in Market Development Incentive Payments (MDIP) to expand the market for natural gas and methanol as transportation fuels. The MDIP funds were to be directed over the following 5 years to initiatives which would contribute to a viable, self-sustaining natural gas vehicle industry in Canada and achieve an initial market penetration of methanol as a vehicle fuel. Under terms of a 1981 Memorandum of Agreement between the governments of Canada and Alberta, Market Development Incentive Payments were provided by Alberta and its natural gas producers to the federal government to encourage the expansion of markets for Alberta natural gas. From a total of over \$160 million collected between November 1981 and April 1986, the federal government, through Energy, Mines and Resources, administered 5 natural gas distribution and promotion programs, including the Natural Gas Vehicle Program and the Natural Gas Fuelling Station Program which together assisted in establishing a natural gas vehicle industry in Canada. With more than \$28 million remaining in MDIP funds, the federal and Alberta governments agreed to direct the remaining funds to the promotion of natural gas vehicles in Canada, as well as

promotion of the use of methanol fuel. The funds were to be used to extend the Natural Gas Vehicle Program (providing \$500 for each vehicle converted to natural gas) and the Natural Gas Fuelling Station Program (providing \$50,000 for each new public natural gas fuelling station). In addition, market demonstrations were planned to encourage the installation of residential refuelling appliances. As of mid-1989 there were about 21,000 dual-fuel natural gas/gasoline vehicles on the road.

Canadian Exploration and Development Incentive Program Act

An Act to amend the Canadian Exploration and Development Incentive Program Act (CEDIP) was assented to October 4, 1989. The initial Act was amended by adding thereto, immediately after section 3, a clause to specify that notwithstanding any other provision of the Act, this Act does not apply in respect of any eligible expenses incurred on or after January 1990. (S.c. 1989, c-19).

Beaufort Sea gas export approval by NEB, and challenge

In October, the National Energy Board granted licences to Esso, Gulf, and Shell Canada, authorizing the export of natural gas from the Mackenzie Delta area to the United States. Esso was authorized to export 144 billion cubic metres (5.1 trillion cubic feet); Gulf 91 billion cubic metres (3.2 tcf); and Shell Canada 25 billion cubic metres (0.9 tcf). A review of the decision was requested by the Council of Canadians and the Dene/Metis Negotiations Secretariat. Several companies had shown interest in the construction of a pipeline for this frontier gas.

Environmental Assessment panel re: nuclear waste disposal

In October, the Federal Environment Minister, acting on the request of the Minister of Energy, Mines and Resources, announced the appointment of a seven-member Environmental Assessment Panel to review the concept developed by Atomic Energy of Canada Limited for nuclear waste disposal in Canada. The review was to be conducted in accordance with the requirements of the federal Environmental Assessment and Review Process (EARP). AECL scientists were confident that the panel and the public would agree that the technology existed to dispose of nuclear fuel wastes in a manner that isolated them safely from the environment.

Canada/Soviet Nuclear Cooperation

In November, Canadian and Soviet government officials signed a new Canada/USSR Nuclear Cooperation Agreement that contained many of the features common to agreements with Canada's other nuclear partners. It included an accord that nuclear equipment, material and technology that became subject to the agreement would not be used for any nuclear explosive device or other military purpose. It permitted significant expansion of Canada/USSR nuclear relations as opportunities emerged in the field of nuclear safety.

Vancouver Island gas pipeline

Following negotiation of a final agreement in November, construction commenced on the natural gas pipeline to Vancouver Island.

NEB Act amendment re: electricity export policy

In speaking to the Legislative Committee of the House of Commons on November 2 on Bill C-23, An Act to Amend the National Energy Board Act, designed to implement a new electricity export policy for Canada, the Minister of Energy, Mines and Resources noted:

- When the NEB Act created the National Energy Board in 1959, the provinces did not regard themselves as electricity exporters and they had no need for mechanisms to regulate exports and, therefore, the NEB had to assume virtually the sole responsibility of overseeing those exports which did occur;
- In 1989, most provinces either exported electricity or saw the potential to do so, and all provinces had institutions and procedures for overseeing the electricity industry, and those which exported electricity had mechanisms to regulate the activity. Consequently, electricity exports and international power lines were being regulated twice, once by the province and again by the NEB. What was needed was a system of federal regulation which complemented, but did not duplicate, provincial efforts;
- The second requirement was to make sure the NEB, when it examined a proposed export or international power line, looked at issues that would be important in the 1990s and beyond, and this therefore called for adding environmental impacts to the list of criteria the NEB was to examine when considering an application;

- All electricity exports and all proposed power lines would still require NEB authorization and in this approval process, all applications would be scrutinized according to federal standards. Bill C-23 would leave the NEB as independent as ever. For the first time, the environment would become an explicit priority of the NEB;
- Bill C-23 extended the maximum duration of export authorization for electricity to 30 years from the previous limit of 25 years;
- When enacted, Bill C-29 would complete the federal government's reform of oil, gas and electricity regulation.

Darlington nuclear station start-up

Atomic Energy of Canada Limited and Ontario Hydro worked closely in the start-up of the first unit of the Darlington nuclear power generating station in November. AECL and Ontario Hydro also allocated increased resources to the maintenance of the generating stations at Bruce and Pickering, and participated in studies for future nuclear plants.

CANMET research - fine coal recovery

Announcement was made in November that EMR's Canada Centre for Mineral and Energy Technology (CANMET) and Westar Mining Ltd. were collaborating to improve fine coal recovery in the Crowsnest Pass region of B.C. Research and testing were leading to improvement in recovery of coal, thereby generating more revenue and reducing the quantity of coal that would otherwise be lost in mine tailings. Furthermore, it was becoming increasingly difficult to find good storage space in the mountainous terrain for the large quantities of tailings that had been produced over the previous 20 years, resulting in potential environmental problems.

Petro Markets: Probing the Economics of Continental Energy

Completed in November by the Fraser Institute, the 192-page report "Petro Markets" consisting of 7 papers by a group of prominent economists provided assessments of key energy issues of the previous two decades and of the outlook, especially for continental oil and gas, in the 1990s. "Probing the Economics of Continental Energy" provided a useful theme for examining the Canadian energy situation at the start of the last decade of the century. The following observations were included in the analysis:

- The oil market in the future may be less turbulent than that over the past 17 years, but it is not likely to evolve smoothly in any direction;
- There is little chance of the U.S. and Canada sustaining a joint energy policy under a renewed surge in the world oil price, but the more limited goal of cooperation is attainable;
- Forecasts based on the concept of using up one type of energy reserve and passing on to the next have not fared well, but there is a preference for the scarcity view, one that emphasizes substitute possibilities among the many alternative sources of oil;
- Expectations of a supply crunch in the 1990s, with OPEC back in the driver's seat, are not likely to occur but, if this were to happen, mechanisms to avoid the federal-provincial imbroglios that characterized the fallout of the previous price traumas are not sitting on the shelf ready for activation;
- The FTA rules make it difficult to support sharp policy discontinuities and the reduction in uncertainty should increase trade flows to the mutual benefit of both countries, but the FTA leaves unresolved one important issue - the need to view supply security in a North American context;
- Firm access to export markets should enhance industry activity, and thereby improve both producer capability and, ultimately, security of supply for Canadian consumers;
- The objective of oil self-sufficiency should not be over-emphasized - the proper emphasis should be on allowing the price system to fulfill its "Avital signalling function", and on maintaining favourable fiscal regimes to promote exploration and development.

Electricity generation in Canada - 1989

The record concerning electricity generation in Canada, as of December indicated that in 1989 the total generation of 482,158 GWh by fuel type was: hydro - 59.7%; coal - 17.7%; nuclear - 15.6%; oil - 3.4%; natural gas - 3.0%; and other - 0.6%. In 1989, provincial electric utilities owned about

82.5% of Canada's total installed capacity and produced about 82% of total generated electricity. The four investor-owned utilities accounted for 5.8% of all Canadian electric utility capacity and produced about 7.3% of total electricity. Municipally-owned utilities and the two territorial Crown corporations accounted for a total of 1.9% of capacity and 1.0% of generation. Industrial establishments had 6.0% of the country's electrical capacity and accounted for 8.0% of electricity generation while several small investor-owned utilities had 3.8% of total capacity and produced 1.7% of total output. During the year, SaskPower and Alberta Power completed a 230 kv transmission line in Saskatchewan and a 138-kv line in Alberta to establish the first Canadian link between the eastern and western power systems of North America. An international comparison of electricity intensity available for 1987 at the end of 1989 showed that Canada's electricity intensity was 1.21kWh/U.S. \$1985 of gross domestic product in a 24 OECD Country comparison with Norway at 1.65 having the highest electricity intensity and Italy, Switzerland and Japan the lowest at 0.49. Canada's relatively high electricity intensity is a result of several factors, including the relatively cold climate and the fact that many electricity-intensive industries are located in the country.

Coal in 1989 and the global warming issue

At the end of the year, in December, it was apparent from the growing debate over the issue of global warming and the release of CO<sub>2</sub> into the atmosphere, that the issue had become the major concern influencing predictions of future demand for coal and other fossil fuels. As a result, the coal industry was reviewing research and development priorities to deal with the global warming challenge. Initial activities were focussing on ensuring the problem was properly understood and in identifying new coal combustion technologies that could increase the efficiency of electrical generation stations. Attention was also being directed into ways in which CO<sub>2</sub> could be utilized in an environmentally acceptable manner, with possibilities including the use of CO<sub>2</sub> in enhanced oil recovery, injecting it into underground formations, and in chemical co-production. In another project, tests were being made of the economies and environmental benefits of substituting coal for natural gas to produce steam for enhanced oil recovery. In 1989, Canada used almost 48 million tonnes of thermal coal for electrical power production. Significant increase in the demand for thermal coal within Canada was expected as new coal-fired thermal power stations were under construction in Nova Scotia, New Brunswick, Saskatchewan and Alberta.

CANDU reactors - 1989 and future plans

In December, 18 CANDU nuclear reactors with a combined generating capacity of about 12,000 MWe were in service in Canada. Four reactors were in construction at the Darlington site east of Toronto which would add almost 3,400 MWe to the Ontario Hydro grid. A second CANDU reactor was envisaged for Point Lepreau, N.B., another four CANDU stations were being considered for Darlington and a CANDU 3 reactor for Saskatchewan. Since starting up in 1983, the Point Lepreau reactor's capacity factor had averaged 93%, making it the top performing CANDU in the world. Ontario Hydro was seeking approval for a preferred action plan calling for at least 10 new reactors to be put in service over the following 25 years.

Oil and gas activity and reserves - 1989

As assessed in December, upstream activity in Canada's oil and gas industry was lower in 1989 than in 1988 due to uncertainty about future oil and gas prices, termination of government incentive programs, the impact of mergers and takeovers, and the ongoing rationalization of producing interests and emphasis on cost production. Exploration and development expenditures in Canada during 1989 were about \$5.5 billion, a decrease of 18% from the \$6.7 billion spent in 1988. The National Energy Board's year-end estimate of remaining established reserves of conventional crude oil was 704.6 million cubic metres, 38.4 million cubic metres more than the 1988 year-end estimate. Crude bitumen reserves totalled 542.2 million cubic metres for developed projects only, as estimated by the Alberta Energy Resources and Conservation board. The NEB had not been including oil discovered in the frontier regions in its established reserves estimates because of uncertainty as to the economic viability of those resources but, in its 1989 estimate, did include recoverable volumes for Hibernia, Cohasset, Panuke and Bent Horn fields for the first time in its remaining established reserves. Estimated remaining established reserves of marketable natural gas at 1989 year-end were 2,234 billion cubic metres, 86 billion cubic metres higher than for year-end 1988, mainly as a result of a reserve increase in Alberta.

Natural Gas Market  
Assessment 1989-  
1991

In December, the National Energy Board issued its second Natural Gas Assessment Report, providing an assessment of the functioning of the Canadian natural gas market and a review of the short-term outlook for Canadian natural gas supply and demand. Publication of these studies was announced in the July 1987 decision in which the NEB adopted the Market-Based Gas Export Procedure for assessing natural gas export applications. Included in the conclusions reached in the Board's study:

- Some, but not all, of the constraints to competition in the market had been eliminated in the past year and the remaining constraints were identified;
- The number and volume of direct sales had increased, and prices for Western Gas Marketing sales and for direct one-year firm purchases had converged, indicating increased competition between Western Gas Marketing and direct sales;
- Domestic prices remained, on average, below export prices, indicating that Canadians were having no difficulty in obtaining gas supplies on at least as favourable a basis as export customers;
- The excess of productive capacity relative to demand was expected to continue declining in the forecast period, with supply and demand coming into approximate balance by 1991.
- Gas demand was high and was continuing to grow, both domestically and in the export market. Both productive capacity and transportation capacity (including storage facilities) were expected to be adequate to meet the demands placed upon them over the outlook period to 1991;
- Natural gas prices were expected to be stable over the period to 1991, although some price fluctuations for certain categories of short-term transactions could be expected.

Canada - U.S. Free  
Trade Agreement

As viewed in December, the Free Trade Agreement between Canada and the United States had not had a perceptible effect on energy flows across the border in the first year of operation of the Agreement. Prior to 1989, steps had already been taken in each country to give a market orientation to energy trade regulation. There were, therefore, no major barriers to be removed which would have had the effect of stimulating energy trade. The importance of the Agreement for Canada's energy trade was not in relation to its short-term effects, but to its impact in the long run. It established a reasonably clear set of "rules of the game" and an institutional framework which would give investors, producers and consumers in both countries enhanced confidence in expanding energy trade.

IEA 1989 Review -  
Canadian Energy  
Policies and  
Programs

In its 1989 review, through to December, of member countries' energy policies and programs, the International Energy Agency report on Canada noted that the stronger emphasis on market-oriented policies had had immediate beneficial effects in the oil and gas industry. However, it warned that attempts in a few provinces to regulate some aspects of gasoline prices could impair the benefits of freer markets from flowing to some consumers. There was also further scope for more market-oriented structure in other areas, particularly in the electricity sector where most Canadian utilities set prices to recover costs established on an historical basis. In addition, provincial utilities could be assigned regional and social development responsibilities leading to tariff policies which would not fully reflect the cost of new supplies, nor the actual cost of supply to different classes of consumers. Recommendations concerning the Canadian energy economy made in the 1989 IEA report repeated those recorded in its 1988 report (see the December 1988 IEA review note).

## THE YEAR 1990

**Overview:** In August, 1990, Iraq invaded and occupied Kuwait. The first reaction of the international community was to embargo Iraq and Kuwait, including oil imports from the two countries, while a diplomatic solution was sought. At the same time, the West, and particularly the U.S.A. began to seek international support for armed intervention to force a return to the *status quo ante* should diplomacy fail, and to establish a military coalition to carry out such intervention. Oil prices on the spot market reached levels not seen since 1986, but soon stabilized as it became clear that oil from non-OPEC sources, as well as increased OPEC production more than made up for the lack of Iraqi and Kuwaiti production on world markets.

In the Soviet Union, economic restructuring was faltering, partly due to opposition by Communist Party hard-liners, and partly because of greater assertiveness by the regions. Soviet oil and gas production continued to decline, although, paradoxically, export levels remained relatively stable as the slowing of economic activity decreased domestic energy demand.

In the federal Budget of February 20, 1990, the Minister of Finance announced the cancellation of the Canadian Exploration Incentives Program (CEIP). The budget also announced the withdrawal of federal support for the OSLO oil-sands project, and froze transfers to the provinces under the Public Utilities Income Tax Transfer Act of taxes paid by privately-owned electric and gas utilities.

Canada-Nova Scotia  
Offshore Petroleum  
Resources Accord

On January 5, the Minister of Energy, Mines and Resources Canada and the Nova Scotia Minister of Mines and Energy announced the proclamation of federal and provincial legislation to implement the 1986 Canada-Nova Scotia Offshore Petroleum Resources Accord. The Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the corresponding provincial Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act enshrined in law the provisions agreed upon by the two governments on the Canada-Nova Scotia Accord of August 26, 1986. The Act replaced the Canada-Nova Scotia Oil and Gas Agreement Act of 1984. The federal and provincial Accord Implementation Acts incorporated provisions of both the Canada Petroleum Resources Act and the Oil and Gas Production and Conservation Act, thus ensuring a consistent legislative framework for oil and gas exploration and development throughout the offshore and other frontier regions of Canada. Under the provisions of the Acts, a Chairman and Chief executive officer was jointly appointed by the federal and Nova Scotia governments to the new Canada-Nova Scotia Offshore Petroleum Board. Each government also appointed two members to the Board. As of January 5, 1990, the Board assumed the responsibilities for offshore management which had previously been exercised by the Canada-Nova Scotia Oil and Gas Board. At the same time, the Nova Scotia government also proclaimed an Act to Protect Georges Bank and the Offshore Petroleum Royalty Act. The Royalty Act enabled Nova Scotia to establish and manage royalties on offshore petroleum resources as if those resources were located on land. The Offshore Accord gave Nova Scotia the responsibility for, and revenues from, royalties and provincial taxes from the offshore region.

Canada-P.E.I.  
Agreement:  
Alternative Energy  
Development and  
Energy Efficiency

On February 12, a \$7.8 million federal-provincial cooperation agreement for alternative energy development and energy efficiency was announced. The 5-year agreement, under the Atlantic Canada Opportunities Agency Cooperation Program was aimed at stimulating economic growth, primarily by building Prince Edward Island's biomass energy industry. Wood-biomass fuel was growing as an important energy alternative for P.E.I. and was accounting for about 13% of all heat and process energy. The agreement was also designed to promote the expansion of district heating systems. The initial Canada-P.E.I. Energy Sub-Agreement under the Canada-P.E.I. Economic Regional Development Agreement (ERDA) spanned the period June 13, 1984 to March 31, 1989. That agreement was designed to develop wood energy as a larger proportion of the province's energy supply. The new Agreement on Alternative Energy and Energy Efficiency was designed to build on the success of earlier federal-provincial ERDA initiatives.

Petro-Canada to be

In a February 27 address, the Minister of Energy, Mines and Resources included an explanation of

privatized	the decision, as announced in the February 20 federal budget, to privatize Petro-Canada, which had been established as a Crown Corporation in 1975 in order to engage in state-to-state trading, to give the government a window on the industry and to contribute to energy security in Canada. In the previous 14 years, Petro-Canada had entered into only one state-to-state deal, and that with Mexico in 1979. In the 1990s Petro-Canada was no longer needed as a window on the energy industry. Other agencies, including the National Energy Board, the Canada Oil and Gas Lands Administration and the Petroleum Monitoring Agency were serving in that capacity. If there was a concern about Canada's energy security, there would be full support for a decision which would allow Petro-Canada to participate and develop reserves that had been discovered in cooperation with other private sector partners. To participate in the development of Canada's petroleum resources, Petro-Canada needed equity capital and financial freedom which would be achieved through privatization.
Federal government support of OSLO project terminated	In the <u>February 20</u> federal budget, there was provision for supporting the OSLO oil sands project through the conceptual engineering phase but support was withdrawn for the construction and operation phases. The project was considered to have marginal economic prospects and would require oil prices to increase appreciably, as well as favourable results from the conceptual engineering studies, to allow for a successful project. At the completion of the feasibility studies, participants in the project would be in a position to make a final decision on whether they were prepared to proceed.
Uranium mine decommissioning	In <u>February</u> , a Canada-Ontario Working Group on Uranium Tailings was formed to review the federal government's financial and long-term management responsibilities for the decommissioning of uranium mine and mill tailings.
NEB excludes social benefit-cost analysis in gas export hearings	In <u>March</u> , the National Energy Board decided, after a public hearing, that it would no longer include social benefit-cost analysis as one of the means it uses to determine whether proposed natural gas exports are in the public interest. The Board found that there was too much uncertainty as to the need for and the results of social benefit-cost analysis to warrant its continued use in gas export licensing.
Hydro-Québec electricity exports - NEB decision appealed	Following hearings completed on <u>March 5</u> , the National Energy Board in August approved applications by Hydro-Québec to export two blocks of firm power and energy to the New York Power Authority and seven blocks of power and energy to Vermont Joint Owners. The first block to New York Power allowed for the export of 500 megawatts of power over a 20-year period commencing May 1995, and the second block would allow for the export of the same quantities of power and energy during the 20-year period commencing May 1, 1996. The seven blocks of firm power and energy to Vermont Joint Owners would vary in size from 19 to 200 megawatts and in duration from 5 to 22 years during the period May 1, 1990 to October 31, 2020. The NEB approved the applications and issued the licences subject to the condition that they would remain valid to the extent that any production facility required by Hydro-Québec to supply the authorized exports, for which construction had not been authorized at the time of completion of the hearing, will have been subjected, prior to its construction, to the appropriate environmental assessment and review procedures as well as to the applicable environmental standards and guidelines in accordance with federal government laws and regulations. On October 26, Hydro-Québec and the Grand Council of the Cree (of Quebec) filed in the Federal Court of Appeal applications for leave to appeal the Board's decision of August on matters relative to the Board's jurisdiction. On October 31, the Board was also served with the application for leave to appeal of le Procureur général du Québec on grounds already raised and, in addition, on the issue that the Environmental Assessment and Review Process Guidelines Order did not apply to the Crown in right of a province. The Federal Court of Appeal on November 28 granted the applications for leave to appeal of all three appellants, who filed their notices of appeal in December 1990.
Transportation Safety Board of Canada	On <u>March 29</u> , the Canadian Transportation Accident and Safety Board Act came into effect. The Act established a new Board with its own mandate to conduct independent investigations and

public inquiries, if necessary, into any commodity pipeline occurrence within its legislative jurisdiction. The Transportation Safety Board of Canada has priority over the National Energy Board with respect to the investigation of causes and contributing factors of incidents related to the operation of a pipeline.

Radioactive waste management facilities

In March, the Federal Environmental Assessment and Review Office was in the process of setting up a full public review of a concept for disposal of high-level reactor wastes deep into rock formations, with the review scheduled to begin in late 1990 and continue for several years. In March, there were 16 separately licensed waste management facilities in operation - 10 in Ontario, 2 in Québec, 2 in Alberta and one each in Saskatchewan and New Brunswick. In addition, there were waste management facilities associated with the Chalk River nuclear laboratories in Ontario, the Whiteshell nuclear research establishment in Manitoba, and uranium mining and milling operations.

Globe 90 Conference - Sustainable Development

At the Globe 90 Conference, held in Vancouver in March, the Minister of EMR reviewed measures taken by the federal government to work towards sustainable development and environmental control in energy production and use. The approach to energy-related environmental problems included:

- better information concerning the environmental consequences of certain energy supply and use procedures;
- measures to promote greater energy efficiency through technological improvement and better energy management;
- the use of less polluting fuels including the use of coal in ways that minimized impact on the environment;
- the development of super energy-efficient housing techniques as employed in the R-2000 homes;
- the development and consumption of alternative transportation fuels, particularly natural gas and propane, and the use of methanol in large vehicles;
- recovery of fuel by-products in industrial processes; and
- greater use of renewable energy sources including biomass, solar and wind energy.

Renewed commitment to AECL and nuclear energy

On March 30, the Minister of Energy, Mines and Resources announced that substantial funds would be provided for Atomic Energy of Canada Limited nuclear R&D programs over the following seven years, thereby confirming nuclear power as an important energy option for Canada and providing significant economic, energy and environmental benefits through the 1990s and into the next century. The renewed commitment to sustaining nuclear energy as an option for Canada followed development of a restructuring framework for AECL and the Canadian nuclear industry by an AECL/Ontario Hydro Working Group under the direction of the Canada/Ontario Steering Committee, and in consultation with other Canadian utilities and the private sector. Ontario Hydro agreed to increase its contribution to AECL research and development by \$30 million annually over the following 7 years. Québec was to provide an additional \$3 million a year. The federal government was committed to \$144 million for each of the 7 years. AECL would continue to be responsible for national nuclear R&D programs and for managing the federal government's interests in CANDU marketing, engineering, and project management. An Ontario Demand/Supply Plan, with the preferred option of building 10 large new CANDU units before the year 2015, suggested a strong need to keep the nuclear option open. There were also plans for Lepreau 2 in New Brunswick. A national nuclear R&D program was seen to provide a broad range of benefits for Canada including the CANDU reactor, low-cost electricity, and the research results, spin-off technologies and advanced training and facilities generated by national R&D laboratories. The Minister of EMR's March 30 announcement was followed by detailed presentations by management of AECL to employees in Whiteshell, Mississauga, Chalk River, Montreal and Ottawa on AECL restructuring and plans for the future. The federal government's announcement was seen by AECL as a strong vote of confidence in the ability of the industry to deliver a clean, safe and economical source of energy to Canadians and countries around the



world.

Uranium mines,  
nuclear power  
reactors in Canada

As of March 31, there were 14 uranium mines in Canada - 7 in Saskatchewan, 5 in Ontario, 1 in the Northwest Territories, and 1 in Labrador. Four mines were being decommissioned. There were 19 nuclear power reactors with a licence to operate: 4 Bruce "A" reactors and 4 Bruce AB" reactors near Kincardine, Ontario; 4 Pickering "A" and 4 Pickering AB" reactors near Toronto; one at Darlington near Bowmanville, Ontario; one at Point Lepreau near St. John, N.B.; and one at Gently near Trois-Rivières, Québec. Construction and commissioning activities continued at the four-unit Darlington nuclear power plant near Bowmanville, Ontario. Electric power was first generated on January 15, 1990 on the first Darlington unit and the second unit was scheduled to start operation in late 1990.

A Framework for  
Discussion on the  
Environment - Green  
Plan

In March, the Minister of the Environment issued a report "A Framework for Discussion on the Environment". This served as a basis for public discussions across Canada on environmental issues and objectives leading, in August, to a report summarizing those discussions entitled "A report on the Green Plan Consultations". This preparatory work in 1990 led, in turn, to the publication in December of the federal government's Green Plan.

Dempster Pipeline  
Link Agreement re:  
Arctic gas

On April 12, the Minister of EMR announced that the Government of Canada and Foothills Pipe Lines Ltd. had extended the Dempster Link Agreement for an additional term of up to 10 years. This ensured that Canada's natural gas reserves in the Mackenzie Delta and Beaufort Sea region were provided with the option for access to southern markets in the event that the Alaska Natural Gas Transportation System (ANGTS) is completed. The agreement extension reaffirmed the Government's commitment to the 1977 Agreement between Canada and the U.S.A. on "Principles Applicable to a Northern Natural Gas Pipeline". It also recognized Foothill's past efforts and expenditures relating to the Dempster Link. This action did not preclude any other party from submitting a pipeline facilities' application to the National Energy Board proposing the same, or an alternative, route.

Frontier Energy  
Policy

In an April 30 statement concerning frontier development, the Minister of EMR reviewed progress in the oil and gas management regime in frontier regions through the Frontier Energy Policy which had been introduced in 1985. The policy established a system of land rights issuance based upon a single, quantifiable bidding criterion in which the best bid was selected. The use of ministerial discretion was essentially eliminated in land issuance. In addition, the fiscal system had been restructured by eliminating the Crown Share and by replacing taxes formerly levied under the National Energy Program by a profit-based regime. As a result of these and related measures, the fiscal framework in 1990 for offshore development was comparable to that for the North Sea, the offshore U.S.A. and most other oil and gas jurisdictions.

Coal industry  
environmental  
responsibilities

In an April 19 address to the Coal Association of Canada, the Minister of EMR focussed on the major challenges to coal as an energy source:

- the public perception of coal is usually identified with acid rain, even though Western Canadian coal is low in sulphur and most of it meets national guidelines without extra control devices;
- the production of nitrogen oxides contributing to ground level ozone in the combustion process;
- coal's association with the global warming issue and related climate change projections based on greenhouse gas emissions;
- that the energy industries, including coal, have a responsibility to be a part of the environmental solutions;
- the coal industry's obligation to look much beyond the simple production of coal, and become increasingly concerned, and involved, in aspects of the downstream use of coal, that is in the full fuel cycle;
- in becoming participants in aspects of the downstream use of coal, both domestic and

offshore markets would be relevant, with the offshore markets providing opportunities to collaborate with, and assist, coal users especially in the developing countries; and

- the coal industry having indicated its willingness to be part of the solution in dealing with the environmental issue, the challenge was to make it a responsibility.

1990 Energy Ministers' Conference-Task Force Report on the Changing Atmosphere

In a public statement on April 26, the Minister of EMR noted that the federal government had been moving systematically with the provinces to address the global warming issue. A Task Force established by Energy Ministers in 1988 to examine the issue had submitted a report to Ministers at their August 1989 meeting, and had tabled a further progress report at the most recent meeting of April 2. Ministers had concluded that, despite the uncertainties concerning the magnitude and timing of global warming and regarding the responses that will be made by the international community, action was required. Accordingly, all jurisdictions had begun to take measures appropriate to their respective responsibilities and circumstances to reduce CO<sub>2</sub> emissions - ranging from educating the public to energy audits, electricity demand management programs, appliance efficiency regulations and research into both abatement and efficiency technologies. Further, at the April 2 meeting, Energy Ministers had endorsed the recent proposal of the Canadian Council of Ministers of the Environment to begin cooperative development of a comprehensive national action strategy on global warming

Green Plan consultations

On May 24, the first of 17 consultation sessions in the design of the Green Plan for Canada was held in Winnipeg, following a nation-wide series of information presentations on the Plan, all in preparation for an action plan to be tabled in December 1990. Water quality, waste management, and atmospheric pollution were considered to be the top three environmental issues. There was a commitment to find a national consensus on the environment that would support strong economic development in an environmentally responsible way. Accordingly, the concept of sustainable development was considered to be the heart of the Green Plan.

An environmentally sensitive integrated resource plan

In May, the Minister of EMR directed attention, in an address to the Canadian Electrical Association, to the theme of integrating energy and the environment, and the development of a strategy to deal with energy-related emissions - nitrogen oxides, sulphur dioxide, and carbon dioxide. They were recognized as the main causes of climate change, ground level ozone and acid rain, with climate change being considered as the most significant environmental issue being faced on a global scale. There was a recognized need for an environmentally - sensitive integrated resource plan for Canada. The specific requirements integral to the development of such a plan were defined as follows:

- the need for a national, integrated R&D program that would help position Canada as one of the world's most environmentally - sensitive nations;
- the need to take full advantage of opportunities for the use of such clean alternative energy resources as wind, small hydro, bio-energy and solar power;
- the need for greater attention to demand-side management through such technologies as energy efficient lighting, and high efficiency motors, thereby reducing electrical consumption, with energy efficiency technologies being both economically and environmentally attractive; and
- the need for reduction of technical, information, financial and institutional barriers to energy efficiency and alternative energy measures.

Canada-Newfoundland Offshore Development Fund Program

In May, a number of programs were approved under the Offshore Technology Transfer Opportunities Program, a \$5 million program under the Canada-Newfoundland Offshore Development Fund. The Fund consisted of \$300 million, cost-shared 75:25 by the Government of Canada and the Government of Newfoundland and Labrador, established at the signing of the Atlantic Accord to help defray the social and economic infrastructure costs related to oil and gas development off the coast of Newfoundland in the period before production commenced, and to ensure that the provincial economy was well positioned for the economic benefits of offshore development. The projects approved in May were directed to training in preparation for oil and

gas production activities.

EMR Estimates,  
1990-1991, new  
directions

In his May 2 presentation on Main Estimates to the House of Commons Committee on Energy, Mines and Resources, the Minister of EMR noted the savings in the EMR estimates for 1990-91 of \$218 million resulting from the phase-out of the Canadian Exploration and Development Incentive Program and a further reduction of \$60 million in expenditures in the terminated Canadian Exploration Incentive Program. A cut of \$7.3 million was realized as a result of the wind-down of the National Conservation and Alternative Energy Initiative which had provided a transition from programs under the National Energy Program to the new policy of emphasizing energy efficiency and renewable energy activities in the private sector. Under the Energy Efficiency and Diversity initiative, \$40 million was being spent in these activities. The plan for 1990-91 also made provision for integrating environmental considerations with the policy process, particularly in relation to the global warming and urban air quality issues. There was renewed emphasis in the science sectors of EMR in developing new technologies to increase the efficiency and reduce the adverse environmental effects of producing, processing and using energy and mineral resources.

Federal commitment  
to the nuclear energy  
option

In a June 5 address to the Canadian Nuclear Association, the Minister of EMR reviewed the process that had been initiated 18 months previously of assessing the nuclear energy option, with implications for energy policy and for environmental policy as well. A commitment had been made in March to support the nuclear option, and the review was continuing to ensure that the level of support for Atomic Energy of Canada Ltd. could be on a long-term basis and to structure the nuclear industry in a way that would encourage the best contribution without duplication by each of the participants. It was noted that, as of mid-1990, Canada had invested some \$30 billion in nuclear facilities. By mid-1990, AECL and Ontario Hydro had established a more consistent direction for the development of the CANDU reactor. At the time, it was considered that the primary market for CANDU technology would continue to be in Canada but that there would be export opportunities.

Alternative energy  
and energy efficiency  
options

In a June 18 address to the Solar Energy Society, the Minister of EMR noted that the use of alternative energy sources was growing and that about 7% of Canada's primary energy production was coming from alternative energy sources, primarily biomass. Through the use of energy efficiency techniques, Canada was saving the equivalent of \$9 billion in its annual national energy bill, with saving up to 50% believed to be achievable in many buildings and industrial processes. Canada's northern remote communities were considered to represent a key market for solar and wind energy.

Petroleum reserve  
investment forecast

In a public statement on June 11, the Minister of EMR predicted that the Canadian petroleum industry would spend about \$10 billion annually through to the year 2005 to increase oil and gas production and add to hydrocarbon reserves. As a result of this investment, Canada would add 200 million barrels per year to its reserves of heavy crude.

COGLA 8<sup>th</sup> annual  
report

On June 15, the 8<sup>th</sup> annual report of the Canada Oil and Gas Lands Administration was tabled in the House of Commons providing a review of oil and gas activities on frontier lands in the 1989 calendar year. In that year, 14 exploratory wells were active in frontier areas, a decrease of 4 from 1989. The focus was in the North, with 5 wells in the Beaufort Sea and 7 on the mainland area of the N.W.T., and only 2 on the last coast.

NEB Act amendment  
re: regulation of  
electricity trade

Bill C-23, an Act to amend the National Energy Board Act and to repeal certain enactments in consequence thereof, came into force on June 1, 1990. The Bill gives effect to the government's policy respecting the regulation of electricity trade announced in September 1988. It also allows the NEB to recover the cost of its operations from the industry it regulates. The basic principle governing the government's policy on the regulation of electricity trade is that there should be no unwarranted duplication of federal and provincial regulation. Applicants seeking to export electricity or to build an international power line will continue to submit their proposals to the

Board and it will then carry out an initial review of the application to decide whether there is need to complement measures taken by the applicant and the sponsoring provinces. If the Board is satisfied that the assessments and mitigating measures carried out by the applicant and the sponsoring provinces have adequately addressed all relevant concerns, the applicant will receive its authorization in the form of a permit. If there are reasons to believe that the proposal may not be in the public interest, the Board will recommend to the Minister of Energy, Mines and Resources that a public hearing be held. If the Governor in Council, on the advice of the Minister, accepts the Board's recommendation, there will be a public hearing conducted by the Board. The Board will either deny the application or issue a licence in the case of exports or a certificate in the case of power lines, subject to the approval of the Governor in Council. The procedures for the regulation of interprovincial power lines were not changed from those previously in the Act. For the most part, such lines will be regulated by the provinces through which they pass. Immediately following the amendments coming into force, the NEB provided guidance to the public and the regulated industry as to the steps to be followed to fully implement the new policy.

Canadian  
Environmental  
Assessment Act

On June 18, the Minister of the Environment announced a major package of reforms to the federal government's environmental assessment review process. A key feature of the package was to be the proposed Canadian Environmental Assessment Act, designed to formalize the federal government's obligation to integrate environmental considerations into project planning and implementation processes, and create a new agency to be known as the Canadian Environmental Assessment Agency. The new Act was to cover all projects for which the federal government held decision-making authority - as a proponent, land manager, provider of funding or a regulatory authority.

EMR/NSERC  
research grants

In July, Energy, Mines and Resources and the Natural Sciences and Engineering Research Council (NSERC) collaborated to fund \$2 million worth of research projects in 1990-91. Grants for the project were made available under the Research Agreements Program of EMR (\$1.4 million) and the Research Partnerships Program of NSERC (\$0.6 million). The primary aim of the Research Agreements Program established in 1972 had been to use outside expertise to support EMR research priorities and to promote the exchange of informations and technological innovation between the private sector and government. Beginning in 1990-91, NSERC would contribute to the overall program by providing additional support to university-based projects. For 1990-91, the funds would support 209 projects in 39 research centres across Canada in the natural sciences and engineering. About 35% of the 1990-91 funds were directed to the earth sciences, 11% to engineering research, 8% for surveying research and 26% to mining and minerals research. In energy, 17 technology research projects were supported by the Canada Centre for Mineral and Energy Technology (CANMET) to study increased efficiency in combustion and the use of alternative fuels. The Energy Program sponsored 8 studies related to the future of nuclear energy, taxation policy, export markets, reservoir engineering and environmental sensitivity.

Coal program to  
reduce atmospheric  
emissions

On July 17, EMR Canada announced the signing of a joint 5-year agreement equally funded by CANMET and the Canadian Electrical Association (CEA). The \$3 million agreement was designed to focus on the development and commercialization of furnace and boiler processes aimed at reducing greenhouse gases and acid rain. The program was in recognition of the importance of coal in fulfilling Canada's future energy requirements and the need for the development of clean and efficient combustion technology.

Cape Breton coal  
safety research

Announcement was made on July 3 that EMR's Coal Research Laboratories would cooperate with the Cape Breton Development Corporation (CBDC) on 22 projects at a total cost of \$3.6 million to enhance the safety and productivity of Cape Breton coal mines. The projects were directed to the operation of CBDC's three submarine coal mines, including more effective roof support technology, monitoring subsidence, improving ventilation and reducing the possibility of rock bursts. The Coal Research Laboratories were established in 1981 for the purpose of investigating and advising on the safer mining of underground coal, especially on methane and coal dust explosions, methane emissions, mine ventilation and roof controls. The CBDC, with about 3000

employees, was the largest underground coal producer in Canada, mining 4 million tons of coal annually from collieries extending as far as 4.8 km from the shore of the Atlantic Ocean and 730 metres below the surface.

Petroleum Monitoring  
Agency Report-1989

On July 11, the Petroleum Monitoring Agency (PMA) reported on petroleum industry financial performance in 1989, noting that the industry's 1989 internal cash flow from total operations declined 1% to \$8.9 billion from the previous year. An increase in extraordinary gains in 1988 led to a fall in net income of 39% to \$1.3 billion in 1989. Due to lower profits, the industry recorded a reduction in the average rate of return on equity to 3.3% from 5.5% in 1988. The petroleum industry's average return for the 5-year period ending in 1989 was 3.7%. Capital expenditures in 1989 were down 16% to \$7.7 billion and upstream capital outlays fell 20% to the lowest level in over a decade. The continuing uncertainty about future crude oil prices together with the rationalization of company operations witnessed by the sale and purchase of oil and gas properties and takeovers by corporations caused overall capital expenditures to decline. Consequently, the reinvestment rate for total operations dropped to 85% in 1989 from a reinvestment rate of 96% in 1988.

Report on the Green  
Plan Consultations

A Report on the Green Plan Consultations was issued in August by Environment Canada (159pp) summarizing the findings of 41 information sessions and 17 consultation workshops held across Canada following release of the Minister's report - "A Framework for Discussion on the Environment" - issued in March 1990. References to energy were included in many sections of the report and there was a special section on energy, identifying energy as a key issue requiring action in the Green Plan. There was unanimous support for demand-side management efforts that would focus on improving energy efficiency and implementing conservation. The report recorded seven objectives having a total of 70 recommended actions under the general heading of energy, all being directed to energy efficiency, conservation, and alternative energy. There was no agreement among participants in the consultation workshops as to whether nuclear power represented a viable energy source.

