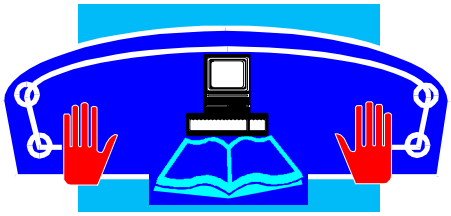

Federal Energy Programs - Northwest Territories
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Federal Programs

FEDERAL ENERGY PROGRAMS

IN THE

NORTHWEST TERRITORIES

NOTE - This information effective July 1, 1987

PREFACE

To provide a record of' energy programs managed by the Department of Energy, Mines and Resources and by other agencies reporting to the Minister of Energy, Mines and Resources, this set of 12 booklets has been assembled on a provincial and territorial 'oasis. This set updates that distributed in 1986.

The information for each program consists of short statements on its objective, operation, authorization, budget, time period, and economic impact. More than 50 programs are recorded, most of which apply to more than one province or territory and, in many cases, to all regions of Canada. All of these initiatives are financially supported by the federal government.

To maintain this as a timely record of federal energy programs, we plan to undertake annual updates of this material.

Energy Policy Coordination
Energy Policy Sector
October, 1987

FEDERAL ENERGY PROGRAMS

IN THE NORTHWEST TERRITORIES

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NORTHWEST TERRITORIES

TITLE
Driver Outreach Program

OBJECTIVE
To increase the awareness of the Canadian driving public of the benefits of fuel-efficient driving in an effort to reduce Canada's consumption of transportation fuel.

DESCRIPTION
The Program will provide support to organizations which are interested in informing their members and the community-at-large about energy-saving driving techniques. It will also provide a communication mechanism and distribution network for the dissemination of information on transportation fuel efficiency. Studies, reports and surveys will be carried out by experts in the transportation field. Educational courses will be offered to those consumer groups identified as demonstrating a willingness to conserve. Promotional materials will help the Canadian driving public make informed choices in the operation and maintenance of their vehicles, and demonstration projects will be carried out on a regional basis. In 1986, The Car Economy Book was updated and revised. This publication has gained wide acceptance across Canada as a general knowledge book on how to save fuel and money and lengthen the lifespan of one's automobile. Driving associations, safety councils, provincial governments and automobile associations were consulted for recommendations and advice on the book's content, marketability and distribution.

AUTHORITY
The Program was announced as a National Energy Program (NEP) initiative under the Small Projects Fund, which was approved by Treasury Board on May 21, 1981, (TB 777484).

BUDGET
1986-87 Nil
1987-88 $9,828

IMPACT
Once the vehicle purchase decision is made, the next most important factor in reducing energy used by motor vehicles is the driving method. By incorporating this new teaching material into the CSC's (Canadian Safety Council's) Defensive Driving II program, which is given to professional drivers and to private motorists across Canada, at least 50 000 drivers will be reached annually. Even if a small proportion of those taking the course adopt energy-saving driving techniques, the reduction in fuel consumption in the road sector would be substantial. An aware driver who operates a well-maintained vehicle will benefit by paying less at the gas pump. Moreover, if all Canadian drivers drove in a fuel efficient manner and maintained their vehicles, all of Canada would benefit by reductions in air and noise pollution, increased road safety and fewer accidents and, of course, conservation of one of our non-renewable resources. Making the public aware that fuel conservation is just as important today as it was in years gone by is what the Driver Outreach Program is all about.

NORTHWEST TERRITORIES

TITLE
Emergency Petroleum Allocation and Rationing Programs

OBJECTIVE
To ensure the equitable distribution of crude oil and petroleum products in the various regions of Canada during a national emergency caused by shortages of petroleum.

DESCRIPTION
The Allocation Program has two main components: a Crude Oil Allocation Program, which is designed to ensure that each refinery receives an equitable proportion of the crude oil which they would have received in the absence of an emergency; and a Petroleum Products Allocation Program, which is designed to control the distribution of petroleum products to wholesale customers in accordance with a system of priorities. Each wholesale customer will receive a proportion of the product that they used during a base period prior to the emergency, with the proportion depending on the priority assigned to that use of the product. There are three categories of use:

- Category A which is use relating to the health, welfare and security of Canadians, and the operational uses of the Canadian Forces;

  Category B which is use relating to the economic stability of Canada; and

- Category C which is use relating to the maintenance of the standard of living of Canadians.

The Rationing Program is intended to be introduced only if the mandatory allocation program has not been successful in dealing with the emergency. It is designed to control the distribution of gasoline and diesel fuel through roadside retail outlets by the issue of coupons to those entitled to gasoline or diesel fuel with the coupons being surrendered to the retailer at the time of purchase. Retail purchase and sale of gasoline or diesel fuel without exchange of the relevant coupons would be illegal.

AUTHORITY
The programs will operate under the authority of the Energy Supplies Emergency Act (1979), which establishes the Energy Supplies Allocation Board as the agency to administer the program. The programs will only become operational upon the declaration-of a national emergency by the Governor-in-Council, which must then be concurred with by Parliament.

BUDGET
The planning budget is $1 million.

TIME

Contingency planning for these programs is ongoing. Implementation will occur only upon declaration of a national emergency.

IMPACT

In the case of a shortage of crude oil supplies it is likely that certain regions of the country would suffer a greater direct impact than others. In the case of a loss of imports the regions most affected directly would be the Atlantic Provinces and Québec. The programs are designed to share the impact of the shortages as equitably as possible across the country. Thus the net effect of the programs would be to reduce the available supplies of petroleum products in Ontario and western Canada in order to mitigate the shortage of petroleum products in Québec and the Atlantic Provinces.

NOTE :

These programs have been designed with advice from the petroleum industry through the Petroleum Industry Advisory Committee and from the provinces and territories through the Provincial Advisory Committee.

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NORTHWEST TERRITORIES

TITLE
Natural Gas Fuelling Station Contribution Program

OBJECTIVE
To encourage the development of a natural gas vehicle refueling network across Canada.

DESCRIPTION
The Program provides a taxable contribution of u? to $50,000, to be provided to some 125 fuelling station operators who wish to install a retail natural gas outlet. This contribution subsidizes the estimated $300,000 cost of adding natural gas compressors and dispensing equipment to an existing gasoline or diesel outlet. The Program complements the Natural Gas 'Vehicle Program.

AUTHORITY
Oil Substitution and Conservation Act
S.C. 1980-81-82, c. 59 as amended by S.C. 1980-81-82, c. 112, s. 50

BUDGET
$6,250,000

TINE
The Program commenced operation in February 1983. Applications were being accepted for review until November 31, 1985.

IMPACT
125 public natural gas fuelling facilities will be established from Québec west (where natural gas is available) . It is expected that this will generate the development of an extensive refueling network that will substantially decrease the amount of imported crude oil used by the transportation sector. The growth of this market promises significant industrial benefits as well.

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NORTHWEST TERRITORIES

TITLE
Natural Gas Vehicle Program

OBJECTIVE
To encourage vehicle conversions to natural gas.

DESCRIPTION
The Program is national in scope. It offers a $500 taxable contribution to participating owners for each vehicle converted to NGV. Only provincial government vehicles and vehicles designed to operate indoors or underground are not eligible.

AUTHORITY
Oil Substitution and Conservation Act
S.C. 1980-81-82, c. 59 as amended by S.C. 1980-81-82, c. 112, s. 50.

BUDGET

FY 83/84	$7,700,000
FY 84/85	3,750,000
FY 85/86	5,000,000
FY 86/87	6,250,000

TIME
The program commenced operation in February 1983 and will terminate on March 31, 1987. This will be followed by a one-year government-industry $500 contribution program by the Governments of Canada, British Columbia and Alberta, and supported with funds from the producers of natural gas 'n Alberta, and the gas utility companies in British Columbia.

IMPACT
Approximately 13,000 vehicles were converted under the original program. It is expected that a further 2,000 will be converted under the program in 1987-88.

The use of natural gas for carburation is relatively new in Canada, and the growth of this market promises significant industrial benefits, including the development of Canadian manufacture of parts and equipment; rapid growth in the vehicle conversion industry; and an expansion in the retail natural gas sales network.

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NORTHWEST TERRITORIES

TITLE
Petrochemical Feeds tocks Program

OBJECTIVE
To ensure that the Canadian petrochemical industry is not unfairly disadvantaged by oil and gas pricing policy.

DESCRIPTION
The profitability of the petrochemical industry is highly dependent on oil and gas feedstock costs which constitute well over half of the production expenses.

Much of the industry was built on the premise that Canadian oil and gas prices would be competitive with those in the U.S. The present policy of market-related pricing for oil and gas, coupled with a very competitive petrochemical market outlook, has encouraged the oil-based olefins sector to undertake expenditures to become more feedstock flexible in order to remain viable .

Thu S far, only the Quebec oil-based sector is receiving government assistance towards feedstock flexibility conversion expenditures.

Industry performance is being closely monitored to observe the effects of oil price deregulation on the oil-based sector competitiveness.

AUTHORITY
Specific feedstock-related assistance must be approved by Ministers, based upon the recommendation of the Minister of EMR.

BUDGET
No specific funding has been allocated.

TIME
Indefinite.

IMPACT
Decisions to invest in new petrochemical facilities anywhere in Canada should be made on the understanding that access to hydrocarbons would be at a "market-driven" price and would be subject to the same federal policies that apply to all industrial oil and gas users.

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NORTHWEST TERRITORIES

TITLE
Petroleum Product Market Monitoring

OBJECTIVE
The main objectives of Petroleum Product Market Monitoring are to monitor and analyze:

- monthly regional demand for petroleum products in Canada;
- market participation of key marketers in Canada;
- monthly by region: retail, industrial and commercial prices for petroleum products in Canada;
- general market intelligence relating to the marketing of petroleum products in Canada;
- the demand and pricing dynamics of critical products in foreign markets such as heavy fuel oil, gasoline, domestic light heating fuel and jet fuel: and
- the impact of "decontrol" on consumer prices in major centres across Canada.