Energy Use and  
Atmospheric Change  
EMR Discussion  
Paper

On August 10, Energy, Mines and Resources released a Discussion Paper "Energy Use and Atmospheric Change" on how the Government of Canada might mitigate the impact of energy use on the atmosphere. The 70-page document described a number of efficiency and alternative energy initiatives that could be taken by the federal government to reduce energy-related atmospheric emissions, CO<sub>2</sub> in particular, through to the year 2000. The major policy thrust of the paper was for Canada to capitalize on existing economic opportunities to modify energy use. The Discussion Paper was provided as a working draft to solicit views in preparation for a submission for inclusion in the Green Plan. The view was emphasized that in developing environmental protection initiatives, governments should take economic considerations into account. Cost-benefit analyses of specific initiatives should be undertaken and there must be national assessments of the scientific evidence in favour of or against specific initiatives. The "Aphased" approach was favoured, taking first the actions which made sense, and proceeding to more costly or disruptive measures only when the risks and consequences of inaction warranted action. The EMR Discussion Paper sections dealt with the international dimension, energy use in Canada, developing a response, an efficiency and alternative energy initiative, estimated impact of initiatives, and the challenge.

Green Plan Priorities  
- Energy Council of  
Canada

In August, the Energy Council of Canada (formerly the Canadian Member Committee of the World Energy Council-CANWEC) prepared a brief on the invitation of the Minister of the Environment providing views to assist in the formulation of the Green Plan, scheduled to be made public in December. The Council's brief defined basic concepts considered fundamental for the Green Plan:

- the concept of sustainable development - in making plans for environmental protection in terms of this concept, it is important to assess the economic, social and environmental costs of all new initiatives and to balance the costs and the benefits; the environmental cost of the use of land, air, and water must be factored into everyday decision - making;

- the Green Plan should make it possible to move away from the existing command and control policy system towards a more flexible regulatory climate that promotes the development of new technology to deal with environmental issues;
- the Green Plan should make it explicit that the private sector will be a major participant in developing and implementing solutions to clean up and prevent environmental problems;
- there must be recognition of the need to forge international partnerships; and
- priorities for dealing with energy-related environmental problems should be based on effective energy policies, not only the promotion of cost-effective energy efficiency and conservation but also full support for efficient production and utilization of all domestic energy options, incentives for energy-related R&D, and a balancing of environment, energy, and economic objectives.

The Council report dealt in separate sections with factors that affect decision-making, changing the decision-making process, strengthening partnerships, environmental stresses, the global commons, and protecting the Arctic environment.

Natural Gas Price  
Monitoring Report -  
1988/89

On August 12, the Minister of EMR released a report monitoring the performance of domestic and natural gas prices during the November 1988-October 1989 "Agas year" showing the prices paid in the domestic market of Canadian natural gas had fallen over the year, and continued to be lower than export prices. For Alberta gas, the weighted average price of all categories of gas sold domestically fell 104 per gigajoule over the gas year from a 1987/88 average of \$1.77 to \$1.67 over 1988/89. Weighted average export prices for Alberta natural gas rose when expressed in U.S. dollars, but due to Canadian currency appreciation, were virtually unchanged in Canadian dollars. As a result there was an improvement in the price advantage enjoyed by domestic consumers from an average of 134 during 1987/88 to 244 in 1988/89. In B.C., domestic consumers continued to see a 15-20¢ / GJ price advantage over U.S. exports. The monitoring process was established as part of the deregulation of domestic natural gas pricing in 1985/86, this survey being the sixth such biannual report.

Canada's R-2000  
technology available  
in Japan

On September 19, the Japan Home Builders' Association entered into a licensing agreement that would make Canada's internationally acclaimed R-2000 home building performance standard available to Japan for the first time. Under terms of the licensing arrangement, Canada's R-2000 technology was to be used to support a Japanese R-2000 program that would be required to meet Canadian-tested and approved materials, equipment and performance standards. The agreement allowed the Japan Home Builders' Association to use R-2000 intellectual property, including the R-2000 logo and trademarks, to assist in making high-quality, energy-efficient housing commercially available in the Japanese marketplace. EMR played a major role in developing the technology for the R-2000 home, and remained responsible for administration of the program. The Canadian Home Builders' Association, working in close cooperation with EMR, had taken the lead in providing delivery, marketing, technical support and quality assurance.

Low-level radioactive  
waste facility report

On September 21, a report of the Siting Task Force on Low-Level Radioactive Waste Management in Ontario was released under the title of "Opting for Cooperation: A Process in Action". The report outlined the progress the task force had made over the previous 2 years in siting a low-level radioactive waste management facility in Ontario. The goal of the program was the voluntary acceptance by a community of a safe, well-managed, long-term facility for the low-level radioactive wastes then located in the Port Hope area. The task force had worked closely with 14 communities. During the subsequent phase of the program, detailed environmental assessments, site and technological evaluations, and socio-economic studies were to be carried out. Final community acceptance was to be decided by a local referendum.

Hibernia offshore oil  
project underway

On September 14, the federal government announced that the multi-billion dollar Hibernia oil project off the coast of Newfoundland would begin immediately. The agreement, signed by the

Governments of Canada and Newfoundland and Labrador and the oil company consortium, met the federal government's commitment first made in 1985, with the signing of the Atlantic Accord, to provide a framework for developing Newfoundland's major offshore potential. The Hibernia field had been discovered in 1979 but its development had been stalled in the early 1980s by federal/provincial disagreement over the ownership of offshore resources. The Atlantic Accord established a regime for the joint management of the offshore by the two governments, giving the people of Newfoundland a role in the effective management of the resource and a substantial share of the project benefits. The federal government commitment, as confirmed in September 1990, included a contribution to cover 25% of the construction costs-up to a maximum of \$1.04 billion, and loan guarantees for 40% of construction expenses up to a maximum of \$1.66 billion for a total \$2.7 billion. The pre-production capital construction costs were estimated at \$5.2 billion. The consortium estimated that 55-60% of that amount - \$2.8 billion to \$3.1 billion - would go to Canadian companies. Operating and capital expenditures over the life of the project were expected to result in significant additional economic benefits for Canada. Four companies - Mobil Oil Canada, Petro-Canada, Gulf Canada Resources, and Chevron Canada Resources - made up the oil consortium. Full environmental assessments had been made and the Government of Canada was satisfied that the project could therefore proceed. Production start-up was scheduled for 1996. The Hibernia field was estimated to have between 525 and 650 million barrels of oil. The expected output level of 110,000 b/d of light oil during the peak production, forecast to be developed by 1998, would be the equivalent of about 12% of total Canadian oil production in the year 2000. The field is 315 km east-southeast of St. John's, under an average water depth of 80 metres.

Uranium resource appraisal-1990

In September, the Uranium Resource Appraisal Group (URAG) of EMR completed its 16<sup>th</sup> annual assessment of Canada's uranium supply capability and an associated survey of exploration activities. Known reserves, as of January, 1990, were estimated to be 583,000 tonnes of uranium, up from 544,000 tU as reported at the beginning of 1989. Exploration successes at recently discovered deposits in northern Saskatchewan and in the N.W.T. added to Canada's overall uranium resources and more than offset the production of 11,400 tonnes of uranium during the year 1989. The Athabasca Basin in northern Saskatchewan continued to attract uranium exploration efforts by major international companies.

Ontario moratorium on new nuclear power facilities

Following its election on September 6, the New Democratic Party government in Ontario announced that there would be a moratorium on new nuclear power facilities in the province until the conclusion of the planned environmental Assessment Board hearings on Ontario Hydro's 25-year demand and supply plan. The hearings commenced in 1991 and were expected to take three years to complete. Notwithstanding the moratorium, the four-unit Darlington nuclear station was to be completed and the facility brought into full operation. Ontario Hydro was asked in September to Adivert planned expenditures for new nuclear developments towards the most comprehensive energy conservation and efficiency program ever undertaken by a utility in North America". In 1990, Ontario Hydro anticipated that the province would need as many as 10 new nuclear power reactors over the following 25 years to supply the electrical base load.

Nuclear power share in world electricity generation

In September, the International Energy Agency (IEA) reported that global consumption of electricity was projected to grow at an annual rate in excess of 3%, with nuclear electric generation increasing at just under 3% per annum. Since 1986, 71 nuclear energy plants had been brought on line worldwide, 12 of those in 1989. An additional 96 nuclear reactors were under construction as of January 1, 1990. In 30 years, nuclear power's share of total world electricity generation had risen from less than 1% to about 17%.

NEB Cost Recovery Regulations

In September, Treasury Board approved the National Energy Board's implementation proposal whereby the NEB can recover the costs of regulation from companies under its jurisdiction. Commencing early in 1991, total costs of operating the NEB were to be recovered from regulated companies rather than being paid out of general government revenues. Regulations concerning this authority were made following amendments to the NEB Act under Bill C-23 (see June 1990

note). The NEB had completed a feasibility study pursuant to the government cost recovery initiative introduced in the May 1985 Budget. The NEB study received Treasury Board's approval in principle in November 1988, and consultation took place with industry during 1989 and 1990. The Cost Recovery Regulations became effective January 1, 1991.

#### Persian Gulf War

On September 27, the Minister of Energy, Mines and Resources explained in the House of Commons the significance of events in the Persian Gulf, precipitated by the invasion of Kuwait by Iraq, as they related to Canada's energy situation, and the actions the Government of Canada was taking to respond to those events. Iraq had invaded Kuwait on August 2, 1990. The result of the embargo of oil shipments from Iraq and Kuwait was the loss to the international oil market of about 4.1 million barrels of oil a day. Some production increases from other OPEC and non-OPEC countries was compensating for the loss. There was also some drawing down of commercial stocks and the situation remained manageable. The international consensus at the time was that global oil markets would tighten and the Canadian oil market would be affected. The Canadian government policy was to ensure that Canadian energy producers and consumers would be free to respond to pressures and opportunities presented by world markets, and the federal government had no intention of returning to industry regulation in the existing circumstances. It was noted that, in the case of an incipient oil supply crisis, the International Energy Agency (IEA) Governing Board could implement Coordinated Emergency Response Measures that would remain below the IEA's emergency trigger level of a 7% reduction of normal supply. It had never been necessary in the past to invoke the oil-sharing system. Those Emergency Measures would involve voluntary actions taken by member states in a pre-crisis situation which, in Canada's case, would involve measures relating to demand restraint. It was noted that, in 1974, Canada had established the Emergency Supplies Allocation Board (ESAB) with the responsibility for preparing and, if necessary, implementing contingency plans during an oil crisis. In preparation for any necessary response, should the existing Middle East situation deteriorate, Canada had updated the readiness of existing emergency plans under ESAB. In the event of an oil crisis in Canada, the federal government had powers to allocate crude oil and petroleum products and, in a situation of extreme shortage, could ration gasoline and diesel fuel at the retail level. Further oil price increases were anticipated from the \$15 WTI U.S. level at the end of 1989 to the range of \$21-\$23 in early August 1990. The situation in the Persian Gulf in September remained one of uncertainty. Canada had accommodated to that uncertainty through collective action with its international partners, through effective emergency planning, and through the continuation of general energy policies that promoted the flexibility and growth of the Canadian energy sector.

#### Powersaver Program

In October, Energy, Mines and Resources reached an agreement with Ontario Hydro to have all 57 EMR buildings in Ontario audited under the Powersaver Program. The results of the audit were to be used to develop customized energy efficiency action plans for EMR's buildings as part of the federal government's demand side management program.

#### Methanol as an alternative transportation fuel

On October 22, a Memorandum of Understanding by EMR, General Motors and Canadian Oxygenated Fuels Association (COFA) was signed providing for the operation of methanol variable-fuel vehicles in Canada. Under the agreement, GM was to provide 110 variable-fuel Luminas, capable of operating on a fuel mixture of 85% methanol and 15% gasoline. The vehicles were to be used for demonstration in various fleet operations in Ottawa, Toronto, Edmonton and Vancouver. In the previous five years, EMR's support for methanol as an alternative transportation fuel had centred on its use in heavy duty truck and buses. More recently, EMR had focussed on variable-fuel vehicle demonstrations in collaboration with COFA on an overall development plan for methanol as a vehicle fuel in Canada.

#### Nuclear fuel waste disposal - Canadian Shield

In October, a public review was initiated of the generic concept of deep geological disposal of nuclear fuel wastes in the stable rock formations of the Canadian Shield. No site selection was planned until such time as the concept had been accepted as safe by the governments concerned. Storage at reactor sites was continuing. In October 1989, the Minister of the Environment had



announced the appointment of a seven-member Panel to conduct an environmental assessment and review and, in August 1990, the Panel appointed a 14-member Scientific and Review Group (SRG) to carry out a detailed scientific and technical evaluation of the disposal concept. The SRG was to report its findings to the Panel. The Panel's public review sessions in October and November 1990 were designed to identify issues that should be addressed by AECL in the preparation of a formal Environmental and Impact Statement (EIS). In the public hearings, some views were expressed in favour of extended above-ground storage of the nuclear fuel wastes to keep options open should a better management solution be available in the future. Varied ethical considerations were also raised including issues surrounding the transfer of responsibility for the wastes to future generations, concern about the long-term stability of institutions, regional inequities of risks and benefits, and global responsibility for accepting wastes for disposal. With completion of the public review sessions, the Panel was to issue guidelines for the EIS to be prepared by AECL in 1991. The EIS would, in turn, be the basis for public hearings on the disposal concept.

Hibernia  
Development Project  
Act

An Act respecting the Hibernia Development Project, and the amendment of certain Acts in relation thereto, was assented to November 6, 1990. The finalization of the legal agreement was made possible with the passage by the Parliament of Canada of Bill C-44, the Hibernia Development Project Act, and Royal Assent of the legislation. On November 29, federal Ministers announced completion of the signing of the binding legal agreement for the \$5.2 billion Hibernia project. The Act provides information as to the contents of agreements that may be entered into including (a) undertakings for the provision of assistance by Canada; (b) provision for the appointment of one or more trustees or other persons to perform such duties as may be required by the Minister of Energy, Mines and Resources; (c) provision for the payment of net profit interest to Her Majesty; (d) undertakings in relation to industrial and employment benefits; (e) undertakings in relation to access to domestic and international markets for oil produced from the Project; and (f) such other terms and conditions as the Minister of Energy, Mines and Resources considers desirable. The Act specifies that the Minister of EMR may, with the approval of the Governor in Council, enter into one or more agreements on behalf of Her Majesty in respect of the Hibernia Development Project.

Privatization of Petro-  
Canada

On November 27, in speaking on Bill C-84, the Petro-Canada Privatization Act, the Minister of EMR expressed the view that the privatization would be consistent with the federal government's energy policy and help achieve energy policy objectives. It would improve the growth opportunities for Petro-Canada and encourage more timely development of Canadian energy resources and it would also enhance Petro-Canada's ability to respond to market opportunities. The energy policy objectives of Canada remained largely as articulated in 1984 with respect to energy resource development, energy security of supply, diversity and competitiveness of the Canadian energy economy, environmental protection, opportunities for increased Canadian ownership and control, and with respect to energy contribution to national reconciliation.

World Climate  
Conference -  
emissions target

At the Second World Climate Conference, held in November in Geneva, Canada reaffirmed its commitment, first made in May at the 1990 UN Conference in Bergen, that the first step towards limiting emissions should be the stabilization of "emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol" at 1990 levels by the year 2000. This was considered a national target and did not pertain to specific regions or sector.

Uranium market  
outlook uncertain

In December, the year-end outlook was one of uncertainty for the Canadian uranium industry due to world oversupply, and lower and volatile prices ending at U.S. \$9.70/lb. U<sub>3</sub>O<sub>8</sub> with even lower prices during 1990. Primary uranium production was 8,750 tU, down from 11,300 tU in 1989. Prospects for market turnaround in the near-term seemed doubtful with the result that new production capacity would be deferred beyond the mid-1990s. The growing public interest in protecting the environment meant that new uranium projects would undergo intense scrutiny, thereby increasing the lead time needed for new uranium developments. However, a study published jointly in December by the Nuclear Energy Agency of the OECD and the International

Atomic Energy Agency (IAEA) forecast that world uranium requirements would increase from about 42,000 tU in 1990 to 53,000 tU in 2005. The forecast indicated that those requirements could not be met from existing and committed production centres relying on lower cost resources and, therefore, new production facilities would be needed by the mid-1990s. At the same time, the report noted that the emergence of non-traditional supplies and the availability of surplus inventory suggested that the need for new sources of uranium production could be delayed significantly. Consequently, the timing of many of the new projects could depend on the supply-diversification strategies of the world's nuclear utilities.

- Coal market outlook In December, it was concluded that the Canadian coal industry would face important challenges in the 1990s. Coal demand was forecast to grow internationally but primarily in the thermal, or steam, coal market and, traditionally, only 10% of Canadian coal exports had been thermal coal while many exporters in Canada, as elsewhere, were not making acceptable returns on the sale of that type of coal. During 1990, Canada produced 40.7 million tonnes of thermal coal, down from 42.4 million tonnes in 1989, and used 44 million tonnes, down from almost 48 million tonnes in the previous year. Exports remained at 4.15 million tonnes in both years.
- Korea CANDU purchase - Wolsong 2 On December 28, Atomic Energy of Canada Ltd. and the Korea Electric Power Corporation signed agreements for the purchase by South Korea of a second CANDU nuclear generation station. The agreements called for construction of another CANDU 6 heavy water reactor beside the existing Wolsong 1, also a CANDU 6, both reactors having a gross generating capacity of about 700 megawatts. Wolsong 2 was to be completed in 1997. In addition to Wolsong 1 and 2, Korea Electric Power planned to place two more reactors on line by the end of the 1990s, with AECL planning to submit bids. AECL estimated that the benefits of the CANDU Wolsong 2 sale included the injection of more than \$400 million into local economies across Canada during the following four years, and the creation of 7,000 direct and indirect jobs for Canadians, and also AECL's supervision of \$200 million in contracts for Wolsong 2 in Korea. Wolsong 1 began service in South Korea in April 1983, and in 1990 was the top performing Korean unit.
- NEB Memorandum of Guidance - early project notification In December, the National Energy Board released its Memorandum of Guidance dealing with early notification of proposed energy projects. The purpose of the Memorandum was to provide for public input during the planning and development of energy projects. Public input could then be incorporated into application proposals to the NEB, thereby allowing those who might be directly affected by a project to more effectively express their views with ultimate improvement of the Board's regulatory process.
- Environmental Assessment and Review Process Guidelines Order - NEB response As viewed in December, two major influences on environmental matters which occurred in 1989 and 1990 were the decisions of the Federal Court regarding the Rafferty-Alameda and the Oldman River Projects. Those decisions asserted that the Environmental Assessment and Review Process Guidelines Order (Athe EARP Guidelines Order") should be interpreted as a law of general application rather than as a mere guideline. Consequently, each federal department and agency had henceforth to take into consideration the environmental implications of all proposals which it planned to take, or for which it had financial, regulatory or administrative decision-making authority. Accordingly, the NEB standardized its screening process to make it compatible with the EARP Guidelines Order, and conducted environmental screenings of 54 natural gas and electricity export applications and over 75 environmental screenings of pipeline facilities ranging from facility modifications to major pipeline looping and transmission facilities.
- Demand Side Management - Canadian electric utilities As of December, several Canadian electric utilities in Canada had launched Demand Side Management (DSM) programs, an efficient strategy dealing directly with one of the primary issues affecting both energy supply and the environment: energy consumption. DSM initiatives were focussing on new technologies, improved manufacturing standards, re-structuring of rate systems and consumer awareness. Ontario Hydro's DSM project, expected to cost over \$3 billion in the following 10 years, would bring a reduction in demand of 4,500 megawatts, greater than the capacity of the Pickering nuclear generating station at that time. B.C. Hydro had a 10 year, \$225

million APower Smart” campaign, expected to free up 2.4 billion kilowatt hours of electricity by 1998, almost four times the amount of power then consumed annually by the City of Victoria. Hydro-Québec had identified the equivalent of 5,000 MW of capacity in DSM opportunities achievable by the year 2006. In addition, Hydro Québec had forecast that a potential of 10,000 MW was available at the more than 400 small hydro sites it had identified in the province.

Green Plan for a  
Healthy Environment

In December, the federal government announced its environmental Green Plan. A total of \$575 million was allocated over six years for global environmental security issues, including ozone depletion and acid rain. The objective of stabilizing greenhouse gases at 1990 levels by the year 2000 was reaffirmed. To reduce greenhouse gas emissions, the federal government, in cooperation with the provincial governments, was developing the National Action Strategy, a comprehensive framework for addressing the global warming issue. It involved a three-part approach: the governments would limit net emissions of greenhouse gases, help Canadians anticipate and prepare for the potential effects of any warming that might occur, and improve the scientific understanding of, and the ability to forecast, climate change. Specific programs to limit greenhouse gas emissions were to be announced independently by the various governments as the programs were developed, with the federal government coordinating these programs and establishing a comprehensive inventory and reporting systems for greenhouse gases. The federal government was also to significantly increase its commitment to scientific research on climate change, including more sophisticated modelling and monitoring. It was recognized that the measures in the Green Plan by themselves would not likely realize the stabilization target but would lay the foundation and would be supplemented by provincial and territorial initiatives. Among other supporting initiatives, the use of economic instruments to achieve environmental objectives, was under discussion.

Economic  
Instruments for  
Environmental  
Protection

In December, as part of the Government’s strategy and action plan for achieving sustainable development set out in Canada’s Green Plans for a Healthy Environment, a 75-page Discussion Paper was released by the Minister of the Environment, in recognition that market incentives could be an effective alternative or complement to traditional approaches to regulation. The federal government’s role was to be the balanced use of regulations and market-based approaches for environmental protection. The Discussion Paper was designed to inform stakeholders of practical design and implementation considerations surrounding the use of economic instruments, and possible options for using them. The paper pointed to a number of potential advantages of economic instruments over the regulatory approach, both in attaining environmental goals and in ensuring that Canada remained competitive in the increasingly global market.

Green Plan goal -  
alternative  
transportation fuels

In December, the Minister of Energy, Mines and Resources announced at the World Ethanol Conference in Vancouver, two key initiatives to address the Green Plan goal of an infrastructure for alternative transportation fuels. One of the initiatives was to direct technology and market development to the widespread adoption of alternative transportation fuels, by expanding the availability and use of methanol, ethanol, propane and natural gas. The other initiative was to focus on R&D in a number of key areas including the improved performance and design of gaseous fuel vehicles, producing fuel from biomass, and developing prototype electric vehicles and fuel cells.

Oil and Gas reserves

The National Energy Board’s estimate of remaining reserves of conventional crude oil, as of December 31, 1990, was 688.3 million cubic metres, a decrease of about 2%, or 16.3 million cubic metres, from the year-end 1989. Since 1985, annual additions of conventional crude oil reserves had generally not replaced production and had been progressively declining, except for 1989 when the discovered crude oil resources in the Hibernia field were booked as established reserves in view of the announced development plan. The remaining established reserves of crude bitumen, for developed projects only were 524.4 million cubic metres, as estimated by the Alberta Energy Resources Conservation Board. The remaining established reserves of marketable natural gas were 2,262 billion cubic metres, 28 billion cubic metres higher than the estimate for year-end 1989, most of the increase occurring in Alberta. Exploration and development expenditures in

Canada during 1990 were \$6.4 billion, an increase of 10% from the \$5.8 billion spent in 1989, and comparable with the average annual expenditures over the previous five years.

Oil and gas supply  
trends-1990

The record, as of December, showed that crude oil production in Canada in 1990 (including conventional light and heavy crude oil, bitumen, pentanes plus, and synthetic crude oil) averaged 261,300 cubic metres per day, 2% less than 1989. The supply of conventional light crude oil continued the declining trend, averaging 141,200 cubic metres per day, a decline of 4% from the previous year's supply. Marketable natural gas production was 98.1 billion cubic metres, similar to the 1989 level. Gas exports to the U.S. rose 7% to 40.7 billion cubic metres (1.44 trillion cubic feet). Access to American pipeline systems continued to improve in 1990 and, by the year-end, all major American pipelines were open-access carriers which facilitated sales of Canadian gas under short-term orders. Of the 33 long-term gas export applications considered by the NEB in 1990, 16 applications were for exports destined for cogeneration projects. During 1990, there was little spare capacity in any of the major gas pipelines in Canada.

Electricity generation  
trends-1990

Total generation of electricity in 1990, for the record through to December, was estimated at 470,000 gigawatt hours, down 3% from 1989. About 63% of Canada's total generation was supplied by hydroelectric power, 22% from conventional thermal generation, and 15% from nuclear generation. The downturn in electricity export sales, which began in 1989, continued and total exports were the lowest since 1976, amounting in 1990 to 494 gigawatt hours, down 11% from 1989. During the first 6 months, exporting utilities had very little surplus energy available for export due to low water conditions in some provinces and restrictions in fossil-fuel generation in Ontario, restrictions required in order for Ontario not to exceed provincial levels in acid gas emissions. During the second 6 months, some utilities replenished their water reserves which, over the previous few years, had become depleted due to below average precipitation.

## THE YEAR 1991

**Overview:** Since the Iraqi invasion of Kuwait the previous year, the United States had established a coalition of countries, including Canada, Britain, France, Saudi Arabia and Egypt prepared to take action against Iraq. By January, 1991 the USA and its Coalition partners had assembled a ground force of over 550,000 troops in Saudi Arabia, as well as significant naval and air assets in the Persian Gulf. Following the failure of a number of diplomatic initiatives, in late January, 1991, Coalition forces began an intensive bombing campaign against Iraq. This was followed, in February, by a ground invasion of Iraq. One hundred hours after the start of the ground war, Iraq requested and obtained a cease-fire. However, retreating Iraqi troops set fire to virtually all the Kuwaiti oil wells, creating significant ecological damage in the Persian Gulf and concerns that the fires were of such an extent that they could take years to extinguish. In the event, however, firms specializing in the control of oil-well fires, including several from Canada, were successful in extinguishing the Kuwaiti fires in less than a year.

In August, 1991, an attempted coup by Soviet Communist hard-liners against the reformist President Gorbachov collapsed. The failed coup resulted in the immediate recognition by the Soviet government of the independence of the Baltic states (Lithuania, Latvia and Estonia), and shortly thereafter by votes to secede from the Soviet Union by its constituent republics. President Gorbachov resigned as Soviet president on Christmas Day, and on December 31, the Soviet Union formally ceased to exist.

Canada and the United States entered into a Clean Air Accord on March 31, 1991. The Accord committed both countries to consult in advance on activities that might cause significant trans-boundary air pollution, to develop means to deal with existing pollution problems, and included a dispute-resolution mechanism. The impact of the accord on the energy industry lay with its acid-rain provisions, which capped sulphur dioxide emissions, and required scheduled reductions in nitrogen oxide emissions. Both effluents are produced by coal-fired power plants, and thus had regional implications for Alberta. The Accord also required tighter emissions standards for new vehicles.

The February 26, 1991 federal Budget announced that the government would proceed with the privatization of Petro-Canada, as enabling legislation had been passed by Parliament. The budget also announced the disbandment of COGLA, with its responsibilities transferred to other departments, as well as the dissolution of Petro-Canada International Assistance Corporation. With the latter dissolutions, the last remaining institutions set up under the NEP ceased to exist. The Budget also announced that, in light of the worsening federal deficit, the timetable for disbursement of Green Plan funds was extended from five years to six.

Canada, the United States and Mexico agreed to enter into negotiations to extend the FTA by admitting Mexico. Energy became a significant focus of the discussions, given Mexican constitutional requirements for the protection of their energy sector, and U.S. interest in enhancing access to energy investment opportunities in Mexico.

Darlington Nuclear  
Station-shut down

In January, Unit 2 of Ontario Hydro's Darlington Nuclear Generating Station was shut down due to fuel end-plate cracks. Although no fuel damage occurred in Unit 1, it was shut down pending identification of the cause of the problem at Unit 2. By year-end 1991 full power was restored. Ontario Hydro was permitted to complete the Darlington Units 3 and 4 under construction, notwithstanding the Ontario government's moratorium on new nuclear power facilities, and Unit 3 was expected to start up in mid-1992 while Unit 4 was scheduled for the spring of 1993.

On January 1, the (hidden) Manufacturers Sales Tax was replaced with a visible Goods and Services Tax (GST). The GST was levied at a rate of 7 percent, and was applicable to most goods and services. GST paid by producers on their inputs was fully refundable, so that only the final purchaser was liable for the tax.

AECB nuclear  
training program

Effective January 1, an Atomic Energy Control Board official was appointed to head a training centre in Ottawa for both its own personnel and regulatory staff from abroad. The program, which had been approved in 1990, was designed to help other countries establish and run safe and effective nuclear regulatory organizations. Romania was expected to be the first overseas beneficiary of the new centre.

IEA decision on Persian Gulf contingency plan

On January 11, the Minister of EMR announced that Canada supported the unanimous International Energy Agency (IEA) decision to adopt a coordinated energy emergency response contingency plan for use in the event that hostilities in the Persian Gulf warranted such action. The decision taken in January would allow for rapid activation of response measures by IEA member countries in a coordinated manner to reduce uncertainty and volatility in the international oil market during a period of crisis. The range of possible response measures included oil stock draw downs, a temporary increase in oil production, fuel switching away from oil, and demand restraint. In Canada, a combination of demand restraint and commercial stock drain was considered to be the best response. The federal and provincial governments had already initiated a number of measures to encourage reduced oil consumption. Crude oil production allocation, or price controls, were not components of the IEA response at this stage. In view of the current level of hostilities in the Persian Gulf, the IEA notified member governments that they should now activate the coordinated contingency plan to make available 2.5 million barrels of oil per day to the world market within 15 days - 2 million barrels a day was to come from stocks, 400,000 b/d from demand restraint actions, and 100,000 b/d from fuel switching. Canada's share of this commitment was 115,000 b/d.

Canada's GST

The Government of Canada implemented the 7% Goods and Services Tax in January to replace the federal manufacturer's sales tax at the wholesale level. The GST was applied to all fuels, unlike the previous tax which applied only to automotive fuels.

Natural gas for vehicles

In February, it was noted in an EMR public statement that over the previous decade, government and industry had delivered a package of initiatives that had established natural gas as an energy-saving and environmentally-attractive transportation fuel. As a result, there were more than 25,000 vehicles operating on natural gas and 120 public natural gas refuelling stations in Canada. Electronic fuel injection equipment had been developed to make natural gas conversions fully compatible with the vehicles of the 1990s, and a unique design had been developed for dedicated natural gas transit buses. Canada was being widely recognized as a world leader in many areas of natural gas for vehicle (NGV) technology. The greatest environmental gains through to 2005 were likely to be made in the transportation sector, with the most proven and promising alternative fuel being natural gas.

Power Savers energy efficient audit in Ontario

In accordance with a Letter of Cooperation signed by representatives of the federal government and Ontario Hydro on March 7, Ontario Hydro was to conduct Power Savers energy efficiency audits of at least 1,300 federal facilities in each year for the following 5 years. The agreement was based on a successful pilot program launched in October 1990 which involved energy audits of more than 60 EMR and Public Works Canada buildings, mainly in the Ottawa area. The audits identified potential energy savings of \$860,000 annually and a reduction of electrical demand of 150 kilowatts. In 1991 there were 14,000 federal facilities in Ontario. If all of those buildings implemented energy-saving measures such as those recommended in the pilot projects audits, the estimated savings for Canadian taxpayers could total between \$25 and \$50 million annually. It was estimated that for the pilot projects alone, there was an associated reduction of 5000 tonnes of CO<sub>2</sub> emissions a year.

PERD Program

As of March, funding for the program of the Panel on Energy Research and Development PERD, coordinated by Energy, Mines and Resources Canada, was set at \$90 million annually for each of the following 5 years. At that time, the PERD program was composed of eight activities, with the following designated funding levels:

- oil, gas and electricity - \$18.4 million;
- energy efficiency - \$18.2 million;
- hydrocarbon enhancement, and bitumen and heavy oil research - \$13.0 million;
- fusion research - \$8.0 million;
- renewable energy sources and environment - \$11.3 million
- clean coal research - \$10.8 million;
- alternative transportation fuels - \$8.9 million; and

- international coordination - \$2.3 million.

As an interdepartmental panel, PERD plans, coordinates and reviews its program to link the energy activities in all sectors through the relevant federal agencies.

Nucleonics Week  
report on CANDU

In its 1990-91 report for the year ending in March, Atomic Energy of Canada Limited quoted, among the highlights of the year, the recognition in Nucleonics Week, the U.S. diary on international nuclear activity, that in the last eight years, AECL CANDU had generated more than \$1 billion (Cdn) in commercial revenue, more than half of it from export sales, with this commercial revenue being achieved despite shouldering the marketing, sales and product development costs for virtually the entire Canadian nuclear industry”.

Measuring  
sustainable  
development: energy  
production and use

Representatives from industry, government (municipal, provincial and federal) and the academic and consulting communities met in Montreal in March to discuss indicators of sustainable development for energy production and use in Canada. The workshop was sponsored by the National Round Table on Environment and the Economy (NRT). A primary goal of the NRT was to better integrate economic activity with the environment. Its mandate was to identify, explain and promote the concept of sustainable development for all sectors and regions of the nation. Indicators to operationalize and measure progress towards sustainable development was one area of activity categorized as “tools for sustainability”. The NRT selected the topic of the sustainable production and use of energy as its first area of activity on indicators because energy cuts across many issue-areas related to sustainable development. Ultimately, a list of key indicators for enough sectors would provide an overall measure of progress toward sustainable development in Canada. Participants at the Montreal meeting considered a preliminary set of 15 indicators related to energy production and use. There was a high level of support for indicators of sectoral energy efficiency (energy used per unit of product or services provided within a particular sector) and impacts on environment (air and water emissions and waste). There was also interest in measuring the diversity of the national energy mix. However, most participants agreed that national indicators of energy intensity (energy use per capita) and aggregate energy productivity (GDP per unit of energy used) were less useful for international comparisons because they inaccurately portray Canada’s performance regarding energy use and efficiency. Recognizing that the preliminary set of national indicators discussed at the work shop focussed on environmental sustainability, participants proposed expanding indicators to include socio-economic considerations which are also a vital part of sustainable development. There was agreement that development and use of micro indicators at the corporate and organizational level should be encouraged; such indicators would be more likely to motivate changes in behaviour than would macro indicators at the national level. At the workshop, previous work on indicators by EMR was recognized as significant.

Hydrogen research

On April 4, the Minister of EMR announced that the federal government would contribute \$1 million towards a joint government-industry R&D program, led by the Hydrogen Industry Council. EMR, through the Canada Centre for Mineral and Energy Technology (CANMET), was to share costs on a 50 : 50 basis with industry to finance the new R&D program to be administered by the Hydrogen Industry Council (HIC). The federal funding of \$1 million over two years was to be provided by the federal Panel on Energy Research and Development (PERD). The HIC was established in 1982 as an association of Canadian industries that shared an active interest in hydrogen technologies. The program brought together the oil and gas industry, with its interest in using hydrogen in refining processes to upgrade heavy fossil fuels to lighter, more valuable fuels, with proponents of the longer-term option of electrolytic hydrogen production. There was also a mutual interest in fuel cells which could operate on either pure hydrogen, or hydrogen-rich reformed fossil fuel.

Fuel cell technology

On April 4, the Minister of EMR announced that the federal government would be contributing \$1 million towards the testing of a hydrogen-powered fuel cell, one of the most promising technologies in the quest for new sources of transportation energy. EMR, through the Canada

Centre for Mineral and Energy Technology (CANMET), was to work with the B.C. provincial government, Ballard Power Systems of North Vancouver, and B.C. Transit in a program to demonstrate that the new fuel cell could reliably power a city bus. Fuel cells had been demonstrated to have two advantages over storage batteries in that they produced more electricity for their size and, because fuel cells operate on a chemical fuel that is constantly being replaced, they are free from interruptions in service caused by the need for electrical charging and do not pollute. In addition to supporting the urban bus demonstration, CANMET provided another \$1 million over 4 years to Ballard Advanced Materials to assist in the development of further fuel cell technology.

Government principles re: coal marketing

In an [April 24](#) address to the Coal Association of Canada, the Minister of EMR acknowledged the difficult marketing circumstances that had been faced by the Canadian coal industry in the 1980s, and which seemed to be continuing in the 1990s with a recent round of price settlements for coking coal that forced the industry to accept another price reduction. The following fundamental principles were expressed as being essential characteristics of the relationship between Canadian coal producers and their offshore customers:

- there must be recognition of Canada's history of reliability as a supplier, and as a fair trader;
- there must be recognition that contracts are to be respected;
- it must also be recognized that Canadian coal mines, most of which are heavily dependent on export sales, must have adequate prices and predictable delivery schedules that provide orderly flows of coal from mine onto the ship;
- it must be understood by all parties that governments in Canada should not be expected to, nor will they, subsidize the production or transport of export coal. Canadian taxpayers had already invested heavily in rail and port infrastructure and, in the case of northeast British Columbia, in the infrastructure to support the townsite; and
- the Government of Canada, through EMR's CANMET, would continue to provide R&D support for new technologies.

Saskatchewan uranium property environmental reviews

In [April](#), the Minister of Energy, Mines and Resources Canada referred six proposals for new uranium mining facilities in Saskatchewan for public review by an independent panel, pursuant to the federal government's Environmental Assessment and Review Process (EARP) Guideline Order. Appointment of the five-member joint panel was announced later in August and a total of \$350,000 was made available in September to assist participants in reviewing Environmental Impact Statements and preparing for, and participating in, the public hearings associated with the 5 new projects. The sixth proposal was to be reviewed by a federal-only panel because conditional approval had already been granted by Saskatchewan authorities.

Ontario Hydro 25-year Demand/Supply Plan

In [April](#), Public Hearings by the Ontario Environmental Assessment Board into Ontario Hydro's 25-year Demand/Supply Plan commenced. Later in the year, in mid-December, Ontario Hydro released a greatly revised version of its 25-year plan, reflecting Ontario government policy wherein construction of any new generating plants would be delayed for the foreseeable future, and reduced forecast load growth would be met by non-utility generation and demand-side management.

Sarnia-Montreal Pipeline future

In an [April](#) report to the Minister of Energy, Mines and Resources, made public on July 8, the National Energy Board advised on the results of its study, conducted at the request of the Minister, as to the future of the Sarnia-Montreal Pipeline, part of the Interprovincial Pipe Line Company system transporting crude oil from Western Canada to refineries in Montreal. The Minister had noted that a diminishing supply of light western crude oil, more economic foreign crude supply opportunities for Montreal refiners, and long transit times to move oil from Sarnia to Montreal had all contributed to the uncertainty about the use of the Sarnia-Montreal pipeline. The Minister had asked the NEB to advise him on the "prospect for, and implications of, closure of the pipeline and the options available to industry and/or government for maintaining the line in an operating mode



with west-east or east-west flow". The main conclusions of the Board's report:

- Canadian crudes are now regarded by Montreal refiners as being generally uncompetitive with overseas crude, primarily as a result of long delivery times and high inventory costs; and
- There are no security of supply reasons requiring government intervention to keep the crude oil pipeline operating between Sarnia and Montreal. There are sound reasons for governments not to intervene as producers determine the most economic means to dispose of domestic crude oil supply and as refiners provide for longer term access to crude oil for their refineries.

COGLA functions transferred to NEB re: the environment

On April 2, about 58 members of the staff of the Canada Oil and Gas Lands Administration (COGLA) were transferred to the National Energy Board (NEB) following disbandment of COGLA. A new Environmental Directorate was established at the NEB combining all functions and responsibilities of the Environmental Branch of the NEB and those of the Environmental Protection Board of COGLA. The environmental responsibility arose out of the NEB Act, the Oil and Gas Production and Conservation Act, and the Canadian Petroleum Resources Act.