DESCRIPTION
Industry trends are analyzed using data from Statistics Canada, trade journals, and proprietary data sent by Canadian refiner-marketers . This permits the Petroleum Product marketing group to produce reports to satisfy management information needs and requests from the Minister's office, and respond to queries from other government departments and the general public.

AUTHORITY
While much of the data used by the Petroleum Product marketing group is within the public domain, the proprietary data is acquired under the authority of-the Energy Administration Act and through various Ministerial guidelines issued to the industry in the past.

BUDGET
This activity currently requires a staff of six and a supporting budget of about $50 000 per year.

TIME
Ongoing.

IMPACT
This activity allows the Petroleum Product marketing group to provide information, which is not available from any other source, to interested policy makers in both the federal and provincial governments.

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NORTHWEST TERRITORIES

TITLE
Accelerated Capital-Cost Allowance (Class 34)

OBJECTIVE
To encourage business and industry to install equipment and facilities in order to reduce energy waste, to decrease dependence on oil and to convert to renewable energy resources.

DESCRIPTION
Class 34 offers an accelerated, capital-cost allowance of "fast tax write-off" applicable to machinery and equipment that forms part of an eligible energy system covered by Class 34 of the Income Tax Regulations. The assets which qualify either save energy, utilize energy resources other than oil, or use renewable sources of energy. Eligible assets can be written off over three years. EMR manages the certification of assets for Revenue Canada.

AUTHORITY
The Federal Budget, May 25, 1976, included an addition (Class 34) to Schedule B - Capital Cost classes of the Income Tax Act. The Federal Budget, December 11, 1979, extended Class 34 to December 31, 1984, and announced significant additions to qualifying assets. The Federal Budget, November 12, 1981, changed the rate of tax write-offs from two to three years. An indefinite extension of the program was announced on December 13, 1984.

BUDGET
(National)

Fiscal Year 1987-88: O&M $91,000

TIME
The program is in place and operating with the Certification Secretariat in the Business & Government Energy Management Division of the Energy Conservation Branch. The program was originally administered by Industry, Trade and Commerce (IT&C) from January 1, 1981, and was transferred to EMR in January 1982. On December 13, 1984, the program was extended for an indefinite period of time.

IMPACT
(National, as of March 31, 1986)

Fuel Saved/Replaced:	6.2 million BOE
Number of Applications for Certificate:	427
Number Granted Certificates:	356
Number Rejected Certificates:	78
Deferred Federal Revenue (present value = 15 per cent):	$22.7 million

BOE = Barrels of oil equivalent (BOE) per year

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NORTHWEST TERRITORIES

TITLE
Bioenergy Development Program (BDP)

OBJECTIVE
To promote research, development and demonstration of new methods and technologies aimed at substituting biomass for non-renewable fuels and chemicals and to transfer bioenergy conversion information and technology. The Program applies throughout Canada.

DESCRIPTION
The Program is essentially concerned with the R,D&D of process technology for the conversion of all types of biomass energy, prepared fuels or chemicals that can significantly reduce traditional fossil fuel consumption patterns. Its scope extends from the receipt and preparation of all forms of biomass, including forest and municipal wastes, peat, aquatic and agricultural biomass, to its transformation into usable energy forms. The R&D component operates exclusively on a contracting-out basis, co-funding with project proponents is encouraged. The demonstration projects are cost-shared with the proponent and other parties, e.g. provincial governments.

Requests for proposals are issued to conduct R,D&D in specific areas.

AUTHORITY
Funding is provided under the National Conservation and Alternative Energy Initiative as announced by EMR May 24, 1985 and under the R&D Program as announced by EMR July 30, 1985.

BUDGET
For FY 8'7/88 - $8 million.

TIME
Ongoing.

IMPACT
The R&D program has been instrumental in establishing a core of technical expertise which 'has put Canada in the forefront of world development in many biomass conversion technologies such as fluidized-bed gasification, direct combustion, and biological and thermochemical conversion of biomass into liquid fuels. Projected impact will include oil substitution and energy savings, the development of industrial and commercial infrastructure resulting in job creation and new market development.

CONTACT
Local CREO office
OR
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Renewable Energy Branch
Energy Programs Sector
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(613) 996-6162

NORTHWEST TERRITORIES

TITLE
Commercial Task Force Program

OBJECTIVE
To encourage and stimulate Prudent energy management in the commercial, institutional and agricultural sectors.

DESCRIPTION
The Program is patterned on the Industrial Task Force Program, which has operated successfully for several years. It assists in the setting of conservation targets and in the preparation and distribution of audio-visual programs, publications, manuals and general information. In addition, the Program provides assistance in the design and co-sponsoring of seminars and workshops, and provides secretarial services on request. The Energy Conservation Branch will act as a contact point for the voluntary task forces and will make representation to the appropriate federal departments and agencies as necessary. The Program also funds studies on energy use in the commercial sector.

AUTHORITY
Treasury Board approval to provide financial assistance to Task Forces was given on May 29, 1981 (TB 777384).

BUDGET
Fiscal Year 1987-88: $565,000 (grants, contributions, operating)

TIME
The Program has been operational since 1981. Since that time the number of task forces has increased from one to six, one of which has twelve regional branches.

IMPACT
(National)

There are six task forces in full operation: for hospitals, for the hospitality industry (hotels, motels and restaurants), for post-secondary education, for farmers, for distributive trades and for office buildings. The Office Building Task Force has established regional Task Forces in Vancouver, Edmonton, Calgary, Regina, Saskatoon, Winnipeg, Thunder Bay, Montréal,

Halifax, Charlottetown, Moncton and St. John's. All Task Forces present conferences, seminars and workshops in all parts of the country. Funds have also been given to the Canadian School Trustees' Association for publication and distribution of a manual of check lists for schools, and to the Canadian greenhouse industry for an energy management conference.

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TITLE
Conservation and Renewable Energy Office (CREO)

OBJECTIVES
The objective of the regional operations function is to provide a capability in each province and territory for:

maintaining close consultation with provincial/territorial governments;
delivering both federal and joint initiatives with the provinces/ territories in the regions;
monitoring regional energy developments;
reviewing new and existing programs from a regional perspective; and
providing liaison with the industrial, commercial and institutional sectors, and the public and regional offices of other federal departments.

DESCRIPTION
The CREO is responsible for the various delivery aspects of a number of programs in the Northwest Territories, including the Super Energy Efficient R-2000 Home Program, the Remote Community Demonstration Program (RCDP) and a number of initiatives in the areas of demonstration and technology transfer.

TIME
The CREO opened in April 1981, and is a permanent office,

Location: Precambrian Building
4922 - 52nd Street, 10th Floor
Yellowknife, N.W.T.
X1A 2N1 (403) 920-8475

IMPACT
The CREO has become firmly established and recognized as a reliable source of advice and information on federal energy programs by the provinces, the public and private sectors, and other federal departments. Public demand continues to increase for CREO marketing and information transfer services on technologies and methods. Program authorities are making effective use of this office for the delivery and feedback on the regional impact of their programs and for representation at regional events and meetings. As a formal contact point between the provincial/territorial governments and EMR, the CREO administers the Memorandum of Understanding between the two levels of government, participating on various management committees which direct and manage the implementation of conservation and alternate energy initiatives.

Staff employed in the Northwest Territories CREO Office: 7

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Energy Programs Sector
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NORTHWEST TERRITORIES

TITLE
Enerdemo Program

OBJECTIVE
The objectives of the Enerdemo Program are to accelerate the adoption and commercialization of energy conservation, renewable and alternative energy technologies by means of' increasing the awareness of these technologies and of helping to develop the Canadian infrastructure supplying these technologies and to create business employment and opportunities in new aria/or existing industries .

DESCRIPTION
The Enerdemo Program covers all sectors, both business and government. It is designed to overcome barriers for wider adoption of conservation and renews'ole energy technologies. This is achieved by communicating as widely as possible the results of the demonstrations of the technical feasibility and economic viability of the proven technologies in practical situations. This in turn will effect an increase in the awareness of and the development of the Canadian infrastructure supplying these technologies. The level of Federai support is normally up to 50 per cent for the entire project although the individual phases can be funded at different rates.

AUTHORITY
T.B. 793346 - May 31, 1984 - established the Enerdemo Program.

BUDGET
Fiscal Year 1987-88 - $3.1 million

TIME
The completion date for non-MOU projects is March 31, 1988 and for projects under the MOU's the completion date is March 31, 1988.

IMPACT
From inception to June 30, 1986, 27 projects were approved for a total contribution of $4.8 million. Of these, four projects with a total contribution of $375,000 are complete.

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Nearest Regional Office of EMR
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OR

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TITLE
Energy Advisory Service

OBJECTIVE
To promote home energy management and increase energy efficiency in existing residences by: increasing consumer awareness; changing attitudes by identifying barriers to consumer action, and addressing these barriers with appropriate messages and compaigns; by providing information which helps to facilitate consumer activity; and by creating a receptive environment for the sale of energy conservation products and services.

DESCRIPTION
The Energy Advisory Service is a national information centre dealing with all aspects of energy management in the existing residential sector. Information is disseminated by means of an active marketing program that promotes the use of Home Energy Programs' products: an extensive series of consumer publications and "how-to" videos, and the Heatline toll-free energy advisory service. EAS is actively involved in a number of joint marketing and promotional campaigns with energy-related product manufacturers, and various national associations such as the Canadian Real Estate Association and the Canadian Electrical Association. Contributions under the Joint Housing Program fund related activities to be undertaken jointly with provincial and territorial governments.

AUTHORITY
The Cabinet Committee on Economic & Regional Development approved NCAEI on April 23, 1985 for a three year period ending March 31, 1988, with a two-year wind-down ending March 31, 1990.