Re-structuring of COGLA responsibilities

Effective April 2, the staff of the Canada Oil and Gas Lands Administration (COGLA) was reassigned to the National Energy Board, the Department of Energy Mines and Resources, and the Department of Indian Affairs and Northern Development. The Minister of Indian Affairs and Northern Development was to continue to issue oil and gas rights on Crown Lands in the North, with all other regulatory functions being assumed by the NEB. The Minister of EMR retained responsibility for all oil and gas regulatory matters within his jurisdiction in southern Canada, including the responsibility with provincial colleagues for the management of the Newfoundland and Nova Scotia Accord areas. The Minister was to be assisted in carrying out these responsibilities by the former members of the staff of COGLA who were transferred to EMR, and by advice from the NEB as provided under Section 26(2) of the NEB Act. Following amendments to legislation, the Minister of EMR was to continue to exercise shared responsibilities for the joint management of the Accord areas. Regulatory responsibility for oil and gas activity on the Frontier Lands was assumed by the NEB. COGLA had been created in 1981 to regulate oil and gas activity on Canada's Frontier Lands. Since that time, regulatory responsibility for most oil and gas activities in the Newfoundland and Nova Scotia offshore had been vested in joint offshore management boards - the Canada-Newfoundland Offshore Petroleum Board in 1985, and the Canada-Nova Scotia Offshore Petroleum Board in 1990.

CO<sub>2</sub> Management Options in a Differentiated World

A report released in April for the Canadian Electrical Association entitled "CO<sub>2</sub> Management Options in a Differentiated World", as prepared by Environment House, quantified the capacity of the world's 50 largest CO<sub>2</sub> - emitting nations to stabilize their annual emissions 10 years into the future at levels prevailing in 1990. The report noted that Environment Ministers from 34 countries, including Canada, had agreed at a meeting in Bergen, Norway, in May 1990 that industrialized nations should stabilize greenhouse gas emissions "as soon as possible", in most cases at 1990 levels by the year 2000. The Canadian position was enunciated in Canada's Green Plan, published in December 1990, which stated that Canada's goal was to stabilize national emissions of CO<sub>2</sub> and other greenhouse gases at 1990 levels by the year 2000. Based on the study of the world's 50 largest carbon-emitting nations, the report prepared for the CEA concluded:

- The stabilization of CO<sub>2</sub> emissions within 10 years is not a realistic objective for many countries, including Canada, nor on a global basis. Even under the most optimistic scenarios, annual CO<sub>2</sub> emissions 10 years in the future would be higher than those prevailing in 1990.
- However, delaying steps to bring carbon emissions under control runs the risk of making a delayed target date for stabilization even less achievable than the 10-year scenarios.
- The one policy option, among various "macro policy" scenarios that has the potential to break through constraints, to produce a "win-win" commitment by high-income and developing nations alike, would centre on the concept of Carbon Reduction Credits. Energy-efficient nations could earn CRCs by applying their technological, capital, energy

and management resources to the substantial problems of energy and carbon management, especially in less-developed countries.

Foreign nuclear fuel wastes	As of <u>May</u> 1991, there had been no change in Canada's policy of not accepting nuclear fuel wastes from other countries for disposal in this country.
Persian Gulf War - world oil security	In a paper prepared for the American Petroleum Institute in <u>May</u> on the subject of world petroleum supply and related security risks, (published following the Persian Gulf War in which Iraq invaded Kuwait and threatened Saudi Arabia), the conclusion was reached, on the basis of the experience of that oil supply crisis, that there are two "security problems" related to oil. One is that faced by Gulf producers in securing their own sovereignty against neighbors with divergent economic and political interests. The other is that of the consuming countries in reducing their vulnerability to unanticipated supply interruptions. While these two problems become inherently intertwined as trade between the two regions grows, there is a mutual interest between producers and consumers in lessening both risks associated with international oil supply interruptions.
Canadian Environmental Assessment Act	The Canadian Environmental Assessment Act was reintroduced in Parliament in <u>May</u> . It required an environmental evaluation to be carried out on all new projects that were financed wholly or partly by the federal government, that take place on federal lands or for which the federal government would be the decision maker. In the energy sector, the legislation covered activities including electricity exports, international power lines, international and interprovincial pipelines, gas plants, oil storage and loading facilities.
Saskatchewan EMR Office	In <u>June</u> , Energy, Mines and Resources Canada established a new regional office in Saskatoon, recognizing that city as the uranium mining capital of Canada. This followed an announcement in April by the federal and Saskatchewan governments of a joint process to conduct an environmental review of 5 proposed new uranium mining projects in northern Saskatchewan. The province was accounting for about one fifth of the world's uranium production.
Hibernia oil project	In <u>June</u> , over 1300 people were working on the Hibernia oil project, more than one half in Newfoundland and most of the rest in other locations in eastern Canada. Commitment of more than \$2 billion in expenditures had been made by the project owners, with another \$3 billion to follow over the succeeding 5 years.
Natural gas bus demonstration program	In <u>June</u> , a demonstration project to test the feasibility of transportation on buses fuelled with natural gas was initiated in Vancouver by B.C. Transit in a project supported by EMR which contributed \$400,000 of the \$1 million demonstration project. The converted buses were using diesel fuel to start up and in idling, with the power provided by natural gas when the bus was underway.
Privatization of Cameco	In <u>June</u> , trilateral discussions on extending the FTA to include Mexico commenced.  In its first step towards privatization, Cameco signed an agreement in <u>June</u> for an initial share offering, at a unit price of \$12.50, 10 million shares being fully subscribed within a few days with proceeds of \$130 million. Later, in September, the Province of Saskatchewan offered 5.3 million special warrants at \$14.75 each. If fully exercised, public ownership in Cameco would be increased from its existing level of 20% to about 38%.
Elliot lake uranium mining in decline	In <u>June</u> , Ontario Hydro announced that it had agreed to continue Rio Algom's Stanleigh's mine contract beyond 1993 but only until 1996, as opposed to the original 2020 date. At the time, the Ontario government and Ontario Hydro undertook several initiatives to help the Elliot Lake community make that transition from dependence on uranium mining to a more diversified economy.
NEB relocated from Ottawa to Calgary	On <u>June 21</u> , Bill C-2 National Energy Board Act (Measures to Amend) was given Royal Assent. The purpose of Bill C-2 was to give effect to the government's decision to relocate the NEB from

Ottawa to Calgary. The Board started operations in Calgary on September 3, 1991, and its new headquarters was officially opened in November.

Petro-Canada  
privatization

Petro-Canada took its initial step toward privatization in June when its first round of shares, equal to about 15%, were offered. The federal government planned to divest its remaining interest in the company as market conditions improved. The foreign ownership share was limited to 25%.

NEB 1991 Energy  
Supply and Demand  
Update, 1990-2010

The Natural Energy Board in June completed its report "Canadian Energy Supply and Demand 1990-2010", updating an earlier study published in 1988. The report contained projections for the period to 2010 of the supply of, and demand for, Canadian energy and of the related emissions of certain gases resulting from energy production and consumption. The report contained a "control case" together with assessments of the impacts on Canadian energy supply and demand of ranges of world oil prices and of North American natural gas resources. In the Control Case, the NEB assumed long-term economic growth of about 2.3% per year. The outlook for oil prices in the Control Case was in the middle of its overall range, growing from \$20 in 1991 to \$27 by 2010 (in 1990 U.S. dollars). The expectations were for low energy demand growth, with end use demand growing from 7,600 petajoules in 1989 to 9,600 petajoules in 2010, an increase averaging 1.2% per year. The Control case projections were predicated on modest economic growth, ongoing energy efficiency improvements associated with technological change, environment-related measures considered viable given the price outlook, and demand management programs. Primary energy demand for domestic use in the control case registered the following changes in use percentages:

	1989 - %	2010 - %
Coal	12	13
Hydro	10	11
Natural Gas	27	26
Nuclear	9	11
Oil	36	33

Renewables 6 5IEA  
comunique re:  
Persian Gulf crisis

The communique issued on June 3 following the meeting of the International Energy Agency Governing Board at the Ministerial level directed particular attention to the Persian Gulf crisis and the ensuing war.

- **Emergency Preparedness:** The Gulf crisis had tested and proved the value of the IEA's emergency response mechanism, and Ministers concluded that IEA members must pursue their efforts to reduce further their vulnerability to oil supply disruption in view of the rise in oil import dependence in the OECD region and the increasing dependence on oil from the Middle East.
- **Energy Security:** Ministers recognized that to achieve reduced vulnerability would require maintenance of diversified energy supplies worldwide, as well as improvements in energy efficiency and conservation.
- **Energy and the Environment:** IEA Ministers reaffirmed their strong commitment to develop integrated policies which furthered the objective of energy security, environmental protection and sustainable economic growth, addressing in particular the challenge that the issue of global climate change posed for the energy sector.
- **Non-Member Countries:** With half the world's energy consumption occurring outside the OECD area, the need for the IEA to develop expanded relations with these countries was stressed. Assisting non-OECD countries in the development, and where necessary, the restructuring of their energy systems would be mutually beneficial.

With its two new members - France and Finland, the IEA had a membership of 23 nations in 1991. The collective economic and energy security interests of the industrialized oil-consuming nations continued to be the IEA's main objective since its establishment in 1974.

IEA review of  
Canada's Emergency  
Response Programs

A report on Canada's Emergency Response Programs was made available on June 11 at a meeting in Paris of the IEA Standing Group on Emergency Questions. The review of Canada's energy emergency programs had been conducted in March 1990. The report on Canada was favourable. The review team had concluded that Canada is well prepared for severe oil supply disruptions of long duration with emergency procedures that are well-developed and tested. The very detailed development of allocation procedures and the associated documentation and training efforts were acknowledged. The review team noted Canada's readiness to contribute to the IEA response from the onset of the Persian Gulf crisis. The strong cooperative relationship between the industry, provinces and the federal government was also cited. However, concern was expressed about the complexity of the allocation programs, particularly the rationing program. The federal government was also encouraged to consider legislation which would force provinces to participate in an early demand restraint program. The most contentious area in the review team's suggestion was that the government review oil supply, demand and import prospects and analyze their impact on security of supply. The infrastructure of eastern Canadian supply, the closing of the Sarnia-Montreal pipeline and diminishing supplies of light crude oil were cited as reasons for encouraging development of government-controlled strategic oil stocks. This recommendation was made prior to the decision to develop the Hibernia oil resources offshore Newfoundland.

Sarnia-Montreal  
Pipeline future

On July 8 the National Energy Board report to the Minister of EMR in April was released, confirming the federal government's policy that markets should be allowed to work without excessive regulation and unnecessary government intervention. The report further noted that market conditions in 1991 were very different from those in 1976 when security of supply considerations were a major factor in the decision to build the Sarnia-Montreal pipeline. The decision made by the operators to discontinue west to east shipments of oil was based on commercial considerations. From 1976 to 1990, the federal government paid the total of \$150 million in deficiency payments to Interprovincial Pipe Line Company. Throughput in the Sarnia-Montreal section ranged from a start-up of 83,000 b/d in 1976 to a high of 309,000 b/d in 1979-1980. During the first quarter of 1991, throughput averaged only 31,000 b/d in a system with a design throughput of 340,000 b/d. In 1976, six refineries were operating in Montreal, with only two in operation by the end of 1985 with a combined capacity of 200,000 b/d. However, the pipeline was to remain available for use. Refilling it with 2.5 million barrels of crude oil would require a minimum of four weeks. Consideration was to be given to using the pipeline in a reversed mode to bring offshore crude oil to Ontario refineries.

Petroleum Monitoring  
Agency Report-1990

In July, the Petroleum Monitoring Agency report for 1990 showed that net income from total operations rose 81% to \$2.4 billion in 1990, and internal cash flow increased 10% to \$9.9 billion. Supply fears resulting from instability in Persian Gulf countries caused crude oil prices to rise sharply in the last 5 months on 1990. Capital expenditures increased 9% to \$8.6 billion. In addition to the increase in capital outlays, there continued to be considerable restructuring in the petroleum industry.

EMR Research  
Agreements Program

On July 31, EMR and the Natural Sciences and Engineering Research Council announced the award of \$2 million in research grants for 1991-92 under EMR's Research Agreements Program in support of 217 projects. About 46% of the funds were earmarked for projects related to mining and minerals, 42% for earth sciences projects some being related to energy resources, 7% directly for energy research projects, and 5% for surveying research. The Program established in 1972, continued to encourage the use of external expertise to support EMR research priorities and promote the exchange of information and innovative technology between the federal government and the private sector.

Hydro-Québec  
upstream facilities -  
NEB jurisdiction

In July, the Federal Court of Appeal considered the sections of the NEB Act relevant to the issuance of electricity export permits and found that the NEB's jurisdiction did not extend to Hydro-Québec's upstream production facilities and that the Board could not therefore impose licence conditions in respect of those facilities. The Court struck down the impugned conditions but ruled that the licences remained valid. The NEB had issued licences in 1990 with the licences

subject to the condition that any production facility required by the company to supply the authorized exports for which construction had not been authorized at the time of completion of the hearings would have been subjected to the appropriate environmental assessment and review procedures as well as to the applicable environmental standards and guidelines in accordance with federal government laws and regulations.

Low-level radioactive wastes	On <u>August 27</u> , the federal government announced its decision to complete the Cooperative Siting Process, begun in 1988, to find a site, with public acceptance, for a facility that would manage Canada's historic low-level radioactive wastes located in the Port Hope, Ontario area. A budget of \$22 million over four years was set for site assessments and related studies. During the completing of the Cooperative Siting Process, communities willing to consider hosting the facility would explore the technical, environmental and social impacts of receiving the low-level radioactive wastes.
NEB changes in Market-Based Procedure	In <u>August</u> , the National Energy Board proposed some changes to the way in which it applied the Market-Based Procedure with respect to the licensing of natural gas exports, and requested comments from interested parties on these proposals. The proposals were primarily intended to streamline the hearing process by ensuring that only those issues which were germane to the public interest would be addressed in public hearings. In addition, the Board clarified the way in which the Complaints Procedure was intended to work.
Westray coal mine opened	In <u>September</u> , the new Westray Coal mine opened in Pictou County, Nova Scotia, with a production capacity of about 1 million tons of low-sulphur thermal coal a year. Three-quarters of its output was to serve Nova Scotia Power Corporation's new 150-megawatt Trenton VI unit.
CANDU marketing - Romania, South Korea	In <u>September</u> , the Canadian government approved a \$315 million loan to Romania to enable the completion of construction on the Cernavoda 1 CANDU 6 nuclear reactor. Later, in December, Atomic Energy of Canada Limited received an invitation to bid on two additional CANDU 6 reactors for South Korea - Wolsong 3 and 4, which were scheduled to go into service in 1998 and 1999, respectively. AECL had signed the contract for Wolsong 2 in December 1990 and that CANDU 6 reactor was scheduled to go into service in 1997.
Saskatchewan nuclear energy review	On <u>September 20</u> , Atomic Energy of Canada Limited and Saskatchewan Power Corporation signed a Memorandum of Understanding (MOU) relating to the establishment of a nuclear industry in Saskatchewan, including the design and siting of a prototype CANDU 3. Activities under the MOU were put on hold in the fall of 1991, although AECL had established an office in the province. Over a six-month period in 1991, an independent panel conducted consultations on the province's energy options. The main recommendations in its preliminary report issued in November 1991 were to study current levels of energy efficiency, analyze the economic potential of demand-side management, and conduct a public review of nuclear generation for the province.
Uranium supply capabilities - 1990	On <u>September 23</u> , the results of the 1990 annual assessment of Canada's uranium supply capabilities was released. Canada remained the leading producer and exporter of uranium in 1990, total shipments under all export and domestic contracts being 9,500 Tonnes of uranium (tU), valued at \$870 million. At the start of 1991, total recoverable known uranium resources were estimated at 594,000 tU, up from 544,000 tU reported at the beginning of 1989. About 80% of Canada's production was being exported in the late 1980s and early 1990s to electrical utilities in the U.S., Japan, and Western Europe. As of January 1, 1991 forward commitments under Canadian export contracts exceeded 60,000 tU.
Canadian Energy Policy - A Framework for Review	An EMR reference paper, dated <u>September 3</u> , 1991, entitled "Canadian Energy Policy - A Framework for Review" provided an important record of energy policy deliberations in the early 1990s. Its purpose was to describe the political, economic and technological context which would affect the success of Canadian energy policy in the 1990s. It was to be used in the review of Canadian energy policy goals and approaches, and in assessing what changes, if any, were needed.

It was noted that the political and economic trends occurring in the world in the early 1990s presented for Canadian energy policy a very different set of conditions from those which the existing government faced when it took office in 1984, and the trends of the early 1990s were offering new problems and opportunities for policy. The 65- page paper undertook to describe in overview the major trends under the themes of Competitiveness, Security, Environment, National Unity, and Technology - in the belief that this would offer a useful framework for discussing change, and for commencing a critical evaluation of the existing policy. To assist in the energy policy deliberations, the paper discussed market trends and prospects for each of the Canadian energy commodities in the 1990s, and also the roles of energy efficiency and energy technology in Canada's energy scene.

Natural Gas Vehicle Refuelling Appliance Program

On October 2, the Minister of EMR launched the Natural Gas Vehicle Refuelling Appliance Program, a \$4 million program to further encourage use of natural gas as a transportation fuel. Under the program, the federal government was to contribute a \$1500 package for conversion of a vehicle - cars, trucks buses - to natural gas and the installation of a vehicle refuelling appliance (VRA). Each payment was to include a \$500 vehicle conversion grant, available through the existing Natural Gas Vehicle Program, and a \$1000 payment towards the purchase and installation of a vehicle refuelling appliance under the Vehicle Refuelling Appliance Program. The vehicle refuelling appliance was considered to be at the forefront of natural gas refuelling technology, with a large potential for a world-wide market.

Power Smart Inc.

An agreement finalizing the Government of Canada's support of Power Smart Inc. was signed on October 28. It had 15 member utilities in Canada and 5 in Czechoslovakia using Power Smart programs. Under the agreement, EMR planned to participate in a variety of energy efficiency initiatives which Power Smart was spearheading across Canada, with the support being provided through EMR's Demand Side Management Initiative. DSM was providing utilities with another tool to meet energy demands for customers, with both economic and environmental benefits.

National Energy Efficiency and Alternative Energy Act

On October 29, the Minister of Energy, Mines and Resources tabled the National Energy Efficiency and Alternative Energy Act in the House of Commons. The legislation, when approved, made provision for EMR, in consultation with industry and the provinces, to establish minimum energy efficiency regulations for specified equipment that was imported or traded between provinces, in order to remove the least energy efficient equipment from the market. Regulations were to be developed for household appliances and other equipment such as air conditioners and furnaces. As a cornerstone of a broader program - the Efficiency and Alternative Energy Program - the Act was designed to promote the sound management of energy use in Canada and facilitate activities in support of alternative energy. Development and enforcement of federal standards was to take into account energy efficiency regulations then existing in other jurisdictions. The existing Energuide appliance labelling program was to be improved and expanded to other types of equipment. The Act also enabled the development of a National Energy Use Database, integrating existing sources of data on energy consumption and developing new sources. The database was to cover energy consumption in all energy sectors and allow for the exchange of information between the federal government, the public and stakeholders.

Uranium market outlook - low prices

In October, the Nuexco-Exchange Value (EV) fell to U.S. \$7.75/lb of U<sub>3</sub> O<sub>8</sub>, an all-time low in constant dollar terms for uranium. Excess uranium supply prevailed in 1991 as inventory surpluses persisted, despite mine closures and output cuts globally. At the same time, new sources of uranium were emerging, mainly from the former Soviet Union Republics. Given the depressed state of the uranium market which had deteriorated throughout the 1980s, it was anticipated that new production capacity in Canada could be deferred to the late 1990s if prices did not recover. It was also apparent that all new uranium mining projects would undergo intensive public scrutiny as governments responded to societal concerns that the environment must be protected.

Oil and Gas Acquisitions Policy

In a public statement on October 2, the Minister of EMR in referring to foreign investment policy as it related to the oil and gas industry, included a description of the Oil and Gas Acquisitions

Policy, as then administered:

- the target of achieving 50% Canadian ownership of the upstream oil and gas industry was still in force;
- the thresholds for review remained at \$5 million for direct and \$50 million for indirect acquisitions;
- establishment of new businesses required notification only, and was not subject to review;
- sales to foreigners of Canadian-owned upstream businesses was disallowed, except in cases of clear financial distress; and
- sales of foreign-owned businesses to foreigners would normally be allowed subject to Canadianization and reinvestment commitments.

The policy was designed to strike a balance between increasing Canadian ownership of the upstream industry, and allowing industry flexibility to respond to market conditions.

Hibernia Project  
Financing  
Agreements

On November 22, announcement was made of agreements concluded between each of the major players in the Hibernia offshore oil development project which might ultimately result in commercial banks participating in the project's financial risks. The agreement provided that, if the Hibernia project meets certain income criteria after production begins, 25% of the debt guarantee - up to a maximum of \$415 million - may be replaced by project financing provided by the Canadian Imperial Bank of Commerce-led syndicate. The Government of Canada would continue to provide its guarantee for the remainder of the project debt. The agreements reached were in line with the Government of Canada's policy, when providing loan guarantees, to insist on provisions whereby the risk to the government as guarantor of project debt is reduced and transferred to private sector lenders, if certain conditions are satisfied.

Green Plan  
initiatives: Buildings  
Energy Efficient  
Program

On November 22, a series of initiatives aimed at encouraging a more efficient building industry in Canada were announced. The initiatives centred on five items from the Green Plan: Building Energy Code; Building Information Transfer; R-2000 Partnerships; Buildings Research, Development and Technology Transfer; and Federal Buildings Initiative. The Buildings Energy Efficient Program was an important component of the new Efficiency and Alternative Energy Program announced in the Green Plan on December 22, 1990. The Program was designed to establish guidelines for energy efficient construction standards for new buildings, accelerate the building industry's adoption of more energy-efficient technologies, strengthen EMR's support for the R-2000 super-energy-efficient home building program, and assist research efforts and the development of promising energy efficient technologies.

Hydrogen utilization  
in bitumen upgrading

On November 26, a joint project "Hydrogen Utilization in Bitumen Upgrading", to study the use of hydrogen to refine transportation fuels from the oil sands, was announced by the Governments of Canada and Alberta and The Oil Sands Task Force of the Alberta Chamber of Commerce. The project to be conducted by CANMET was designed as a first step toward a more efficient use of hydrogen in heavy oil upgrading. The purpose of the study was to examine how hydrogen reacts with heavy oil in the oil sands upgrading and refinery process, with the long-term objective of increasing product quality without increasing hydrogen consumption.

Environmental  
Education Program

On November 27, the Government of Canada announced its funding support in the amount of \$400,000 of the Sustainable Development Education Program. The program was a cooperative project of private industry, environmental and education interest groups, governments, and the Conference Board of Canada to develop and distribute a wide range of curriculum materials designed to educate young Canadians about environmental and economic issues. The federal participation included EMR, the Department of Environment, the Department of Industry, and the Department of International Trade.

Energy Environment  
Externalities

The Proceedings of a November 20 seminar, sponsored by the International Association for Energy Economics on the theme "Energy Environment Externalities - Integration into the

Economic System”, provided a useful record of views in eight papers by specialists on the topic who directed attention to the following matters:

- what are energy environment externalities?
- why are they important?
- how can the problem be resolved through regulation and/or market instruments?
- what challenges do externalities pose for decision-makers in terms of measurement, disruption of the market place, distribution of costs, regional considerations, and jurisdiction?

Uranium further-processing requirement ended

In December, the Minister of EMR informed the uranium industry that the further-processing component of Canada’s uranium export policy would be phased out, thereby bringing it into closer conformity with the government’s commitment to free trade. All new export contracts reviewed by the federal government after December 15, 1991 would not be subject to the further-processing requirement. For existing contracts, the further-processing requirement remained in place until December 31, 1995, after which time the requirement was to be totally eliminated.

Interprovincial trade in electricity

By December, the National Energy Board had completed the first phase of its review, undertaken at the request of the Minister of EMR, to identify and examine the measures that could be developed to enhance interprovincial trade in electricity, encourage greater cooperation between electrical utilities, and enable buyers and sellers of electricity to have commercial access to available transmission capacity through intervening provinces for wheeling purposes. During 1991, the NEB prepared several reports to provide a better understanding of the critical issues involved. The reports were made available to provincial authorities and utilities for comment.

Energy supply and demand trends in 1991

Based on the record available at the end of December, results for 1991 showed that a strong increase in net energy exports more than offset a decline in domestic energy consumption, resulting in higher production in 1991 compared to 1990. On January, 16, 1991, the first day of Allied bombing of Iraq, following that country’s invasion of Kuwait in late 1990, the WTI spot price of crude oil reached its peak for the year at U.S. \$32.00 per barrel but by January 31 the price had fallen to U.S. \$21.55 and over the remainder of 1991 it averaged between \$19.50 and \$23.00 on a monthly basis. Primary energy consumption in Canada in 1991 was 0.7% below the 1990 level, with petroleum product consumption dropping more than 5%, natural gas demand virtually unchanged, while hydroelectricity and nuclear power consumption rose by 3.8% and 16.3%, respectively. Exports of crude oil and petroleum products were up 14.6% and export revenues totalled \$9.6 billion, while import costs declined by 23% to \$5.2 billion. In 1991, gas export volume increased by 16% over 1990, continuing the rising trend which began in 1986. Net export revenues increased from \$3.2 billion in 1990 to \$3.5 billion in 1991, but the average gas export price declined from \$2.11 to \$1.99 per gigajoule. The volume of electricity exports rose by more than 20% to 71 petajoules, thereby reversing a declining trend that had begun in 1987. Electricity exports had a value of \$557 million.

Oil and gas field activity trends in 1991

Oil and gas exploration activity results available at the end of December for 1991 showed a slight decline from 1990 because of continuing uncertainty about future oil prices, low gas prices due to persistent oversupply, declining cash flows and more attractive opportunities overseas. Canadian oil and gas spending at provincial and federal sales totalled \$384 million, the lowest amount since 1986 and down 36% from the \$600 million level in 1990.

Oil and gas reserves-1991

The remaining established reserves of crude oil as at December 31, 1991 were 676.4 million cubic metres, down slightly from the 1990 year-end total of 688.3 million cubic metres. Crude bitumen reserves, for developed projects only, were 501.7 million cubic metres compared with 524.4 million cubic metres a year earlier. Estimated established reserves of marketable natural gas at the end of 1991 totalled 2,280 billion cubic metres, up slightly from 2,262 billion cubic metres a year earlier.

Coal supply and

Results to the end of December showed that the year 1991 was one of improvements for the



demand trends in 1991	<p>Canadian coal industry. International demand grew, resulting in a record year for total Canadian coal exports. Overall production and consumption increased while imports fell. Production of thermal coal increased to 42.1 million tonnes in 1991 over 40.7 billion tonnes in the previous year. Imports declined and domestic consumption amounted to 45.4 million tonnes, up from 44.0 million tonnes in 1990. Canadian thermal coal exports also increased to 5.3 million tonnes, from 4.1 million tonnes in 1990 in response to demand from the Asian-Pacific region and certain European countries. However, an assessment prepared by the B.C. government concluded that coal producers were still not making adequate returns on investment.</p>
Alternative energy initiatives in transportation	<p>On <u>December 4</u>, the Minister of EMR announced a set of initiatives to improve the performance and expand the availability and use of alternative transportation fuels technologies. The new initiatives followed from the Energy Efficiency Act tabled in Parliament on October 29 and the buildings-related energy efficiency measures announced on November 22. The new initiatives focussed on alternative transportation fuels technologies and market development; and alternative transportation fuels research and development. These initiatives were taken in recognition of the fact that, in the pursuit of balanced economic and environmental energy goals, long-term solutions demanded the development of more energy options and eventual widespread use of alternatives. Accordingly, there was need to expand alternative energy technologies in transportation.</p>
Canada Petroleum Resources Act- Royalty Regulations, frontier energy policy	<p>On <u>December 12</u>, new royalty regulations under the Canada Petroleum Resources Act became effective, to replace interim regulations that had been in place for several years. The regulations represented the final element in the federal government's frontier energy policy. The royalty regime applied to hydrocarbon developments in offshore and onshore areas of federal jurisdiction that were not then subject to joint management agreements. The Government of Canada frontier energy policy was announced in 1985 with the release of "Canada's Energy Frontiers: A Framework for Investment and Jobs". The royalty structure begins with a one per cent royalty on gross revenue, increasing by one per cent every 18 months to a maximum of five per cent until project payout, after which the royalty rises to 30% of net revenues or 5% of gross revenues, whichever is greater. Payout is reached when cumulative project revenues exceed payout costs. Prior to payout, there is a one per cent allowance for capital costs and a ten per cent allowance for operating costs to compensate for expenses not specifically allowed for in the regulations. In addition, a 25% investment royalty credit, applicable to frontier exploration well costs equal to or less than \$5 million, was to be made available for new exploration wells, with the credit to be applied against royalties otherwise payable from frontier production.</p>
IEA 1991 review - Canada's energy policy	<p>Following its in-depth review of Canada's energy policy in 1991, as completed in <u>December</u>, the following recommendations were recorded in its official report in which it noted that Canada had made major changes in its energy policy over the preceding several years but there remained areas where the federal and/or provincial and territorial governments needed to focus additional efforts:</p> <ul style="list-style-type: none"> <li>• continue to pursue a market-oriented energy policy with a view to enhancing the overall efficiency of the energy sector and benefits to consumers;</li> <li>• relax the policy restricting foreign ownership in the oil and gas industry to enhance investment opportunities and to increase competitiveness;</li> <li>• critically review and assess the role and effectiveness of federal and provincial funding of megaprojects and its possible effects on energy markets and trade, and weigh the benefits of alternative uses of such financial commitments;</li> <li>• strengthen cooperation among all levels of government in formulating and implementing energy and environmental goals;</li> <li>• pursue the integration of energy and environmental goals through a variety of coordinated actions, placing emphasis on improving energy efficiency and cleaner use of fuels;</li> <li>• monitor and critically evaluate the result of energy efficiency programs and if these information-based programs, which are being carried out in a period of low prices, prove insufficient to meet energy and environmental objectives, the Government should</li> </ul>

- implement additional measures;
- ensure that there is national leadership in establishing efficiency levels for equipment and appliances, and in the coordination of energy efficiency objectives in transportation policy for infrastructure planning and vehicle fuel efficiency;
- encourage structural change and increased market orientation in the electricity sector, and encourage interprovincial electricity trade;
- review natural gas permit regulations and practices, and relax elements that impede market competition;
- continue cost-effective support to AECL's R&D and engineering activities to maintain the nuclear power option, and ensure that AECL's commercial engineering activities are operated on a cost recovery basis;
- maintain funding for PERD and other federal and provincial R&D programs; and
- balance support to the federal R&D program to sustain long-term strategic options that help assure Canada's future energy security, in addition to supporting near-term technology commercialization.

House of Commons  
Report on Climate  
Change

In December, the House of Commons Standing Committee on the Environment released a report entitled "The Risks of Irreversible Climate Change" (105 pages) based on hearings completed in March 1991. The report focused on three main premises: global warming has been proved scientifically; it is an inevitable and continuing consequence of past and present patterns of human activity; and it represents a severe threat to both Canada and the planet as a whole. The report presents the basic issues, policy considerations, and strategy for the 1990s to achieve targets for emission reduction. It also considers what has to be done to stabilize greenhouse gas emissions at a sustainable level by the year 2050.

## THE YEAR 1992

Overview: At the G-7 Summit in Vancouver, Canada agreed to support the Russian reform process. Subsequently, the Minister of EMR announced an initiative to share with the Russian government the Canadian experience in petroleum resource management. A Canadian delegation, led by EMR, visited Moscow later in the year to assess Russian needs so that a project proposal and funding requirements could be ascertained.

In its February 25, 1992 Budget, the federal government reduced the manufacturing and processing tax rate by one percentage point, to 22 percent, effective January 1, 1993 to be followed a year later with an additional percentage point reduction. In addition, the capital cost allowance rate for manufacturing and processing equipment was increased from 25 to 30 percent.

The government issued an economic statement in December, 1992, that permitted the first \$2 million of Canadian Development Expense (CDE) to be reclassified as Canadian Exploration Expense (CEE) if renounced to shareholders under a flow-through share agreement. This initiative was intended to improve the access to capital of small oil and gas exploration companies. The economic statement also removed the mandatory minimum CEE deduction for principal-business corporations.

Deferral of Ontario  
Hydro expansion  
plans

In January, Ontario Hydro's demand/supply update resulted in a substantial deferral in the Aneed" for new base-load capacity and indicated a surplus generating capacity of about 5,000 MWe in the mid-term. Later in the year, in October, Ontario Hydro's Board of Directors approved a plan which reduced capital expenditure by more than \$7 billion over the following 10 years, the capital cost reduction to be realized by deferring planned generation and transmission projects and implementation of energy management programs. The review continued into 1993.

Photovoltaic solar  
system

On January 25, EMR signed a \$1 million agreement with the Ontario Ministry of Energy, Ontario Hydro, and the Hugh MacMillan Rehabilitation Centre to install a solar energy system on the roof of the Centre in North York, Ontario. The 100 kilowatt photovoltaic (PV) solar system was Canada's largest working test centre for photovoltaics. The system would reduce electricity demand at the Centre, especially during summer months when the Centre's summer demand exceeds its winter demand by as much as 40%. As this was typical for large low-rise buildings such as industrial complexes and shopping malls, photovoltaics were being regarded as a viable way to offset the strain on power distribution systems during the summer.

Natural gas trade  
dispute between  
Canada and California

On January 30, announcement was made of a "Statement of Principles" which established a basic framework for future natural gas trade between Canada and California. The Agreement was considered as an important step toward resolving the existing natural gas trade dispute between Canada and California. Six principles set out in the Agreement demonstrated that there was common ground for a mutually acceptable resolution to the dispute, but the Agreement was contingent on satisfactorily addressing outstanding transition issues. Under the umbrella of the Canada-U.S. Energy Consultative Mechanism and the related Natural Gas Trade Talks, the federal governments of Canada and the United States, the provinces of Alberta and British Columbia, and the California Public Utilities Commission (CPUC), a series of discussions to address the existing natural gas trade dispute were being conducted. The dispute had culminated with a decision by the CPUC on November 6, 1991 containing several elements (unacceptable to the Canadian gas industry) which would break long-term contracts with Canadian companies supplying natural gas to customers in the State of California. Canadian producers had made significant investments to meet their obligations under the contracts which had to be recognized in any changes to the existing commercial relationship. The parties agreed that in principle the future gas market would be characterized by multiple buyers and sellers of natural gas; aggregators not being precluded from either the demand or supply sectors; open access pipelines; a non-discriminatory system of capacity brokering; transactions between buyers and sellers occurring at various market centres determined by commercial agreements and for transportation contacts; and a stable and reasonable

regulatory environment.

Advanced Houses Program

On February 3, the Minister of EMR announced the upcoming construction of a series of Advanced Houses across Canada, to be the most energy-efficient and environmentally responsible homes in Canada. Advanced Houses, built to stringent requirements, were designed to use one-quarter of the energy of conventional homes, reduce water consumption by one-half, and address issues such as reduced CO<sub>2</sub> production and the greater use of renewable resources to decrease environmental impacts of housing. It was expected that many of the innovations, once proven through the Advances Houses Program, would be incorporated into the R-2000 Program, Canada's national initiative aimed at improving the energy efficiency of new homes. The Advanced Houses Program and the R-2000 Program, both managed by EMR, were part of the federal government's commitment to the environment under the Green Plan. Later in the year, on September 11, General Electric Canada Ltd., and Camco Inc. entered into an agreement with EMR whereby the two companies offered to supply 11 Advances Houses in Canada with the most energy efficient domestic appliances and related equipment. G.E. was to donate its products, lighting motors and time-of-use metres for the monitoring phase of the Green plan, and Camco was to provide energy-efficient appliances for the Advanced Houses Program.

Canada Oil and Gas Operations Act

On February 20, the Minister of EMR introduced into Parliament amendments to the Oil and Gas Production and Conservation Act. The amendments addressed the remaining recommendations of the Royal Commission on the Ocean Ranger Marine Disaster. Since 1988, the Government of Canada had carried out extensive consultations with the East Coast Accord provinces, Territorial governments, the Offshore Petroleum Boards, and the petroleum industry on the initiatives introduced in the amendments designed to ensure that consistent safety standards were in place for the oil and gas industry across frontier lands. Appropriate amendments were also made to the Canada Petroleum Resources Act and to the East Coast Accord Implementation Acts. Following proclamation of the bill, the Oil and Gas Production and Conservation Act was to be re-named the Canada Oil and Gas Operations Act. The Act was assented to 23<sup>rd</sup> June 1992 and proclaimed on 2<sup>nd</sup> September. The purpose of the Act is to promote, in respect of the exploration for, and exploitation of oil and gas:

- safety, particularly by encouraging persons exploring for and exploiting oil or gas, to maintain a prudent regime for achieving safety;
  - the protection of the environment;
  - the conservation of oil and gas resources; and
  - joint production arrangements.
- (Ch. 35 Statutes of Canada 1992 Vol 1)

Natural gas deregulation process

In February, an appraisal of the natural gas deregulation process indicated major progress since the October 31, 1985 implementation of the Agreement on Natural Gas Markets and Prices, a federal-provincial agreement that committed both levels of government to the phased deregulation of gas. Over the period from the early 1960s to the mid-1980s, the natural gas industry in Canada had been increasingly regulated. There were price controls on wellhead production, federal and provincial regulation of the gathering, transmission and distribution pipelines, and regulation of export volumes and prices by the Natural Energy Board. A consensus had emerged that controls should be reduced, leading to the October 1985 Agreement. Specific actions subsequently taken included the relaxation and reform of export regulations, the removal of wellhead price controls, the reform of pipeline regulation to distinguish between transportation and marketing functions, and the freeing up of pipeline capacity to leave more room for natural gas sales by producers and direct marketers. In 1992, the movement towards a more competitive natural gas market was still continuing. There remained questions as to whether producers had full access to a diverse set of markets and whether consumers had full access to a diverse set of supplies.

Uranium and nuclear energy industry-1992

As of March 31, there were 20 nuclear power reactors with a licence to operate in Canada and a total capacity of 13,310 Mwe: 4 Bruce A and 4 Bruce B reactors near Kincardine; 4 Pickering A and 4 Pickering B reactors near Toronto; 2 at Darlington near Bowmanville, Ontario; one at

Gentilly near Trois-Rivières, Québec, and one at Point Lepreau near St. John, N.B. In addition, 2 reactors at Darlington were at an advanced stage of construction and commissioning. There were 9 mine facilities operating in Canada—one in Labrador, 2 in Ontario, 5 in Saskatchewan, and one in NWT. The depressed market for uranium had resulted in further production cutbacks in the Ontario uranium mines at Elliot Lake. Four mines were being decommissioned in Ontario and 2 in Saskatchewan.

High-level reactor wastes disposal

The panel set up in accordance with the Federal Environmental Assessment and Review Process Guidelines Order, to carry out a public review of a concept for disposal of high level wastes deep in rock formations, issued Environmental Impact Statement Guidelines (EIS) in final form in March 1992. The panel's review is expected to continue for several years.

AECL's 40<sup>th</sup> Anniversary Year

The year ending March 1992 marked Atomic Energy of Canada Limited's 40<sup>th</sup> anniversary. In 1952, when AECL was created as a Crown corporation, Canadian scientists were already prominent in nuclear research. They had built the first reactor outside the U.S.A.; had constructed and operated a second reactor, the National Research Experimental (NRX) research facility; and had begun work on an even more powerful research reactor, the National Research Universal (NRU). Two years later, AECL joined with Ontario Hydro and Canadian General Electric to construct Canada's first CANDU Nuclear Power Demonstration plant, a small electricity-generating unit at Rolphton on the Ottawa River. With the success of that plant and a larger commercial prototype, the CANDU program had grown by 1992 to include 33 units - in operation or under construction - in six countries. The AECL reported in 1992 that it had established a goal with the objective of obtaining at least 10 new CANDU orders within the following 5 years ending in 1996. The company noted that many spin-off technologies had resulted from its national laboratories' work, including cancer therapy machines, sterilizing technology, air and water pollution detectors, small reactors and radioisotopes.