BUDGET
(National)

Fiscal Year 1987-88:	Operating Costs, (including salaries & operating)
National Activities	$2 000 000
Joint Activities	$3 900000

TIME
The program terminates on March 31, 1988, with a two-year wind-down period ending March 31, 1990.

CONTACT

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NORTHWEST TERRITORIES

TITLE
Energy Management and Technology Transfer Program

OBJECTIVE
To promote energy efficiency in industry, commerce, institutions and federal government departments through the widest possible dissemination of available information on energy management practices and energy conservation techniques and technologies.

DESCRIPTION
Through close cooperation with the private sector, trade associations, utility companies and other government departments, the program accumulates and disseminates information on the availability and benefits of energy-related technologies for improving energy use efficiency. Assistance is provided through technical manuals, seminars/workshops and case studies. The manuals consist of a series of 24 "How To" publications on improving energy productivity, and are prepared in consultation with industrial and commercial associations and utilities. Seminars/workshops on energy management are conducted nationality and regionally. They are presented in cooperation with energy conservation task forces, trade associations and EMR's Conservation and Renewable Energy Offices (CREOs) across Canada, by professionals who are experts in the fields to be discussed. The services of the seminar/workshop leaders , audio-visuals, manuals, and case studies are available 'without charge to trade associations, task forces, and other groups seeking to improve the energy efficiency of Canadian enterprises and institutions. Case studies are provided through cooperation with trade associations.

AUTHORITY
Low Cost Initiatives

BUDGET
$1.6 million

TINE
This program has been operational since 1985.

IMPACT
In 1586-87, 32 seminars/workshops were conducted. In 1987-88, 75 seminars/workshops are planned to support the objectives of the Task Force and federal energy management programs. In addition, 125 case studies will be produced and disseminated.

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TITLE
Federal Energy Management Program

OBJECTIVE
To encourage greater efficiency and lower costs in energy used by buildings and vehicles owned by the Crown.

DESCRIPTION
A Cabinet Decision of April 26, 1985, directed that the Minister of Energy, Mines and Resources implement a National Conservation and Alternative Energy Initiative (NCAEI). One element of this Initiative was a redirected FEMP with the following components:

- the establishment of detailed and accurate energy use efficiency targets for each federal department and agency;
- the carrying out of surveys to identify areas where energy is being used inefficiently and where off-oil conversions should be undertaken;
- the dissemination to federal departments of information on energy conservation and oil substitution opportunities, case studies, etc;
- the mounting of training programs to transfer knowledge of energy management to officers in federal departments and agencies; and
- the dissemination to federal organizations of techniques successfully proven in demonstration projects which federal organizations can use as models in their programs of energy-related capital investments.

AUTHORITY
Cabinet Decision 145-85 RD(C) of April 26, 1985.

BUDGET

Fiscal Year 1986-87 $2,800,000
Fiscal Year 1987-88 $2,500,000

IMPACT
The program has succeeded in reducing energy consumption in the federal government accommodation and transportation sectors by 24%. This reduction represents a cost avoidance of $192 million annually.

The annual energy bill of the federal government departments exceeds $600 million. A recent study on the accommodation sector has indicated that some $80 million of energy cost avoidance remains. The program has been given a new direction which emphasizes establishment by the departments of their own energy efficiency goals and the development of energy management plans to meet the goals. The Federal Energy Management Program will assist departments in the development of their goals and plans as well as provide services of surveys, training, information dissemination and demonstration projects.

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NORTHWEST TERRITORIES

TITLE
Industrial Energy Conservation Task Force Program

OBJECTIVE
To assist industry to achieve a high degree of energy-efficiency in manufacturing and processing systems on the basis of current and expected energy prices.

DESCRIPTION
The core of the program consists of 14 voluntary Industrial Energy Conservation Task Forces which operate under the name Canadian Industry Program of Energy Conservation (CIPEC). These Task Forces, first organized in 1975, cover the major energy-using sectors of industry. Organized for the most part through the major trade associations, the functions of these groups are to exchange information among member firms, to set targets, to report to government annually on improvements in energy-efficiency and to serve as a focal point for government-industry discussions of energy matters. Working closely with these Task Forces, the Business and Government Energy Management Division of the Energy Conservation Branch of Energy, Mines and Resources has developed this program to assist industrial firms to identify energy waste and undertake corrective measures to reduce energy consumption and costs. The Division provides coordination for the overall CIPEC program and also manages the direct, financial support elements. The latter involves three separate elements: financial support to individual energy conservation task forces to implement energy conservation programs; funds covering the administration, planning and direction of activities of the 14 task forces and the CIPEC Coordinating Council; and funds for energy conservation economic and technical studies.

AUTHORITY
Treasury Board (TB) approval to provide financial assistance to Task Forces was obtained on May 29, 1981 (TB 777384).

BUDGET
(National)

Fiscal Year 1986-87: $650,000 (contributions, operating)

TIME
This program has been operational since 1975. Since that time, the number of task forces has grown from 10 in 1975 to 14 in 1987.

IMPACT

In 1985 the Task Forces reported a total energy saving of 502 x 10^{15} joules (equivalent to 82 million barrels of oil) over the base year. This represents an overall improvement in energy efficiency of 24.1 per cent and exceeded the 1985 overall goal of 23 per cent set by the Task Forces in 1980. A new five-year target to 1990 of a further 2 per cent or 31 per cent overall has been set. Over 700 companies are now reporting annually their energy efficiency improvements. While savings have been achieved in all provinces, the highest percentage has been achieved in Québec and Ontario, due to the concentration of medium-to-large companies in these two provinces. This program has encouraged (and will continue to encourage) investment in energy conservation throughout Canadian industry.

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NORTHWEST TERRITORIES

TITLE
Industry Energy Research and Development Program (IERD)

OBJECTIVE
To encourage and assist Canadian industry to undertake research and development to increase the efficiency of energy use and to promote the widest possible use of the technology developed under the program.

DESCRIPTION
The purpose of the program is to effect research and development which will increase the efficiency of energy use throughout industry. The program also provides other benefits such as job creation, improvement of industrial capability and new mark et opportunities. IERD responds to requests for financial assistance for projects from the private sector, and assistance is available to all companies established in Canada. The Federal Government's contribution is based on company resources, the degree of risk of the project, and incrementality. The level of support for IERD projects is normally up to 50 per cent of eligible costs. Contributions other than 50 per cent may be recommended depending upon the nature of the project.

AUTHORITY
(a) TB 752124 - July 7, 1977 - Authorization - IERD was Put into effect April 1, 1977.

(b) TB 759852 - August 30, 1978 - To approve the terms and conditions for the IERD Program.

(c) TB 781945 - May 13, 1982 - To approve revised terms and conditions of the IERD Program (to give proprietary rights to the applicant).

(d) TB 782299 - June 14, 1982 - To approve additional funds for contributions, operating costs and 5 PYs.

(e) TB 783769 - September 2, 1982 - To approve transfer of $1,951,000 in contributions from allocated reserve ($1,050,000 to ITC and $50,000 for operating expense from supplementary estimates and 1 PY).

(f) TB 791698 - March 15, 1984 - To transfer IERD to EMR from DRIE.

BUDGET
Fiscal Year 1987-88 - $5.2 million

IMPACT

To date, 64 projects nave been approved for a total contribution of $27 million. The subsequent investment by the private sector (approximately $36 million) will result in significant energy savings, increased production and employment (implementation-will amount to approximately 14,000 person years) and improved competitiveness of industry leading to a forecast increase of export sales of some $500 million per year by 1990. The annual energy savings of completed projects is .4 million BOE.

CONTACT

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NORTHWEST TERRITORIES

TITLE
Memoranda of Understanding (MOU) Between Canada and the Provinces/Territories Under the National Conservation and Alternative Energy Initiative (NCAEI)

OBJECTIVES
MOUs are federal/provincial agreements. Their purpose is to facilitate the delivery of Canada's initiatives in the area of energy conservation and alternative energy. These initiatives are promoted by the specific Programs which are included within the umbrella of NCAEI. MOUs allow Canada to work in close cooperation with the provinces/territories to accomplish mutual objectives. The MOUs enable Canada and the provinces to share the costs of certain projects.

DESCRIPTION
There are eight MOUs. Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Alberta and the Northwest Territories have signed agreements with the federal government. These agreements all expire on March 31, 1988. With the exception of Manitoba and Alberta, there is provision for a wind-down year (1988/89) during which all projects must be completed. In Manitoba and Alberta, all MOU projects must finish prior to March 31, 1988.

AUTHORITY
Authority for Canada to enter into an agreement with the provinces/territories is provided by paragraph 7(2)(b) of the Resources and Technical Surveys Act.

BUDGET
Each agreement identifies notional maximum levels of funding that each party to the MOU will expend in each of the years of the MOU. These amounts vary from province to province. The budget also identifies a cost-sharing ratio.

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Federal-Provincial Territorial Agreements
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NORTHWEST TERRITORIES

TITLE
Remote Community Demonstration Program (RCDP)

OBJECTIVE
The objective of the RCDP is to help increase the efficiency and reduce the cost of energy supply and use for power generation and space heating by communities in areas that do not have access to electricity grids or natural gas distribution systems, by promoting the adoption of alternative approaches to energy supply ana energy conservation.

DESCRIPTION
The program is being implemented in two overlapping but distinct phases. Phase I, the study phase, commenced October, 1982 and continued to March 1984. Financial assistance was provided to assist communities and agencies responsible for or directly interested in remote community energy supply in assessing remote community energy needs and identifying energy conservation and alternative energy supply options. Seventy-three studies were funded covering a wide range of energy options for over two-thirds of the 375 eligible communities.

Phase 11, the demonstration phase, commenced in October, 1984 and will run until March 31, 1989. Funding is provided for a limited number of demonstrations of practical, effective, and economic energy supply and conservation options. A major selection criterion in choosing demonstration projects is their potential for wide application among remote communities in Canada. Transfer of information, including dissemination of RCDP studies and demonstration reports to all remote Communities and their energy supply agencies is a major activity.