Ontario Hydro Western Canadian coal purchases

On March 13, Ontario Hydro announced that it would continue purchases of Western Canadian coal, although at lower volumes and prices. It signed two three-year contracts to replace the 15-year-old agreements that were to expire at the end of 1992. Luscar Ltd., an existing supplier, and CNR, were to supply and transport 1.2 million tons a year from Luscar's Coal Valley, Alberta mine. Fording Coal Limited, a new supplier, and CP were to supply and transport 300,000 tons from Fording's mine in southeast B.C. In addition to significant cost reduction, the low-sulphur Canadian coal, competitive with U.S. supplies, would help Ontario Hydro reduce acid gas emissions and meet its emission limits. The agreements, which were flexible enough to allow for extensions, ensured that one-third of Ontario Hydro's coal supplies would continue to originate from Western Canada.

Foreign investment in the oil and gas industry-new rules

On March 25, the Minister of EMR announced new rules for foreign investment in the oil and gas industry. There was no longer to be a requirement to ensure Canadian ownership of 50% of the upstream oil and gas industry through the Oil and Gas Acquisitions Policy. For U.S. investors, the threshold triggering Investment Canada review of direct oil and gas acquisitions was raised to \$150 million, the same threshold applying to other sectors under the Free Trade Agreement. Thresholds applying to all other foreign investors remained at \$5 million for direct acquisitions and \$50 million for indirect acquisitions. In 1985, the federal government had retained the goal of 50% Canadian ownership in the upstream portion of the oil and gas industry. The Oil and Gas Acquisitions Policy has been one of the primary instruments to help achieve Canadianization targets. However, as a result of the 50% policy goal, the ability of the Canadian-controlled company to rationalize its holdings of petroleum properties had been restricted and the ability of those companies to raise funds for exploration by selling properties was affected by the policy. Largely as a result of lower than expected oil and gas prices, profitability levels had been very low compared to most other sectors. Capital investment levels had not been high enough to prevent the loss of about 9000 jobs in the oil and gas industry since 1989. It was concluded that the existing policy was impeding growth of the industry and, consequently, the target of achieving 50% Canadian ownership was abandoned. Canada continued to have control over the production,

transportation and trade of its energy resources through federal and provincial regulatory agencies. It was concluded that allowing the sale of Canadian assets to foreign investors would enable companies to rationalize and achieve lower costs, thereby having the immediate impact of decreasing operating costs and making Canadian producers more competitive. The Government of Canada believed the Canadian oil and gas industry was mature enough to compete on international terms at home and abroad. Later in the year, on December 10, the Ministers of Energy, Mines and Resources and of Indian Affairs and Northern Development announced the tabling in Parliament of the Canadian Ownership Requirement Repeal Bill designed to remove the minimum 50% Canadian ownership requirements for production licences on frontier lands. The Bill made provision for amending three pieces of federal legislation : the Canada Petroleum Resources Act, the Canada-Newfoundland Atlantic Accord Implementation Act and the Canada-Nova Scotia implementation Act.

#### PERD funding

Panel on Energy Research and Development (PERD) funding for the year ending March 1992 was maintained at \$90 million to afford stability to R&D efforts. The program's eight activities, in order of funding, were:

- oil, gas and electricity - \$18 million;
- energy efficiency - \$14.8 million;
- fusion - \$12.8 million;
- hydrocarbon enhancement and heavy oil - \$12.7 million;
- renewable energy sources and environment - \$10.8 million;
- clean coal technology - \$10.2 million;
- alternative transportation fuels - \$8.6 million; and
- international coordination - \$2.1 million.

#### Demand Side Management Programs

Effective April, through a cooperative initiative between EMR and the Canadian Gas Association (CGA), access information on Demand Side Management (DSM) became available in the form of information brochures, and a detailed list of DSM programs by category and company on a computer diskette as well as a printed version of the list. In 1990, the CGA had formed a DSM Working Group with EMR officials and representatives from the natural gas industry. The Working Group surveyed Canadian Electrical Association members to determine the number and scale of DSM programs in use. The DSM programs in operation were designed to encourage energy efficiency improvements, the selection of the most efficient energy source for the use intended, and improvements in operating efficiency of transportation and delivery systems.

In April, the Minister of EMR visited Moscow and announced the Legislative and Regulatory Initiative of resource management advice to the Russian government.

#### Westray coal mine explosion

On May 9, Curragh Inc.'s Westray mine in Pictou County terminated production following an explosion, with loss of life. During the year there were two other mine closures in Nova Scotia. The Evans Coal Mine Ltd. Mine closed following a fire and subsequent flooding, and the Cape Breton Development Corporation's Lingan mine was sealed off due to flooding. The Lingan mine had been scheduled to close in 1993.

#### New Energy Efficiency Green Plan Initiatives

On May 11, four new Green Plan initiatives were announced: the establishment of a Minister's Advisory Council on Industrial Energy efficiency; Enhanced Support for Canadian Industry Programs on Energy Conservation; Industrial Targeted Research and Development; and Energy Innovators Ventures. The Minister's Advisory Council, including leaders from all major energy-consuming industrial sectors in Canada, would help stimulate the development and implementation of private sector initiatives to set and achieve new energy efficiency targets, and contribute to the development of government policies pertaining to energy efficiency, alternative energy, and energy-related environmental problems. The mission of the new Canadian Industry Program on Energy Conservation was to support industrial competitiveness by improving the efficiency of energy consumption and the economic management of energy-related problems. The new Industrial Targeted R&D initiative would keep industry in the forefront of emerging energy

efficiency technologies through EMR's CANMET in partnership with key stakeholders in Canada's industrial sector. The Energy Innovators Ventures was to be a voluntary corporate leadership program to encourage Canadian corporations, cities and town to implement innovative efficiency and alternative energy technologies to reduce energy-related emissions in an economically-feasible manner.

AECB 1946-1974 records

In May, the final step was taken on an information initiative begun in 1985. A review of historic Atomic Energy Control Board minutes for the period 1946-1974 was completed, and they were added to the public documents collection at the AECB Ottawa office. The review was necessary because the Board has statutory responsibilities for protecting certain information.

NWT plebiscite towards self-rule

On May 4, the residents of the Northwest Territories voted in a plebiscite by a 54% majority to approve a western boundary for an Inuit-controlled domain called Nunavut, thereby starting a process to divide lands between the Inuit and the Dene peoples, some 17,500 in the NWT being Inuit living in the Eastern Arctic. The discovery potential for uranium deposits within Nunavut meant that this latest step toward Inuit self-government would be followed with interest by the uranium industry. The final step to self rule was scheduled for 1999.

Russia-Canada MOU on atomic energy

On May 25, the Minister of Energy, Mines and Resources Canada and the Russian Minister of Atomic Energy signed a Memorandum of Understanding to expand and strengthen mutually beneficial cooperation for peaceful uses of atomic energy. The parties agreed on the following basic areas of cooperation: reactor safety, development of district heating reactors, nuclear waste storage technologies, development of the nuclear fuel cycle, plant decommissioning, nuclear applications in medicine and agriculture, irradiation processes, and exchange of information on questions of medical radiology.

Russia-Canada cooperation in the petroleum sector

In a May 25 address in Moscow, the Minister of Energy, Mines and Resources Canada noted that Canadian industry, building on some 15 years of involvement in the Russian oil and gas sector, had close to a dozen cooperative ventures in Russia. Through those joint ventures, Canadian firms were introducing specialized knowledge and expertise for operating in cold weather on muskeg and permafrost, for sour gas processing, horizontal drilling, and for rehabilitation of existing long-distance pipelines. More than 100 Canadian petroleum specialists were working in Russia on a rotation basis to provide field management and enhanced recovery services. The work of these specialists was helping to increase domestic oil and gas supply and Russian exports.

Russian-Canadian Joint Declaration on Oil and Gas

On May 29, the Canadian Minister of Energy, Mines and Resources and the Russian Minister of Fuel and Energy signed a Joint Declaration to provide for annual consultations on oil and gas issues between officials of the two countries. The Joint Declaration was to provide for discussions on resource management regimes and contribute to the revitalization of Russia's petroleum sector while helping create more business opportunities for Canada firms operating in Russia.

Canadian Environmental Assessment Act

The Canadian Environmental Assessment Act, which had been reintroduced in Parliament in 1991, received Royal Assent on June 23, 1992. It requires an environmental evaluation of projects that receive federal financial assistance, that are on federal land or for which the Government of Canada is the decision maker. The purposes of the Act:

- to ensure that the environmental effects of projects receive careful consideration before responsible authorities take actions in connection with them;
- to encourage responsible authorities to take action that promotes sustainable development and thereby achieve or maintain a healthy environment and a healthy economy;
- to ensure that projects that are to be carried out in Canada or on federal lands do not cause significant adverse environmental effects outside the jurisdiction in which the projects are carried out; and
- to ensure that there be an opportunity for public participation in the environmental assessment process.

(Statutes of Canada 1992 Vol. 1 Ch. 37).

The legislation makes provision for the Canadian Environmental Agency to advise and assist the Minister of the Environment in performing the duties and functions conferred on the Minister by the Act.

- Energy Efficiency Act      An Act respecting the energy efficiency of energy-using products and the use of alternative energy sources, cited as the Energy Efficiency Act, was assented to on June 23, 1992. The responsible Minister is the Minister of Energy, Mines and Resources (now Natural Resources Canada). Part I of the Act is concerned with energy using products; Part II with the promotion of energy efficiency and alternative energy sources, and Part III covers matters of general application including regulations and offences and punishment under the Act. Part I includes conditions concerning trade in energy-using products, requirements concerning testing, maintenance of documents and record, inspection rights and procedures, and law enforcement procedures to ensure energy efficiency standards in respect of an energy-using product. Part II sets out the powers of the Minister in promoting the efficient use of energy and the use of alternative energy sources. The Governor in Council may make regulations requiring prescribed persons to file with the Minister a report: setting out prescribed statistics and information respecting the value, quantity, type and use of energy, including alternative energy purchased, consumed or sold by that person; together with expenditures on research, development, acquisition and related technology; and information concerning the sales of prescribed energy-using products or classes of energy-using products. Part III of the Act describes the nature of regulations that may be made under the Act, and defines offenses under the several sections of the Act, and punishment related to violation of the terms of these actions. The Minister is required to submit a report to Parliament at the end of each fiscal year on the administration and enforcement of the Act for that year. (Statutes of Canada 1992, ch. 36)
- Cohasset Development Project- N.S. Offshore      The opening ceremony for the Cohasset Development Project, offshore Nova Scotia, took place on June 6. The field was developed by LASMO PLC and its partner, Nova Scotia Resources Limited. The oil production being initiated from the Cohasset fields had followed from plans made many years before by the company. To the time of initial production, there had been over \$200 million in oilfield development expenditures which had generated 300 jobs. The \$200 million Canada-Nova Scotia Development Fund had been established to support the development of offshore infrastructure.
- Framework Convention on Climate Change - Rio Earth Summit      Canada was one of 150 countries to sign the Framework Convention on Climate Change in June 1992 in Rio de Janeiro. Later in the year, on December 4, Canada formally ratified the Convention and also the Biodiversity Convention. The objective of the Framework Convention on Climate Change, as stated in Article 2 of the Convention, is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". Principles of the Convention, as stated in Article 3: "The parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost." As a first step in its obligations under the Framework Convention on Climate Change, Canada was continuing to implement the country's 1990 Green Plan commitment to stabilize emissions of carbon dioxide and other greenhouse gases at 1990 levels by the year 2000. At the Earth Summit in Rio, the world community set new goals and standards for sustainable development. It was Canada's intention to update the Green Plan to reflect these changes. It was also intended to produce Canada's National Action Strategy on Global Warming in 1993.
- Report on natural gas deregulation      In a public statement given on June 3, the Chairman of the National Energy Board provided an assessment of natural gas deregulation in Canada noting that the market was working for producers and consumers of Canadian gas; that this experience could provide a policy template for other



jurisdictions; but that the necessity for some regulation of the gas industry to continue should not be allowed to frustrate the freest possible operation of the market. It was further noted that:

- The Canadian gas market has been substantially deregulated over the past 6-7 years, from comprehensive regulation to a situation where buyers and sellers are free to determine prices and other contractual terms on the basis of good-faith negotiations.
- This has been achieved by Canadian governments, regulators, producers, pipelines, distribution utilities and end-users responding positively to the new market-based policy framework.
- Not all players have been affected equally: producers have lost ground, consumers have benefitted enormously, the value of gas-producing assets has fallen, new business opportunities have appeared for brokers, and the transmission industry has grown rapidly.
- The Canada-U.S.A. common gas market is functioning within the framework of 56 regulatory jurisdictions which, while properly regulating natural monopolies and safeguarding the public interest, should interfere as little as possible with the free working of the market.
- The National Energy Board puts its faith in markets to equilibrate supply and demand and this is reflected for example in its gas export approval process.
- Regulators should define the "Rules of the road" in advance, provide for transition in the event of change, and generally avoid interfering with commercial choices made in an unbiased negotiating environment.

Ontario Hydro  
Uranium supply  
requirement

In July, Ontario Hydro issued a request for proposals for the supply of uranium concentrate covering its long, medium and short term requirements. Consideration was to be given to proposals from companies having ownership in uranium mining properties in Canada, the U.S., Australia and Namibia, with the companies to have substantial ore reserves and established production operations or assured ability to operate. Ontario Hydro expected it would require between 1200 and 1300 tU for the year 1996, and between 1600 and 1700 tU annually thereafter until the year 2002.

IPL Sarnia-Montreal  
pipeline extension

On July 6, the Interprovincial Pipe Line Company reactivated its Montreal Extension as a result of new nominations for Montreal refinery delivery service by the Alberta Petroleum Marketing Commission. The Sarnia-Montreal pipeline had been deactivated in 1991 due to lack of oil nominations by Montreal refiners.

World Energy  
Council North  
America Report

In July, the North America Regional Report was published by the World Energy Council as part of the Council's international study "Energy for Tomorrow's World-the Realities, the Real Options and the Agenda for Achievement." The study was initiated at a Congress of the World Energy Council in Montreal in 1989 and the findings announced at the Council's Congress in Madrid in 1992, with the full report comprising the results of 9 regional studies being published in 1993. The purpose of the world study was to represent the global energy sector, its probable development over the next 30 years and above all to demonstrate what the sector can and cannot achieve in the interdependent context of the sustainable development of the economy, energy, and environment." The international report "Energy for Tomorrow's World", as published in 1993, deals with the themes of world energy to 2020, regional perceptions and priorities (including those of the regional North America report), the agenda for action, and projections beyond 2020. The North America regional report provides a record of Canada and United States energy economies - their resources, policies, challenges to be met, forecast scenarios, energy options, and agendas for action. The Canadian component includes a comparison of scenarios projecting per capita energy use to the year 2020: 328 GJ/person in a technology and growth driven case; 232 GJ/person in an efficiency potential case (the preferred option); and 131 GJ/person in a soft energy case. The central theme of the regional study: "Energy efficiency and energy conservation programs must be strengthened throughout North America. The programs should be the cornerstones of national energy policies".

Natural Gas Market  
Assessment

In August, the National Energy Board issued a report entitled "Natural Gas Market Assessment: Long-Term Canadian Natural Gas Contracts", as part of its monitoring of Canadian energy

markets. The report provided a comprehensive study of changes to contracting practices in the long-term market for domestic and export gas sales during the period 1985-1991.

EMR Research  
Agreements Program

On August 20, announcement was made of \$2 million in research grants under the EMR Research Agreements Program. Since April 1990, the Natural Sciences and Engineering Research Council (NSERC) had been providing additional support to industry-based projects of the program. For the year 1992-93, EMR and NSERC were supporting 213 projects at 42 universities and research centres across Canada complementing the work of the GSC, CANMET, the Mapping and Remote Sensing Sector, the Energy Sector and the Mineral Policy Sector of EMR.

Light-Duty Methanol  
Vehicle  
Demonstration  
Program

On August 29, the Canadian Light-Duty Methanol Vehicle (LDMV) Demonstration Program was initiated to test the feasibility of using methanol in light vehicle transportation as another initiative in EMR's promotion of alternative transportation fuels. In mid-1992, there were about 140,000 propane vehicles on the road across Canada. Since 1983, EMR had supported conversions of more than 30,000 vehicles to natural gas, the construction of refuelling stations and the development of natural gas vehicle technology. The initiative taken in August 1992 was providing for the first commercial demonstration of light vehicles powered by methanol, to be continued through to March 1994. Chrysler Canada was providing and delivering vehicles equipped with the new methanol-using technology. The methanol demonstration program had been initiated on the signing of a Memorandum of Understanding by EMR, Chrysler Canada and the Canadian Oxygenated Fuels Association (COFA). The agreement with Chrysler followed a similar agreement with General Motors. COFA was to work with gasoline retailers to provide the fuelling infrastructure in those areas where the methanol flexible-fuel vehicles would be operating.

Manitoba Hydro  
electric transmission  
facilities

On August 26, announcement was made of a federal/Manitoba agreement providing for the federal sale of High Voltage Direct Current Transmission Facilities, linking Winnipeg with hydroelectric power stations on the Nelson River, to Manitoba Hydro. The sale represented the conclusion to the 1966 agreement between the Government of Canada and the Province of Manitoba to develop the hydroelectric potential of the Nelson River. The \$198 million sale transferred full ownership and control of the transmission facilities to Manitoba Hydro, and eliminated any future obligations of the Government of Canada in the administration of the agreement. The transmission facilities which were designed, constructed and financed by the federal government began service in 1974. They consist of two 900 kilometre high voltage direct current transmission lines and conversion facilities.

CANDU sales to  
South Korea

In September, Atomic Energy of Canada Limited announced that the contract for Wolsong 3 and 4 had been signed with South Korea. The sale of these CANDU nuclear power plants would result in \$500 million in contracts for Canadian companies. The Wolsong 1 and 2 nuclear plants had also been supplied by AECL. Wolsong 1 had been in operation since 1983 and Wolsong 2 was under construction. Each of the four units for the Wolsong site was a CANDU 6 design with a generating capacity of up to 700 megawatts.

In September, an interdepartmental mission led by EMR visited Russia to assess Russian requirements for regulatory advice in the resource sector.

Ocean Ranger Royal  
Commission  
recommendations

On September 2, implementing recommendations of the Royal Commission on the Ocean Ranger disaster, as incorporated in the Canada Oil and Gas Operations Act, were proclaimed. The recommendations were directed to improved worker safety. Related legislation in the Newfoundland Accord and the Nova Scotia Accord was also amended. On February 15, 1982, the Ocean Ranger semi-submersible drill ship sank in a storm 175 nautical miles east of St. John's, Newfoundland with the loss of 84 lives. (See also February 20, 1992 note on the Canada Oil and Gas Operations Act).

NEB Export Impact  
Assessment - natural

On September 3, the National Energy Board released a draft of its Export Impact Assessment (EIA) which analysed the impact of significantly higher gas exports on Canadian demand, supply

gas	and prices over the next 20 years. EIAs continued as part of the public hearing component of the Board's Market-Based Procedure. Interested parties were invited to comment on the specifics of the EIA analysis. The purpose of the EIA was to determine whether a proposed export was likely to cause Canadians difficulty in meeting their energy requirements at fair market prices (see April 1993 note).
Energy Innovators Initiative	On <u>September 16</u> , Jasper, Alberta, became the first Energy Innovators community in Canada under EMR's Energy Innovators Initiative. This Initiative was designed to encourage Canadian businesses, cities and towns to work in partnership with utilities, manufacturers and governments to reduce energy costs by becoming more energy-efficient. The goal of the Jasper program was to reduce power consumption in the town by as much as 20% by the end of 1993. (See also May 11, 1992).
Energy efficient kiln	On <u>September 3</u> , EMR joined with Western Economic Diversification Canada, the Canadian Electrical Association, B.C. Hydro, and the Council of Forest Industries in a \$2.8 million project to develop an energy efficient kiln to dry lumber through the use of radio frequency waves. CANMET, under the Industry Energy Research and Development Program, was to contribute over \$1 million to the project. The technology for the radio frequency kiln would be able to dry lumber in one-eighth of the time required by conventional gas-fired kilns. Potential savings in energy through use of the kiln were estimated to be the equivalent of 100,000 barrels of oil each year.
Energy Efficiency Act-regulations concerning equipment	On <u>September 24</u> , a discussion paper was released under the title of "The Regulation of Energy Efficiency and Labelling of Equipment in Canada", as a basis for public consultation. The paper followed from the Energy Efficiency Act which received Royal Assent" on June 23, 1992. Comment was invited on proposed regulations, under the Act, pertaining to the energy efficiency of equipment, and labels on equipment that would help customers identify the amount of energy they use. The regulation of equipment energy efficiency and the labelling of equipment were two initiatives in EMR's new Efficiency and Alternative Energy Program which had been described in the Green Plan as a set of measures to reduce greenhouse gas emission in Canada and reduce such environmental threats as air pollution and global warming. The Energy Efficiency Act provided for the expansion of the existing EnerGuide program requiring that certain products display a label conveying information on energy consumption or efficiency. A new EnerGuide label was to be formally proposed with the first set of regulations under the Energy Efficiency Act.
Elliot Lake uranium mine closures	In <u>October</u> , the Atomic Energy Control Board decided that decommissioning proposals from Elliot Lake uranium mines should be referred to the Minister of the Environment for public review by a panel under the Environmental Assessment Review Process (EARP), with input from the Government of Ontario. Earlier in the year, in March, Denison Mines Limited closed its Elliot Lake mine following completion of its uranium supply contract with Ontario Hydro. With Rio Algom Limited scheduled to close its Stanleigh operation in Elliot Lake in 1995, each company requested approval from AECB to begin decommissioning their waste management sites around the Elliot Lake area. Referral to the EARP was to be the first step.
Lloydminster heavy oil upgrader	On <u>November 20</u> , the official opening ceremony was held at the Bi-Provincial Upgrader in Lloydminster, Saskatchewan. The designed output was 46,000 barrels a day of synthetic oil from the region's heavy oil resources. The construction of the Upgrader had increased total investment in Saskatchewan by \$487 million and in Alberta by \$918 million over the previous 4 years.
Fuel-ethanol, federal-Saskatchewan initiative	On <u>November 23</u> , the Canadian and Saskatchewan governments announced a five-year \$12 million federal initiative to encourage the production and use of fuel-ethanol in Canada. This ethanol initiative was announced under the umbrella of the Interdepartmental Steering Committee on Ethanol and covered 4 areas: economic and market assessment, emissions and safety assessments, research and development, and technology transfer and repayable contribution. Ethanol, a high-octane alcohol, could be used as a blend with conventional gasolines, alone as a neat fuel, or as a raw material to produce high octane fuel ethers. Blends of up to 10% ethanol with gasoline, called

gashole, could be used safely without engine modification in any gasoline vehicle. Blends of ethanol and gasoline result in less pollution and offer energy diversification through the use of renewable resources. It was estimated that development of ethanol production could create a potential demand for up to 1 million tonnes of grain a year, providing farm market receipts of \$50 million a year. The ethanol initiative followed the removal of the federal excise tax of 8.5 cents per litre from the ethanol portion of gasoline blend as announced in the February 25, 1992 budget, providing for the same federal tax treatment as alternative fuels such as natural gas, propane, and ethanol or methanol used as the main component of motor fuel. At the time, Canada's annual production of fuel-ethanol was about 21 million litres.

Uranium export policy - pricing component modification

On November 22, the federal government advised the uranium industry and the nuclear-electric utilities of a modification to the pricing component of Canada's uranium export policy. The objective was to bring the policy into conformity with the government's commitment to freer trade. An earlier enunciation of the policy in May 1990 set out the pricing component consisting of the two following requirements:

- The Canadian government will expect terms in export contracts to provide for an equitable balance of benefits and risks, and to be generally not less favourable than those being obtained in the same time period by competing Canadian and international producers for contracts of similar duration.
- In the interests of promoting stable productivity and employment, each export contract should include mechanisms, such as escalating floor price provisions, which will help to reduce the impact of unexpected shifts in the market, and thereby contribute to a more predictable commercial environment for both the company and its employees.

In the November 1992 statement, Ministers eliminated the second requirement with respect to all new contracts. In making the decisions, Ministers noted that Canadian producers were well placed to compete on an equal footing with any in the world. Moreover, given the high level of competition in the international market, the producers themselves were in the best position to determine the most appropriate way of protecting their investment base. The federal interdepartmental Uranium Exports Review Panel decided to continue to review contractual pricing terms on behalf of Ministers to ensure that the first requirement was being followed and that export contracts were generally consistent with Canada's uranium export policy.

URAG report - uranium resources and supply

On November 12, the Uranium Resources Appraisal Group (URAG) released its annual assessment, as of January 1, 1992, of Canada's uranium resources and supply capability. Exploration expenditures in 1991 of \$44 million were almost unchanged from 1990 at \$45 million despite low spot prices and limited market opportunities. The estimate of known uranium resources was 459,000 tonnes of uranium, a 20% drop from a year previously when resources totalled 594,000 tU, the loss resulting from the closure of several mines in the Elliot Lake area due to the depressed uranium market. Production capability from Canada's existing mining operations was increased during 1992 with the return to full operation at the Rabbit Lake facility in Saskatchewan where output was almost triple the 1991 level. However, Canadian output remained well below mine capability which was in excess of 10,000 tU. As of January 1, 1992, forward commitments under Canadian export contracts were in the order of 45,000 tU. Actual exports in 1991 were 7,810 tU, down from 8,648 tU in 1990.

Coal supply trends - 1992

Thermal coal consumption in Canada during 1992, to the end of December, totalled 46.1 million tonnes, up from 45.4 million tonnes in 1991. There was increased use of thermal coal in Alberta, Saskatchewan, New Brunswick and Nova Scotia.

IEA comment on CANDU financing

In its report on Canada's energy economy for the period ending December 1992, the International Energy Agency repeated the observation in its 1991 report that it was unclear what progress had been made on ensuring that the Atomic Energy of Canada Limited's commercial engineering activities were being operated on a cost-recovery basis so as to enable the CANDU operation to be financially self-sufficient by 1996, a goal that had been indicated in the 1991 review. CANDU

operators could be expected to pay for services so that government funds could be concentrated on strategic support for the nuclear program.

Nuclear reactor accidents - 1992

For the 12 months ending in December 1992, the Atomic Energy Control Board reported that although reactor operations had been acceptably safe, there were 620 unusual events, of which 259 required a formal report to the AECB. The unusual events ranged from minor spills of radioactive heavy water to unanticipated increases in reactor power beyond demanded levels. In August, there was a leak of heavy water from a moderator heat exchanger at the Pickering A station resulting in a release to Lake Ontario of about 2,300 terabecquerels of tritium (4.5% of the monthly derived emission limit). This was the highest emission of tritium to the lake since the startup of the Pickering station in 1971. Other incidents included two "A loss of regulation" problems at Unit 2 of the Bruce A reactor in November.

Greenhouse gas emissions in 1990

In December Environment Canada released a report estimating national greenhouse gas emissions in 1990. The total amount of CO<sub>2</sub>, methane and nitrous oxide released by human activity in Canada in that year was equivalent to 526 million metric tons of CO<sub>2</sub> emissions. Combustion of fossil fuels accounted for about 94% of CO<sub>2</sub> emissions, 29% of methane emissions and 52% of N<sub>2</sub>O emissions. Transport accounted for about 32% of CO<sub>2</sub> emissions, electricity production 20% and industrial sources 17%, with the remainder attributed to miscellaneous heating and industrial processes.

TransCanada PipeLines stress corrosion cracking

In December the National Energy Board initiated a written inquiry concerning the Transportation Safety Board's recommendation on stress corrosion cracking in gas pipeline maintenance program. This followed from the NEB's responsibility for specifying how Canadian interprovincial and international pipelines are to be constructed and operated. Since 1985, the NEB had been closely following the issue of stress corrosion and cracking on TransCanada PipeLines' natural gas system. In the period 1984-1992 it had authorized over \$75 million in expenditures by TransCanada to ensure the integrity of the system in relation to corrosion cracking.

COGLA-NEB resources staff merger

By December 1992, the National Energy Board had completed the administrated integration of energy resources and reserves staff components of the former Canada Oil and Gas Lands Administration (COGLA) with the NEB's frontier staff to form a new Energy Board Directorate responsible for the assessment of Canada's energy resources and reserves.

NEB environmental assessments - 1992

During 1992, to the end of December, the National Energy Board performed environmental assessments of more than 160 projects and export application, 38 of these being for gas and oil export and the remainder for project applications. The NEB is responsible for all environment concerns relating to its regulation of oil, gas, petroleum products, pipelines, energy exports, international power lines, and frontier oil and gas activities. Proponents of federally-regulated energy projects are required to propose a socio-economic action plan, including a monitoring system, to deal effectively with impacts. The NEB may set socio-economic terms and conditions as part of its approval, and it does follow-up work to ensure compliance.

NEB Environmental Studies Research Fund (ESRF)

During 1992 through to December, the National Energy Board's Environmental Studies Research Fund (ESRF) was funding 20 studies valued at \$1.5 million, with 6 new studies being funded from the \$991,000 1992 budget. The ESRF is a research program which sponsors environmental and social studies to assist government decision making related to oil and gas exploration and development on Canada frontier lands. The program, initiated in 1983, receives its legislated mandate through the Canada Petroleum Resources Act which was proclaimed in 1987. Funding for the ESRF is provided through levies on frontier lands paid by interest holders such as the oil and gas companies. The ESRF is directed by a joint government/industry management board chaired by NEB's director general of the environment directorate.

Oil and gas exploration- 1992

An appraisal in December indicated that exploration and development activity in the Canadian oil and gas industry decreased during 1992. Spending on provincial and federal land sales totalled

\$207 million, the lowest level in 5 years and down by 46% from the \$384 million spend in 1991. Total exploration and development expenditures in Canada in the oil and gas sector during 1992 were \$6.4 billion, compared with \$6.7 billion in 1991.

#### Oil and gas reserves

As of December 31, 1992, the remaining established reserves of conventional crude oil were 680 million cubic metres, up slightly from 676 million cubic metres a year earlier. Crude bitumen reserves for developed projects only totalled 482 million cubic metres, down from 502 million cubic metres at the end of 1991. Remaining established reserves of marketable natural gas were estimated at 1,911 billion cubic metres at the end of 1992, down from 2,280 billion cubic metres at the end of 1991.

#### Energy supply and demand trends in 1992

Results to the end of December showed that energy production in Canada rose by 1% in 1992 from the 1991 level. Exports continued to expand, and domestic consumption increased marginally after two successive years of decline. Over the period 1988-1992, there had been little change in the market shares of the major energy sources. Total exports of petroleum (including crude oil and refined products and natural gas liquids), natural gas, and electricity in 1992 were 4,841 petajoules, an increase of 10% over 1991. Higher exports were partially offset by higher imports so that net exports increased by 6.3%. The value of net exports rose by 6.7% to \$9.5 billion, of which 49% were accounted for by petroleum and 44% by natural gas.

## THE YEAR 1993

Overview: Prime Minister Brian Mulroney retired and was replaced as leader of the Progressive-Conservative party and Prime Minister by Kim Campbell. Prime Minister Campbell announced a reorganization of government departments, including EMR, which was merged with the department of Forestry and renamed Natural Resources Canada (NRCan). Shortly afterwards, Prime Minister Campbell called a general election, which was won by the Liberal party under Jean Chretien.

1993 also saw the entry-into-force of the North American Free Trade Agreement (NAFTA), which extended the FTA to Mexico. The NAFTA retained most of the key FTA provisions governing energy trade, including those relating to security of supply. Critical of the agreement during the election campaign over concerns that it lacked adequate safeguards for the environment and Canadian energy sovereignty, the new Liberal Government issued a statement on energy security in the NAFTA context, and the Act implementing the agreement was allowed to stand.

The Canadian International Development Agency (CIDA) approved a budget of \$1.2 million to fund the Legislative and Regulatory Initiative of resource management advice to the Russian Republic. The Initiative was managed by NRCan, with the participation of the Alberta energy department and the Canadian Institute of Resources Law (CIRL), of the University of Calgary.

Hibernia oilfield -  
partnership change

On January 12, announcement was made of a private sector-government agreement to provide a solution to the ownership problem following the withdrawal of Gulf Canada from the Hibernia oilfield resources in February 1992. Murphy Oil Corporation became a new equity partner, agreeing to acquire a 6.5% interest in Hibernia. Mobil and Chevron each increased their share by 5% and the federal government agreed to acquire an 8.5% share of the project. A statement accompanying this announcement provided a history of the Hibernia Project dating from the 1960s when Mobil Oil Canada (75%) and Gulf Canada Resources (25%) acquired, under federal permit, about 2.6 million hectares located primarily on the Grand Banks. The Hibernia oil discovery was recorded on September 21, 1979.

Sustainable Energy  
and Mineral  
Development -  
Parliamentary  
Committee Report

In January, the House of Common Standing Committee on Energy, Mines and Resources issued a 202-page report entitled "Sustainable Energy and Mineral Development: A Realistic Response to the Environmental Challenge". The report, directed primarily to energy, dealt in turn with each of the energy sources from nuclear to solar and hydrogen, emphasizing the importance of energy efficiency and conservation, and set out 31 specific recommendations. During its hearings, it received 88 submissions. In its work the Committee placed much emphasis on how governments could improve their environmental policy framework to ensure that industry's response would lead to sustainable development within the energy and mineral sectors. The Committee members concluded that an environmentally effective and affordable response by industry would be greatly facilitated if government made changes in the following areas:

- The government's consultation and decision-making process needs to become more open and transparent, with greater emphasis placed on cooperative multi-stakeholder participation;
- The many environmental policy initiatives contained in the government's Green Plan need to be prioritized according to the relative severity and urgency of the corresponding environmental policy measures;
- Environmental regulation and legislation should be harmonized throughout the country and improved where possible; and
- Greater reliance should be placed on market-based measures in the formulation of environmental policy.

In addition, the Committee focused considerable attention on means to enhance energy efficiency opportunities, and concluded that the federal government should devise innovative measures,

including financial rewards, to achieve energy efficiency gains without jeopardizing Canada's competitive advantage in energy. The Committee noted, too, that global problems require global solutions, particularly in the case of global climate change. Consequently, every effort should be made to satisfy domestic environmental objectives by implementing cost-effective measures that would increase the efficiency of energy production and use in Canada. In addition, countries in Canada's position should also be permitted to receive credits for international action if such action leads to a lessening of what is essentially a global problem.

Canada's Greenhouse Gas Emissions-1990, stabilization target

Environment Canada's estimates of greenhouse gas emissions as completed in 1992 were made available in January 1993 in a 78-page report including emissions of carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons as released to the environment in 1990. The national totals in kt/year were A carbon dioxide - 460,394; methane - 3,376; nitrous oxide - 92; and chlorofluorocarbons - 11. Estimates were provided for each of the following sources: industrial processes, fuel combustion-stationary, fuel combustion-transportation, incineration, agriculture, and miscellaneous. The report acknowledged that there were still many uncertainties and gaps surrounding some of the emissions estimates. Although these estimates are intended to form Canada's stabilization target for the year 2000, they may change pending the development of better estimation techniques and measured emissions.

Ontario Hydro uranium supply

In February, Ontario Hydro selected four suppliers of uranium for the period 1999-2002 from a large number of competitive bids. Annual deliveries of about 600 tU in concentrates over that period would represent about 35% of Ontario Hydro's projected requirements. The estimated value of the contracts was \$220 million at \$20.15/lb. of  $U_3O_8$ , significantly less than the company had been paying to Elliot Lake producers under contracts terminating in 1996. Three producers in northern Saskatchewan were each to supply about 150 tU in concentrates annually. The remaining suppliers were to be Australian producers, marking the first time that a Canadian utility had purchased uranium from outside Canada.

Energy Sector Overview

Completed in February for EMR departmental purposes, the report "Energy Sector Overview" provided a comprehensive overview of the energy sector of the Canadian economy, the policy environment in which the sector operated, the organization within the department, and the major energy challenges of the early 1990s. In addition to the survey of the energy industry in terms of its several components and of the policy framework, and the organization structure within Energy, Mines and Resources, the report focused on the major issues in relation to megaprojects, nuclear and uranium, environment, efficiency, trade and investment, and frontier issues, and issues related to program management in view of the federal government's changing roles in Canada's energy economy. The report directed attention to the fact that energy policy was no longer primarily concerned with security of supply and the distribution of economic rents from upstream oil and gas operations and similar matters, but more with other policy agendas including the environment, trade, international relations and federal/provincial relations. It was further noted that not only had the emphasis and balance of policy concerns altered, but the way in which policy was being developed had also undergone significant change. Public interest groups, industry, and the provinces, were demanding a more open and consultative process. The report provided an important focus on the changing energy policy role as well as detail on energy issues.

Oil sands and heavy oil R&D strengthened

On March 19, the governments of Canada and Alberta announced new initiatives designed to support the development of Alberta's oil sands and the heavy oil resources of Alberta and Saskatchewan through research and development partnerships, the establishment of a National Centre for Upgrading Technology (NGUT) in Devon, Alberta, and the creation of a National Task Force on Oil Sands Strategies (NTFOSS). Through to the spring of 1996, federal staff of EMR's CANMET at Devon was to be increased by 30 positions to a total of 90 and research expenditures were to be doubled to \$15 million. One outcome of this increase was to be the buildup of Devon as CANMET's principal centre for oil sands upgrading research and development. The initiative was also to involve a collaborative effort between CANMET and the Alberta Research Council to create a National Centre for Upgrading Technology to develop technologies that lower the costs of



producing synthetic crude oil and petroleum products derived from the oil sands and heavy oil deposits. The mission of the National Task Force on Oil Sands Strategies was to be a catalyst for further development of Canada's oil sands through identification of a clear vision for growth and technological, socio-economic, environmental and marketing aspects of oil sands development. The Task Force was to identify new concepts, technologies and strategic approaches, and communicate the results to key private and public decision makers.

#### Coal's future

In addressing the World Coal Institute Conference in London on March 24, the Minister of EMR noted coal's continuing importance in the Canadian energy economy, generating 14% of all electricity in the country, with coal-fired generating capacity projected over the following 20 years to grow by 25% using conventional and emerging technologies. Canada was the world's fourth largest coal exporter. Recognizing that technological improvements were the key to the future of coal, Canada was giving emphasis to clean-coal initiatives including utility applications of circulating fluidized bed combustion, low nitrogen oxide flames, de-Nox treatment and slagging combustion.

#### Canadian uranium exports to Taiwan via the U.S.A.

On March 5, the Government of Canada formalized an agreement with the U.S.A. whereby Canadian uranium could be exported for use in nuclear reactors in Taiwan for the generation of electricity. Such uranium was to be transferred from Canada to the U.S.A. for enrichment and fabrication into nuclear fuel elements in the United States prior to re-transfer to Taiwan. Those conditions were necessary to ensure that the objectives of Canada's nuclear non-proliferation policy were fulfilled. Canada's Aone China" policy did not allow for the conclusion of a government-to-government nuclear cooperation agreement with Taiwan, which is one of the usual prerequisites for nuclear trade. The arrangements put in place by the agreement concluded with the U.S. satisfying the objectives of Canada's nuclear non-proliferation policy.

#### CANDU reactor operations in Ontario

In March, Ontario Hydro restricted the maximum power level of its four Bruce A and four Bruce B reactors, to 60% of full power due to a safety risk associated with the possibility that the fuel might shift position inside pressure tubes. All four of Ontario Hydro's reactors at the Darlington site were in full service at year-end 1993. On October 13, Unit 7 of the Pickering station passed the previous world record of 533 days of continuing power generation by a water-cooled nuclear plant.

#### Ontario Hydro cost reduction program; Bruce retubing cancelled

In March, Ontario Hydro's Board of Directors announced an extensive cost reduction and reorganization program. The program was to provide for cost reductions ranging from \$875 million in 1994 to \$1.4 billion in 1996, as well as a \$13 billion reduction in debt over the following 10 years. A debt to equity ratio of 60:40 was targeted instead of the longstanding 80 : 20 ratio, and there was also a commitment to zero rate increases in real terms for the next 10 years. The large reserve generating capacity, immediate capital constraints, and debt reduction targets prompted the Board to delay the retubing of Bruce >'A' Units 1 and 2, previously scheduled to commence in 1997, at a cost of \$1.6 billion. Later in March, Ontario Hydro announced it was not committed to retube any of the Bruce A reactors and that the units would be retired if they became unsafe to operate.

#### Pickering A retubing completed in re-tubing program

By March, replacement of all the pressure tubes in Unit 4 at Pickering was completed. This concluded the retubing program for the Pickering A reactors. The AECB was continuing to require monitoring to ensure that other Canadian reactors would be taken out of service and retubed if the pressure tubes were no longer suitable for continued operation. Degradation of the pressure tubes due to incorrect installation of support rings could result in high local concentrations of zirconium hydride and eventual failure, as had occurred at Pickering in 1983.

#### Nuclear Liability Act administration - EMR role

In the reporting period ending in March, the Atomic Energy Control Board continued its responsibility for the administration of the Nuclear Liability Act, designating nuclear installations and, with the approval of Treasury Board, prescribing the amount of basic insurance to be maintained by the operator. The AECB continued to assist the Department of Energy, Mines and

Resources in its newly-acquired policy role with respect to the Act, in its reviewing and updating of the Act, and in its taking the lead role in defence of a court action that had been launched against the Act. The review and update of the Act initiated by EMR was consistent with renewed interest, and efforts, in the international nuclear community toward improved legislation and international agreements in the area of third-party liability that had stemmed, for the most part, from the Chernobyl accident in the former Soviet Union.

AECL  
decommissioning  
activities forecast

During the year ending in March, Atomic Energy of Canada Limited prepared a broad plan of activities to be carried out over the next four to five decades in the decommissioning of its facilities including prototype reactors, heavy water plants, nuclear research, development and other facilities. Activities include dismantling, decontamination, and related waste storage and disposal. While the cost of much of this future work could not be reasonably estimated, it had been possible to determine a range of \$200-300 million (in 1993 dollars) as the likely cost of those other parts of the program for which preliminary estimates could be made. In the past, decommissioning activities had been financed through parliamentary appropriations complemented by proceeds from related asset sales. AECL expected this would continue to be the case except to the extent that the corporation was able to recover, through its commercial and cost-sharing arrangements with third parties, an allowance for decommissioning costs associated with current commercial and cost-share work. To that extent, costs would in future be provided for as third party contributions are realized. Beyond that, the corporation expected to continue its existing policy of expensing costs as decommissioning activities took place.

PERD funding

For the fiscal year ending in March, the Panel on Energy, Research and Development (PERD) funding of \$85 million was allocated among the following activities:

- oil and gas activities - \$14.7 million;
- energy efficiency - \$16.3 million;
- nuclear fusion - 12.7 million ;
- heavy oil, bitumen - \$11.9 million;
- renewables, environment - \$11.4 million;
- coal research - \$9.9 million;
- alternative transportation fuels - \$8.1 million.

While PERD investment in current year dollars had been decreasing somewhat because of government deficit reduction initiatives, the program continued to provide stability in energy R&D.

AECL CANDU  
global market  
objective

In its report to the Minister of EMR for the fiscal year ending March 1993, Atomic Energy of Canada Limited reported that it had set, as one of its strategic objectives, the goal of obtaining one-quarter of the emerging global market for nuclear electricity. The view was that Canada, through AECL, had an opportunity to support sustainable development by employing its CANDU nuclear power technology at home and by marketing it internationally.

Regulatory Reform  
EMR, AECB, NEB

On April 14, the Minister of Energy, Mines and Resources announced the appointment of an Advisory Panel to oversee the regulatory review to be conducted by the Department of Energy, Mines and Resources (EMR), the Atomic Energy Control Board (AECB) and the National Energy Board (NEB). The goal was to put regulations to a competitive test, the overall objective being to minimize the impact on Canadian industries' ability to compete in the marketplace, while preserving the public benefits which would continue to be the goals of the EMR, AECB, and NEB regulations. The reviews were to be conducted in the context of the government's commitment to more effective and responsive regulation that was announced in the February 1992 Budget Speech. EMR, AECB and NEB were to review their regulations independently, under the auspices of the Advisory Panel, and to make recommendations within the year (see October 8 notes on Regulatory Review).

NEB Export Impact

In April, the National Energy Board held a workshop to address the issues related its use of the

Assessment	Export Impact Assessment (EIA) as one element of the public hearing component of the market-based procedure used to make decisions on the licensing of natural gas exports. The purpose of the EIA had been to determine whether a proposed export would likely cause Canadians difficulty in meeting their energy requirements at fair market prices. As a result of the workshop, which had followed the NEB's own analysis made public in September 1992, the Board decided that it would no longer issue a separate EIA document in relation to natural gas export decisions. Instead, the analysis would be carried out within the framework of the Board's long-term energy supply and demand report, "Canadian Energy Supply and Demand" and its periodic "Natural Gas Market Assessment" reports.
Energy Trade Mission to Mexico	In <u>April</u> , the federal Minister of Energy, Mines and Resources led a two-day energy trade mission to Mexico in which 13 Canadian energy companies participated. The companies, representing all aspects of the energy industry in Canada, were seeking opportunities to market their knowhow and products in Mexico. With the expected implementation of the North American Free Trade Agreement (NAFTA) in January 1994 between Canada, the U.S.A. and Mexico, the opportunities for Canadian business in Mexico were expected to grow. In May, the Minister of EMR led a second trade mission to Mexico to promote alternative transportation fuels industries, as well as the competitiveness of Canada's geomatics, mining and minerals. Provisions of the expected North American Free Trade Agreement for energy and geomatics were expected to build on the Canada-U.S.A. Free Trade Agreement, providing for national treatment when applying energy regulatory measures. To capitalize on the access that was expected to be achieved as a result of the implementation of the NAFTA, the Government of Canada had created an initiative called Access North America with the purpose of maximizing benefits for Canadians from the Agreement.
EMR Innovative Partnerships Initiative	On <u>May 27</u> to Government of Canada announced the Innovative Partnerships Initiative (IPI), a new program designed to promote innovative private and public sector partnerships dedicated to increasing energy efficiency. The IPI's initial 32 partners included companies qualified to do energy efficiency upgrading for the federal government, major Canadian utilities, and financial institutions. Working together with EMR officials, the partners would be able to provide a comprehensive package of information, management and financial services to promote energy efficient projects. To meet financial challenges, the IPI advocated a unique business arrangement called Energy Performance Contracting (EPC). Using EPC, an organization would hire an energy services company to undertake an energy improvement project and agree to finance all the upfront costs. The energy services company would be repaid, over the life of the contract, from the money saved on energy bills. The IPI provided for a unique partnership between Energy, Mines and Resources Canada and the private sector, bringing together a wide variety of organizations with a stake in increasing the use of energy efficiency practices within the government, institutional, commercial, and industrial sectors across Canada.
EMR's Energy Ventures Division programs	The Innovative Partners Initiative (IPI) introduced in <u>May</u> 1993 added to a number of innovative energy efficiency initiatives supported by EMR's Energy Ventures Division. These included the Federal Buildings Initiative, created to encourage energy efficient retrofits of federal facilities; the Energy Innovators Venture, assisting private, public and commercial sector organizations in improving energy efficiency; and the Industrial Energy Efficiency Initiative, helping industries in the goods - producing sector to improve the energy efficiency of their operations. Partnerships such as those established by the IPI were seen to be crucial for the Department's success in all of its energy efficiency and related initiatives.
Yukon Oil and Gas Accord	In <u>May</u> 1993, the Canada Yukon Oil and Gas Accord was signed by the Yukon Government Leader and the Minister of Indian Affairs and Northern Development. The Accord allows for the transfer to the Yukon of authority to administer and control oil and gas resources, and for the establishment of an Oil and Gas Management Regime. The National Energy Board was to continue to regulate oil and gas activity in the Yukon during an interim period not to exceed 18 months following signing of the Accord.

Natural gas resource appraisal

A report released on May 31 indicated that 20 trillion cubic feet of natural gas remained to be discovered in existing exploration plays in the Western Canada Sedimentary Basin, and another 50 trillion cubic feet remained in other unexplored plays in the Devonian System of the western Canada plains. The report entitled "A Devonian Gas Resources of the Western Canada Sedimentary Basin" was co-authored by the Geological Survey of Canada and the Energy Sector of EMR. The information was expected to help identify investment opportunities for exploration and development of the natural gas resources in western Canada. It would also serve as an important tool for effective resources management and planning for future supply. Part I of the report described the geology of the Devonian System of the Western Canada Sedimentary Basin and assessed its overall gas potential, indicating that the System may contain as much as 25% of western Canada's undiscovered natural gas. Part II was an economic analysis, taking technology, costs and other economic factors into consideration, to provide an estimate of the amount of gas which may be profitably discovered and produced.

Energy policy evolution

An EMR Management Conference of May 14 noted that the Department had changed significantly since the early 1980s with major downsizing. Quite a few of the 28 statutes the Department had responsibility for were inoperative or redundant, as were many of the regulations, an indication of the extent of change. Over a very few years EMR had adapted its policy framework, particularly in relation to energy, to the needs of the time, now characterized by less intervention, deregulation, and greater reliance on non-financial instruments. Accordingly, EMR was planning and managing in step with the imperatives of prosperity, globalization, and fiscal restraint.

Innovative Housing >93 Conference

In June, Innovative Housing >93 was held in Vancouver, as the world's largest conference on energy-efficient and environmentally responsible housing and development patterns. The event was hosted by EMR and the Canada Mortgage and Housing Corporation with support from the National Research Council, the Canadian Home Builder's Association and the International Energy Agency (IEA). The conference provided Canada an opportunity to showcase to the rest of the world its leading-edge, environmentally-responsible housing technologies, programs, demonstration projects, and approaches to community planning and design. It was noted that EMR's efforts to encourage the development and implementation of integrated energy systems at the community level would be strengthened under the Integrated Energy Systems Initiative. That initiative was designed to focus on research and development directed to the development of more efficient and cost effective means of implementing district heating, cooling and cogeneration to improve the efficiency of power generation or the use of heat rejected from industry. International studies had shown that integrated technologies can have a very significant impact on the reduction of fossil fuel use and CO<sub>2</sub> production. Innovative Housing >93 provided an opportunity to examine first-hand the new construction practices, emerging products and technologies and innovative approaches to community planning and design that were responding to the day's social, economic and environmental challenges. Delegates from 30 countries participated. The records of this conference provide an important source of information on innovative housing as developed by 1993.

Canadian Ownership Requirement Repeal Act

On June 30, 1993, the Canadian Ownership Requirement Repeal Act was proclaimed, first notice of change in the rules governing foreign investment in the oil and gas industry having been given on March 25, 1992. The new Act amended three pieces of federal oil and gas legislation: the Canada Petroleum Resources Act, the Canada-Newfoundland Atlantic Accord Implementation Act, and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act. Key provisions of the Repeal Act include:

- the elimination of the minimum 50% Canadian ownership requirement for the issuance of frontier oil and gas production licences; and
- the elimination of Ministerial review and approval/disapproval of transfers of ownership in a frontier oil and gas production licence or shares therein. (See also March 25, 1992 note on new rules).

North American Free Trade Agreement (NAFTA)

An Act to Implement the North American Free Trade Agreement between the Government of Canada, the Government of the United Mexican State, and the Government of the United States of America, cited as the North American Free Trade Agreement (NAFTA) was assented to June 23, 1993. (Statutes of Canada, 1993, Vol III). Chapter Six of the Act specifies conditions pertaining to Energy and Basic Petrochemicals as set out in Articles 601 to 609. Article 603 on Import and Export Restrictions includes:

1. Subject to the further rights and obligations of this Agreement, the Parties incorporate the provisions of the General Agreement on Tariffs and Trade (GATT), with respect to prohibitions or restrictions on trade in energy and basic petrochemical goods. The Parties agree that this language does not incorporate their respective protocols of provisional application to the GATT.
2. The Parties understand that the provisions of the GATT incorporated in paragraph 1. prohibit, in any circumstances in which any other form of quantitative restriction is prohibited, minimum or maximum export-price requirements and, except as permitted in enforcement of countervailing and antidumping orders and undertakings, minimum import-price requirements. Article 604: Export Taxes, states that no Party may adopt or maintain any duty, tax or other charge on the export of any energy or basic petrochemical good to the territory of another Party, unless such duty, tax or charge is adopted or maintained on:
  - a. exports of any such good to the territory of all other Parties; and
  - b. any such good when destined for domestic consumption.

Article 605 of Chapter Six defines other export measures. Article 606 deals with energy regulatory measures. Article 607 deals with national security measures noting that no Party may adopt or maintain measures restricting imports or exports except in four specified cases of national emergency, as defined in the Article

.Nuclear fuel waste disposal - AECL's concept

The Canadian Nuclear Society Bulletin, Spring issue, June 1993, included an Atomic Energy Control Limited description of its nuclear fuel waste disposal Concept, based on disposing of the waste in a vault excavated 500 to 1000 metres deep in intrusive igneous rock of the Canadian Shield. The following record of the history of the development of the Concept is included in the report:

- In 1977, the federal Department of Energy, Mines and Resources commissioned a study, led by Professor Kenneth Hare of the University of Toronto, which concluded that the underground disposal in geological formations was the most promising option.
- In 1978, the governments of Canada and Ontario established the Canada Nuclear Fuel Waste Management Program to investigate the safety, security and desirability of a Concept for permanent disposal of the fuel waste in a deep underground repository constructed in intrusive igneous rock.
- In 1981 the two governments reaffirmed their commitment to the program, but announced that the process for selecting a disposal site would not be undertaken until the Concept had been reviewed and accepted. Consequently, as of 1993, the R&D program and Concept development had been carried out on a generic basis rather than a specific project basis. Participants in the R&D program have included AECL, the lead agency for research on disposal, Ontario Hydro which advanced the technologies for storage and transportation, EMR, Environment Canada, scientists at Canadian Universities, consultants in the private sector, and the general public and special interest groups through public consultation and information programs.
- Following 14 years of study by AECL of the disposal Concept, the Ministry of Energy, Mines and Resources in 1988 referred the Concept for review under the Environmental Assessment and Review Process (EARP). AECL was the proponent for this review and planned to submit an Environmental Impact Statement (EIS) on the Concept to an Environmental Assessment and Review Panel. A Scientific Review Group appointed by the Panel was to conduct a full technical reviews of the EIS to assist the Panel in judging

the technical validity and acceptability of the Concept.

- After a 4-year period during which the Panel reviewed the issues and held hearings to obtain public input, guidelines for the EIS were issued in March 1992. AECL was to submit the EIS by the end of 1993, with public hearings projected for 1994 and 1995, and Panel recommendations by the end of 1995.

AECL believed that if the Panel recommended acceptance, it would be important to proceed with implementation, without delay, for the reasons related to the following objectives: (a) environmental leadership and reducing the burden on future generations; (b) fostering public confidence in nuclear energy; (c) forestalling inaction by default; and (d) preserving the knowledge base.

Department of  
Natural Resources  
Canada (NRCan)

The new name Department of Natural Resources Canada was taken into use in July, replacing the former name, Department of Energy, Mines and Resources Canada. An Act to establish the Department of Natural Resources, and to amend related Acts - the Department of Natural Resources Act - was assented to December 5, 1994. The Act specifically required the new Department of Natural Resources Canada to incorporate sustainable development considerations in its activities and policy positions.

AECL - Korea  
technical cooperation

In August, Atomic Energy of Canada Limited and the Korea Atomic Energy Research Institute (KAERI) signed a technical cooperation document, whereby both parties agreed to explore various options for the Republic of Korea's future nuclear power program, including the examination of a larger-sized CANDU.

Energy-efficient  
lumber kiln

On August 9, a new \$3 million energy-efficient lumber kiln was officially opened. It was designed to use radio frequency/vacuum (RF/V) technology to reduce the time it takes to dry wood for distribution to customers. Through the federal Program on Energy Research and Development, CANMET provided \$1 million for the project. The RF/V kiln reduces drying time and saves energy: 6-inch thick lumber can be dried in only 40 hours compared with conventional kiln time of 4 months for the same size of lumber. The new kiln was expected to save 100,000 barrels of oil a year, corresponding to a reduction of 50,000 tonnes of CO<sub>2</sub> emissions.

Uranium resources  
and exploration  
activity-URAG

The Uranium Resource Appraisal Group's annual appraisal, issued in September for the effective date January 1, 1993 showed little change in the total of Canada's uranium resources. Uranium exploration expenditures in 1992 amounted to \$46 million. Expenditures had peaked at \$126 million in 1980, declined to \$33 million in 1986 and had been in the range of \$37 - \$59 million in the period 1987-1992.

Cameco investment  
in Kazakhstan  
uranium

On September 8, Canada's uranium company, Cameco, and the German company, Uranerz, announced an agreement with the Kazakhstan National Joint Stock Company of Atomic Power Engineering and Industry (KATEP) which had exclusive control of the uranium resources of the Republic of Kazakhstan. Under the 10-year agreement, Cameco and Uranerz were to share their expertise in the uranium industry with KATEP, investing about U.S. \$3 million in that country's uranium facilities to improve efficiencies, upgrade safety and protect the environment; and ultimately cooperate in the development of its substantial uranium resources. In turn, KATEP was to market a share of its uncommitted production exclusively through Cameco and Uranerz, acting as independent agents. Canadian interests were thereby moving further into international uranium supply.

Canada's Energy  
Outlook, 1992-2020

In September, Natural Resources Canada released its 96-page Working Paper "Canada's Energy Outlook, 1992-2020", updating the 1990 forecast study and incorporating important methodological advances such as end-use demand trends in industries and process/end-use models, to reflect technological and regulatory realities. While not an official forecast by NRCan, it was a considered view of the evolution of energy markets in Canada over the following three decades. Principal observations of the report covering framework assumptions, energy demand,

energy supply, greenhouse gas emissions, impact analysis, and supporting appendices, included the following:

- primary energy demand projected to increase 1.7% annually in 1991-2020;
- electricity demand to grow 1.5% per year, or half the rate of the 1980s;
- industrial demand to grow fastest, and residential demand growth the weakest reflecting the impact of energy efficiency programs;
- alternative transportation fuels to make only modest inroads in the transportation sector;
- energy intensity to decline by 0.8% per year;
- total crude oil production to decline in the mid-1990s as conventional western reserves are depleted but the decline offset in the longer term with frontier areas and oil sands production;
- Canada to remain a net oil exporter until 2008;
- a relatively high surplus of natural gas production to continue over the short term but diminish in the medium and long term as demand grows;
- coal supply to increase at slightly less than 2% per year through to 2020;
- electricity demand to rise by 17% by 2000, but by 2020 to be about 59% higher than 1991, with hydropower retaining the largest share at 60%;
- during the period through to 2010, no new nuclear or coal-fired plants in Ontario, but several CANDU and coal-fired stations projected in the following decade while natural gas to play a small part in electric power generation;
- CO<sub>2</sub> emissions to increase by 1% per year to 2000 and by 1.7% after 2000 reflecting an expanded use of coal for electricity generation.

AECL -  
Saskatchewan nuclear  
agreement

In September, Atomic Energy of Canada Limited and Saskatchewan Power reached agreements setting out details authorized in the Saskatchewan/AECL MOU signed in December 1992. Three key elements were the launching of technical feasibility studies concerned with the potential for establishing nuclear businesses and facilities in Saskatchewan, the funding of a chair at the University of Saskatchewan, and the establishment of a Saskatoon reactor design centre.

Federal Energy  
Policy Paths Report

A Natural Resources Canada 59-page report, completed in September, entitled "Federal Energy Paths" provided a clear exposition of energy policy issues and options, as viewed in 1993, against the background of the evolution of federal energy policy, and the external forces shaping policy options. The first section of the report provided an overview of three major eras in the evolution of energy policy: 1947-73 Growth and Development; 1973-84 Crisis and Intervention; and 1984-94 Market-oriented Approach. The second section dealt with external forces shaping policy options: Broad Economic Policy Development; and Energy Policy Environment. The third section focused on energy policy issues and options, directing attention to Objectives and Principles; and Policy Issues. While many factors would shape and condition energy policy, the report concluded that none would likely overturn the basic needs which drive energy policy - the three central objectives of energy policy:

- To ensure for Canadians secure, reliable access to competitively priced energy supplies - Security Issues;
- To ensure that the development of Canadian energy resources and technologies for producing and using energy affords maximum economic benefit to Canada - Economic and Development Issues;
- To assure the energy needs of Canadians are met and the production of Canadian energy resources is carried out in an environmentally responsible manner - Environmental Responsibility.

The report noted that the federal government faced an important energy policy challenge in meeting these objectives, and concluded that a viable federal role would include the meeting of key responsibilities;

- maintaining the economic union in such matters as interprovincial trade and developing common standards;
- providing an information infrastructure of the Energy Economy;

- providing national R&D leadership in energy technologies;
- providing leadership in national energy related environmental issues;
- maintaining sound international trade and investment relations; and
- managing areas of direct federal responsibility as effectively and efficiently as possible while respecting the many important provincial interests which are affected-initiatives such as the regulatory review panel being intended to ensure that this remained the case.

Canadian Options for Greenhouse Gas Emission Reduction Report (COGGER)

In September the final report of the Canadian Options for Greenhouse Gas Emission Reduction (COGGER) Panel was issued. The Panel was established by the Canadian Global Change Program of the Royal Society of Canada and the Canadian Climate Program Board. In its 40-page report, the Panel provided information with respect to two sets of questions: (1) How much potential for CO<sub>2</sub> reduction through energy efficiency and fuel switching exists in Canada that is worth doing anyway over the next several decades? How much of this potential is achievable, assuming different approaches and strategies? (2) What would be involved in achieving much more aggressive energy efficiency and fuel switching targets, if these are necessary for climate stabilization? The report includes, in its Appendices, considerable reference estimates data on CO<sub>2</sub> emissions reduction potential for Canada and IEA countries.

National Report on Global Warming - Draft

Canada's National Report on Actions to Meet Commitments Under the United Nations Framework Convention on Climate Change was completed in September 1993. (Canada had become the eighth country, on December 4, 1992, to ratify the Convention). The draft of Canada's National Report, due to be finalized by the end of 1993, provided an overview of current actions of governments, communities and the private sector with respect to Canada's Convention commitments in the areas of climate change mitigation, adaptation, research, education and international cooperation. The Report provided a framework for actions by government and non-government stakeholders to limit greenhouse gas emissions, adapt to possible effects of climate change and improve scientific understanding. Concerning actions taken to address climate change, the Report noted that the majority of measures in Canada had been aimed at increasing energy efficiency and energy conservation, or a switch to less carbon-intensive energy sources. There were also measures in place to address non-energy sources of greenhouse gases and to enhance carbon sinks in the forestry and agricultural sectors. Steps were also being taken in providing an effective response through education, research, and international cooperation. At the international level, Canada was contributing funding for developing country participation in fora such as the Intergovernmental Negotiating Committee of the Climate Change Convention, and by providing financial and technical resources through the Global Environment Facility, and bilateral channels.

To assess progress in limiting emissions, the Report used four tools: annual emission inventories; developing climate change indicators; preparing an emissions outlook to the year 2000 (the outlook presented in this National Report indicated that energy-related greenhouse gas emissions in the year 2000 would be 10.6% higher than the target 1990 level); and by using case studies to assess the effectiveness of measures to limit greenhouse gas emissions from selected areas of economic activity. The Report concluded that Canada's progress toward meeting its climate change objectives indicated that additional measures needed to be considered if Canada was to meet its emissions limitation commitments.

Federal Advisory Panel on Regulatory Review - NEB

On October 8, the Minister of NRCan made public a report of the Federal Advisory Panel on Regulatory Review which had found that the regulatory processes of the National Energy Board were both current and responsive to changing conditions. In its submission to the Panel, earlier in May, the NEB had suggested areas where improvements in the regulatory process could be made. The Panel's recommendations endorsed those suggestions and the NEB was following up on the recommendations.

Canada-California gas dispute

In October, the National Energy Board decided to revoke, effective November 1, two orders issued in 1992 which had restricted natural gas exports to northern California. The decision was



based on a review of submissions which stated that negotiations had resulted in a Decontracting Plan which had been agreed to by the gas purchaser and a large majority of the producers involved in the Canada-California dispute of long standing.

Federal Advisory  
Panel on Regulatory  
Review - NRCan  
AECB NEB

The report of the Federal Advisory Panel on Regulatory Review, made available on October 8 reviewed the regulations administered by the former Department of Energy, Mines and Resources, now Natural Resources Canada, as well as those of the Atomic Energy Control Board and the National Energy Board. In the February 1992 Budget, the federal government had announced that all federal departments and agencies would review their regulations to determine their impact in Canadian competitiveness. For the Ministry as a whole, the Panel review involved the examination of more than 100 sets of regulations as to their cost to governments, to industry and to consumers. The review also assessed the predictability, transparency and fairness of the regulatory regimes for the affected industries. A guiding principle of the review was that regulations could not be eliminated at the expense of the public health. The Advisory Panel assessed and commented on the conclusions brought forward by the departmental and agencies staffs and developed both the general and the specific recommendations contained in the report. As a result, the Ministry was acting to revoke 37 (34%) of the 110 sets of regulations then in existence, as they no longer served any purpose. Another 42 sets of regulations (38%) were to be retained, and 37 sets (38%) were scheduled for further review. The Panel's recommendation that all of the departments' and agencies' regulations be formally and systematically reviewed at regular intervals was accepted. Included in the Panel's recommendations were a number specific to the Atomic Energy Control Board, and new legislation to replace the AECB Act was under consideration. Revocation of regulations related to the Energy Administration Act was also recommended.

Federal election

In a federal election held in October, the Liberal Party of Canada was elected to form the government, the Hon. Anne McLellan becoming Minister of Natural Resources Canada.

Air Quality Goals -  
Environment and  
Energy Ministers  
Commitment

On November 17, Canada's Environment and Energy Ministers, following a joint meeting held in Saskatoon, announced approval of joint action on air quality issues. They agreed to take the following three actions:

- "Ministers approved a comprehensive framework to deal effectively with air quality problems in a manner which encourages coordinated approaches and avoids duplication of effort. The new mechanism will deal with a full range of air issues of interest to Canadians, such as climate change, urban smog and acid rain;"
- "Ministers discussed a draft report on Canada's situation regarding global warming and the need for further actions (see September 1993 note). They have instructed their officials to proceed with the development of options that will meet Canada's current commitment to stabilize greenhouse gas emissions by the year 2000 and to develop sustainable options to achieve further progress in the reduction of emissions by the year 2005;" and
- "Subject to further consultation on the development of a national strategy prior to ratification, ministers supported Canada's signing of a second international protocol to reduce emissions of sulphur dioxide (SO<sub>2</sub>), which is a major cause of acid rain."

At this first joint meeting, Environment and Energy Ministers confirmed their commitment to work together to meet Canada's air quality goals, and to consult with all interested parties in developing national and regional clean air goals.

SO<sub>2</sub> and No<sub>x</sub>  
emissions guidelines

Environment Canada's 1993 updated national guidelines for emissions of sulphur dioxide (SO<sub>2</sub>) and nitrogen Oxides (No<sub>x</sub>) were available in November as applied to new thermal generating stations. A report was also published outlining specifications for the design, installation and operation of automated continuous emission monitoring systems used to measure gaseous releases of SO<sub>2</sub> and No<sub>x</sub> from thermal generating facilities. The seven eastern provinces in Canada had signed agreements with the federal government to control SO<sub>2</sub> emissions. As a result, some

provinces had imposed sulphur dioxide limits on their electric facilities.

National Air Issues Mechanism	The National Air Issues Mechanism in place in <u>November</u> and for some months previously consisted of the Multi-Stakeholders Climate Change Task Group supported by Assessment, Inventories, Measures, and Forecasting Working Groups, and reporting to the National Air Issues Coordinating Committee. That Committee reported to the National Air Issues Steering Committee which, in turn, advised Ministers - Environment, Energy and Others - at Federal, Provincial and Territorial levels.
Global Climate Change Strategy industry's position	A statement by industry representatives in <u>November</u> defined energy companies' Global Climate Change Strategies in the following terms: Ensure that policy options considered by the governments of Canada, in response to the challenges of Global Climate Change, fully assess the impacts on the producers, the diverse manufacturing and business sectors, the various regions and the competitiveness of Canada with respect to our major trading partners.
Energy Policy Overview	An Energy Policy Overview Report, completed in <u>November</u> , reviewed and updated energy policy issues and responsibilities as dealt with in the Energy Sector Overview of February 1993 and the Federal Energy Paths Report of September 1993. The November Report concluded, as in the previous reports, that energy policy in the coming years would likely be focused on three objectives: security of competitively priced energy supplies; environmental responsibility; and economic and regional development. The report is important in its definition of the main elements in the changed federal role in energy, and its reference to key relationships which are critical to the development and implementation of energy policy. Those relationships are defined within the federal government, with the Provinces, with clients, and with international partners.
Adaptation to Climatic Variability and Change	A 53-page 1993 report completed in <u>November</u> by the Task Force on Climate Adaptation of The Canadian Climate Change Program provided a critical assessment of the concept of climate adaptation, and made proposals for appropriate action. It was expected that the report would give further impetus to the process of assessing the threat to Canadian society from climate change, and stimulate the search for adaptive responses. The report included the five explicit references to adaptation as included in the Framework Convention on Climate Change which was signed by 154 countries, including Canada, at the U.N. Conference on Environment and Development held in Rio de Janeiro in June 1992. In its study, the Task Force focused on adaptation in socio-economic activities to climate variation and change. Included in its inventory of adaption strategies are specific recommendations related to the maintenance and operation of thermal power plants (fossil fuel or nuclear), and hydroelectric plants. Publication of the study was supported by the Atmospheric Environment Service of Environment Canada.
Natural gas market assessments	In <u>December</u> , the National Energy Board issued two Natural Gas Market Assessment reports: Natural Gas Supply-Western Canada, Recent Development (1982-1992) and Short-Term Deliverability Outlook (1993-1996); and Canadian Natural Gas Market Mechanisms: Recent Experiences and Developments. These two reports were part of NEB's ongoing monitoring of energy markets. During 1993, NEB issued 29 new licences authorizing the export of some 95.3 million cubic metres (3.4 trillion cubic feet) of natural gas over periods ranging from 4 to 20 years. The Board also issued 125 short-term orders authorizing the export of natural gas for periods of up to 2 years.
Oil and gas reserves - 1993	As of <u>December 31</u> , 1993, estimated established Canadian reserves of crude oil were 688.8 million cubic metres, up slightly from the 1992 year-end reserves of 680.1 million cubic metres. Crude bitumen reserves were 457.6 million cubic metres, for developed projects only, down from 482.2 million cubic metres a year earlier. Estimated established Canadian reserves of marketable natural gas at the end of 1993 were 1,876 billion cubic metres, down from 1,911 billion cubic metres at the end of 1992. The ratio of total connected and unconnected remaining reserves to production of natural gas continued its historical decline, to a level of about 15 in 1993.

Electricity generation in 1993	As of <u>December</u> 1993, Canada's net generating capacity was estimated to be 109,100 megawatts, an increase of 3% over 1992. Total net generation of electricity in 1993 was estimated at 512,000 gigawatt hours, an increase of 2% from 1992, with 62% hydro, 22% conventional thermal, and 16% nuclear. Total Canadian consumption in 1993 was an estimated 485,200 GWh, a 2% increase over 1992. Exports of electricity totalled 29,364 GWh up 12% with an associated revenue of \$858 million, a 23% increase. Firm and interruptible sales rose 23% and 3%, respectively.
Oil and gas exploration - 1993	The record through to <u>December</u> showed that activity levels in land, drilling and the geophysical sectors increased dramatically in 1993 from 1992 levels, reflecting optimism, particularly in the natural gas sector. Canadian oil and gas industry spending in provincial and federal land sales totalled \$732 million in 1993 compared with \$206 million in 1992. Exploration and development expenditures in total were estimated at \$8.0 billion compared with \$5.3 billion in 1992.
Energy supply and demand trends - 1993	The record in <u>December</u> at year-end showed strong growth in 1993 in the Canadian energy industry, with energy production up by 5.1%. Energy consumption rose 2.9%, with the largest share of the increase coming from natural gas demand. Total energy exports and imports grew 9.0% and 5.8%, respectively. Over the previous 5 years, the market shares of the various energy sources, expressed as a percentage of domestic consumption, had changed gradually. In 1989, petroleum accounted for 36.2% of all energy consumed; by 1993 its share had fallen to 33.9%. The share of renewables remained fairly stable at 5.6 to 5.8%. The shares of natural gas, hydro, and nuclear energy had each gained slightly, with no increase in the coal percentage. The value of petroleum, natural gas, and electricity exports in 1993 was \$17.9 billion, an increase of 13% from the \$15.5 billion total in 1992. The value of energy imports of \$5.5 billion in 1992 declined slightly to \$5.4 billion in 1993.
Coal market outlook	Although thermal coal consumption in Canada declined somewhat in 1993 due mainly to the increased electrical generation in Ontario from Ontario Hydro's nuclear plants, the outlook in <u>December</u> for the remainder of the decade and into the 21 <sup>st</sup> century was for increases in Canadian and world coal production, utilization and trade. The expectation was that thermal coal demand would grow in Nova Scotia, New Brunswick, Ontario, Saskatchewan, and Alberta.
New uranium mining projects	At the end of <u>December</u> , there were 5 new uranium mining projects, planned for production in Saskatchewan, in various states of environmental approval. The aggregate mill capacity of the projects was 16,500 tonnes of uranium per year. In addition, two other properties were preparing for expansion to existing operations. Canadian uranium production in 1993 was 9,150 tU, well below the country's then production capability, in excess of 10,000 tU/year.
Nuclear power generation	In <u>December</u> , the combined generating capacity of Canada's 22 in-service CANDU reactors was approximately 15,350 megawatts electric (MWe), accounting for almost 17% of the country's electric power generation capacity. In Ontario, nuclear-generated electricity reached 55% of the province's electric power in 1993 and in New Brunswick, 35% of that province's output.
Nuclear reactor accidents-1993	For the 12 months ending in <u>December</u> 1993, the Atomic Energy Control Board judged that, although nuclear reactor operation had been acceptable safe, there had been 700 unusual events recorded at the operating reactors, of which 270 required a formal report to the AECB. The unusual events ranged from minor spills of radioactive heavy water to loss of cooling capacity while the reactor was shut down. During the year, Ontario Hydro completed repairs to the reactor building dome on Unit 1 of the Pickering A station to reduce the leakage that, under postulated accident conditions, would occur through hairline cracks in the concrete.
CANDU high performance	At year-end in <u>December</u> , the CANDU 6 station at Point Lepreau, N.B. continued to be a world leader in lifetime rankings. The Wolsong 1 unit in South Korea led the world in annual performance rankings in 1993. At year's end, Unit 7 at the Pickering Generating Station exceeded the world mark of 713 consecutive days of operations. The unit was scheduled for maintenance

outage in September 1994.

Nuclear industry  
economic benefits

In the period ending in December 1993, Ernst & Young, management consultants, documented the economic benefits of the Canadian nuclear industry. The study found that, in the 30 years since nuclear power was first used to generate electricity in Canada, the industry had contributed at least \$23 billion to the country's gross domestic product.

Challenges facing the  
Canadian electric  
industry

As viewed in December, the Canadian Electrical Association found the year 1993 as one of increasing change in the Canadian electric industry. The unexpectedly slow economic recovery, the down-sizing and restructuring in industry, energy efficiency programs and other initiatives aimed at domestic and industrial applications, were all leading to higher surplus levels in generating capacity, with impacts on electric utility revenues. The regulatory environment, increasingly favourable toward competition, was stimulating a renewed emphasis on planning and restructuring in the electric utility industry.

IEA review of  
Canada's energy  
policy

In its 1993 Country Reviews for the period ending in December, the International Energy Agency found that Canada had responded well to recommendations made in the last (1991) IEA in-depth review of Canada. Canada's energy policy objectives were seen to be broadly in line with the IEA's Shared Goals. The IEA did note that additional attention in two areas could help Canada build upon its progress : in the matter of CANDU financing, to ensure that AECL's commercial engineering activities were run on a cost-recovery basis (see December 1992 note) : and to evaluate the effect of government funding of megaprojects on energy markets.

## THE YEAR 1994

**Overview:** On July 18, 1994, First Ministers signed an Agreement on Internal Trade to eliminate barriers to trade, investment and mobility within Canada. The Agreement protected 10 economic sectors, eliminating new trade barriers and required the reduction of existing ones. The AIT also provided for the streamlining and harmonization of regulations and standards, the establishment of a formal dispute resolution mechanism, and commitments to further liberalize trade through continuing negotiations and specified work programs. The AIT did not contain an energy chapter, which was to be the subject of further negotiations between the parties.

The February 22, 1994 federal Budget restricted the small business tax rate to companies with capital of less than \$15 million. The Budget also eliminated Class 34 (the accelerated capital cost allowance class for energy conservation equipment), placing its contents into Class 43.1, a subset of the manufacturing and processing equipment Class 43. As such, energy conservation equipment would now only qualify for a CCA rate of 30 percent, on a declining-balance basis. In addition, the equipment had to be used in a manufacturing process, or for the generation of electricity. However, certain renewable energy equipment was added to Class 43.1, as were enhanced combined-cycle generating equipment.

Uranium marketing  
issue: Russia U.S.A.  
Canada

On January 7, Canada presented a Diplomatic Note to the U.S.A. government pointing out that the U.S.A.-Russian amendment to the quantitative restraint agreement signed between the U.S.A. and six former Soviet Union uranium producing republics in October 1992 would endanger the viability of Canada's uranium production industry and would be inconsistent with the obligations of the U.S.A. under the North American Free Trade Agreement and the GATT. Despite the protest, the U.S.A.-Russian amendment was signed on March 11, 1994. Canada challenged the amendment, and consultations commenced under the NAFTA dispute settlement. Following three rounds of talks in 1994, an agreement to resolve the dispute to the satisfaction of all parties was reached early in 1995. Under the settlement, the U.S.A. confirmed that the uranium derived from the retirement of Soviet nuclear weapons would be subjected to the quotas and restrictions of the suspension agreement. The disposition of this material for use as commercial nuclear fuel was to take place over a period of many years, minimizing the impact on the world uranium market and on Canada's uranium market in the U.S.A.

NAFTA ratified

The North American Free Trade Agreement was ratified in January 1994.

Bruce A Unit 2  
suspension,  
maintenance backlog

In February, Ontario Hydro announced its decision to suspend operation of Unit 2 of the Bruce A nuclear station, beginning in September 1995. The Unit was to be left in a state that allows for pressure tube replacement and boiler rehabilitation, should such a decision be made by Ontario Hydro in the future. In March 1993 Ontario Hydro had reduced power on all Bruce reactors to 60% as a result of large loss-of-coolant accidents. Later, in June 1993, AECB approved Ontario Hydro's request to raise power to 80% on all Bruce B reactors. Bruce A reactors continued to be derated to 60% power in 1993. In March 1994, AECB approved raising of power to 70% in Units 1, 2 and 3. While AECB's overall assessment was that the standard of operation and maintenance of Canadian nuclear reactors was improving, the backlog of maintenance work and the necessary revisions to operating procedures continued to be a general shortcoming.

Advisory Council on  
Industrial Energy  
Efficiency

On February 7, the Minister of Natural Resources Canada met with Canadian industrial leaders at the first meeting of the Minister's Advisory Council on Industrial Energy Efficiency (MACIEE). The Government of Canada was looking to Canadian industry to use energy efficiency as a means of limiting greenhouse gas emissions. It had been concluded that a voluntary approach by industry could be an effective way of reducing emissions. Members of the MACIEE were primarily chosen from the Policy Board of the Canadian Industry Program for Energy Conservation (CIPEC) which was first established in 1975 as a voluntary industry-driven program to deal with energy prices and security of supply issues. Since that time, CIPEC had taken on the environmental challenge and had established a framework of voluntary industry participation in the development of policies and strategies for reducing industry's contribution to Canada's greenhouse gas emissions. The

new Advisory Council on Industrial Energy Efficiency was intended to provide a forum for representatives of the goods-producing sectors to consider the issues, make commitments and arrive at reasonable solutions regarding the implementations of industrial energy strategies. The work of the Council would be in support of NRCAN's Industrial Energy Efficiency (IEE) Initiative. The MACIEE would provide for a revitalization of the Canadian Industry Program for Energy Conservation (CIPEC), and support an Industrial Targeted Program to stimulate research and development in selected industrial sectors

.R-2000 Home Program-new standards

On February 14, the Minister of NRCAN announced new standards for the R-2000 Home Program and a housing energy code that would also help Canadians contribute to the reduction of greenhouse gas emissions throughout the country. Under the new standards, R-2000 homes would use 14% less energy and 35% less water than homes built to the existing standard, while maintaining and improving air quality and comfort. In 1993, 1500 homes were constructed by qualified R-2000 home builders, a 25% increase over 1992. At this time, the Minister also released for public commentary the draft National Energy Code for Houses. Following its adoption by provincial governments, the Code would require that all new small residential buildings meet or exceed minimum standards to provide a cost-effective degree of energy efficiency.