AUTHORITY
Funding is provided under the National Conservation and Alternative Energy Initiative as announced by EMR May 24, 1985.

BUDGET
For FY 87/88 - $3.5 million.

TIME
Phase I--October 1982 to March 1984
Phase II--October 1984 to March 1989

IMPACT

The program impacts directly on remote communities as identified in all provinces and territories except Nova Scotia, New Brunswick and Prince Edward Island. It is intended to reach a relatively small (total estimated population: 200 000) target group, but a group for which high and direct assistance has not been available and a group that is especially vulnerable to rising oil costs and depleting oil supplies.

Provincial and territorial governments are involved in a formal advisory capacity in program implementation through RCDP Regional Advisory Committees. There is also a multi-departmental National Advisory Committee.

The attached table provides an estimate of the number and population of remote communities by province and territory.

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ENERGY USE SUMMARY EXISTING (REMOTE COMMUNITIES)

	Pop'n	Total Energy PJ	Residential Energy PJ	Per Capita Energy GJ	Per Household Elec Use GJ	Per Capita Elec Use GJ	Oil for Electricity PJ	Oil for Space Heat PJ	Per Capita Oil GJ	cost of Oil $ Millions	Total Canada Total Energy PJ (Stats Can '82)	Total Canada Total Oil PJ (Stats Can '82)
Newfoundland	30 109	2.3	1.8	76	90	37	0.95	0.83	59	15.6	73.9	46.6
Québec	38 330	6.3	1.12	165	115	122	2.7	1.67	114	38.7	885.8	367.7
Ontario	14 158	0.98	0.50	69.3	N/A	19.2	0.20	0.20	28.6	4.4	1 481.1	285.0
Manitoba	12 313	1.15	0.55	93	129	43	0.54	0.25	64	7.2	151.8	39.7
Saskatchewan	3 452	0.27	0.12	77.6	111.1	29.2	0.03	0.03	48.8	1.44	197.2	65.5
Alberta	3 772	0.22	0.15	60.6	69.9	21.1	0.005	0.043	34.1	1.16	618.4	123.6
B.C.	25 252	6.6	1.83	261	102	107	2.12	2.19	171	41.4	428.9	121.1
Yukon	22 828	7.03	2.46	307	161	194	0.28	2.16	107	26.7	"	"
NWT	46 041	10.71	2.87	233	126	118	2.19	4.67	149	76.8-1	18.6	15.>
Total or Average Total for Remote Communities	196 255	35.6	11.4	181	96.8	76.7	9.15	12.09	108	214.5	4 068	1 117

SOURCE: "Energy Overview Study of Remote Communities in Canada"
March 1985

NOTE: "YUKON COMBINED WITH NWT"
GJ = GIGAJOULES
PJ = PETAJOULES (MILLION GJ)

NORTHWEST TERRITORIES

TITLE
Solar Energy Development Program (SEDP)

OBJECTIVE
A research, development and demonstration activity committed to developing and improving cost-effective renewable energy technologies through cost-shared programs dealing with active solar, passive solar, photovoltaics, small and low head hydro and wind energy. These programs will help encourage the development of new products and technologies and identify new markets and applications .

DESCRIPTION

1) RESEARCH AND DEVELOPMENT

The objective of this component is to develop, within Canada, technologies that are capable of contributing to Canada's energy supply, and that are renewable, environmentally safe, cost-effective and which offer significant industrial opportunity.

ASSISTANCE

This program will require cost sharing of projects with industries that seek to develop new or improved products for near term commercial or technologies exploitation. The contractor should demonstrate the ability to provide a minimum of 25% investment for the proposed project.

Proposals will be solicited through periodic calls for proposals. Short term projects, as well as two or three year projects that can achieve significant technological progress are acceptable, subject to fiscal year funding availability.

In their proposals, proponents who submit a project for near term product development must include a description of the plan for commercialization.

Expiration date: March, 1990.

2) DEMONSTRATION PROGRAMS:

a) The Solar Domestic Hot Water Demonstration encourages the use of solar domestic water heating by assisting the solar industry to market and install systems across Canada.

ELIGIBILITY:
A contribution toward the installed cost of a solar domestic hot water system is made directly to a private company (solar manufacturer, installer, building contractor, etc.) which markets and distributes systems to installation contractors across Canada. All participating companies are selected on an ongoing basis. Only approved packaged systems are eligible and they can be installed on either a residential or small commercial or institutional building.

ASSISTANCE:
The program reduces the cost of installing a solar domestic water heater through contribution payments to participating companies. The payment for each installed system is determined according to the amount of energy it is capable of delivering. Systems producing more energy receive a correspondingly higher subsidy level. There are five levels of payment: $400, $550, $700, $800 and $900. These payment levels will be lowered as the program proceeds.

Expiration date: **March,** 1988.

b) The Commercial/Industrial Solar Demonstration's objectives are to demonstrate improved system cost/performance and to provide opportunities to the Canadian solar industry to design, market, install and operate commercial/industrial solar energy systems.

ELIGIBILITY:
Private companies (manufacturers, installers, building contractors, etc.) and owners/operators of commercial/industrial buildings.

ASSISTANCE:
The level of contribution to the project will be based upon the amount of energy expected from the system. For commercial and institutional systems, the contribution is up to $74 per annual gigajoule of installed capacity, but no more than 50% of the total project cost. For industrial process heat systems, the contribution is $40 Per annual gigajoule with no percentage limit; and for seasonal commercial pools, the contribution is $35 per annual gigajoule but no more than 50% of the total project cost. The level of the government's support will decline as the program proceeds.

After an agreement has been signed, the proponent will undertake the design, installation, commissioning, and in some cases the operation and maintenance of the system. Inspections will be carried out during the project to ensure that the terms and conditions of the agreement are met.

A selected number of systems are being monitored to collect useful performance data over a period of time. This data will enable Energy, Mines and Resources to measure the effectiveness and reliability of the system.

Expiration date: March, 1988.

NORTHWEST TERRITORIES

PAGE

c. CANADIAN EXPLORATION AND DEVELOPMENT INCENTIVE PROGRAM C-1

NORTHWEST TERRITORIES

TITLE
Canadian Exploration and Development Incentive Program

OBJECTIVE
To stimulate oil and gas exploration, development, investment and employment activity in Canada.

DESCRIPTION
The Canadian Exploration and Development Incentive Program (CEDIP) provides cash incentives to qualified corporations or individuals incurring eligible expenses in respect of oil and gas exploration and development in Canada. Cash incentives are equal to 33 1/3% of eligible expenses incurred on or before April 1, 1987 up to a maximum of $10 million for each qualified applicant. Payments are made in accordance with the legislation establishing the program and definitions for the determination of eligible expenses as well as specific rules for different ownership structures.

AUTHORITY
Canadian Exploration and Development Incentive Program Act.

BUDGET
The federal government will provide approximately $350 million a year in direct assistance to the oil and gas industry.

IMPACT
It is estimated that the new program could lead to $1 billion in new exploration and development activity and generate 15-20,000 person years of new employment. The estimated number of wellstobe drilled as a result of CEDIP in 1987/88 is 1,500. The program will be particularly helpful to smaller and medium-sized companies which often have difficulty raising equity fund ing to finance activity. CEDIP will allow these companies to issue flowthrough shares, thus attracting investors for exploration and development projects.

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D. CANADA OIL AND GAS LANDS ADMINISTRATION (COGLA)

Overview: Canada Oil and Gas Lands Administration (COGLA) D-1

Oil and Gas Activities under COGLA Supervision:

Arctic Islands (Frontier Lands - DIAND) D-3

- Beaufort Sea - Mackenzie Delta (Frontier Lard - DIAND) D-4

- Hudson Bay - Davis Strait - Lancaster Sound (Frontier Lands - DIAND - EMR) D-5

Mainland NWT and Yukon (Frontier Lands - DIAND) D-6

OVERVIEW

CANADA OIL AND GAS LANDS ADMINISTRATION (COGLA)

OBJECTIVE

COGLA ' S primary responsibility is to manage and regulate oil and gas exploration, development and production on the frontier lands under its jurisdiction (see below) . COGLA must ensure that all such activity is undertaken safely, and undertaken in a marine r which is environmentally acceptable , with due consideration to the conservation of resources. COGLA also ensures that Canadian industry and personnel are given an opportunity to Participate in these activities on a competitive basis.

COGLA's functions, for those lands under its jurisdiction, include:

authorization of all activities associated with petroleum activity;

assessment of the results of exploration, discovered resources and prospectivity of the frontier lands;

protection of the environment and monitoring of exploration and production operations and facilities;

advising the Minister on the issuance of the legal rights to explore for, development and/or produce petroleum; and

ensuring the application of the "full and fair access" principle '° Canadian industry and personnel.

DESCRIPTION

From the mid 1960's until COGLA'S establishment in 1981, federal oil and gas management functions in the frontier lands were divided between the departments of Energy, Mines and Resources (EMR) and Indian Affairs and Northern Development (DIAND). 'i'he departments' areas of responsibility were, Respectively, south and north of the Line of Administrative Convenience, (60th parallel of latitude, except in the Eastern Arctic)[1] COGLA was established to unite these resource management functions and to provide a consistent regime for all the frontier lands. COGLA reports to the Minister of IAND for the frontier lands north of 60°.

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[1] Identified in P.C. 1965-2234

In an effort to balance the roles of the federal and provincial governments in managing petroleum activities, the Government of Canada has recently entered into two oil and gas management agreements. The Atlantic Accord, signed on February 11, 1985, and the Canada-Nova Scotia Accord, signed on August 26, 1986, each establish joint federal-provincial petroleum management boards for the respective province's offshore areas. The Canada-Newfoundland Offshore petroleum Board has already been established. The new Canada-Nova Scotia Offshore Oil and Gas Board will be established soon, replacing the existing Board created under the Canada-Nova Scotia Agreement of 1982. These two Boards have the responsibility of managing the petroleum activities occurring in their offshore areas. COGLA's responsibilities with respect to these new regimes are to provide the federal legislative and regulatory basis for joint management and to advise the federal minister on his reviewothe Board's decisions.