Zero emission transit bus

Federal/British Columbia funding of \$3.2 million to build a heavy duty, full-size zero emission transit bus was announced on February 14 by the Federal and Provincial Governments. British Columbia was to contribute up to \$2.2 million over 3 years toward a \$6 million Phase 2 commercialized program being carried out by Ballard Power Systems Inc. of Vancouver. NRCAN, California's South Coast Air Quality Management District, and Ballard had committed to contribute \$1 million, \$1.3 million and \$1.5 million, respectively. This funding followed successful completion of the Phase 1 zero emission vehicle prototype bus programs. In 1993 Ballard had successfully launched the world's first fuel cell powered zero emission prototype transit bus, powered by fuel cell technology which combined hydrogen and air to create electricity.

Ontario Hydro surplus capacity

On February 14, Ontario Hydro announced that surplus generating capacity would be reduced by about 2700 MWE during 1994/95. Four fossil-fuelled units at the Lambton and Lennox stations and one nuclear unit at the Bruce nuclear station were to be mothballed. Bruce Unit 2 was to be shut down in June 1995.

Hydro-Québec export licence approved

On February 24, the Supreme Court of Canada rendered its judgment, upholding the National Energy Board's original decision on a Hydro-Québec export licence application. The Court had heard an appeal on October 13, 1993 by the Grand Council of the Crees (of Québec) and the Cree Regional Authority against an NEB export licence approval being granted without certain cost disclosure and with environmental conditions concerning generation facilities being appended to the export licence.

Western Canadian Coal to Ontario Program

In February, NRCAN reviewed the Western Canadian Coal to Ontario Program which had been underway since 1987. In that year, the Action Committee on Western Canadian Low-Sulphur Coal to Ontario was established under the chairmanship of the Deputy Prime Minister, with the Premier of Ontario as Vice-Chairman, and the Premiers of British Columbia, Alberta, and Saskatchewan as members. The main objective of the committee was to undertake technical research designed to reduce the delivered cost of Western Canadian coal to Ontario and to expand its use in that province. It was established as a result of a recommendation from a federal/provincial task force on low sulphur coal to Ontario created to increase the contribution of coal to the economic development of the western provinces. Funding was shared equally by the Federal and Provincial Governments and the private sector, to a maximum of \$81 million. To February 1994, some 16 projects had been supported at a total shared cost of about \$17 million. In April 1993, the Secretariat to the Action Committee for the program had recommended that the Committee continue with a mandate that went beyond technical research, to other means of assisting sales of

Western Canadian coal and sales of related industries. This proposal was not accepted and in November 1993 there was a major change to the focus of the Western Diversification Program, including the identification of strategic initiatives, with coal not being seen as a strategic sector and not eligible for funds, nor were unexpended funds in the initial \$81 million coal program carried forward. At the same time, there were intimations from industry that the Western Coal to Ontario Program had not accomplished much. Research and development alone could not do enough for the competitive difficulties related to the location of Western Canada coal mines, the high cost of production, the long transportation distance to market as compared to U.S. coal mines located across the Great Lakes, and the declining Ontario thermal coal market with Ontario Hydro's generating units designed to burn U.S. coal. At the same time, attention was turning to coal marketing opportunities in the Asia-Pacific region to which NRCAN was giving attention through the APEC Energy Working Group. In addition to coal marketing opportunities, there were opportunities for the export of Canadian environmental technologies relating to coal production and use

.Canada's National Report on Climate Change-1994

Canada's National Report on Climate Change was completed in February. The draft national report, published in September 1993, was made available to stakeholders for review and comment. Much of the response received in October and November was incorporated into the final report. Subsequent national reports were to be produced on a regular basis, as determined by the Conference of the Parties to the Framework Convention on Climate Change. Federal and provincial/territorial environment and energy ministers collaborated to produce the 1994 national report, with input from the private sector and non-governmental organizations. The report presented an overview of action being taken in Canada to meet the country's commitments to the Framework Convention on Climate Change in the areas of climate change mitigation, adaptation, research and education, and international cooperation. As a first step, Canada had established a national goal to stabilize net emissions of greenhouse gases not controlled by the Montreal Protocol at 1990 levels by the year 2000. The 1994 national report provided governments, non-government stakeholders and individual Canadians with a foundation for understanding Canada's situation and for determining the extent of further action needed to meet Canada's climate change goals. The report consists of 3 Sections: Canada and climate change, including a framework for action; 2- Canadian Actions to Address Climate Change; and Assessing Canada's Progress in Mitigating Climate Change. A process was established to develop and recommend to federal and provincial/territorial energy and environment ministers a national action program designed to meet Canada's climate change goals. The process is based on a Comprehensive Air Quality Framework to encourage all jurisdictions in Canada to coordinate and cooperate in the management of all air issues, including acid deposition, smog, ozone depletion, and climate change. The framework is implemented by means of a National Air Issues Coordinating Mechanism, which includes a national Task Group on Climate Change. This group of government, business, labour, consumer and environmental members had accepted responsibility for completing the 1994 and future national reports, providing advice to the federal government regarding positions Canada should be taking during international climate change negotiations, and developing a national action program to achieve Canada's climate change goals.

Task Force on Climate Change

In a March 24 public statement the Minister of National Resources referred to the establishment of the Climate Change Task Force Group, comprised of industry as well as provincial and federal government representatives, in which NRCAN was participating. The Task Force reported to the National Air Issues Coordinating Committees.

Canadian Greenhouse Gas Emission Inventory Activities

A 108-page report "Canadian Greenhouse Gas Emission Inventory Activities", dated March 22, 1994, was prepared by Environment Canada to provide a summary of activities then underway to develop emission estimates of greenhouse gases in Canada and internationally. The report also provided background information on why the estimates were being developed, a discussion of how the 1990 estimates were arrived at, and what changes might be forthcoming. The ultimate goal was to develop a national consensus emission inventory for 1990 and beyond, a process that

would be facilitated once the international community came to an agreement on a common reporting format, and an agreement was reached on how Canada should develop its national estimates. The report is a record of federal government and provincial government activities in greenhouse gas inventory work to early 1994. It also provided a detailed comparison of emission inventories of the provinces and territories. It took note of the work of NRCan in developing forecasts of energy use and concomitant carbon dioxide emissions, referring in particular to the document "Canada's Energy Outlook 1991-2020".

U.N. Framework  
Convention (UNFEC)  
in force

The United Nations Framework Convention on Climate Change (UNFCC) came into force on March 21, 1994, 3 months after the 50<sup>th</sup> country ratified the convention. Canada, the eighth country to do so, ratified the convention in December 1992. The ultimate objective of this convention is to "achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".

Carbon tax not  
favoured

In a March 24 address to the Canadian Association of Petroleum Producers, the Minister of NRCan reiterated that the Government of Canada was committed to market-based principles while recognizing its responsibilities to Canadians with respect to science and technology, resource ownership, regulation, and the environment. There was a commitment to harmonize energy and environmental goals, and to arrive at a made-in-Canada approach to meeting Canada's international obligations on global warming. A special effort was to be made to obtain the right balance between environmental objectives and cost competitiveness. There was no government support of the concept of a carbon tax as a cost effective way of reducing CO<sub>2</sub> emissions.

PERD funding 1993-  
94

Program of Energy Research and Development (PERD) funding, in the yearly period ending March 31, totalled \$83.5 million. While fossil fuel-related R&D was still the largest component of PERD investment, it was not all production-related. About 55% dealt with improving the efficiency of extraction and conversion of resources. The remaining funding was directed towards the environmental, health and safety of fossil fuel production, conversion and utilization.

Nuclear reactor waste  
program

During the fiscal year ending March 31, 1994 the panel set up in accordance with the Federal Environmental Assessment and Review Process Guidelines Order to carry out a public review of a concept for disposal of high-level reactor wastes deep in rock formations continued its activities. The Environmental Impact Statement guidelines were issued in final form in March 1992 by the panel. The review was expected to continue for several years.

Environmental Panel  
recommendations-  
northern  
Saskatchewan  
uranium

On March 25, the Government of Canada's response was announced concerning recommendations received on December 2, 1993 from the Rabbit Lake Uranium Mine Environmental Assessment Panel on proposals to develop 3 new ore bodies that would extend uranium production at the Rabbit Lake operations in northern Saskatchewan, co-owned by Cameco Corporation and Uranerz Exploration and Mining Limited. The Government believed that full production could proceed, subject to the Atomic Energy Control Board licensing process through which the Board would address the conditions recommended by the Panel during the evaluation of the licence applications. Full support of the Environmental Assessment and Review Process (EARP) was essential to ensure that all of Canada's uranium producing operations were meeting high standards of health, safety and environmental protection. Commitment to those standards enhanced the Canadian industry's reputation as a reliable uranium supplier to the international market.

Standing Committee  
on Natural Resources  
- Witness: AECL  
President

The Minutes of Proceedings and Evidence of the Standing Committee on Natural Resources of March 8, 1994 record the appearance of the President of Atomic Energy of Canada Limited. The witness noted that since 1962 to early 1994, the return to the taxpayers of Canada for the investment of \$4.2 billion in AECL had been \$23 billion. Much of the evidence presented in this



appearance related to the question of why a new AECL mission statement had been adopted by the corporation with the result that its focus would be somewhat narrowed to essentially CANDU-related research. The cut-back in AECL's overall research program would come about with the lessening of support from its customers, particularly Ontario-Hydro with the AECL funding agreements with Ontario Hydro terminating in March 1997.

Standing Committee  
on Natural Resources  
- Energy Sector  
Witnesses

The Minutes of Proceedings and Evidence of the Standing Committee on Natural Resources of March 10, 1994 record the appearance before the Committee of NRCan Energy Sector officials. The presentation covered federal government responsibilities in the area of energy, the relative importance of energy in the economy, a review and outlook for energy supply and demand in Canada, and an overview of issues currently facing the Energy Sector. The questions put to officials by the Parliamentarians covered a broad range of interests and concerns: efficiency gains in fuel use in a broad range of applications; environmental concerns related to fuel use; nuclear waste disposal; the potential of small hydro and biomass as energy sources; the use of ethanol in transportation fuel; the uncertainty of energy prices; progress in deregulation; energy supply and demand forecasting. Committee members indicated considerable satisfaction with information supplied in response to questions.

Energy Efficiency  
Act Annual Report -  
1994

On April 30, the Minister of NRCan tabled in the House of Commons the first annual report on the administration and enforcement of the Energy Efficiency Act. The report highlighted existing levels of energy use for all major sectors in Canada's economy, and displayed the gains in energy efficiency achieved in each sector over the previous 15 years. The report also illustrated the need for continuing rapid improvements in energy efficiency in all sectors in order to meet the environmental challenge the country was facing. NRCan's objective was to provide a report to Parliament on the Department's activities in the areas of energy efficiency, renewable energy, and alternative transportation fuels which came under the authority of the Energy Efficiency Act. Those activities involved suasion, regulation, cost-shared research and development and information. The report represented the first time in many years that a comprehensive outline had been provided of NRCan's programs in support of energy efficiency and the use of alternative energy. Those programs represented the elements with which the Federal Government would pursue its global climate change responsibilities in the area of energy efficiency and alternative energy.

European coal market  
subsidies

An April 28 statement on behalf of the Minister of NRCan drew attention to distortion in the international coal marketplace related to European subsidies for coal production. The Uruguay Round Agreement of the GATT had aimed to reduce the use of subsidies which were causing havoc in international coal markets. Action would be taken on behalf of the Canadian coal industry, under provisions of the GATT, when subsidies were leading to import displacement, price undercutting, or lost sales.

Energy efficiency  
agreement-Canada  
and Newfoundland

In April the federal Minister of Natural Resources and the Newfoundland Minister of Mines and Energy signed a 4-year Letter of Cooperation on Energy Efficiency and Alternative Energy. The agreement created a framework for effective federal-provincial cooperation to improve energy efficiency and promote the use of alternative energy in Newfoundland. It also responded to the need to limit greenhouse gas emissions and addressed the issue of global warming. The Letter of Cooperation would help avoid any duplication of subsidies, and improve the use of public funds by Federal and Provincial Governments. Under the agreement, activities were to be managed by a joint Management Committee to be co-chaired by senior officials of NRCan and the Newfoundland Department of Mines and Energy. The Canada-Newfoundland Letter of Cooperation was the third agreement to be signed since 1993, the first two having been with Saskatchewan and with Nova Scotia.

Standing Committee  
on Natural Resources  
- Minister's statement

In her statement of April 26 before the House of Commons Standing Committee on Natural Resources, the Minister of NRCan reviewed the work of the Department in the context of the Main Estimates. In directing attention to priorities, she described representative energy efficiency

initiatives; a project to test the commercial viability of a radio-frequency lumber kiln; the Federal Buildings Initiative; the Energy Innovators initiatives; the R-2000 Home Program; the C-2000 Program for Advanced Commercial Buildings; and the overall emphasis on increased energy efficiency in the residential, industrial, commercial and transportation sectors towards the objective of reducing greenhouse gas emissions. Attention was also directed to the serious issues which faced the nuclear industry, with major questions concerning uranium resources, the structure of the industry, the strategy to deal with radioactive wastes, nuclear safety, and the stability of nuclear energy programs in other countries.

R-2000 program renewed in Saskatchewan

On May 19, the federal Minister of Natural Resources and the Saskatchewan Minister of Energy and Mines announced agreement to renew the R-2000 New Home Building Program in Saskatchewan. Recently, the performance standards for the R-2000 homes had been upgraded to provide for more efficient and environmentally responsible products for Canada's residential building market. R-2000 homes could use up to 50% less energy than conventional homes.

Bill C-6, NEB authority to regulate frontier oil and gas activities

Bill C-6, An Act to amend the Canada Oil and Gas Operations Act, the Canada Petroleum Resources Act and the National Energy Board Act, and to make consequential amendments to other Acts was assented to 12<sup>th</sup> May, 1994 (S.C. 1994, Vol. 1, Ch. 10). This Act defines certain authorities and responsibilities to the National Energy Board in respect of the Canada Oil and Gas Operations Act, the Canada Petroleum Resources Act and the National Energy Board Act and it repeals the Canada Oil and Gas Act. The amendments transferred authority to the NEB to regulate oil and gas activities in frontier areas, except offshore Nova Scotia and Newfoundland where there are federal/provincial shared management agreements. Rights issuance matters remain under the authority of the Minister of Natural Resources and the Minister of Indian Affairs and Northern Development. The amendments authorize The NEB and its officers and employees to provide advice to ministers, officers and employees of government departments, ministries and agencies. They also transfer authority to hear appeals, hold inquiries, and make orders in respect of declarations of significant discoveries and resource conservation matters. Bill C-6 received first reading in the House of Commons on February 2, 1994. Clause by Clause Consideration is recorded in the March 22, 1994 Minutes of Proceedings and Evidence of the House of Commons Standing Committee on Natural Resources. This legislation put in place the legal framework for the NEB to assume the frontier oil and gas responsibilities of the Canada Oil and Gas Lands Administration (COGLA).

NEB report on oil sands exports

On May 18, a report was issued by the National Energy Board on the topic of long-term licensing of oil sands production exports. The report reviewed the effectiveness of the regulatory process applied to long-term exports of Canadian oil sands production. The regulatory review had begun in May 1993. The report summarized comments of interested parties on a preliminary report distributed in August 1993, on regulatory opinions, and on views of the NEB on options. The report was to be considered by the Minister of NRCan with a view to determining how impediments to investment in the oil sands could be reduced and development of the resource continued.

Standing Committee on Natural Resources - Energy Sector Witnesses

The Minutes of Proceedings and Evidence of the Standing Committee on Natural Resources, House of Commons, for the meeting of May 3, 1994, record the presentations of Energy Sector, NRCan, officials who appeared before the Committee in relation to the Department's Main Estimates for the fiscal year ending March 31, 1995. The Energy Sector presentation included an outline of the portfolio structure of the Sector and how the estimates pertained to it; information on megaprojects with reference to cost overruns; the efficiency and alternative energy program in the Sector, including information on ethanol; and information on the nuclear program, including reference to the cost of nuclear power as it related to other ways of baseload electricity generation. The record in the Committee's Proceedings of May 3 provides an important reference, as of mid-1994, on key energy issues. The priorities cited for the 1994-95 period were climate change policy; second-generation steps regarding programs in the efficiency and alternative energy area; and Canada's policy concerning nuclear energy, its future and the question of R&D funding.

Questions by members of the Parliamentary Committee related to the government investment in Hibernia; the role of Petro-Canada in the market, with 30% of the company ownership in the private sector; the future of gas supply in the Atlantic provinces; the future of ethanol and other alternative transportation energy sources; oil price deregulation; and the cost of recycling nuclear waste.

Standing Committee  
on Natural Resources  
- CANMET  
Witnesses

The Minutes of Proceedings and Evidence of the Standing Committee on Natural Resources, House of Commons, for the meeting of May 4, 1994 record the presentations of officials of the Canada Centre for Mineral and Energy Technology (CANMET) in relation to NRCan's Main Estimates for the fiscal year ending March 31, 1995. Officials noted that partnership with Canadian mineral and energy industries is the essence of CANMET's mandate which is directed to ensuring that industry has the technology needed to operate competitively, safely and efficiently. These Proceedings provide a record of how CANMET sets priorities and conducts its programs. Considerable attention was given in the presentation by CANMET officials to energy efficiency and alternative energy research and development programs with an annual budget of \$31 million, 75% of the research being contracted out.

Inter-Utility Trade in  
Electricity - NEB  
report

On June 24, a report was released by the National Energy Board on the interprovincial trade in electricity with the title "Review of Inter-Utility Trade in Electricity". The report reviewed and reported on measures to enhance interprovincial electricity trade, to encourage greater cooperation between utilities regarding system planning and development, and to allow electricity buyers and sellers to obtain commercial access to available transmission capacity, through intervening provinces for wheeling purposes. Earlier studies by the NEB had demonstrated that there were potential benefits from enhanced levels of trade, the greater portion of any increased benefits stemming from transactions between Canada and the U.S., with benefits from additional interprovincial trade also being significant. The latest report outlined options that would help to realize these benefits. Specific follow-up on the NEB report was to continue to involve the provinces, utilities and other interested parties. A companion report, also issued on June 24 by the NEB entitled "Review of Inter-utility Trade in Electricity - Analysis of Submissions", analyzed the responses received from provincial governments, utilities and interested persons. While there was general, but not unanimous, agreement among utilities and provinces on the concept of regional cooperation to achieve greater economy in electricity supply, there was no agreement on open access to transmission lines. The U.S. Energy Policy Act (1992) had given the U.S. Federal Energy Regulatory Commission powers to order transmission access, with possible future implications for Canada.

Canada-  
Newfoundland  
Offshore  
Development Fund -  
Safety Centre

On June 21, the Offshore Safety and Survival Centre (OSSC) of the Marine Institute of Memorial University was opened. The new centre gave Newfoundland a high degree of capability in emergency and safety training for offshore and marine environments. It was designed to provide an improved standard of safety training and fire fighting and includes a simulated oil production platform for training purposes. Funding of \$3.6 million for establishment of the Centre was provided under the Canada-Newfoundland Offshore Development Fund, a \$300 million fund cost-shared 75:25 by the Government of Canada and the Government of Newfoundland. The Fund had been established to help defray the social and economic infrastructure costs related to oil and gas development off the coast of Newfoundland, before production began, and to ensure that the provincial economy was well-positioned to obtain the economic benefits of offshore development.

Energy Innovators  
Initiative - Jasper  
program

On June 10, Alberta Power acknowledged NRCan's participation in a program which since 1992 had supported the town of Jasper's energy efficiency improvements. A Public Information Committee, in which NRCan had participated, had provided advice to the town during the planning and implementation of the Jasper Energy Efficiency Project. In 1992, Jasper, Alberta, had been the first municipality to join NRCan's Energy Innovators Initiative. As a result of electricity savings, Alberta Power a subsidiary of Canadian Utilities Ltd., had been able to defer construction of a \$12.5 million transmission line or a \$3.5 million three megawatt generating station. The town's energy efficiency efforts had resulted in savings in residents' power bills and

had reduced greenhouse gas emissions of CO<sub>2</sub> and nitrous oxide.

C-2000 Buildings Program

In June, four winners of the C-2000 Advanced Commercial Buildings Program's Concept Design Phase were announced. The program was part of the Buildings Energy Technology Advanced (BETA) Phase, conducted by CANMET. C-2000 was promoting the adoption of advanced technologies and management techniques through pilot projects, monitoring and information transfer.

C-2000 buildings were expected to consume less than half the energy of existing commercial buildings and to improve both the indoor air quality and functional performance. Concepts that had contributed to the success of the Advanced Houses Program were also being applied in the C-2000 Program, including advanced mechanical, ventilation, heating and control systems, and high-performance building envelopes. The next stage of the development process was to be the Design Development Phase.

MDIP program extension for transportation fuels

On June 6, announcement was made of an extension of the Market Development Incentive Payments (MDIP) program to establish new markets for natural gas and methanol as alternative transportation fuels. NRCan was to administer the balance of the MDIP funds, totalling about \$15 million on programs in support of the two fuels. The MDIP programs announced in June 1994 continued initiatives launched by the federal and Alberta governments in 1989, thereby providing incentives for natural gas vehicle conversions and factory-produced natural gas vehicles. MDIP also continued to support a technology development program for natural gas and methanol, which in turn served to stimulate expanded market demonstrations of methanol vehicles in several Canadian centres. Under the terms of a Memorandum of Agreement signed between the Governments of Canada and Alberta in 1981, MDIPs were provided by the Alberta government and natural gas producers in the province to the Federal Government to develop new markets for natural gas. Between 1981 and 1986, a total of \$160 million in MDIP funds was collected. The funds were expended on a series of 5 natural gas distribution and promotion programs including the Natural Gas Vehicle Program (NGVP) and the Natural Gas Fuelling Station Program (NGFSP). In 1989, it was agreed that all remaining MDIP monies (\$28.5 million) would be directed to the promotion of methanol fuel as produced from natural gas. In October 1989 the Federal and Alberta energy ministers announced a comprehensive set of MDIP programs in support of natural gas and methanol vehicles, including a continuation of the NGVP and NGFSP, with the latter program expended to include support for private and public refuelling facilities, an incentive for the installation of natural gas vehicle refuelling appliances (VRAs), a market demonstration of the potential of methanol as a vehicle fuel in Canada, and a program of research and development in support of both natural gas and methanol vehicles. As further support was required to ensure that the natural gas vehicle became firmly established as a viable transportation energy option for Canada, after consultation with all stakeholders the Federal and Alberta governments agreed in June 1994 that MDIP support to natural gas and methanol fuel development would be extended a further three years, April 1/94 to March 31/97.

NewGrade Heavy Oil Upgrader - financial restructuring

An agreement to financially restructure the NewGrade heavy oil upgrader in Regina was announced on June 15 by the federal and Saskatchewan governments and the President of Federated Cooperatives Ltd. (FCL). The MOU provided for federal participation in the restructuring agreement reached in August 1993 between Saskatchewan and Consumers Cooperative Refineries Ltd. (CCRL), a wholly-owned subsidiary of FCL. Under the terms of the new agreement, the Government of Canada was to make a one-time payment of \$125 million. In exchange for this payment, Canada was relieved of any future financial obligations related to the project. Prior to the new agreement, Canada was responsible for \$275 million in loan guarantees. CCRL was committed for up to \$115 million, with \$50 million of this to be through an asset purchase from NewGrade. Saskatchewan would contribute a total of \$75 million and would share responsibility for any future cash deficiency, and would also indemnify the Government of Canada in the event that Canada loans were called. Saskatchewan and CCRL were each to share cash flow deficiencies equally up to \$4 million per year. The upgrader began operation in

November 1988 and was routinely exceeding its design production capacity of 50,000 barrels a day, upgrading heavy oil into a synthetic crude for further processing by CCRL and other refiners into usable petroleum products. The construction of NewGrade was financed with a \$154 million equity injection from the Saskatchewan government and \$635 million in third party debt. The debt had been guaranteed by the Saskatchewan government (57% or \$360 million) and the Federal Government (43% or \$275 million). Before the June 1994 agreement was reached, a combination of debt load and depressed heavy oil prices had threatened the upgrader's ability to meet its debt obligations.

Sulphur protocol -  
acid rain

In June, Canada signed the United Nations Economic Commission for Europe's (UNECE) second sulphur protocol. It committed signatory countries to work toward a level of wet sulphate deposition that would not harm the environment. For several parts of eastern Canada existing programs in place in Canada and the U.S.A. were likely not sufficient to achieve this goal. An Acid Rain Task Group had been established to develop a national acid rain strategy by 1997, prior to the signing of the second sulphur protocol. To meet the commitment of the existing acid rain program in eastern Canada, some provinces had imposed SO<sub>2</sub> limits on their electric utilities. New power plant construction and retrofits of existing plants were addressing NO<sub>x</sub> and SO<sub>2</sub> emissions.

Energy in Canada - A  
Review of the  
Canadian Energy  
Sector

A 120-page report "Energy in Canada - A Review of the Canadian Energy Sector," completed in June 1994, by Natural Resources Canada provided a description and assessment of the Canadian energy economy as perceived in 1994. An introductory overview chapter is followed by chapters on crude oil and petroleum products, natural gas, electricity, uranium, nuclear, coal, renewable energy, alternative transportation fuels, and energy efficiency. Appendices deal with energy R&D expenditures, restructuring in the upstream petroleum industry, energy and the environment, and concluding with a brief description of energy policy pertaining to each sector of the Canadian energy economy. Support statistics in the several chapters were carried through to 1993. The outlook sections at the end of each chapter would be of particular importance as a reference in future energy policy deliberations, taking into consideration what was foreseen in early 1994 in the context of what subsequently had developed at the time of a new policy appraisal. The outlook sections in the uranium, nuclear, and renewable energy chapters would be of particular interest.

Syncrude-CANMET  
R&D partnership

On July 22, the Minister of NRCan and the President of Syncrude Canada Limited signed a Memorandum of Agreement which consolidated a successful research and development partnership between Syncrude and CANMET. During the previous 6 years, CANMET and Syncrude had worked together on a number of joint research and development projects to develop technologies related to the conversion of oil sands to synthetic oil. Under the MOU, both organizations agreed to plan a series of joint projects which would make the best use of the talents of each organization to use existing technologies and create new ones for the continued successful development of Canada's largest source of liquid hydrocarbons. The agreement provided for discussion of plans between Syncrude and CANMET with other interested developers. The two parties were confident that their collaborative research would become a cornerstone for activities by the Canadian Oil Sands Network for Research and Development (CONRAD).

Energy Innovators -  
Edmonton area

On July 22, the Minister of NRCan announced the inauguration of four Edmonton based organizations as Energy Innovators: AGT Ltd., the City of Edmonton, Edmonton Catholic School Board, and Interprovincial Pipe Line Ltd. joined the Energy Innovators Venture, a voluntary program coordinated by NRCan to encourage the adoption of energy efficient practices to save money and help protect Canada's environment. The four new Energy Innovators had demonstrated their commitment to energy efficiency by implementation initiatives to reduce energy consumption in their buildings. Energy efficiency in their properties had been improved through the installation of energy-efficient lighting systems, energy management control systems and other energy saving initiatives.

NEB environmental  
review-gas export

On July 8, the Minister of NRCan responded to the June 30 decision by the National Energy Board to approve natural gas export licences granted in its GH-5-93 hearing held earlier in 1994,

licences	<p>involving exports of 1.3 trillion cubic feet of natural gas. The Minister was satisfied that the NEB had complied with the requirements of the Environmental Assessment Review Process (EARP) Guidelines Order, and was prepared to recommend GH-5-93 export licences to the Governor-in-Council for approval on the expedited basis. The NEB had conducted its review of natural gas export licences issued earlier in 1994 in GH-5-93. The Board had conducted its review in response to a recent ruling by the Supreme Court of Canada that re-affirmed the National Energy Board's right to review environmental effects of identifiable upstream facilities related to electricity exports. During 1994, the NEB carried out environmental assessments of more than 160 projects in fulfilment of obligations under the Environmental Assessment and Review Process Guidelines Order, the NEB Act and the Canada Oil and Gas Operations Act. These included assessments of pipeline facilities applications, energy export applications, drilling programs, development plans, seismic and geological programs and R&amp;D activities.</p>
NEB report Canadian Energy Supply and Demand 1993-2010	<p>On <u>July 28</u>, the National Energy Board issued its report "Canadian Energy Supply and Demand 1993-2010", updating information from its June 1991 report. Later in 1994, in December, the Board published its technical report, a detailed discussion of the analysis and results of its 1994 study of Canadian energy supply and demands. The July report concentrated more on issues and less on the projection of results than previous reports. The main issue evaluated in the report was the impact of evolving technology on natural gas supply costs and the associated implications for total energy supply and demand. In its analysis of the prospects for Canadian energy supply and demand, the Board focused on the implications of the following:</p> <ul style="list-style-type: none"> <li>• the impact of technological change on natural gas supply costs and in turn the implications on demand and supply of all energy sources;</li> <li>• evolving oil supply technologies and different oil prices for Canadian oil supply;</li> <li>• a more energy intensive economy for energy demand;</li> <li>• more interprovincial planning of electricity supply together with open access to transmission facilities for the pattern of electricity generation and trade.</li> </ul> <p>The 69-page report set out the Board's macroeconomic assumptions; explained its natural gas price profiles in the two principal supply cases analyzed in its Current and High Technology cases, and its reference crude oil price assumption; presented the results of the energy demand projection in total, by sector, by fuel and by region; and then described the supply and demand outlook for electricity, natural gas, and crude oil. The report also included a section on the implications of the energy projections for atmospheric emissions. The Board's analysis resulted in substantially different natural gas price profiles in the two principal supply cases analyzed; by 2010 Alberta fieldgate prices are projected to average about \$4.00 and \$2.25 per gigajoule in real terms in the Current and High Technology cases respectively, compared to the 1993 level of \$1.58 per gigajoule. The Current Tech case is one in which the conventional resource continues to comprise the bulk of production and is increasingly expensive to exploit. In the High Tech case, new advances in technology and geological knowledge prevent the costs of finding and developing new gas reserves from rising appreciably from current levels. The report concluded that the combination of expanding exports and domestic demand would lead under all scenarios to rapidly rising production of Canadian gas over the next 2 decades - production could reach 7 exajoules in 2010 (6.7 trillion cubic feet) compared with 4.7 exajoules (4.5 t of) in 1993. In a setting in which electricity generation capacity is planned on an interprovincial basis and access to transmission is available, the Board's analysis suggested that large hydro projects in Labrador and Manitoba, which are too large for intraprovincial use, would be developed to supply the Atlantic provinces and Ontario from Labrador and possibly the U.S.A., while hydroelectric power from Manitoba would be transmitted to Ontario and Saskatchewan. Without the implementation of specific control measures, emissions of the greenhouse gases of carbon dioxide and methane would continue to rise with the growing use of fossil fuels through to 2010.</p>
Decommissioning Elliot Lake uranium mines	<p>In <u>August</u>, the Minister of Environment Canada approved an environmental panel's proposal to revise its terms of reference for review of proposals submitted by Rio Algom Ltd. and Denison Mines Ltd. for decommissioning several uranium mine site tailings in the Elliot Lake area, and</p>

final Environmental Impact Statements (EIS) guidelines were issued. The proponents' EIS were expected in early 1995, to be followed by public hearings. The Federal Government was to provide more than \$60,000 assistance under the Participant Funding Program to help individuals and groups prepare for their participation in the environmental review process at Elliot Lake uranium mining sites. This would be a continuing process as other uranium mining sites and processing facilities were decommissioned.

SO<sub>2</sub> emission limits-  
Utility programs

In August, Nova Scotia Power, with an annual SO<sub>2</sub> emission limit of 145,000 tonnes, officially opened the Point Aconi 165 MW Generating Station using circulating fluidized bed technology to achieve 90% SO<sub>2</sub> removal and to reduce NO<sub>x</sub> emissions to about 30% of those from a conventional pulverized coal-fired boiler. New Brunswick Power Corporation, with an annual SO<sub>2</sub> ceiling of 123,000 tonnes, began in late 1993 operating its 450 MW coal-fired plant at Belledune that was equipped with wet limestone scrubbers to capture about 90% of the SO<sub>2</sub>. Ontario Hydro, operating with an annual emission limit of 175,000 tonnes of SO<sub>2</sub>, completed in 1994 a \$537 million gas desulphurization project adding scrubbers to two 500 MW units at the Lambton Generating Station, thereby enabling the utility to stay within its limit, even with increased coal use.

Bi-Provincial  
Upgrader in  
Lloydminster

On August 3, Husky Oil Ltd. and the Governments of Canada, Alberta and Saskatchewan announced that Husky and Saskatchewan would purchase Canada's and Alberta's equity ownership in the Bi-Provincial Upgrader in Lloydminster. The agreement in principle would keep the 46,000 barrel a day Upgrader open. Husky's equity ownership in the plant would rise to 50% from 26-27% and Saskatchewan, through its Crown Investment Corporation, would increase its equity ownership to 50% from 17.5%. The cost of purchasing Canada's and Alberta's equity would be borne by Husky and Saskatchewan proportionally to their increased equity portions. The terms of the agreement included a cash payment of \$41.96 million to the federal government for its 31.67% ownership, and \$32.02 million to Alberta for its 24.17% ownership. There was also provision for upside interest payments over 20 years to the two governments if the price differential between heavy oil and synthetic crude exceeded \$6.50 per bbl. The two governments would also receive the benefits of any higher purchase price if either Husky or Saskatchewan were to buy or sell any equity or interest in the Upgrader. Canada and Alberta would have no ongoing liability for the operation of the Upgrader. The Upgrader was officially opened on November 22, 1992 with a design upgrading capacity of 46,000 b/d. To August 1994 it had produced 26.7 million barrels of synthetic crude oil and was operating at capacity. It employed over 400 workers.

Cameco privatization

In a share offering that closed on September 15, the Governments of Canada and Saskatchewan both sold 2 million Cameco shares at a price of \$25.50, continuing the privatization process that had begun after the 1988 merger of two Crown Corporations: Saskatchewan Mining Development Corporation and Eldorado Nuclear Limited into Cameco Corporation. This sale reduced provincial government ownership in Cameco to 34.9% and federal government ownership to 5.7%. An additional 5.1% reduction in provincial ownership occurred by October 1, 1994 when a special warrants issue in late 1991 by the Saskatchewan government was fully exercised. As of mid-October 1994, the public held 64.5% of the more than 52 million outstanding shares of Cameco, Canada's largest uranium mining and processing company.

Uranium resource  
appraisal by URAG

In September, the Uranium Resource Appraisal Group (URAG) of NRCAN completed its 20<sup>th</sup> assessment of Canada's uranium supply capabilities and an associated survey of uranium exploration and mining activities, as of January 1, 1994. Exploration expenditures for uranium in 1993 totalled \$40 million, down from \$46 million in 1992, in part reflecting continued low spot prices and limited market opportunities, with 20 active exploration projects in both years. With deterioration of the uranium market, the URAG assessment was again restricted to those resources recoverable from mineable ore at prices of \$150/kg U. or less. As of January 1, 1994, total recoverable known uranium resources were estimated at 475,000 tonnes of uranium. Each year since January 1, 1990 there had been a steady increase in the total estimate reported due to continued exploration successes in northern Saskatchewan and the NWT. The increase had occurred despite production exceeding 35,000 tU in that period and despite the continued

downward adjustment of resources in the Elliot Lake, Ontario, area resulting from the closing of Rio Algom's Quirke and Panel mines in mid-1990 and the Denison mine in early 1992.

Manitoba R-2000  
Home Program

On September 26, the federal Minister of NRCan and the Manitoba Minister of Energy and Mines announced an agreement to renew the Manitoba R-2000 Home Program which had been successful in reducing energy use and improving air quality in Manitoba homes. The Manitoba agreement included NRCan., Manitoba Energy and Mines, Manitoba Hydro, the Manitoba Home Builders' Association and the Construction Association of Rural Manitoba. R-2000 homes had been demonstrated to use 50% less energy than conventioned homes. In the previous 3 years, 3500 R-2000 homes had been built by qualified R-2000 builders throughout Canada.

National Energy  
Code for Homes

On September 29, results of a survey of energy efficiency matters in Canadian homes were released showing that the majority (88%) of Canadians supported minimum energy efficiency standards for new homes. Mechanisms to improve energy efficiency in the residential sector included the new National Energy Code for Homes. Working in partnership, the federal and provincial governments, the National Research Council, and the electric utility companies were funding the new National Energy Code for Houses. Once the provinces officially accept the Code, every new home would have to meet or exceed minimum requirements for energy efficiency. Each province would have a unique set of requirements to reflect its climate, energy costs, and construction costs. In the survey of home buyers across Canada, highest in rank of features that make a home energy-efficient were considered to be energy efficient heating systems, good insulation, and well-sealed doors and windows.

Uranium and  
Thorium Mining  
Regulations-funding  
of decommissioning

The Uranium and Thorium Mining Regulations were amended on October 18, 1994, to require proponents and operators of uranium mining facilities to provide sureties (financial assurances) to fund decommissioning of their facilities, and to authorize the AECB to direct decommissioning of the facilities. Promulgation of these amendments followed consultation with industry, government and the public.

Bruce nuclear reactor  
design modifications

In October, AECB gave Ontario Hydro authority to raise power on all Bruce A reactors to 75%, previously at 70%. This followed approval given in August to raise power to 88%, from 80%, on all Bruce B reactors. Ontario Hydro had been pursuing design modifications to resolve the problems of possible fuel movement that could worsen the consequences of a large loss-of-coolant accident. The approvals to raise power in Bruce A and B reactors followed the installation of design modifications. Ontario Hydro continued to pursue further design modifications with the objective of returning the Bruce reactors to 100% power.

Nuclear reactors  
waste program

In October, Atomic Energy of Canada Limited submitted to the Environmental Assessment and Review Process panel an Environmental Impact Statement (EIS) and 9 reference documents providing details on the major aspects of the nuclear fuel waste disposal concept. The concept had been developed by AECL in partnership with Ontario Hydro. In August 1995 interested parties including government departments, aboriginal groups, representatives of learned societies, environmental groups and individuals provided comments, in 65 submissions, on the completeness of the information provided by AECL. The panel decided to proceed with public hearings starting in March 1996.

Zero emission transit  
bus

In October, the world's first pollution free demonstration bus was being tested in Ottawa and elsewhere in Canada. The bus was created by Ballard Power Systems Inc. of Vancouver in partnership with the Federal and B.C. governments. The technology was being developed for adaptation to city buses in Canada and elsewhere, zero emissions being possible through the use of fuel cells to generate electricity from hydrogen and air. Like batteries, fuel cells convert chemical energy to electrical energy, but fuel cells have the advantage that they produce more electricity for their size than batteries, are free from service interruptions related to the need to recharge batteries, and do not use environmentally - damaging materials in their construction.



Competitiveness Through Energy-NABST report-supported NRCan	In <u>October</u> , a report was released entitled “Competitiveness Through Energy”, prepared by the Energy Efficiency Committee of the National Advisory Board on Science and Technology (NABST). That Board was formed in 1987 to advise the Prime Minister on how science and technology could be more effectively used in Canada. The report underscored that government and industry play complementary roles in the energy efficiency challenge. Its 14 recommendations focused on six issues: benchmarking for best practices, technology transfer, research and development, deregulation of production, financial initiatives, and federal government examples. The report supported Natural Resources Canada’s approach and activities to encourage energy efficiency.
AutoSmart Program and related programs	On <u>October 24</u> , the AutoSmart Program was announced, a new program to inform motorists about energy efficient driving. It was designed to encourage drivers to buy fuel efficient vehicles, to consider alternative fuels, and to adopt fuel-efficient driving and maintenance habits. The Program was designed as an information initiative to generate public awareness of transportation energy efficiency, and of the links between the environment and driving, maintenance, and purchasing behaviours. NRCan was also operating a Fleet Management Program, targeting the commercial operators of light-duty vehicles, such as cars, trucks and vans, and medium-duty vehicles such as buses and snow removal equipment. Heavy-duty operators were continuing to benefit from NRCan’s Pro-Trucker Program.
Energy Innovators Program-Alberta	On <u>October 24</u> , the Minister of NRCan welcomed 14 more Alberta-based organizations as Energy Innovators. Energy efficiency was becoming widely recognized to have the largest potential for short-term contributions to sustainable development. The 14 new Energy Innovators included the University of Alberta, energy companies, hospitals, and community, commercial and industrial organizations.
Advisory Council on Industrial Energy Efficiency	The second meeting of the NRCan Minister’s Advisory Council on Industrial Energy Efficiency (MACIEE) met on <u>October 20</u> , with representation from 20 industrial sectors accounting for 80% of Canada’s total industrial energy use. Members of the Council had agreed to an energy efficiency improvement of 1 to 2 % per year over the succeeding 5 years. In the 8 months since the Council’s first meeting (February 7, 1994), the private sector and government had developed and agreed on targets and were preparing to develop action plans and programs for their achievement. The adoption of voluntary targets to improve energy efficiency without government intervention was indicative of industry’s commitment. MACIEE was to give direction to the Canadian Industry Program for Energy Conservation (CIPEC), a voluntary, industry-driven program promoting participation and monitoring of progress in the industrial sector’s energy efficiency programs. It was established in 1975. Participation in CIPEC had tripled to 3000 members since 1990. MACIEE was also providing the Government of Canada with recommendations from industry for an effective framework of energy efficiency policies and programs.
Industrial Sector Energy Efficiency Programs	At the time of the second meeting in <u>October</u> of the NRCan Minister’s Advisory Council on Industrial Energy Efficiency (MACIEE), a number of federal government energy efficiency programs and services in the industrial sector were in operation, including the following: the Industrial Energy Innovators Program; Industry Energy Research and Development Program; Industry Targeted Research and Development; Gas Technology Program; Canadian Energy Management and Environmental Training Program; and The Centre for Analyses and Dissemination of Demonstrated Technologies. These and other industrial energy efficiency programs were directed to reducing emissions and enhancing Canada’s industrial competitiveness.
Canada’s Energy Outlook 1992-2020	The Energy Sector report “Canada’s Energy Outlook 1992-2020, completed in <u>October 1994</u> , provided an update to the long term outlook for energy demand, supply and related greenhouse gases which NRCan had published in September 1993. The new report provided a reference scenario for use in the development of a National Action Program to achieve Canada’s climate change objectives, the development of that Program being undertaken under the auspices of the

National Air Issues Coordinating Mechanism (NAICM), a joint federal-provincial organization established in 1992. The October 1994 report also served as a basis for discussion of other energy issues in the ongoing development of energy policy. Following the Introduction, Section 2 of the report highlighted the major changes in the framework assumptions from the September 1993 report, setting out the reasons for each change. Section 3 provided the updated energy demand projections by sector, and Section 4 gave the results of updating the oil and gas supply and electrical generation projections. Section 5 focused on the changes in the projections of energy-related greenhouse gas emissions, and the implications of the changes for meeting Canada's climate change objectives. A statistical appendix provided detailed results for the updated scenario. Carbon dioxide emissions were projected to increase from 461 megatonnes in 1990 to 640 megatonnes in 2020, down from 717 megatonnes in the 1993 study. The lower estimate in the 1994 study was due mainly to reduced requirements for transportation fuels and for stationary fuel combustion, particularly in electricity generation and the industrial sector, the reduced requirements resulting mainly from the lower economic growth assumed in the 1994 report for the post-2000 period. The CO<sub>2</sub> emissions for 2000 at 518 megatonnes were well above the 1990 objective in the Government's Green Plan of 461 megatonnes as the stabilization goal. With Canada's economy and population continuing to grow, the report concluded that reducing emission levels of greenhouse gases beyond 2000 would pose a major challenge that would require significant technological, structural and life-style changes.

#### Yukon Accord

In November, the National Energy Board issued two reports representing detailed studies of two sedimentary basins in the Yukon Territory that have the best petroleum potential. The studies were part of the ongoing work to provide the Yukon government with technical and advisory support leading up to the transfer of responsibility for oil and gas regulation to the territorial government under terms of the Yukon Accord. During 1994, the Federal Government reached an agreement with the Yukon government for the devolution of oil and gas responsibilities to that territorial government. The NEB continued to work closely with Yukon officials to facilitate the transfer of oil and gas regulatory responsibilities in accordance with the Yukon Accord Implementation Agreement.

#### Decommissioning of uranium mine sites

In November, the Atomic Energy Board amended its Uranium and Thorium Mining Regulations to require uranium producers to provide financial assurances at the beginning of their operations that sufficient funds would be available for the eventual decommissioning of their mine sites. The changes in Regulations would ensure that taxpayers do not bear future decommissioning costs associated with the clean-up of uranium mine sites.

#### Canada-China Nuclear Cooperation Agreement

On November 7, Canada successfully concluded negotiations on a Nuclear Cooperation Agreement with China. The Agreement met all of Canada's nuclear non-proliferation policy requirements on the sale of CANDU nuclear reactors to China. The construction of two CANDU 6 units at the Qinsham site was the focus of a Memorandum of Understanding signed by AECL and the Chinese Nuclear Corporation on November 8, 1994. Financing was expected to be a key factor in the negotiations.

#### Energy Efficiency Regulations

On November 7, the Minister of NRCan announced that new Energy Efficiency Regulations were published in Part II of the Canada Gazette on November 1. The Regulations established federal standards for energy-using equipment and were to take full effect on February 3, 1995. They would help eliminate inefficient equipment from the Canadian market as they established national energy efficiency performance standards for specific equipment imported into Canada or traded interprovincially. The initiative also provided a new regulatory basis for NRCan's EnerGuide Program, giving consumers comparative information about energy consumption that must appear on labels. The Regulations had been the subject of extensive consultation with manufacturers, distributors, electrical utilities, provincial governments, and environmental and consumer organizations. The Regulations were to be enforced primarily through the voluntary commitment of regulated parties. Third party verification by organizations accredited by the Standards Council of Canada, and border monitoring by Customs Canada, would ensure a level playing field for

manufacturers and energy-efficiency products for customers.

Financing Energy  
Efficiency  
Investments in the  
Public Sector

In November, in connection with new initiatives to advance energy efficiency measures in the public sector, announcement was made of the establishment and objective of the Action Committee on Financing Energy Efficiency Investments in the Public Sector to increase the availability of financing for energy efficiency projects in institutions of the federal, provincial and municipal governments. Estimates for the federal, provincial and municipal sectors indicated that private sector requirements would be in the order of \$2 to \$ 3 billion. The Action Committee was to work in partnership with NRCan to:

- identify funding sources for energy efficiency retrofit work;
- maintain a Financing Catalogue which would be available to energy service companies and building owners, and listing funding sources and information on lending terms and conditions; and
- investigate ways to improve the flow of capital for energy efficiency purposes.

Federal Buildings  
Initiative (FBI)

On November 1, the federal Minister of Natural Resources announced further measures to promote energy efficiency throughout all levels of government in Canada through Natural Resources Canada's Federal Buildings Initiative (FBI), as part of the Department's Efficiency and Alternative Energy Program. There was a commitment by the Minister's Cabinet colleagues to work towards retrofitting all federal buildings. It was estimated that the Federal Government could create more than 20,000 person years of employment through an increase in demand for energy-efficient goods and services for building retrofit projects. New measures initiated at this time included:

- NRCan to retrofit all of its facilities with energy-saving technologies and practices;
- Ministers had committed to develop retrofit schedules and report their results to the Minister of NRCan for an annual report to Parliament;
- NRCan had entered into an agreement with the Federation of Canadian Municipalities to replicate the FBI in municipal buildings and facilities;
- A Financial Advisory Committee was to identify and access sources of investment to finance public sector projects, with the initial committee including representation by 7 investment firms;
- A Human Resources Advisory Committee was to ensure that a trained and skilled workforce was available.

A key component of the FBI was a mechanism that allowed departments to invest in energy efficient improvements and pay for those investments through reduced energy costs. In 1994, at least 80 projects, covering more than 2000 buildings, were at various stages of FBI implementation, with the total value of contracts for those projects being an estimated \$200 million. It was projected that if FBI was fully implemented in all 50,000 federal facilities, it would create more than 20,000 person years of employment in highly-skilled jobs; stimulate more than \$1 billion of investment; and reduce the total annual energy costs of \$800 million by up to \$160 million. The replication of FBI in the municipal sector through the partnership between NRCan and the Federation of Canadian Municipalities could create as many as 40,000 person years of employment, stimulate private sector investment of up to \$2 billion, and reduce annual energy costs by \$200 million.

Department of  
Natural Resources  
Act - NRCan

An Act to establish the Department of Natural Resources and to amend related Acts - the Department of Natural Resources Act - was assented to December 15, 1994 (S.C. 1994 Ch. 41). The responsible Minister is the Minister of Natural Resources. The Act served to amend all other Acts and Regulations by replacing reference to the "Department of Energy, Mines and Resources" by "Department of Natural Resources" and "Minister of Energy, Mines and Resources" by "Minister of Natural Resources". The Interpretation section of the Act includes the following:

- "natural resources" means mines, minerals and other non-renewable resources, energy including energy developed from water, and forest resources;
- "Sustainable development" means development that meets the needs of the present

without compromising the ability of future generations to meet their own needs.

Canadian Environmental Assessment Act - amendment	An Act to amend the Canadian Environmental Assessment Act was assented to <u>December 15, 1994</u> (S.C. 1994 Ch. 46). The new Act amends the Canadian Environmental Assessment Act (S.C. 1992 Ch. 37) as assented to June 23, 1992 in order to provide more specific direction concerning the purpose of the Act, the Environmental Assessment Process, and the Minister's (Environment) Powers and Regulations under the Act.
Energy supply and demand trends in 1994	The record through to <u>December</u> 1994 showed that the Canadian energy industry experienced strong growth in 1994, with energy production increasing 6.1%. Domestic energy consumption rose 4.5%, following the growth in demand for all major fuels. Total energy exports and imports rose by 6.9% and 0.2%, respectively. The value of gross exports of petroleum, natural gas and electricity increased from \$15.4 billion in 1993 to \$17.0 billion in 1994. The value of net exports (exports less imports) rose from \$8.9 billion in 1993 to \$10.3 billion in 1994.
Oil and gas exploration - 1994	Results for 1994 available in <u>December</u> , indicated that activity in land sales, drilling and geophysical work attained the highest levels since 1985 despite lower oil prices in the first quarter and decreasing gas prices in the last quarter of the year. Canadian oil and gas industry spending on sales of provincial and federal exploration rights totalled \$1.4 billion compared with \$732 million in 1993. The 1994 industry spending on those sales represented the highest since 1980. Exploration and development expenditures in Canada in conventional areas amounted to \$9.3 billion in 1994 compared with \$8.4 billion in 1993. In the international oil market, the price of North Sea Brent crude oil fell to \$US 13.81 per barrel early in 1994, rose by \$4 in mid-year and declined to \$US 15.95 at year-end.
Oil and gas reserves - 1994	The record available at the end of <u>December</u> 1994 showed that the estimate of Canada's remaining established reserves of conventional crude oil was 656.1 million cubic metres (4.1 billion barrels), a decrease of 4.7% from the reserves remaining at the end of 1993. For the 5 years 1990-1994 cumulative oil production amounted to 366 million cubic metres versus a cumulative oil reserve addition of 317 million cubic metres. Total remaining established reserves of bitumen, in developed projects only, at the end of 1994 amounted to 565.0 million cubic metres (3.56 billion barrels) up from 457.6 billion cubic metres (2.88 billion barrels) at the end of 1993, the increase in the main arising from a re-evaluation of the bitumen resources. Estimated established reserves of Canadian marketable natural gas at the end of 1994 totalled 1,812 billion cubic metres (64.2 trillion cubic feet), a decrease of 3.4% from 1993.
Uranium market - 1994	Notwithstanding depressed world uranium markets, resulting from the potential availability of uranium from the former Soviet Union, the Canadian production record through to <u>December</u> showed that Canada produced 9,600 tonnes of uranium in 1994, the highest amount since the late 1980s. Pre-production work progressed at 3 of the 6 new Saskatchewan uranium mining projects that had been advanced through the environmental review process, while preparations continued for environmental reviews of the remaining 3 uranium mining proposals.
World nuclear generating capacity	In <u>December</u> , at the end of 1994, there were 424 nuclear power plants operating in the world. The combined nuclear generating capacity had grown to 340 gigawatts (GWe), an increase of 8% from 5 years earlier. With 54 nuclear reactors under construction at year-end 1994, total world nuclear generating capacity was anticipated to increase a further 10% to about 372GWe by the end of the decade.
Electricity generation - Canada, 1994	As measured in <u>December</u> , Canada's net generating capacity was estimated to be 108 terawatts, an increase of 0.5% over 1993. Total net generation of electricity in 1994 was estimated to be 542.8 terawatt hours, up 6% from 1993. Of Canada's total generation, 61% was from hydroelectric generation, 19% was from conventional thermal generation, and 20% from nuclear power. Total Canadian consumption in 1994 was estimated at 498 terawatt hours, 2% higher than 1993. Growth in exports to the U.S.A. continued, the value of Canadian electrical exports in 1994 being \$1.3

billion, a 55% increase over 1993, and the second highest total of electricity exports on record.

Hydro-Québec Great Whale project shelved

By December, it had been decided that Hydro-Québec's Great Whale project would be shelved indefinitely. Located 700 miles north of Montreal, the project was to have followed the James Bay hydro project. That project, being completed in 1994, adds about 13,000 MW to Hydro-Québec's capacity.

Thermal coal use in Canada

For the 12 months ending in December, thermal coal consumption in Canada at 47.6 million tonnes was near an all-time high. Of Canada's total coal production of 72.8 million tonnes in 1994, 62.5% was thermal coal, most of it used to generate electricity.

Pickering A station shut down

On December 10, the failure of a pressure relief valve and subsequent failure of piping resulted in a loss-of-coolant accident at Unit 2 of the Pickering A nuclear station. Following this accident, Ontario Hydro shut down the remaining 3 units of the station. All 4 units continued to remain shut down at the end of the year pending the results of a study of the causes of the accident. At the Bruce A station, Ontario Hydro was continuing its study of the cooling system problem which might also potentially exist in other CANDU reactors.

Ontario Hydro objectives

In its annual report for the period ending in December 1994, Ontario Hydro described its objectives and programs in terms of the following concepts: energy efficiency, sustainable development, safety and reliability, and competitiveness. At the end of 1994, Ontario Hydro was the largest electric utility in North America in terms of installed generating capacity. The supply system included 69 hydroelectric stations, 5 nuclear stations and 6 operating fossil-fuelled stations. Total system capacity was about 34,000 megawatts, transmitted across 29,000 kilometres of transmission lines and 109,000 kilometres of distribution lines. Its customers included 306 municipal electric utilities serving more than 2.8 million customers, 954,440 retail customers and 103 large direct customers. Ontario Hydro had concluded that it was unlikely that electricity demand in Ontario would reach the company's generating capacity for another, 7 or 8 years.

NEB report Canadian Energy Supply and Demand 1993-2010 - Technical Report

On December 15, the National Energy Board released its report "Canadian Energy Supply and Demand 1993- 2010, Technical Report", and the accompanying volume, "Appendix to Technical Report". The first volume of the Board's 1994 report on the outlook for Canadian energy supply and demand was issued in July (see July 28 note on the contents and main findings of the 1994 outlook study). The first volume focused on the major trends and issues. The second and third volumes provided detailed explanations of methodology and analytical detail with respect to the energy projections. The NEB presented its projections in terms of a Current Tech Case, and a High Tech Case. In the former case, the 1991 primary energy demand of 9,236 petajoules rose to 12,746 petajoules in 2010; in the High Tech Case the demand in 2010 was estimated to be 13,290 petajoules. Appendices in the Appendix to the Technical Report include detail on macroeconomic assumptions, energy prices, Canadian energy demand, electricity, natural gas, crude oil and equivalent, natural gas liquids, coal, alternative and renewable energy, atmospheric emissions, and sources and uses of energy with a total energy balance for Canada, historically, and for the Current and High Tech cases as projected.

IEA 1994 Country Reports - Canada

In its review of Energy Policies of IEA Countries for the annual period ending December 1994, the International Energy Agency, in its report on Canada, gave full recognition to the federal government's free market-oriented policies, including the negotiation of the NAFTA, as ratified in January 1994; to the decision to no longer fund megaprojects; to the progress in developing a national climate program across a large number of jurisdictions with a high degree of economic, social and cultural diversity; and to the progress in the Efficiency and Alternative Energy Program, with 33 regulatory, information and R&D initiatives in place. The IEA noted that additional attention in the following areas could help Canada build upon this overall progress: an increase in inter-utility trade in electricity; additional measures to meet greenhouse gas emission targets; and measures to ensure that AECL's commercial engineering activities are run on a cost-recovery basis in order to enable the CANDU nuclear operations to be financially self-sustaining

by 1996.

Efficiency and  
Alternative Energy  
Program (EAE)

As of December 1994, there were 20 major initiatives included in the Efficiency and Alternative Energy Program, launched in 1992 as the Canadian Government's initial response to the issue of global warming. The EAE consists of a number of initiatives directed toward greater energy efficiency and the use of alternative energy in all end-use sectors: equipment, buildings, industry, and transportation including the following:

- National Energy Use Database;
- Energy Efficiency Standards for Equipment;
- Energy Equipment Labelling, using Energuide labels;
- Building Energy Code;
- Building Information Transfer;
- R-2000 Partnership;
- Buildings R&D and Technology Transfer;
- Alternative Transportation Fuels - Technology and Market Development;
- Alternative Transportation Fuels - Research and Development;
- Federal Buildings Initiative;
- Energy Innovators Ventures;
- Integrated Resource Planning;
- Industry Energy Efficiency
- Industry-Targeted R&D;
- Advanced Integrated Energy Systems;
- Transportation Energy Efficiency; and R&D;
- Renewable Energy Understanding and Awareness;
- Renewable Energy Market Assessments; and
- Renewable Energy R&D.

## THE YEAR 1995

**Overview:** The February 27, 1995 Budget announced a sweeping review of federal programs and priorities. Federal program spending was to be reduced from \$120 billion in 1993-94 to \$108 billion by 1996-97. The budgets of federal departments (excepting DIAND) were to be significantly reduced over the following three years. Subsidies for business were reduced by sixty percent. The government also confirmed that no support would be forthcoming for new megaprojects, once the Hibernia project was completed, and that it would sell its remaining 70 percent interest in Petro-Canada. Finally, the budget increased the corporate surtax from 3 to 4 percent, increased the Large Corporations Tax by 12.5 percent and the excise tax on gasoline by 1.5 cents a litre, and announced a review of the resource allowance.

Canadian  
Environmental  
Assessment Act  
(CEAA)

In January 1995, the Canadian Environmental Assessment Act was proclaimed. The CEAA established, for the first time in legislation, a process for the systematic conduct of environmental assessments of public or private projects involving the federal government. One of the underlying principles of the CEAA is that the public should be given ample opportunity to participate in environmental assessments. To support this objective, a Public Registry was established by the Canadian Environmental Assessment Agency to provide public access to information upon which environmental assessments are based. The CEAA places a range of obligations on the Atomic Energy Control Board, among other agencies, relative to the conduct of environmental assessments, obligations which are clearly defined in the CEAA. In addition to the CEAA dealing with projects involving the Federal Government, the federal and provincial governments share jurisdiction over energy-using products, the design of which can affect the level of atmospheric emissions resulting from their use. In another area of responsibility, the Federal Government regulates imports and interprovincial trade in energy-using equipment under the Energy Efficiency Act. In the case of energy performance of buildings, the federal and provincial governments cooperate in developing performance standards, which are then available for adoption by the provinces.

EEAE Cooperation  
NRCan-B.C.  
government

On January 30, the governments of Canada and British Columbia signed Letters of Cooperation (LOC) on matters concerned with Energy Efficiency and Alternative Energy (EEAE). The LOC would ensure more effective use of the public funds invested by both governments in energy efficiency and alternative energy in British Columbia. Under the agreement, program activities were to be managed by a joint committee, co-chaired by senior officials from NRCan and the B.C. Department of Mines and Petroleum Resources. The committee was to be responsible for preparing an annual report to Ministers. The LOC covered program initiatives undertaken jointly by the two departments or individually by each department. At the time, the two departments were cooperating in a number of areas including the development of the National Energy Code for Homes and Buildings, energy efficiency standards, market development of natural gas vehicles, and demonstration of light duty methanol vehicles. The 5 year agreement represented a framework which NRCan was using with other provincial and territorial governments, LOCs having been signed with Saskatchewan, Nova Scotia and Newfoundland, with plans underway for cooperative mechanisms for several other provinces.

Hybrid Electric  
Vehicle Challenge  
(HEV)

On January 27, announcement was made of support by NRCan of the 1995 Hybrid Electric Vehicle (HEV) Challenge, another in the series of annual events in North America giving science and engineering students an opportunity to display their skills in developing leading edge automotive technology. The hybrid electric vehicle has two sources of motive energy. Typically, this involves an electric motor powered by batteries and a combustion engine powered by methanol, ethanol, reformulated gasoline or compressed natural gas. Accordingly, HEVs combine to lower emissions of electric vehicles within the range of alternatively-fuelled engines. Competitors in the Challenge were to be evaluated on various categories including drivability, performance, emissions and vehicle efficiency at a test site in Michigan in June. Students from 5 Canadian universities were to participate along with students from 30 other North American universities. Participation was part of NRCan's research and development program on alternative

transportation fuels and their role in contributing to urban air quality standards.

- Cameco privatization      On January 15, Cameco of Canada would sell its remaining 3 million shares of the company, subject to regulatory approval. That final federal offering resulted in Cameco's ownership being held roughly 70% by the public and 30% by the Government of Saskatchewan. Privatization of the country's largest uranium company had commenced in September 1988, when the federal government held 40% of the common shares and the Saskatchewan government, the remainder.
- Bruce A nuclear station damage      In January, Ontario Hydro found serious damage to the divider plates in three of the four preheaters on Unit 4 of the Bruce A station. The damage that had occurred had resulted in some loose parts entering the heat transport system piping. Most of the debris was removed during the repair of the preheaters, with removal of the remainder to be delayed until the next planned outage, scheduled for 1997.
- Ethanol-gasoline blends, biomass program      In January, the level of tax exemption rose to 10 cents per litre, from 8.5 cents, for the portion of ethanol in ethanol-gasoline blends, provided the ethanol is made from renewable sources. This followed from the Federal Government announcement late in 1994 of a new program to encourage the development of biomass-derived ethanol production. The National Biomass Ethanol program provided for a \$70 million line of credit that could be accessed by a limited number of eligible applicants.
- Energy Efficiency Act-new Regulations      In February, NRCan established new Regulations under the Energy Efficiency Act, setting minimum performance standards for 22 household products and appliances and labelling requirements for 7 household products. These regulations complemented provincial and U.S. regulations and applied to energy-using products imported or traded across provincial boundaries. They governed primarily residential products, which represented 60% of energy use in the residential sector. The next step was to develop similar regulations in the commercial and industrial sectors which was in progress in 1995.
- NEB Pipeline Regulations-a new era      Starting with Interprovincial Pipe Line Inc. in February, the National Energy Board received for approval a succession of multi-year negotiated settlements between the pipeline company and its shippers. This marked a turning point in the Board's economic regulation of pipelines. Some 27 years previously, TransCanada Pipelines Ltd. had applied to the NEB to be regulated on a cost of service basis. Subsequently, that approach was applied to all major Canadian pipelines. Their costs were litigated before the NEB, often annually, in expensive proceedings requiring legal counsel and expert witnesses. The NEB had prepared for an alternative approach by publishing guidelines for negotiated settlements in 1988, updated in 1994, and in 1995 establishing the cost of capital for major pipelines on a generic basis, with provision for automatic annual adjustments to the rate of return on equity. While the litigation route remained available for determining the amount of revenue a pipeline could recover in its tolls, it was anticipated in the future to be used only selectively. Instead, the pipeline industry was entering an era of regulation which would encourage consensus among all of a pipeline's stakeholders.
- Canada-U.S.A. uranium relations      On February 23, through an exchange of letters, the U.S., provided Canada with certain assurances and clarifications with respect to the implementation of its uranium anti-dumping suspension agreements with Russia and the Highly-Enriched Uranium (HEU) contract with Russia. In return, Canada suspended its consultations on uranium under the North American Free Trade Agreement, while reserving the right to reactivate them should circumstances warrant. Throughout 1995, the U.S. Department of Commerce took steps to limit the import of uranium that was enriched in Europe.
- National Action Program on Climate Change (NAPCC)      In February, federal, provincial and territorial Energy and Environment Ministers approved the National Action Program on Climate Change, and it was tabled in Berlin in April 1995. The NAPCC set out the strategic directions Canada was to follow in pursuit of its objective to stabilize greenhouse gas emissions at 1990 levels by the year 2000. The Voluntary Challenge and Registry



Program (VCR) was to be a key element of the NAPCC.

Natural gas exports to U.S.A.

In a March 28 address to the U.S. Natural Gas Supply Association, the Minister of NRCan noted that Canada's natural gas exports had reached 2.5 trillion cubic feet in 1994, representing about 12% of total U.S. demand. In that year, natural gas was the largest net energy export, contributing over \$6 billion to the Canadian economy. As the most environmentally-friendly fossil fuel, natural gas was contributing to stabilizing greenhouse gas emissions in both countries.

Energy Efficiency Act-1994-95 Report to Parliament

The Report to Parliament on the Administration and Enforcement of the Energy Efficiency Act for the fiscal year ending March 31, 1995 was presented by the Minister of Natural Resources. The document recorded NRCan activities during 1994-95 to promote energy efficiency and the use of alternative energy in all sectors of the economy under the authority of the Energy Efficiency Act. NRCan's Efficiency and Alternative Energy (EAE) Program was proving to be a key component of Canada's National Action Program on Climate Change (NAPCC) which also included a new Voluntary Challenge and Registry Program (VCR). The Energy Efficiency Act gives the Minister of Natural Resources the authority to promote EAE programs and requires the Minister to table before Parliament an annual report on the administration and enforcement of the Act in the previous fiscal year. This was the third Report. Following introductory chapters, the Report dealt in individual chapters with general programs, energy efficiency for buildings, equipment, industry, and transportation, and with alternative energy in terms of alternative transportation fuels, and with renewable energy. Achievements were documented for each activity centre. The federal budget had stated that NRCan "will reorient energy policy from a traditional focus on supply to an increased emphasis on efficiency and alternative energy sources, the environment and sustainable development." Illustrative of the progress made in 1994-95 under the intent of the Act and Regulations, which are described in Chapter Two of the Report, were the following measures under the voluntary initiatives: an increase in the number of Energy Innovators from 125 to 200 in Canadian corporations, institutions and municipalities, representing 50 million square metres of floor space; the construction of almost 1000 R-2000 homes; and the launch of the Auto\$mart Program aimed at reducing emissions from vehicles through information, training and exhortation.

Uranium mine development and outlook

In March, announcement was made that construction of the \$250 million McClean Lake uranium project would proceed, thereby enhancing Canada's competitive position in the global uranium market. In 1997, when the McClean mill was scheduled to start, it would be the first new uranium production facility to come on stream in Canada, since 1982. Also in 1995 the environmental impact statements for the Midwest Joint Venture, Cigar Lake, and McArthur River projects were completed and were to be reviewed by the Joint Federal-Provincial Environmental Assessment Panel on Uranium Mining Development in Northern Saskatchewan. The world-class uranium projects in Saskatchewan were expected to form the basis of continued Canadian production well into the next century. A significant baseload of long-term contracts with customers in the U.S., Eastern Europe and the Far East positioned Canada's uranium producers very well to compete with the world's major uranium suppliers, and to continue as the world's leading supplier of uranium for many years.

Canadian Electrical Assoc.-NRCan MOU on Climate Change

On April 12, the federal Minister of Natural Resources and the President of the Canadian Electrical Association (CEA) signed a Memorandum of Agreement (MOU) on global climate change. The MOU committed the CEA to work with NRCan to develop and promote the Voluntary Challenge and Registry (VCR) Program. That Program invited Canadian stakeholders to participate in and develop action plans to limit or reduce net greenhouse gas emissions. A registry was to be operated to record the reductions achieved as a result of the commitments and plans. NRCan was committed to working with other government partners to further develop the voluntary approach for responding to climate change. NRCan at this time was working with associations and their members to develop fair and open reporting to chart progress in limiting greenhouse gas emissions. The CEA represented a core group of 36 corporate utility members which accounted for about 95% of Canada's installed generating capacity. In addition, CEA members, included some 32 major Canadian electrical manufacturers and several hundred other

companies and individuals.

Coal Association-  
NRCan MOU on  
Climate Change

In April, the Coal Association of Canada signed a Memorandum of Understanding (MOU) with Natural Resources Canada to participate in the Voluntary Challenge and Registry Program (VCR). The commitment of the Coal Association and the Canadian Electrical Association to the VCR in 1995 brought a large number of energy companies into the Program.

Canada's National  
Action Program on  
Climate Change-1995

Canada's National Program on Climate Change was tabled in April 1995 for the first meeting of the Conference of the Parties to the U.N. Framework Convention on Climate Change, the report being presented on behalf of all federal, provincial and territorial Energy and Environment Ministers in Canada. The country had made progress in addressing climate change based on consensus across a large number of jurisdictions with a high degree of economic, social and cultural diversity. First step actions to address climate change were in place in all jurisdictions across Canada. The Action Program set the course for meeting Canada's convention commitments in the areas of climate change mitigation, adaptation, research and education, and international cooperation. The 42-page report, the first iteration of Canada's plan to address climate change, outlined a long-term strategic approach, whereby all key stakeholders, working with governments, were involved in developing and implementing actions that would effectively address the global challenge. The Action Plan also highlighted ongoing and enhanced activities, new measures, along with measures under consideration for future implementation. The report advised that while Canada's National Report on Climate Change had estimated that in 1990 the total amount of human-generated greenhouse gases in Canada was equivalent to 526 megatonnes (Mt) of CO<sub>2</sub> emissions, recent revisions had increased the current estimates of total CO<sub>2</sub> equivalent emissions from 526 to 577 Mt. Based on that revision and changed estimates for projected energy-related emissions, forecasts indicated that total greenhouse gas emissions in the year 2000 would be in the range of 645 to 655 Mt, or about 13% higher than 1990 emission levels. The 1995 report described the strategic framework for the action program; mitigation in terms of the role of governments, broad based measures, and sectoral actions and opportunities; and also with reference to science and adaptation. Methods for reviewing progress were outlined. The report concluded by emphasizing that Canada's National Action Program pursues the goal of stabilization in a manner that provides a clear example of sustainable development demonstrating the ability to achieve environmental objectives while continuing development.

First Conference of  
the Parties-COP-1,  
UN Framework  
Convention on  
Climate Change

The First Conference of the Parties to the UN Framework Convention on Climate Change (COP-1) was held in Berlin, Germany, March 28-April 7, 1995. COP-1 concluded by producing a "Berlin Mandate" which agreed that existing commitments under the UN Framework Convention on Climate Change (UNFCCC) were inadequate to achieve its goals and needed strengthening. It was therefore agreed at COP-1 that developed countries would aim both to elaborate policies and measures to that end, and set quantified limitations and reduction objectives "within specified time-frames, such as 2005, 2010 and 2020" for anthropogenic greenhouse gas emissions not controlled by the Montreal Protocol. The Ad hoc group on the Berlin Mandate, or AGBM, was established by COP-1 with a mandate to negotiate next steps for developed countries for the post-2000 period under the Framework Convention on Climate Change. Developed countries, including Canada, did not agree to any new commitments, but did agree to aim to elaborate policies and measures, as well as set limitations and reduction objectives. There was a clear intention to arrive at a binding protocol for post-2000 anthropogenic greenhouse gas emissions reductions at COP-3 in 1997 (Canada is an Annex I country).

Microeconomic and  
environmental  
assessment of climate  
change measures

The Forecast Working Group (FWG) of the National Air Issues Coordinating Mechanism reported in April 1995 on the microeconomic and environmental assessment of climate change measures. The report was intended to provide a quantitative assessment of the impact on greenhouse gas (GHG) emissions, direct programming costs to governments, private sector investment and the value of energy savings of the measures proposed by the Climate Change Task Group. Results included an assessment of how many megatonnes of emissions needed to be avoided in order to achieve stabilization in the year 2000. Results obtained in the April 1995 study were considered

very preliminary as more data were needed, particularly in the industrial and transportation sectors. FWG assessments were being undertaken to help policy makers make sound decisions on the measures to be adopted to meet Canada's goal of stabilization of net GHG emissions at their 1990 levels by 2000, and to achieve further reductions by 2005. The measures being assessed by the FWG were those proposed in June 1994 to the Climate Change Task Group, a multi-stakeholder group, which had been tasked by the National Air Issues Coordinating Committees with the development of a National Action Program to enable Canada to reach its climate change goals. Joint meetings of federal and provincial Ministers of Energy and of the Environment in November 1993 and in November 1994 had agreed to proceed with the development of options to meet Canada's GHG emission stabilization objective. The responsibility of assessing the effectiveness of various measures in reducing GHG emissions, and their economic implications, continued to be delegated to the FWG. Accompanying the FWG report, as prepared in April 1995, was a report, dated April 31, 1995, prepared by Informetrica on the "Impact of GHG Initiatives on the National and Provincial Economics", with data from FWG's microeconomic assessments being fed into Informetrica's macroeconomic model of the Canadian economy. FWG had relied on energy end-use and econometric models operated by NRCan and others to develop the definition of the measures which could be included in Canada's National Action Programs.

Minister's Advisory Council to CANMET

On May 24, the Minister of Natural Resources announced new appointments to the Minister's National Advisory Council to the Canada Centre for Mineral and Energy Technology (CANMET). The Advisory Council, an industry-led advisory board reporting to the Minister and focusing on mineral and energy technology issues, carries out its work in 5 committees: mining, mineral processing, metals and minerals, hydrocarbons, and efficiency and alternative energy.

National Task Force on Oil Sands Strategies report

In May by the National Task Force on Oil Sands Strategies (NTFOSS) presented its report highlighted the challenges and the opportunities associated with the development of Canada's oil sands. The report recommended improved tax treatment of oil sands projects, and increased research and development.

Minister's Advisory Council on Industrial Energy Efficiency

On May 23, the Minister of Natural Resources appointed new members to the Minister's Advisory Council on Industrial Energy Efficiency (MACIEE) which had 18 company leaders from sectors representing some 80% of industrial energy use in Canada. The Council provides a forum for business leaders in the goods producing sectors of the economy to provide advice and to make voluntary commitments to energy efficiency and the use of alternative energy, thereby directing efforts to the objective of stabilizing greenhouse gas emissions at 1990 levels by the year 2000.

Canadian Energy Pipeline Assoc.- NRCan MOU on Climate Change

On May 12, the Minister of Natural Resources and the Chairman of the Canadian Energy Pipeline Association (CEPA) signed a Memorandum of Understanding (MOU) on global climate change, similar to the agreements signed with the Canadian Association of Petroleum Producers and the Canadian Electrical Association. The agreement committed the CEPA to work with NRCan to develop and promote the Voluntary Climate Change Challenge and Registry Program (VCR). CEPA was to encourage its members to participate in the program by preparing action plans that would result in limitations of greenhouse gas emissions. A registry was established to record the reductions achieved as a result of those commitments and plans. The Canadian Energy Pipeline Association represented 12 of Canada's major oil and gas pipeline transmission companies transporting more than 95% of the natural gas and crude oil produced in Canada.

National Energy Code for Buildings

In May, notice of an update on the National Energy Code for Buildings (NECB) was given, the Code at that time being in its second draft, with final publication expected in early 1996. The update directed attention to requirements regarding the building envelope, lighting, heating, ventilating and air conditioning systems, electric power requirements, and service water heating systems. The National Energy Code for Buildings was being designed to help ensure that new buildings would use energy more efficiently, thereby saving on energy bills and providing a more comfortable indoor environment. The Code would also provide increased flexibility in design, thereby enabling designers to choose a prescriptive path with trade-offs or a performance path to

share compliance with the NECB. By constructing buildings that are more energy-efficient Canadians would be helping to conserve the non-renewable resources used for generating energy and also helping to reduce atmospheric CO<sub>2</sub> and other emissions.

#### Nuclear Co-operation Agreements (NCA)

During May, a new bilateral nuclear agreement with Lithuania took effect, bringing the total number of such agreements then in force to 19, covering 33 countries. In addition, negotiations towards similar NCAs with Slovenia and Ukraine were successfully concluded. The Atomic Energy Control Board participates with the Department of Foreign Affairs and International Trade in the negotiation of bilateral nuclear cooperation agreements, in support of Canada's non-proliferation policy designed to ensure that this country's nuclear exports are used only for peaceful non-explosive purposes, and to contribute to the emergence of a more effective and comprehensive international nuclear non-proliferation regime.

#### Environmental assessments by AECB

In June, the Atomic Energy Control Board (AECB) established electronic links with the Canadian Environment Assessment Agency for the purpose of recording information in the Agency's Public Registry which provides public access to information upon which environmental assessments (EA) are based. The Canadian Environmental Assessment Act (CEAA), promulgated in January 1995, places a range of obligations on the AECB and other agencies relating to the conduct of EAs. The AECB records information in the Public Registry with respect to projects for which it is required to conduct an EA.

#### Ontario Hydro uranium purchases

In June, Ontario Hydro issued a third bid request to supply 50 tonnes of uranium and/or 100 tU annually for the years 1997 to 1999. In addition to sourcing its uranium from Canada, the U.S.A., Namibia or South Africa, the request would also give consideration to proposals from joint ventures or a mixture of supply arrangements involving Western and Former Soviet Union suppliers. In 1993, Ontario Hydro had selected four producers - three from Canada and one from abroad - to supply 35% of its projected uranium requirements from 1996 through 2002. In September 1993, Ontario Hydro issued a second bid request from Western sources to supply 20% of its requirements from 1997 to 2000, and in June 1994 the utility chose an Australian supplier and Cameco to supply 100 tU per year and Uranerz to supply about 75 tU over the contract period. These purchase arrangements assumed ongoing full scale nuclear plant operation.

#### Alternative Fuels Act

An Act to accelerate the use of alternative fuels for motor vehicles, cited as the Alternative Fuels Act, was assented to 22nd June, 1995. It is the purpose of this Act that, for the fiscal year commencing on April 1, 2004 and for every fiscal year thereafter, when it is cost effective and operationally feasible, seventy-five per cent of motor vehicles operated by all federal bodies and crown corporations will be motor vehicles operating on alternative fuels, thereby promoting the replacement of petroleum based fuels for transportation. For the purposes of the Act, "alternative fuel" means fuel that is for use in motor vehicles to deliver direct propulsion; less damaging to the environment than conventional fuels; and prescribed by regulation, including ethanol, methanol, propane gas, natural gas, hydrogen or electricity when used as a sole source of direct propulsion energy. The Act provides that the Treasury Board may make Regulations concerning fuel, class of motor vehicle, criteria to be used in determining cost effectiveness and operational feasibility; and Regulations generally for carrying out the purpose of any of the provisions of the Act. Effective with the fiscal year commencing April 1, 1997, the President of the Treasury Board shall report to each House of Parliament for each fiscal year on the application of the Act in respect of all federal bodies and Crown corporations. The implementation policy calls for 50% of all vehicle purchases for the fiscal year commencing April 1, 1997, 60% for the fiscal year commencing April 1, 1998, 75% for the fiscal year commencing April 1, 1999 and for every fiscal year thereafter to be vehicles powered by engines capable of operating on alternative fuels.