AUTHORITY

Canada Petroleum Resources Act and the Oil and Gas Production and Conservation Act.

IMPACT

Major opportunities for employment and industrial development can arise from petroleum-related investments in the frontier lands, where expenditures in drilling are forecast at $3 billion to 1990. In order to ensure that Canadians benefit from these opportunities, the legislation requires that a benefits plan must be submitted and approved before any work can begin, unless the Minister waives this requirement. These benefits plans outline the company's preparations for Canadian employment and procurement for the intended activity. In particular, a company is expected to indicate the efforts it is willing to make to ensure that Canadian suppliers of goods and services are given a full and fair opportunity to participate on a competitive 'oasis and to identify opportunities for transfers of knowledge and technology to Canadians, thereby enhancing Canadian expertise in the sector.

REGIONAL OFFICES

COGLA currently maintains regional offices in Yellowknife, and will continue to maintain an office in Halifax until the new Canada-nova Scotia Offshore Oil and Gas Board is established. These offices have the authority to give minor approvals and sign Drilling Authorities. Regional staff also conduct regular drilling site inspections and monitor drilling activities on a continual basis.

COGLA also maintains a field office in Inuvik and an information office in Calgary.

OIL AND GAS ACTIVITIES UNDER COGLA SUPERVISION
ARCTIC ISLANDS (FRONTIER LANDS - DIAND)

Background

Since 1962, 177 wells have been completed at a total cost of about $1 billion (as spent). As a result, 20 significant discoveries have been made: 3 oil, 4 oil and gas, and 13 gas. The only production project is Bent Horn, which began production in 1985. During the one-month production period each year, approximately 16 000 m^3 (100 000 barrels) of oil will be produced to be shipped out by the tanker MV Arctic.

Management

COGLA administers and regulates oil and gas activities on behalf of the Minister of IAND north of a line of administrative convenience roughly equal to the 60th parallel.

As a normal practice, the views of the Government of the Northwest Territories are sought regarding decisions about exploration and development in the Northwest Territories. COGLA works closely with the Government of the Northwest Territories to ensure that the views of northern residents, including aboriginal peoples, are made known to the IAND Minister.

Future Activity

During 1987, an additional development well may be drilled at Bent Horn. No exploratory drilling is anticipated.

OIL AND GAS ACTIVITIES UNDER COGLA SUPERVISION
BEAUFORT SEA-MACKENZIE DELTA (FRONTIER LANDS - DIAND)

BACKGROUND

Since 1965, 232 wells have been drilled, for a total cost of $6.1 billion (as spent). This has resulted in 46 significant discoveries, of which the largest gas pools are onshore and the largest oil pools are offshore. The 1984 Amauligak discovery is a large oil pool which has been successfully delineated at two locations. The operator, Gulf Canada Resources, has stated that reserves are in the order of 700 to 800 million barrels. Amauligak could be the lead development project for the region, starting with seasonal phased production in 1988, and full development in the mid-1990s.

MANAGEMENT

COGLA administers and regulates oil and gas activities on behalf of the Minister of IAND north of a line of administrative convenience roughly equal to the 60th parallel.

As a normal practice, the views of the Government of the Northwest Territories are sought regarding decisions about exploration and development matters in the Northwest Territories. COGLA works closely with the Government of the Northwest Territories to ensure that the views of northern residents, including aboriginal peoples, are made known to the IAND Minister.

FUTURE ACTIVITY

Gulf has announced plans to drill 2 to 3 delineation wells at Amauligak in late 1987 - early 1988. Seasonal production from one of these wells could commence in the summer of 1988.

OIL AND GAS ACTIVITIES UNDER COGLA SUPERVISION
HUDSON BAY - DAVIS STRAIT - LANCASTER SOUND
(FRONTIER LANDS - DIAND-EMR)

Background

Five wells have been drilled in central Hudson Bay, including one in 1969, two in 1974, and two in 1985. Extensive seismic exploration has also been undertaken, for a total cost to date of $50 million. In 1971, a prohibition was placed on exploration in northern Hudson Bay in view of the native concerns about the effects on fish and sea mammals upon which they depend in part for their livelihood. Various efforts are being made to lift this moratorium.

In 1985 the Hudson Bay Oil and Gas Committee (HBOGC) was formed, comprised mostly of the regional and native representatives. Companies are required to discuss environmental or socio-economic concerns with the HBOGC.

Three offshore wells have been drilled off the southern part of Baffin Island and seismic exploration has been carried out in the area, as well as in the Lancaster Sound with a total exploration cost of $500 million. A drilling embargo is currently in effect in the Lancaster Sound/Baffin Bay area, and is not expected to be lifted in the near future.

Management

COGLA administers and regulates oil and gas activities on behalf of the Minister of IAND north of a line of administrative convenience running through northern Hudson Bay and Hudson Strait. South of the line COGLA administers and regulates oil and gas activities on behalf of the EMR Minister.

As a normal practice, the views of the Government of the Northwest Territories are sought regarding decisions about oil and gas activities in the Northwest Territories. COGLA works closely with the Government of the Northwest Territories to ensure that the views of northern residents, including aboriginal peoples, are made known to the IAND Minister.

Future Activity

There have been a number of concerns raised with regard to future activities in Lancaster Sound, specifically any exploration activities and possible tanker traffic. The companies involved have agreed to suspend drilling activities until technology is developed to fully protect the environment. This is not expected to occur before 1990. Tanker traffic through the area, to and from the Bent Horn project, will be carefully monitored and a contingency plan, covering all aspects of the operation, will be prepared to the satisfaction of the Canadian Coast Guard and other concerned government agencies.

OIL AND GAS ACTIVITIES UNDER COGLA SUPERVISION
MAINLAND m AND YUKON (FRONTIER LANDS - DIAND)

Background

Since the 1920's, 920 wells have been drilled at a cost of $700 million (as spent) . A major part of the drilling in the last few years has been a 185-well expansion project at the Norman Wells oil-field, completion of which will make Norman Wells the third-largest producing oilfield in Canada. The expansion project includes a pipeline which now moves 4 000 m^3 (25 000 barrels) of oil per day through to Zama, Alberta.

The Pointed Mountain gas field is also on production, and another gas field located in the same area, Kotaneelee, remains shut-in waiting on markets. A total of 28 significant discoveries have been made in the mainland territories south of the Mackenzie Delta, 2 oil discoveries and 26 gas.

Management

COGLA administers and regulates oil and gas activities on behalf of the Minister of IAND north of a line of administrative convenience, roughly equal to the 60th parallel.

As a normal practice, the views of the Government of the Yukon or the Government of the Northwest Territories are sought regarding decisions about exploration and development matters in the North. COGLA works closely with the territorial government, to ensure that the views of northern residents, including aboriginal peoples, are made known to the IAND Minister.

Future Activity

In 1987, drilling is expected at the Liard F-25A discovery well. There will also be continued development drilling by one rig at Norman Wells.

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E. MINERAL AND ENERGY TECHNOLOGY SECTOR

Overview: Energy Research and Development (R&D) E-1

R&D Coordinated by the Office of Energy, Research and Development (OERD) E-2

Overview: Canada Centre for Minerals and Energy Technology (CANMET) E-4

R&D Performed by CANMET E-5

OVERVIEW

ENERGY RESEARCH AND DEVELOPMENT (R&D)

Although energy R&D is carried out by many federal departments and agencies, the Department of Energy, Mines and Resources (EMR) is responsible for coordination and plays a key role in planning. The resources made available for energy R&D are allocated through approval procedures of the Interdepartmental Panel for Energy Research and Development (PERD).

Members of PERD are senior officials of the departments and agencies involved in federal energy R&D programs. Secretariat service is provided by the Office of Energy R&D which guides planning and reviews the program proposals before they are brought forward.

General R&D needs are identified in a policy framework which reflects current government policy. They include emphasis on fossil-fuel resources as well as emphasis on renewable energy sources. They also include the efficient use of energy (conservation) and the development of new liquid fuels anti alternative energies. Conventional energy technologies also require R&D assistance to ensure progress toward energy self-sufficiency.

The federal R&D program under PERD is divided for administrative purposes into six tasks. These are shown below with their expected (rounded off) expenditures for Fiscal Year 1987-88.

Conservation; including devices to make efficient use of energy - $15 million.
Oil Sands, Heavy Oil and Coal; excluding coal conversion - $21 million.
Nuclear Energy; nuclear fusion research only - $8 million.
Renewable Energy; including active and passive solar, photovoltaics, wind, bioenergy and geothermal - $8 million.
New Liquid Fuels; including synthetic gasoline, alcohols and hydrogen - $15 million.
Conventional Energy; including oil, gas and electricity - $19 million.

The amounts shown cover only the federal share of costs for programs under PERD. Excluded are major fundings involved in the mandates of Atomic Energy of Canada Limited, Petro-Canada and other Crown agencies. Also excluded are significant demonstration projects carried out under the ENERDEMO and other programs.

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TITLE
R&D Coordinated by the Office of Energy Research and Development (OERD)

DESCRIPTION
(See Overview for details)

ACTIVITIES
The energy R&D activities of greatest significance to the Northwest Territories are the special problems of housing, transportation and oil exploration under Arctic conditions. Federally funded programs in these areas include:

Arctic Hydrography
Hydrographic studies in the Arctic Ocean continue to be concerned with electronic scanning, sounding techniques, remote sensing (lidar), digital depth acquisition, moored instrument recovery and tidal propagation research.

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Arctic Environment
Federal departments will continue with R&D to improve the understanding of Arctic environments and the forecasting of Arctic weather, sea and ice conditions with the purpose of ensuring safety, environmental protection, timely approval and cost-effective regulation of oil and gas development.

CONTACT
Mr. Wayne Richardson
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Environment Canada
Ottawa, Ontario
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Beaufort Sea Geotechnics
The sea-bed characteristics of the Beaufort Sea are being studied in order to regulate the safety of oil and gas exploration and production activities.

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Dartmouth, Nova Scotia
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Permafrost Research

Fundamental studies on permafrost behaviour and its effect on construction and transportation operations are being conducted, including investigations of the nature and behaviour of natural gas hydrates.

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Remote Communities

PERD funds have supported the development of technologies being applied in the Remote Communities Demonstration Program's projects on the monitoring and comparison of energy performance of mobile homes at Yellowknife and a 17 1/2 kw wind turbine for heating residences at Cambridge Bay.

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OVERVIEW

CANADA CENTRE FOR MINERAL AND ENERGY TECHNOLOGY (CANNET)

The Canada Centre for Mineral and Energy Technology (CANMET) is a research branch of the Department of Energy, Mines and Resources. Its total 1987-88 budget is $74 million and it employs 783 scientists, engineers, technicians and support staff. Within the Mineral and Earth Sciences Program of EMR, CANMET is responsible for the Mineral and Energy Technology Activity and for the R&D and testing component of the Administration of the Canada Explosives Act. The mandate of CANMET is to enhance the role and contribution of minerals and energy to the Canadian economy by means of mission-oriented research and development.

CANMET has five research laboratories/divisions to manage in-house R&D and contracting to the private sector and universities. The Mining Research Laboratories contribute to coal and uranium reserve assessments and develop safer and more efficient mining technologies. The Mineral Sciences Laboratories develop technology to assist in the assessment and more efficient extraction and refining of mineral resources. The Energy Research Laboratories respond to R&D objectives in bitumen, heavy oil and synthetic crude upgrading; coal combustion, gasification and liquefaction; and improvements to domestic and industrial heating furnaces. The Coal Research Laboratories have one laboratory in Nova Scotia conducting research into coal mining safety, especially ventilation, and a laboratory in Alberta conducting research into bitumen recovery and coal mining, preparation and carbonization. The Physical Metallurgy Research Laboratories conduct research into materials (mostly specialty steels) for petrochemical processing, coal combustion, oil and gas pipelines, and offshore structures.

CANMET maintains a close partnership with Canadian energy industries and electrical utilities by encouraging innovative R&D, often through cost-shared programs. CANMET seeks to further deveiop Canada's petroleum and coal-based resources by improving extraction and upgrading technologies and improving utilization of the primary products. All available means of technology transfer are used to ensure that federal R&D efforts reach Canadian industry, its intended beneficiary. CANMET is Canada's leading agency for fossil-fuel energy research.

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NORTHWEST TERRITORIES

TITLE
R&D Performed by the Canada Centre for Mineral and Energy Technology - (CANMET)

DESCRIPTION
(See Overview for details)

ACTIVITIES
CANMET's R&D efforts in mining and mineral processing are of indirect benefit to the northern territories.

CANMET's program on Energy Conservation in Mineral Processing will help develop technology to enable the mineral industry to reduce the energy component costs of mineral production.

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F. GEOLOGICAL SURVEY OF CANADA SECTOR

Overview: Geological Survey of Canada (GSC) F-1

GSC (By Province/Territory) F-4

Overview: Polar Continental Shelf Project (PCSP) F-5

Polar Continental Shelf Project (PCSP) F-6

OVERVIEW

GEOLOGICAL SURVEY OF CANADA (GSC)

OBJECTIVE

To ensure the availability of comprehensive geological, geophysical and geochemical knowledge, technology and expertise concerning the Canadian landmass, including the underlying solid earth, offsnore areas, mineral and energy resources and the conditions affecting land and seabed use, as required for effective exploitation of mineral and energy resources, estimation of the resource base of Canada, land use, public safety and security, and formulation of policies.

DESCRIPTION

The Geological Surveys Activity conducts geological, geophysical and geochemical research and surveys; operates national networks of geophysical observatories ; estimates mine ral and non-renewable energy resources; investigates geological phenomena posing hazards to human activities and the environment; develops geophysical and other technologies; develops national geoscience standards; fosters Canadian geoscience and Canadian participation in international geoscience; co-operates with the provinces on the foregoing; provides advice to governments; and produces and disseminates maps and reports.

The GSC is sub-divided into eight divisions, five of which are based in Ottawa, although the activities of the operational divisions cover all land and offshore areas of Canada.

AUTHORITY

The duties and responsibilities of the Branch are contained in the Department of Energy, Mines and Resources Act (R.S.C. 1970, c.E-6), and the Resources and Technical Surveys Act (R.S.C. 1970, c.R-7). Geological research in the provinces of Manitoba, British Columbia, Prince Edward Island and Newfoundland are specified as conditions of these provinces joining Canada (Canada, Statutes 1870; Imperial Order in Council, May 16, 1871; Imperial Order in Council, June 26, 1873; and the Union of Newfoundland Act 1949).

TIME

The work of the Geological Survey of Canada is ongoing, although there is a need to perform non-renewable, energy resource evaluations of specific areas on demand by the Petroleum Resource Appraisal Panel and the Canada Oil and Gas Lands Administration (COGLA), and to meet a variety of other short-term government needs .

BUDGET

Division (Location)	Estimates 1987-88 $	P-Y
Cordilleran & Pacific Margin Geoscience (Vancouver & Sidney, B.C.)	7,882	75
Sedimentary and Petroleum Geology (Calgary, Alberta)	17,821	168
Lithosphere and Canadian Shield (Ottawa, Ontario)	9,842	107
Atlantic Geoscience (Dartmouth, N. S.)	15,328	120
Terrain Sciences (Ottawa, Ontario)	9,264	91
Mineral Resources (Ottawa, Ontario)	16,378	167
Geophysics (Ottawa, Ontario)	13,864	116
Geoscience Information (Ottawa, Ontario)	5,309	97
Activity Management and Support (Ottawa, Ontario)	6,218	62
	101,906	1,003

IMPACT

Tne outputs of the GSC nave three main functions:

- Ensuring the availability of a comprehensive basic geoscience knowledge of the Canadian landmass, including the underlying solid earth and offshore areas, to meet national needs.

- Acquiring geological information on the nature, distribution and magnitude of Canadian mineral and energy resources, and developing related exploration technology, as required for effective exploration of minerals and energy, estimation of the resource base of Canada, and formulation of policies.

- Identifying and assessing natural geological hazards, features and processes that affect the environmental and ecological balance that may constrain the use of land, particularly in association with resource exploration, development and utilization.

Without a comprehensive geoscience knowledge base, neither resource assessment nor land use evaluation can be made. As a result, it has been found best to treat these tasks as interlocking. Thus it is difficult to identify work that contributes solely to the energy program. However, approximately 310 PY (31%) and $36,800,000 (39%) of resources have been identified as contributing directly to the energy program.

The work of the GSC relates to the energy program in the following ways:

Basic geoscience knowledge is acquired through field and laboratory work permitting the description of geological conditions favorable for reservoirs of petroleum and natural gas and deposits of coal and uranium.

These geoscience descriptions are essential to the preparation of resource evaluations of specific areas. The evaluations are then available to the Energy Sector for use in country-wide, energy resource evaluations and in making policy decisions.

Examples of GSC work that contribute to decisions concerning the engineering and environmental aspects of energy resource development are: assessment of earthquake risk for energy related developments; delineation of permafrost conditions on land and on the sea-bottom conditions in the Arctic; mapping of the terrain conditions and study of surficial processes in the Arctic which are essential for protection of the environment along the route of proposed pipelines and other energy related development; studies of coastal and sea-bottom processes and sea-bottom conditions have been important in decisions relating to exploitation of energy resources such as the Hibernia field on the Newfoundland shelf.

Examples of exploration technology and methodology developed at the GSC and transferred to energy industry include: portable seismometers; airborne gamma ray spectrometry surveys used to indicate areas of differing radiation levels; borehole logging techniques to provide more information at reduced costs in exploration drilling; reconnaissance, geochemical techniques to indicate areas of possible uranium mineralization; and the provision of calibration facilities to enable exploration companies to calibrate their equipment.

Canada Wide - (ea. 65 PY and $7,900,000 for 1987-88)

GSC work identified as specifically contributing to the energy program on a Canada wide basis includes: petroleum resource evaluation; data management, publication of energy related maps and reports, and management of laboratory facilities; coal resource evaluation and geochemistry; uranium resource evaluation.

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GEOLOGICAL SURVEY OF CANADA (BY PROVINCE/TERRITORY)

Northwest Territories - (ea. 54 PY and $12,900,000 for 1987-88)

GSC work identified as specifically contributing to the energy program consists of: integrated studies of bedrock geology in Sverdrup Basin, Beaufort Mackenzie Basin and Arctic Continental Shelf, seismic profiling on land, at sea and from the Ice Island, modelling of major geological features, investigation of coastal processes and sea-bottom conditions of the Beaufort Sea and Arctic Island channels, biostratigraphic studies, petroleum and source rock geochemistry, gravity surveys, investigations of permafrost distribution, processes and phase changes on land and offshore, investigation of gas hydrates, monitoring of environmental conditions along pipelines and in other areas of construction, transportation and exploitation; stratigraphy of coal measures and coal resource evaluation in the Arctic Islands.

OVERVIEW

POLAR CONTINENTAL SHELF PROJECT

DESCRIPTION

The Polar Continental Shelf Project (PCSP) was established by the Canadian Government by means of a Cabinet Directive on April 5, 1958. In the early years of the Project several team3 Of scientists conducted various studies in one area in a particular season, attempting to create a balanced picture of this little-known part of Canada. Every few years the project moved to a new sector of the Canadian Arctic, thus strengthening Canadian rights and enhancing Canada's reputation in world science. It was originally intended that the PCSP would conduct geological, geophysical and oceanographic investigations of the Polar Continental Shelf. In the mid-1960s, the majority of the Branch's scientific staff were transferred to various branches within the Department to allow more contact with the various disciplines related to their work in the Arctic .