#### A Manager's Guide to Greening the Fleet

In support of the implementation of the Alternative Fuels Act assented to in June 1995 and the alternative fuels for motor vehicles program, NRCan published in 1995 its manual "A Manager's Guide to Greening the Fleet". The 93-page report, which includes a copy of the Alternative Fuels Act, consists of six parts:

- Part One provides information on federal government objectives related to fleet management and related issues;
- Part Two provides information on managing fleet operations;
- Part Three looks at issues to consider when deciding to buy a vehicle, together with options for special equipment;
- Part Four identifies ways of improving fleet performance;
- Part Five focuses on environmentally responsible vehicle maintenance; and
- Part Six examines the fuel alternatives such as ethanol-gasoline blends, low-sulphur diesel fuel, methanol, natural gas and propane.

“Greening the Fleet” was to be an ongoing process, with additional information to be provided as it became available.

Solar energy technology demonstration in the N.W.T.

On July 4, a project was initiated at Arctic College’s Nunatta campus to demonstrate the value of solar energy technology. The installation of a photovoltaic (PV) system marked the launch of “PV for the North”, a joint program between NRCan and the Science Institute of the Northwest Territories-East to introduce solar energy technology to Canada’s North. Photovoltaics convert solar energy directly into electricity in place of diesel generation, the conventional method of producing electricity in the North, which involves high fuel transportation and maintenance costs, particularly in remote communities. The 3 kW grid-connected PV system at the Nunatta campus was the first application of PV to a community grid in the N.W.T. The installation at Nunavut College was a key part of Phase A of PV for the North, a 5-year \$1 million photovoltaic research, development and technology transfer program. The program had several parts, including the Nunatta campus installation, a market study of PV in the N.W.T., studies of operational characteristics of PV systems in northern climates, and the development of models to optimize design. The goal was to increase the use of PV technologies in Canada’s North, and reduce the region’s dependence on expensive fossil fuels thereby meeting the need for efficient and environmentally responsible energy alternatives.

Stress Corrosion Cracking on oil and gas pipelines

In July, a failure due to stress corrosion cracking (SCC) occurred on TransCanada Pipelines’ system near Rapid City, Manitoba. The National Energy Board immediately stated its serious concern about the increased incidence of SCC and decided to hold a wide-ranging public inquiry into this phenomenon on Canadian oil and gas pipelines. The inquiry was initiated in August and a report was planned for mid-1996. SCC involves a complex process which can result in the formation of cracks on the surface of a buried pipeline. In severe cases, the pipeline can fail if the cracking goes undetected for several years. Environmental assessment and protection was another area where the NEB was intensifying its efforts, incorporating the Canadian Environmental Assessment Act (The CEA Act) into its procedures.

Energy Sector includes CANMET energy R&D

During the 1995 restructuring of NRCan, forging closer links between science and policy, the Energy Sector was expanded to include the energy R&D portion of CANMET, to be called the Energy Technology Branch CANMET, and the Office of Energy Research and Development which continued to manage the interdepartmental Program of Energy Research and Development (PERD). The new organization came into effect on August 16, 1995. The Energy Technology Branch CANMET was consolidated into three components: the existing CANMET Western Research Centre in Devon, Alberta; the CANMET Energy Diversification Research Laboratory in Varennes, Quebec; and a new division called the CANMET Energy Technology Centre made from merging the Ottawa-based Energy Research Laboratories, Energy Efficiency Division, and Alternative Energy Division. (See also March 1996 note “Energy Policy Overview”).

New coal mines-1995

In August, a new thermal coal mine, the Sheerness mine, began production in Alberta of 2 million tons a year, providing sub-bituminous coal to the adjacent Sheerness generating station near Hanna, accounting for half of the stations coal requirements. Later in the year, in November, approval was given to Pioneer Coal Ltd. for a strip mine in Stellarton, N.S. In 1995, there were 8 coal mines operating in B.C., 12 in Alberta, 6 in Saskatchewan, 1 in N.B., and 2 in N.S.

Cameco in Kazakstan uranium mining	In <u>August</u> , Cameco Corporation, Uranerz Exploration and Mining Ltd., and Kazakstan National Joint Stock Company of Atomic Power Engineering and Industry (KATEP), the state organization controlling uranium mining in Kazakstan, announced a joint venture proposal to develop uranium deposits in southern Kazakstan, each partner with a one third interest.
Conference of the Parties (COP 1)- Berlin Mandate	The first session meeting on the Berlin Mandate of the Conference of Parties (COP 1), as established in April 1995, met in Geneva, <u>August 21-29</u> , with delegates from federal departments, including Natural Resources Canada. Most of the discussions focused on the need for analysis and assessment to lay groundwork for more formal negotiations towards a new Protocol ready for signature in 1997. Canada, noted that a strong analytical base would be critical in ensuring that negotiations on next steps would proceed in a well-informed manner, resulting in a realistic and credible outcome. Canada's provincial energy departments were to be fully consulted on the country's negotiating position.
Voluntary Challenge and Registry (VCR)- Participant's Handbook	In <u>August</u> , Natural Resources Canada published a 14-page handbook under the title "Voluntary Challenge and Registry (VCR)" relating to Canada's climate change. The handbook provides participants with general guidelines on how to participate in the Voluntary Challenge and report to the Registry. The Climate Change Voluntary Challenge and Registry Program is considered to be a key element in Canada's National Action Program on Climate Change (NAPCC). It, in term, represents a consensus of federal, provincial and territorial governments, setting out the principles, strategic directions and opportunity areas that Canada will pursue to reduce greenhouse gas emissions. The Challenge is to limit or reduce net greenhouse gas emissions in Canada on a voluntary basis. The Registry component provides a public record of organizations' commitments, action plans, progress and results.
VCR participation by mining companies	On <u>September 12</u> , the Minister of Natural Resources (NRCan) acknowledged the energy efficiency commitments and accomplishments of 6 Canadian mining companies resulting from their successful participation in the Climate Change Voluntary Challenge and Registry Program (VCR). Through the Mining Association of Canada, the companies were also participating in the Canadian Industry Program for Energy Conservation (CIPEC), a voluntary network of industry associations and industry task force working groups with the mandate of focusing on increasing the energy efficiency of Canada's mining and manufacturing industries.
VCR participation by the Canadian Gas Association	On <u>September 20</u> , NRCan, Gaz Metropolitan, and the Canadian Gas Association announced a partnership in voluntary action by the Canadian gas industry directed to helping Canada meet its international commitments on climate change. This followed the signing of a Memorandum of understanding (MOU) between NRCan and the Canadian Gas Association, committing the CGA to work with NRCan to develop and promote the Climate Change Voluntary Challenge and Registry Program (VCR) which was to include the development of a voluntary reporting system for CGA member companies to track emissions, communications, consultations, research and new technology developments, and marketing of new high-efficiency natural gas equipment. The 320 corporate members of the CGA included major natural gas transmission companies, distributors, manufacturers of gas appliances and equipment, brokers and producers. In 1995, similar agreements to promote the VCR were signed by NRCan with the Canadian Association of Petroleum Producers, the Canadian Electrical Association, the Canadian Energy Pipeline Association, and the Coal Association of Canada.
Gentilly nuclear reactor problem	On <u>September 4</u> , the Gentilly 2 nuclear reactor near Trois-Rivières, Quebec, was shut down due to a failure of a drain valve resulting in several leaks and a small loss of reactor coolant. There were no radioactive releases.
	On <u>September 22</u> the government closed the public offering of 123.9 million of its Petro-Canada shares, which raised in excess of \$1.746 billion. The sale reduced the government's holding in Petro-Canada to 49.4 million shares, or about 20 percent of the company.

NRC Standing  
Committee re.  
National Energy  
Code for Buildings

The National Research Council Standing Committee on Energy Conservation for Buildings met September 13-15 to review the more than 640 comments on the National Energy Code for Buildings and the National Energy Code for Houses received as a result of the second and final round of public review. Many of the comments received appeared to result from lack of understanding on the part of the commentator of the intent of the Codes or specific provisions in the Codes. Therefore many of the requirements were clarified, either by improved wording in the Codes or by the addition or expansion of appending notes. Although many comments strongly challenged some of the Codes fundamental structures and rationales, alternative approaches were not suggested and the Standing Committee did not find the arguments submitted convincing so the Standing Committee re-affirmed those structures and rationales. The report of the meeting identified the issues discussed and the changes to be made prior to finalizing the National Energy Code for Building and the National Energy Code for Houses.

Sustainable  
Development and  
Minerals and Metals

An Issues Paper entitled “Sustainable Development and Minerals and Metals”, prepared by Natural Resources Canada, was completed in September 1995. The purpose was to engage stakeholders on how the concept of sustainable development may be applied to minerals and metals. Following consultations with stakeholders, NRCan intended to develop, for consideration by Ministers, a new mineral and metal policy based on sustainable development, as an update of the 1987 “Mineral and Metal Policy of the Government of Canada”. The 79 page Issues Paper’s presentation was in six Parts: Sustainable Development and the Case for Minerals and Metals; the Minerals and Metals Industry; Government Role in Minerals and Metals; Sustainable Development Challenges; Science and Technology; and Conclusion. The Issues Paper demonstrated how the concept of sustainable development may be applied to minerals and metals, pointed to the challenges, and proposed policy guidelines to incorporate the concept into federal decision-making which would affect those commodities. Although this NRCan Issues Paper was not directed to the energy economy, it provides an important reference on the Department’s approach to the concept of sustainable development.

Council of Energy  
Ministers Open  
Session with Industry  
Associations

The Council of Energy Ministers met in “Open Session” with industry associations in Saskatchewan on September 11, 1995. The meeting, consultative in nature, provided for sessions on energy supply and trade, energy and the environment, and regulatory/legislative matters. The federal Minister of National Resources and the Saskatchewan Minister of Energy co-chaired the meeting. Industry was represented by the Canadian Electrical Association, the Coal Association of Canada, the Canadian Association of Petroleum Producers, the Canadian Gas Association, and the Canadian Petroleum Products Institute. The meeting provided for a review and exchange of information on a number of matters of mutual interest, including the following;

- the Energy Chapter of the Internal Trade Agreement, with particular reference to the difficult issue of electricity transmission;
- the Energy Charter Treaty, the federal Minister noting that Canada’s participation in the Energy Charter Treaty negotiations, reflected the country’s dedication to pursuing more liberal trade and investment relationships worldwide;
- recognition of the importance of the work of the Conservation and Renewable Energy Sub-Committee of the Advisory Committee on Energy which was providing a national forum for coordination of energy conservation initiatives and the advancement of renewable energy resource development opportunities, and providing information on policy and program developments relating to energy efficiency;
- support of the recommendation of the Petroleum Emergency Preparedness Sub-committee that its activities be suspended and that future work be limited to maintenance of the contact list and telecommunications links for use in an oil shortage situation;
- update on preparations for international negotiations on the Climate Change Convention; and
- the importance of continuing progress in the work of the National Air Issues Coordinating Mechanism in limiting greenhouse gas emission., and the key role of the voluntary Challenge and Registry (VCR) in the National Action Program on Climate Change.

Uranium resources and supply capability	In <u>October</u> , Natural Resources Canada completed its 21st annual assessment of Canada's uranium supply capability and an associated survey of exploration activity. Exploration expenditure in 1994-95 of some \$36 million approached the \$40 million spent in 1993/94, with 20 companies active in both years. Canada's known uranium resources recoverable from mineable ore at prices of \$150/KgU or less, as of January 1, 1995, were estimated at 454,000tU, a slight decline from the 475,000tU reported, as of January 1, 1994. Some uranium producers had to limit production until projects with replacement reserves had cleared the environmental review process.
Point Lepreau nuclear reactor shutdown	During recommissioning in <u>October</u> at the Point Lepreau nuclear reactor, near Saint John, N.B., following a maintenance outage period since April, an accident occurred which caused the failure of a pump and spread debris in the heat transport system. In gradually returning the limit to full power under Atomic Energy Control Board supervision, NB Power commenced a review of its operating procedures.
FleetWise Federal Vehicle Efficiency Program	On <u>October 19</u> , NRCan, Environment Canada, and the Treasury Board initiated a program "FleetWise" to reduce costs, improve energy efficiency and reduce emissions of the 25,000 motor vehicles in the federal fleet in keeping with NRCan's Action Plan submitted to the Voluntary Challenge and Registry (VCR). FleetWise would also help achieve environmental and fiscal objectives set out in the Alternative Fuels Act which committed the Federal Government to begin purchasing alternative transportation fuel vehicles in 1997, and to ensure that by 2004 alternative fuel would be used in 75% of federal vehicles where feasible and cost-effective.
Task Force on Cleaner Vehicles and Fuels: Report to CCME	The Task Force on Cleaner Vehicles and Fuels, in a report dated <u>October 23</u> , 1995, submitted its findings and recommendations to the Canadian Council of Ministers of the Environment (CCME). The Task Force had been established by the CCME on November 8, 1994 to develop options and recommendations on a national approach to new vehicles emission and efficiency standards and fuel formulations for Canada, recognizing regional/urban realities. The report focused on the impacts of vehicle emissions on air quality in Canada, and proposed recommendations that would result in improved air quality in the near and long term. The Task Force recognized that certain regions experience more serious air quality problems and should therefore have the flexibility to enact more stringent air pollution measures as deemed necessary. The recommendations were reported under the following headings: No. 1: National Vehicle Standards; No. 2: Alternative Transportation Fuels and Advanced Technology Vehicles; No. 3: Other Programs for vehicles; No. 4: Vehicle Fuel Efficiency; No. 5: National Standard for Low Sulphur Diesel; No. 6: National Standard for Gasoline; and No. 7: Process for Liaison on Internal Combustion Engine and Fuels Standards.
Retail Council in support of the Energy Innovators Initiative	On <u>November 3</u> , a Memorandum of Understanding was signed between the Retail Council of Canada and Natural Resources Canada committing the Canadian retail sector to further Canada's environmental objectives through voluntary action in energy efficiency. With 6,600 members, the Retail Council represented more than 65% of Canada's retail trade. Through the Energy Innovators Initiative, the Council was to promote and implement a sector-wide program to reduce energy waste and limit greenhouse gas emissions.
Industry (CIPEC) in support of VCR	In a <u>November 10</u> address to a forum organized by the Canadian Industry Program for Energy Conservation (CIPEC), the Minister of Natural Resources (NRCan) reported that more than 200 industrial companies and 14 associations had agreed to support the Climate Change Voluntary Challenge and Registry (VCR) program. A CIPEC report showed that the Canadian mining and manufacturing sectors had reduced CO <sub>2</sub> emissions by 1.4% in the period 1990-1994 through a combination of strategies, including energy efficiency and increased use of electricity (fuel switching), as well as a significant switch to biomass in the forest products sector. In addition, industry had mobilized itself in support of the VCR program through the 14 industry associations representing 3,000 companies who were participating in CIPEC.
Energy Efficiency	On <u>November 14</u> , announcement was made of new Energy Efficiency Regulations to significantly



Regulations-lamps	reduce CO <sub>2</sub> emissions. The new regulations to establish minimum energy performance levels for fluorescent lamps were to become effective February 1, 1996 and for incandescent reflector lamps on April 1, 1996. It was estimated that the resulting energy savings would decrease CO <sub>2</sub> emissions by 5.3 megatonnes in the year 2000, equivalent to the annual emissions produced by more than one million automobiles. The regulations were to apply to prescribed lamps imported into Canada or traded interprovincially.
VCR Program progress report	On <u>November 20</u> , the Minister of NRCan tabled a progress report in Parliament on the Voluntary Challenge and Registry (VCR) Program. Recruitment to the Program had focused on the 75% of greenhouse gas emissions that originate from industrial and business activity; the sectors that produce the greatest share of those emissions; and the largest firms in those sectors. Companies registered with the VCR Program from the energy and electric utilities sectors represented between 80 and 100% of the greenhouse gas emissions from their respective sectors. The producers of 60% of mining emissions and over 50% of forestry, pulp and paper emissions had made commitments. Engagement from manufacturing included a majority of emissions from transportation equipment manufacturing (80%), primary metal manufacturing (50%), and industrial chemicals manufacturing (95%). In addition, NRCan had signed MOUs with key industry associations that pledged to work to ensure their members made efforts to limit greenhouse gas emissions, including the Canadian Gas Association, the Canadian Electrical Association, the Canadian Association of Petroleum Producers, the Canadian Energy Pipeline Association, the Coal Association of Canada, and the Retail Council of Canada. A record of the progress in the VCR Program is presented in the 43-page report, completed in November, entitled "Voluntary Challenge and Registry (VCR)". The purpose of the report was to provide an initial assessment of progress by analyzing participation and commitment in the VCR since Ministers decided to launch the program in February 1995. The report illustrated that the strategy developed had achieved results that could form a strong foundation for further progress.
Leading the Way Forward-Action Program on Climate Change	In <u>November</u> , a 26-page report "Federal Action Program on Climate Change-Leading the Way Forward" was issued by the Government of Canada over the signatures of the Minister of Natural Resources Canada and the Minister of the Environment. "Leading the Way Forward" is the Federal Action Program on Climate Change. The Report set out the Government of Canada's agenda and concrete actions in pursuit of its long-term commitment to address climate change under the National Action Program. It showed how federal departments and agencies were pulling together to provide an effective response to the challenge of climate change science, mitigation and adaptation. Addressing climate change was seen as an integral part of Canada's commitment to sustainable development. The document outlined the Government of Canada's three broad approaches for addressing climate change: encouraging action across all sectors of the economy; getting the federal house in order; and understanding the science of climate and of climate change. "Leading the Way" described how the Federal Government will lead national efforts to build on Canada's strengths in science, energy efficiency, renewable energy, sustainable transportation, agriculture and forestry to address climate change.
Emission Reductions from Federal Operations-Government Plan submitted to the VCR	In <u>November</u> , the Minister of Natural Resources and the Minister of the Environment submitted a Letter of Intent, and an Action Plan to Canada's Climate Change Voluntary Challenge and Registry (VCR) as recorded in a 26 page report under the title of "Emissions Reductions from Federal Operations". The Action Plan covered all federal departments and agencies. At that time, the Government of Canada had committed, with respect to federal operations, to surpass the national goal to stabilize greenhouse gas emissions at 1990 levels by the year 2000, and reduce greenhouse gas emissions by at least 20% by the year 2005, relative to 1990. Taking into account such measures as the Federal Buildings and FleetWise initiatives, NRCan projected a 17% reduction in CO <sub>2</sub> emissions from buildings and vehicles by 2000 and a 30% reduction by 2005. The report provided an overview of measures being undertaken, including those relating to energy use in federal buildings and in the federal fleet; specific actions on the part of NRCan, Public Works, DND, Environment Canada, and NRC with respect to federal buildings; and specific actions by those departments and agencies with respect to federal fleets. The report also provided

estimates of emissions originating in properties and fleets owned by federal institutions for the period 1990-95 and as projected for the period 1995-2000. There is a record of partnerships the Federal Government had entered into with others to limit greenhouse gas emissions, including a considerable number of MOUs signed by NRCan with various industry representatives. The report emphasized that the Action Plan was to be viewed as an evolving document. Revisions will be made to reflect new developments and to improve the quality of data.

NRCan's MOUs on climate change voluntary initiatives

A report prepared in November recorded the Memoranda of Understanding on climate change voluntary initiatives signed by Natural Resources Canada with 7 industry associations over the period January to November 1995, and provided progress reports from 4 of those Associations: Canadian Association of Petroleum Producers, Canadian Electrical Association, Canadian Energy Pipeline Association, and the Canadian Gas Association. The MOUs were designed as a means to promote engagement among Associations and their members in planning and implementing voluntary actions to prevent and reduce greenhouse gas emissions, in support of the Voluntary Challenge and Registry (VCR) program. The report was a clear record of the extent of cooperation in the program by the MOU signatories.

Motor Vehicle Manufacturers' efficiency agreement

On November 20, the Minister of NRCan announced the signing of an agreement with the Motor Vehicle Manufacturers Association (MVMA) on motor vehicle fuel efficiency with the objective of developing a comprehensive strategy for the motor vehicle industry to contribute to greenhouse gas limitations. The strategy was to be directed to finding ways to help motorists to realize the benefits of fuel savings, improving on-road fuel efficiency performance of vehicles, encouraging consumers to consider fuel efficiency when purchasing a vehicle, and promoting technological progress in the fuel efficiency of new vehicles. The MVMA represented Canada's largest manufacturers of passenger cars and trucks including Chrysler Canada Ltd., Ford Motor Company of Canada Limited, General Motors of Canada Limited, and Volvo Canada.

Coal-related SO<sub>2</sub> and NO<sub>x</sub> emissions

In November, a working group chaired by Environment Canada was established to develop guidelines for NO<sub>x</sub> emissions from coal-fired utility boilers constructed after the year 2000. Although eastern Canadian coal-burning utilities were all below their SO<sub>2</sub> emission levels, even with the implementation of existing programs to control SO<sub>2</sub> emissions in Canada and the U.S.A. sulphate deposition was likely to continue to cause lake acidification. Accordingly, the Acidifying Emissions Task Groups, also chaired by Environment Canada, continued to work to develop a national strategy to address acidifying emissions in the post-2000 period.

Decommissioning Elliot Lake mine sites

On November 14, public hearings commenced on Environmental Impact Statements (EIS) prepared by Rio Algom and Denison Mines Ltd for decommissioning several mine tailings sites at Elliot Lake. The two companies had submitted proposals in 1992 which were referred by AECB for public review under the federal Environmental Assessment Review Process (EARP). With Terms of Reference proposed, a 3-member Elliot Lake Environmental Assessment Panel was established and guidelines were drafted for preparation of EISs. Final EIS guidelines were issued in 1994 and the proponents' EIS submissions were received in early 1995, leading to commencement of public hearings in November. Those hearing were completed in January 1996, and it was expected that the Federal Government would be in a position to respond to the panel's recommendations by mid-1996, four years after the companies' initial proposals.

Gas export authorizations by NEB

In November, the National Energy Board released a report as part of its ongoing gas export regulation and monitoring responsibilities showing that the total authorized volume of natural gas remaining to be exported under long-term licenses was 521 billion cubic metres (18.4 trillion cubic feet). This quantity did not include licenses authorizing the export of natural gas from the Mackenzie Delta totalling 260 billion cubic metres (9.2 trillion cubic feet).

Energy and Environment Ministers-Joint

In November 1995, Energy and Environment Ministers held their annual joint meeting. The issue of climate change continued to be a key focus. Included in the agenda was a discussion of progress in the National Action Program on Climate Change (NAPCC) which they had approved

Meeting	<p>in February 1995, and which set out the strategic directions Canada is to follow in pursuit of its objective of stabilizing greenhouse gas emissions. The Voluntary Challenge and Registry (VCR) Program progress report was tabled at the meeting, noting that over 500 cross-sectoral companies and organizations, representing a majority of greenhouse gas emissions in Canada, had committed to participate in the VCR. NRCan strongly supported mitigative actions to reduce greenhouse gas emissions in a way that would make economic sense and at the same time protect the environment for future generations. The importance of the volunteer component of the VCR was emphasized. The effectiveness of the National Air Issues Coordinating Mechanism (NAICM) was favourably reviewed but the need to improve its strategic planning and priority setting was noted.</p>
Energy supply and demand trends-1995	<p>For 1995, the record through to <u>December</u> showed that total energy production increased 5.1% over 1994. Domestic energy use rose 1.7%. Total energy exports and imports rose by 10% and 3.6%, respectively. Since 1991, petroleum had steadily accounted for about one-third of energy needs. The market share of natural gas had fluctuated around 30%; the share of hydroelectric power had remained at 11%, while nuclear energy had been in the 9.9% to 11.7% range. The share of renewable forms of energy-solar, wind, wood and other forms of biomass rose slightly from 5.6% in 1991 to 5.8% in 1995. The value of gross exports of petroleum, natural gas and electricity increased from \$16.3 billion in 1994 to \$16.9 billion in 1995 despite lower gas prices. The value of net exports (exports less imports) decreased from \$9.5 billion in 1994 to \$9.0 billion in 1995.</p>
Oil industry activity-1995	<p>In 1995, the record through to <u>December</u> indicated that oil and gas industry spending on provincial and federal exploration rights in western Canada totalled \$851 million compared with \$1.4 billion in 1994. Exploration and development expenditures in conventional areas during 1995 were estimated at \$8.0 billion, down from \$9.6 billion in 1994. During the 5 year period, 1991-1995, expenditures varied from the low of \$1.4 billion in 1992 to the high of \$9.6 billion in 1994. North Sea Brent oil prices averaged U.S. \$17.04 per barrel in 1995, about 7% higher than the 1994 average. In 1995, Canadian export prices of natural gas averaged \$1.90 per gigajoule down from \$2.36 in 1994.</p>
Oil and gas reserves	<p>As measured at the end of <u>December</u>, year-end 1995 conventional crude oil reserves totalled 667 million cubic metres (4.2 billion barrels), down about 1% from 1991. From 1991 to 1995, on a cumulative basis, additions to established reserves of conventional light and heavy crude oil replaced 94% of production. Remaining reserves of bitumen in active projects were estimated to be 574 million cubic metres (3.6 billion barrels) at year-end 1995, an increase of 14% since 1992. Remaining established reserves of marketable natural gas, as of year-end 1995, were estimated to be 1,829 billion cubic metres (64.6 trillion cubic feet), an estimate that did not include any volumes for the east coast offshore or the Arctic. From 1991 to 1995, additions of marketable gas reserves replaced 82% of total production. Over the period 1991 to 1995, natural gas production increased by 39%, from 108 billion cubic metres in 1991 to 150 billion cubic metres in 1995.</p>
Electricity generation in 1995	<p>Total net generation of electricity in 1995, as measured at the end of <u>December</u>, was estimated to have been 544 terawatt hours, up 1% from 1994. Of Canada's total generation, about 62% was from hydroelectric sources, 21% from conventional thermal generation, and 17% from nuclear generation. Total Canadian consumption in 1995 was estimated at 507 terawatt hours, a 2% increase from 1994. Total export sales were down 10% from 1994, with an associated revenue decrease to \$1.2 billion. Firm and interruptible export sales decreased 7% and 11%, respectively. The average price for firm exports rose slightly from \$35.65 per megawatt hour in 1994 to \$36.40 in 1995. The interruptible price fell from \$25.69 in 1994 to \$24.17 in 1995.</p>
Pipeline construction in 1995	<p>In 1995, to the end of <u>December</u>, the National Energy Board had approved construction of about 700 kilometres of natural gas pipeline, 150 kilometres of oil pipeline and a variety of additional pipeline facilities. The estimated cost of the natural gas and oil pipeline construction was \$975 million and \$17.5 million, respectively. Pipeline construction continued to be a major component of oil and gas industry activities.</p>

NEB environmental assessments-1995, and emergency plans	Through to <u>December</u> , the National Energy Board carried out environmental assessments of more than 150 projects in 1995. The NEB has incorporated the Canadian Environmental Assessment Act into its procedures. The projects assessed included pipeline facilities applications, research and development activities, energy export applications, frontier drilling programs, development plans, seismic and geological programs. The NEB ensures that all companies under its jurisdiction have adequate emergency response plans to deal with and reduce or mitigate any negative effects to personnel safety, public health, and the environment resulting from an oil spill or natural gas leak. The NEB works closely with the responsible company and other government agencies to monitor and control the situation during emergencies.
Natural gas market assessment, Market-Based Procedure	In <u>December</u> , the National Energy Board released a Natural Gas Market Assessment Study, as part of its Market-Based Procedure to regulate the export of natural gas. The study contained a statistical analysis of price links between various natural gas producing basins in North America. By assessing the strength of price links between basins, conclusions can be reached as to whether natural gas is priced in a single “continental” market or whether pricing takes place in segmented regional markets. The strength of such links is important from a Canadian perspective to the extent that natural gas supply/demand developments in other parts of North America may influence natural gas prices in Canada. The study concluded that there had been a general increase in the strength of price links between producing regions since the inception of gas industry deregulation; that there is, however, somewhat of a pricing split between eastern and western gas markets; and that the pricing of Alberta gas seemed to be more strongly linked with western gas markets than with eastern gas markets. Overall, the study provided statistical evidence for industry perception of an east-west split in gas pricing. The growing strength of price links, in general, indicated that natural gas markets had become more competitive thereby diminishing the likelihood that one, or a few market players, could unduly influence price.
Uranium market outlook-1995	The record available at the end of <u>December</u> showed that Canada’s total primary uranium production in 1995 approached 10,450 tonnes of uranium, the highest output since the late 1980s, and almost one-third of the world’s production. World uranium prices recovered markedly as effective limits on the flow of uranium products from the republics of the former Soviet Union into the U.S. market came under control. Global uranium production in 1995 was just half of global consumption, and Western inventories declined further. As the world’s leading supplier, Canada had four of the world’s top ten uranium producing companies which derived all or a major portion of their uranium in Canada.
Additional uranium production possibilities	As of <u>December</u> 1995, there were five new uranium mining projects having total estimated resources of 250,000 tU that remained to be brought into production in Canada over the following several years, given timely environmental and regulatory approvals. Their development would form the basis of uranium production capability in Canada well into the future.
Uranium under contract	At the end of <u>December</u> 1995, forward commitments under all domestic uranium purchase contracts were in the order of 7,500 tU. Forward commitments under all export contracts for Canadian uranium exceeded 50,000 tU. The nominal cumulative amount of uranium under Canadian export contracts, renewed and accepted since 1974, totalled 195,127 tonnes of uranium, with exports going to 13 countries. The United States Market took 45% of that cumulative total; France, slightly more than 13%; and Japan, slightly less than 13%. Canada exported 8,179.1 tU in 1995.
Uranium refinery and conversion facilities	The record in <u>December</u> 1995 showed that Cameco continued to operate the only uranium refining and conversion facilities in Canada located at Blind River and Port Hope, Ontario, respectively. At Blind River, uranium concentrates are refined to uranium trioxide (UO <sub>3</sub> ), an intermediate product, and then shipped to Port Hope where the UO <sub>3</sub> is converted to either uranium hexafluoride (UF <sub>6</sub> ) for use in foreign light water reactors following enrichment outside of Canada, or uranium dioxide (UO <sub>2</sub> ) for use in CANDU reactors. The Blind River refinery, the world’s largest, has an annual throughput capacity of 18,000 tU as UO <sub>3</sub> , and processes uranium concentrates from several

countries. The Port Hope facilities, with a capacity of some 10,500 tU as UF<sub>6</sub> and 2,500 tU as UO<sub>2</sub>, have about one quarter of the Western World's UF<sub>6</sub> annual conversion capacity and provide the only commercial supply of fuel grade UO<sub>2</sub> for CANDU reactors. About 80% of the UO<sub>3</sub> from Blind River is converted to UF<sub>6</sub> while the remaining 20% is converted to UO<sub>2</sub>.

Nuclear reactor performance in 1995

The operation record for 1995 reviewed in December indicated that the combined generating capacity of Canada's 22 in-service CANDU reactors averaged in excess of 15,400 megawatts electric (Mwe) for much of the year. On October 8, Unit 2 of the Bruce A nuclear generating station was put out of service and was mothballed but remained in Ontario Hydro's generation plan as an option to meet demand beyond the year 2002. On December 8, the AECB approved the restart of Unit 2 at the Pickering A nuclear station. It had been shut down in December 1994 after a loss-of-coolant accident. After an 8-month scheduled outage for maintenance work, the Point Lepreau reactor was back into the electric power grid in late December at full power. To the end of June 1995, 7 CANDU's were among the top 25 reactors worldwide on the basis of lifetime performance.

Ontario Hydro privatization proposal

In December, options for phasing in competition in Ontario's electric power sector were still under consideration by an Advisory Committee on Competition in Ontario's Electricity System, which the Ontario government had established in 1995. The range of issues being considered included privatization of Ontario Hydro and restructuring of the 300 local utilities that were responsible for supplying power to consumers throughout the province.

Coal supply

The 1995 coal supply record available in December showed that total coal production in the year was 74.9 million tonnes of which 46.5 million tonnes were thermal coal. Domestic consumption of thermal coal was 48.6 million tonnes, a record in recent years. Most of the coal consumed in Canada in 1995 was used to generate electricity. The 1995 total production was an all-time high, the output being valued at \$1.9 billion. Projections to the end of the century suggested that Canadian coal production, and its use in thermal generation, would continue to increase.

Energy sector role-Canadian economy

The important role of the energy sector in the Canadian economy was evident in the record for 1995 as available at the end of December. In that year, the energy sector represented about 7% (approximately \$41 billion) of total Gross Domestic Product. Of that amount, \$15 billion was generated in the upstream oil and gas sector; related energy industries and services accounted for the remainder. The energy sector directly employed more than 300,000 Canadians in all regions of the country, about 3% of the total workforce. Net earnings from all forms of energy exports in 1995 were equivalent to about 50% of Canada's net merchandise export earnings, or \$16.9 billion.

"green" power procurement-a Green Government initiative

In December, plans were underway to assess the viability of a federal government "green" power procurement program, part of the Federal Action Program on Climate Change. "green" power was defined as electricity produced from renewable energy sources as bioenergy, wind, photovoltaics, small hydroelectricity (under 20 MW), and landfill gas. Purchasing green power would help reduce greenhouse gas emissions directly associated with the federal government's use of electricity and help establish a strong and competitive renewable industry in Canada. Discussion with interested utilities and industry would be aimed at developing a Memorandum of Understanding which would establish the terms and conditions for a competitive process to select projects for Green Power Procurement. The Memorandum and pilot projects would allow the federal government to assess the viability of a large scale program. The Green Power initiative followed from the federal government's strong commitment to the implementation of sustainable development in its policy statement "Creating Opportunity", and the "Guide to Green Government", signed by all federal Ministers, which specified that each Minister is accountable for making measurable progress on sustainable development.

Canadian Industry Program for Energy Conservation-1994-

The Canadian Industry Program for Energy Conservation (CIPEC) 1994-1995 report was submitted to the Minister of Natural Resources on December 15, 1995. The report provided clear proof that, within the manufacturing and mining sectors, the voluntary approach to the Climate

95 report	<p>Change Challenge was working. CIPEC is a voluntary initiative, created in 1975. Participating companies had reduced their energy use by over 26.2% per unit of production between 1975 and 1990, for an annual on-going reduction of 30 megatonnes of carbon dioxide. In 1994, CO<sub>2</sub> emissions were 1.4%, or 1,350 Kilotonnes of CO<sub>2</sub>, below 1990 levels primarily because of improved energy efficiency, and fuel switching from coal to natural gas and to biomass. The report confirmed that industry could achieve 1990 levels of CO<sub>2</sub> by the year 2000, assuming industrial GDP grows at or below 2% a year between 1995 and 2000. The 86-page report provided details on the Canadian industry program for energy conservation, industry's energy efficiency performance for 1990 to 1994, energy efficiency by sector for 1990 to 1994, exports of embodied energy in 1994, the energy efficiency commitment for 1995-2000, detail on CO<sub>2</sub> emissions, climate stabilization in the post 2000 period and a projection of the CO<sub>2</sub> emissions gap in the post 2000 period, and CIPEC services to industry. Through supporting industry associations, 3000 companies were involved in CIPEC at the time of reporting. On November 10, 1995, CIPEC sponsored its second International Industrial Energy Efficiency Conference with over 150 leading executives from Canadian industry in attendance.</p>
AutoSmart Guide and Handbook	<p>Completed in 1995 by <u>December</u>, the 42-page AutoSmart Guide and the 6-page AutoSmart Handbook provide readily usable information on how to buy, drive and maintain a car to save money, energy and the environment. The NRCAN publications direct attention to the fact that cars are one of the world's single greatest sources of environmental pollution. The information and guidelines presented provide the means of extensive money saving while helping to protect the environment.</p>
Survey of Canadian New Household Equipment Purchases	<p>The NRCAN "Survey of Canadian New Household Equipment Purchases 1994 &amp; 1995", a statistical report carrying data through to <u>December</u> 1995, was the third report of a series on results of surveys conducted on behalf of NRCAN on energy use in the residential sector. The surveys were developed as part of the National Energy Use Database initiative. Released in March 1997, the report reviewed the results of two surveys that collected information on household equipment: the 1994 and 1995 Household Equipment Surveys. The goal of the report was to present the features of energy-consuming equipment bought by Canadian households in the two years. Household Equipment Surveys are conducted annually through the mail by Market Facts of Canada to bridge the gap between the 1993 and 1997 Survey of Household Energy Use, and focus on the new major appliances bought and their related energy efficiency.</p>
Canadian Biodiversity Strategy	<p>The 77-page publication "Canadian Biodiversity Strategy", Canada's response to the Convention on Biological Diversity, was made available on <u>December 6, 1995</u> by the Biodiversity Convention Office, Environment Canada. The Strategy was developed jointly by federal, provincial and territorial governments with significant input from a broad cross-section of Canadian interests. Governments were putting the Strategy to use as a guide for implementing Canada's obligations under the Convention on Biological Diversity. The Strategy provides a framework for action at all levels that will enhance Canada's ability to ensure the productivity, diversity and integrity of the country's natural system and, as a result, the ability as a nation to develop sustainably. It promotes the conservation of biodiversity and the sustainable use of Canada's biological resources, and describes how the country will contribute to international efforts to implement the Convention on Biological Diversity which the Prime Minister signed at the Earth Summit in June 1992. The biodiversity strategy has important implications in the production and use of energy in a sustainable manner.</p>
Pickering nuclear station concerns	<p>In August, the Atomic Energy Control Board sent a letter of warning to Ontario Hydro requiring that management at Pickering demonstrate a rapid improvement in operational safety. This followed from a series of events of safety significance at Pickering during early 1995, and observations by the AECB staff that station management was not demonstrating, by example, appropriate consideration for safety. A team of AECB staff specialists was set up to monitor and evaluate the programs planned and implemented by Ontario Hydro to reverse the negative trends and to sustain performance improvement. As of <u>December 1995</u>, AECB staff had not been able to</p>

conclude that rapid improvement in safety performance had occurred at the Pickering stations.

Energy Efficiency  
Trends in Canada  
1990 to 1995

The NRCan publication "Energy Efficiency Trends in Canada 1990 to 1995" was the second annual review of trends in end-use energy efficiency in Canada and it carried the record through to December 1995. It continued the practice of monitoring trends in energy efficiency and their contribution to changes in energy use and greenhouse gas emissions. The objective of the report was to explain the contribution of energy efficiency to the evolution of secondary energy use and greenhouse gas emissions in Canada. Promoting greater energy efficiency in all sectors of the economy continued to be an important element of Canada's National Action Program on Climate Change. An improved understanding of the relationship between energy efficiency, energy use and greenhouse gas emissions would assist policy-makers in developing more effective responses to the issue of global climate change and sustainable development. The report provided a review of four end-use sectors (residential, commercial, industrial, and transportation) for the period 1990 to 1995. The year 1990 was the base year of Canada's commitment under the Framework Convention on Climate Change. The analytical approach employed in the study relied on various factual and analytical indicators and a factorization method to describe the trends and explain the factors underlying them. As the quality and quantity of data upon which the analysis was based varied greatly across sectors, NRCan implemented the National Energy Use Database initiative to establish processes for the collection of data that would allow for a better understanding of energy use in Canada. The analysis and results of the study of energy efficiency trends in Canada for the period 1990-1995 was presented in seven chapters: scope of the report; economy-wide trends in end-use energy, energy efficiency, and emissions; residential sector; commercial sector; industrial sector; transportation sector; and an end-use perspective on emissions from electricity generation. Explanatory information on data and methodology, essential to the use of the report, was included in four Appendices. An extensive glossary of terms, in a fifth Appendix, added considerably to the usability of this and other energy industry reports.