The primary activity of the PCSP today is to provide logistic support to field parties. Except for oil industry activities, the logistics for almost all research in the Canadian Arctic are coordinated by the PCSP. bring the last three field seasons more than 200 scientific programs have been supported from the base camps at Tuktoyaktuk and Resolute. Universities, as well as government agencies, may apply to PCSP for support of their Arctic research. The scientific studies undertaken in the >.retie eacn year rangefrom arch.ealcgy to zoology. PCSP has also been the prime coordinating agency for Arctic research between Canada and other Arctic powers.

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NORTHWEST TERRITORIES

TITLE
Polar Continental Shelf Project (PCSP)

OBJECTIVE
To contribute to the orderly scientific investigation of Canada's Polar Continental Shelf, the contiguous Arctic Ocean and mainland regions, and to maintain and improve the logistics required for scientific investigations in an Arctic environment.

DESCRIPTION
The PCSP undertakes the study of scientific problems unique to Arctic Canada and the provision of coordinated logistic support to public and private sector groups conducting scientific studies in the Arctic. The Branch also undertakes to provide information about scientific operations in the Arctic to the general scientific community and to the local inhabitants.

AUTHORITY
The Polar Continental Shelf Project was initiated by a Cabinet Directive on April 5. 1958, over the signatures of two Cabinet Ministers, the present Minister Of the Department of Indian and Northern Affairs (DIAND), and the Minister of the Department of Energy, Mines and Resources (EMR).

BUDGET
1987-88 - $5.3 million and 25 person-years

TIME
?CSP is an ongoing activity.

IMPACT
In 1972, 43 scientific parties were supported in the Canadian Arctic. In 1986-87, 229 parties were supported by the logistic support sYstem of PCSP. Most federal government scientific parties, and all Canadian and foreign universities operating in the Canadian Arctic, pass through its various networks. There is, in addition, considerable cooperation with industry. The area of influence is generally north of the mainland and the Mackenzie Delta with short excursions into the mainland.

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G. SURVEYS, MAPPING & REMOTE SENSING SECTOR

Overview: Surveys and Mapping Branch G-1

Energy-related Maps from the National Atlas of Canada - Fifth Edition G-2

Legal Surveys Division G-3

OVERVIEW

SURVEYS AND MAPPING BRANCH

DESCRIPTION

The Branch is responsible for the fundamental survey networks within Canada's territorial boundaries, the legal surveys needed for the administration of legal rights to the land of the Yukon and Northwest Territories, Indian Reserves, National Parks and the Canadian Continental Shelf, the preparation and distribution of topographic, geographic and aeronautical maps and charts and the demarcation of the International Boundary and certain other political boundaries.

The Topographical Survey Division of the Branch is responsible for mapping Canada at scales of 1:50 000 and 1:250 000. The 1:250 000 series is complete and being maintained. Approximately 10,650 of the 13,000 maps comprising the 1:50 COO series have been completed. The unmapped areas are mostly in the No rth. System completion is scheduled for the 1990s. Maps of the 1:250 000 series are used for general project planning, and those of the 1:50 000 scale for the operational planning of resource development projects. The 1:50 000 maps provide engineers with geographical reference and terrain contours for exploration surveys, site planning, environmental studies and monitoring, as well as the day-to-day operation of and reporting on projects. Recently, the Topographical Survey Division has embarked on a program to produce topographical information of Canada in digital form.

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ENERGY-RELATED MAPS FROM THE

NATIONAL ATLAS OF CANADA - FIFTH EDITION

DESCRIPTION

The fifth edition of the National Atlas of Canada is produced by the Surveys and Mapping Branch. The new edition is an organized collection of separate map sheets appearing over a number of years and providing strategic overview of subjects of national concern and significance.

The maps cover Canada as a whole generally at a scale of 1:7.5 million; consequently each province and territory is included in the treatment of each subject.

MAPS RELATING TO ENERGY

Published:

Canada - Coal
Canada - Energy
Canada - Heating Degree Days
Canada - Energy and Mineral
Canada - Oil Pipelines
Canada - Natural Gas Pipelines
Canada - Electricity
Canada - Solar Radiation
Canada - Temperature
Canada - Length of Day

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LEGAL SURVEYS DIVISION

DESCRIPTION

The Surveyor General's mandate is derived from over 25 Acts, Regulations, Ordinances and Orders-in-Council. His major responsibility is the management of surveys under the Canada Lands Surveys Act and the custody of all original plans, field notes, etc. connected with such surveys. With respect to energy-related work, the Surveyor General is responsible for approving surveys to define the legal position of wells or of oil and gas rights in Indian Reserves, the Territories and offshore Canada Lands.

The Canada Oil and Gas Land Division and Survey Regulations are expected to be finalized in late 1987. They will incorporate the major recommendations of government-industry workshop on Oil and Gas Surveys held in 1985.

The responsibility for on-going regulatory functions, and the day-to-day operations, has been delegated to the regional offices, with the responsibility for surveys in offshore Canada Lands being retained in the Ottawa headquarters. Details regarding the regional offices are given in the following table. Only a small portion of these resources are directly related to energy programs.

REGIONAL OFFICE	LOCATION	PERSON-YEARS	ANNUAL BUDGET
Atlantic	Amherst, N.S.	6	$239000
Québec	Québec City	11	$438 000
Ontario	Toronto	13	$717 000
Manitoba	Winnipeg	9	$358 000
Saskatchewan	Regina	7	$279000
Alberta	Edmonton	10	$398000
British Columbia	Vancouver	18	$717000
Yukon	Whitehorse	6	$279000
Northwest Territories	Yellowknife	6	$239000
TOTAL		91	$3 624000

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H. NATIONAL ENERGY BOARD

Overview: National Energy Board H-1

OVERVIEW

NATIONAL ENERGY BOARD

Background

Under the National Energy Board Act of 1959 and subsequent amendments, the Board has two principal responsibilities:

- to regulate specific matters concerning oil, gas and electricity in the public interest, and

- to advise the Government on the development and use of energy resources .

The Board has the authority to hold inquiries into any aspect of energy matters under its jurisdiction and to issue reports for the use and information of the Government, Parliament, and the general public.

Overall Responsibilities

The National Energy Board regulates the traffic, tolls and tariffs of pipeline companies under federal jurisdiction to ensure that the tolls are just and reasonable and that there is no unjust discriminate on in tariffs or service .

The Board issues long-tern licences for the export of oil, gas, and electricity. Such licences are normally granted following public hearings. In issuing export licences, the Board must satisfy itself that, among other things , the quantities of energy exported do not exceed the surplus remaining after making allowance for reasonably foresees'~le Canadian requirements. The Board also issues orders for short-term exports of energy commodities subject to the restrictions imposed in tne National Energy Board Part VI Regulations. In addition, the Beard authorizes licences and orders for imports of natural gas .

The Board grants certificates to construct and operate interprovincial and international oil, gas, and petroleum products pipelines, as well as international and designated interprovincial electric power lines. Before a certificate is issued, the Board is required to hold a public hearing. Persons whose lands may be affected by the route of a pipeline or power line approve? by the Board can present their views to the Board at a local public 'nearing. Their evidence is considered in the determination of the final detailed route of the line. The Beard approves minor pipeline facilities or minor additions to, or modifications of, existing pipeline systems without a public hearing. These approvals are restricted to pipelines not more than 40 kilometres long and to installations such as tanks, pumps , compressors, and meter stations. The Board may also authorize, without a public hearing, the construction and operation of international power lines not exceeding 50 kilovolts.

The Board's Oil and Gas Pipeline Regulations provide for the safe design, construction and operation of pipelines under the Board's jurisdiction. To ensure high standards of pipeline constriction and operation, the Board carries out inspection programs and conducts investigations of pipeline system performance.

To enhance public safety, the Board grants prior approval to utilities crossing a pipeline, thereby ensuring design compatibility and reducing the possibility of damage to the pipeline. It also establishes the conditions under which a pipeline may be constructed across an existing utility thereby ensuring the integrity of other utility services. Construction of a pipeline crossing navigable water or a rai lway requires permission of the Minister of Transport or the Canadian Transport Commission.

The Board considers the environmental implications of any proposal to build and operate an oil or gas pipeline or international power line, Environmental activities include the assessment of applications and, after certification, an auditing of the company's inspection of construction and operation. This ensures that new projects will have minimal adverse effects on fish, wildlife, land-use, environmental health, and safety.

The Board monitors socio-economic action plans of pipeline companies, conducts investigations, and reviews performance when warranted. It has issued guidelines for assessing the regional socio-economic impact of gas or oil pipeline projects.

For many years, the Board had significant responsibilities in administering Parts I, 1.1 and III of the Energy Administration Act. Parts I and I.I pertained, respectively, to the collection of charges on oil exports and the collection of the Transportation Fuel Compensation Recovery Charge. Although the export charge program ended, in effect, in 1985, and the TFCR Charge in 1983, some activity remains in the area of auditing and refunds. Part III pertains to the administration of domestic natural gas pricing and specifically the price of gas from a producer province sold within or without that province for use outside that province. Activity under Part III ceased in November 1986, when the government withdrew from interprovincial natural gas pricing.

The Board's statutory responsibilities regarding the Canadian portion of the Alaska Natural Gas Transportation System relate mainly to the regulation of tolls and tariffs, the approval of pipe specifications, the granting of leave to open orders, and the regulation of the operation of the line. However, the Board's activities under the Northern Pipeline Act will be negligible until the main project proceeds.

The Board is a Court of Record. With specific exceptions relating to the confidentiality of competitive pricing information, the Board's deliberations are conducted on the basis of publicly filed, publicly available information.

For major applications and inquiries, the Board holds public hearings at which applicants and interested persons have full rights of participation in the official language of their choice. To give parties an opportunity to discuss their concerns or questions, the Board provides advance notice of its hearings and allows time for parties to respond to requests for information. In addition, the Board issues quarterly regulatory agendas on matters coming before the Board as well as information bulletins and press releases on a variety of matters pertaining to Board activities.

When the Board is prepared to grant a certificate for a pipeline or a power line or to issue a licence for the export of natural gas or electricity, the import of natural gas, or the long-term export of oil, it so reports to the Governor in Council through the Minister of Energy, Mines and Resources. If a certificate is approved by the Governor in Council, the certificate is then issued by the Board. In the case of export or import applications, licences issued by the Board go into effect on approval by the Governor in Council. A decision of the Board to refuse an application is not subject to referral to the Governor in Council. The Board's Reasons for Decision on applications are issued as public documents. The Board's decisions on tolls and tariffs are made without reference to the Governor in Council, as are the majority of the Board's day-to-day decisions.

The Board may review, rescind, or change any of its orders or decisions, or re-hear any application before deciding on it. It may also change a previously issued certificate or licence, but no such change is effective until approved by the Governor in Council. Parties may apply to the Board requesting that an order of decision be reviewed, or a licence or certificate amended. A decision or order of the Board may be appealed to the Federal Court of Appeal, provided the appeal is based on a point of law or jurisdiction.

The Board does not have the power to award costs to participants in its proceedings. This power was recently tested in the courts with reference to costs incurred by certain intervenors involved in the review of an approval of the location of a propane terminal in Flamborough, Ontario. In the case of detailed route hearings, the Board may establish the appropriate level of compensation to be paid to a landowner for costs associated with participation in the hearing.

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I. ATOMIC ENERGY OF CANADA LIMITED

Overview: Atomic Energy of Canada Limited I-1

OVERVIEW

ATOMIC ENERGY OF CANADA LIMITED

Atomic Energy of Canada Limited (AECL) is a Crown company having a normal, commercial structure but with its shares owned by the Government of Canada. AECL reports to the Canadian Parliament through the Department of Energy, Mines and Resources.

AECL has an exclusive national mandate for the research, development and utilization (R&D) of all aspects of the peaceful use of atomic energy. This role has required AECL to pursue a wide range of activities, from basic research to the supply of nuclear reactors. In the process, AECL has emerged as a multi-site, multi-division company employing about 4992 full-time people, plus 249 snort-tern and 40 student employees (at March 31, 1987).

CANDU (CANada Deuterium Uranium), a uniquely Canadian reactor system, was designed and developed over the past 30 years by AECL in cooperation with Ontario Hydro and Canadian industry.

The interaction between AECL (the designer and engineer), Canadian utilities (the operator), and Canadian industry (the manufacturer of CANDU components) has been one of the key factors in the success of the Canadian nuclear program.

AECL occupies a unique position among world nuclear suppliers. Not only is it the designer of a proven, nuclear power system, it is also Canada's national, nuclear research authority. This gives AECL an advantage not readily available in other countries--the ability to provide a wealth of technical backup to its product.

In addition to its R&D and CANDU responsibilities, AECL has two other specific res?onsibilities. These are heavy water and non-reactor products.

Heavy water is a critical component required for moderating and cooling CANDU reactors. Because of the necessity to ensure that this strategic material is available in sufficient quantity, and because of economic and technical difficulties encountered by private sector suppliers, AECL purchased, refurbished and operated two heavy water plants on Cape Breton Island", Nova Scotia. Ontario Hydro also operates two plants in Ontario to supply its own needs. The downturn in world demand for nuclear stations has recently resulted in an oversupply of heavy water, and has resulted in a decision to shut down the two Cape Breton plants. The shutdown process began in mid-1985 and the units are expected to have reached a safekeeping condition by mid-1987.

The responsibility for radioisotope products is handled by AECL's Radiochemical organization in Ottawa. This organization is responsible for the development, design, manufacture and sale of a wide range of equipment for medical and industrial process applications and for the production and marketing of radioisotopes and radiopharmaceuticals for medical diagnostic purposes. It is the world's largest producer of bulk reactor isotopes, based on production from research reactors at the Chalk River Nuclear Laboratory and Cobalt 60 production in Ontario Hydro's Pickering reactors. An isotope Production facility is also in operation using the TRIUMF accelerator in British Columbia.

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J. ATOMIC ENERGY CONTROL BOARD

Overview: Atomic Energy Control Board J-1

OVERVIEW

ATOMIC ENERGY CONTROL BOARD

OBJECTIVE

.4 federal regulatory agency responsible for the health, safety, and national and international security and safeguard aspects of radioactive substances and items, and of nuclear facilities.

DESCRIPTION

The Board controls the development, application and use of atomic energy by means of a comprehensive licensing system administered with the cooperation of other federal and provincial government departments concerned with health, the environment, transportation, labour, etc., which have similar or relevant responsibilities .

The Board exercises federal jurisdiction over a range Of atomic energy projects and activities including uranium mining and refixing; nuclear reactors and heavy water plants; the production and use of radioactive isotopes; and national and international safeguards for nuclear equipment and materials.

AUTHORITY

The Atomic Energy Control Act.

BUDGET

The annual budget is $23.1 million (1986-87).

TIME

The Board is an on-going entity.

IMPACT

At the end of 1986-87, the Board staff was 275 members, most of them located in Ottawa, Ontario. Regional offices in Mississauga, Calgary, and Laval, were staffed with four inspectors each.

There are 19 staff members located at nuclear power reactor sites in Ontario, Quebec and New Brunswick and 7 in the Elliot Lake, Ontario, mining area.

A further 14 employees of other government organizations were appointedas inspectors and 10 medical advisers under the Atomic Energy Control Regulations. All of these appointments are on a part time basis.

Research contracts in support of the Board's activities were awarded as follows in 1986-87:

Ontario	$1,241,978
Quebec	235,444.
New Brunswick	154,227.
Manitoba	132,873.
British Columbia	82,501.
Alberta	75,654.
Newfoundland	60,491.
Foreign	880.

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K. PETRO-CANADA

overview: Petro-Canada K-1

OVERVIEW

PETRO-CANADA

OBJECTIVE

Petro-Canada was established on July 30, 1975 by an Act of Parliament to help achieve national goals in the Canadian energy sector. All of its shares are held in the name of the Minister of Energy, Mines and Resources in trust for Her Majesty in right of Canada. The objectives for which the Corporation was incorporated, as stated in Section 6 of the Petro-Canada Act, include:

to engage in exploration for, and the development of, hydrocarbons and other types of fuel or energy;

to engage in research and development projects relating to fuel and energy resources;

to import, produce, transport and market other fuels and energy; and

to engage or invest in ventures or enterprises related to the exploration, production, importation, distribution, refining and marketing of fuel, energy and related resources.

DESCRIPTION

Petro-Canada commenced operations on January 1, 1976, and is now the largest fully-integrated Canadian-owned petroleum company. In less than a decade, Petro-Canada has become a major player in all aspects of the industry. The Corporation ranks among the top five companies in all commonly used operating measures in exploration and production. It is the second largest refiner and marketer, with a network of more than 4300 wholesale and retail outlets across the country. It is the leading Canadian company exploring off the East Coast.

Petro-Canada is a Part II, Schedule "C" Crown Corporation under the terms of the Financial Administration Act. Petro-Canada Inc. is a wholly owned subsidiary of Petro-Canada and is its principal operating company. Petro-Canada Inc. is incorporated under the Canadian Business Corporations Act in every province and the two territories of Canada.

The Corporation's Annual Report, which is tabled in parliament, is submitted to the Minister of Energy, Mines and Resources within three months after the end of the financial year (December 31).

Petro-Canada submits its Corporate Plan and Capital Budget annually to the Minister of Energy, Mines and Resources eight weeks prior to the commencement of its financial year which is January 1. The Corporate Plan is for a five-year period and is approved by the Governor-in-Council on the recommendation of the Minister of Energy, Mines and Resources.

The one-year Capital Budget is approved by the Treasury Board on the recommendation of the Minister of Energy, Mines and Resources and the Minister of Finance, if required.

A summary version of Petro-Canada's Corporate Plan and Capital Budget is tabled in Parliament each year to comply with the requirements of the Financial Administration Act.

The Board of Directors is appointed by the Cabinet through an Order-in-Council. The Chairman and President, both of whom are selected by the Board, must be approved by Order-in-Council. Likewise, the by-laws also have to be approved. The Board of Directors can be comprised of up to fifteen members including two employees (the Chairman and President).

AUTHORITY
Petro-Canada Act.

BUDGET
At year end 1986, Petro-Canada had assets of over $8 billion including Federal Government equity of $4.2 billion. This equity came from annual cash injections (until 1984), the Canadian Ownership Special Charge (which was used to pay for the acquisition of Petrofina Canada Ltd.), and the transfer of Federal Government assets (such as its interests in Syncrude and Panarctic) in 1976.

IMPACT
The Corporation is organized into three units: Petro-Canada Resources, including exploration and production; Petro-Canada Products, comprising refining and marketing; and a corporate division which supports these operating units.

Petro-Canada employed 7740 people across Canada as of year end 1986. Petro-Canada Inc., Petro-Canada Resources and Petro-Canada Products are headquartered in Calgary.

The Corporation's Mission Statement, as developed in 1986, was:

> to operate in the energy industry in a profitable manner by maximizing the return to the corporation in our shareholder's investment; and to conduct (the Corporation's) operations with a results-oriented organization that is sensitive to the development of its employees and to the needs of customers and communities with which it does business.

The key operating objectives for the Corporation in 1986 were:

> to earn a return on the capital invested by the shareholder at least equal to the cost of capital, as measured by traditional market measures;

to maintain an adequate level of financial strength;

to earn a commercial return on investment in the upstream while maintaining an economic reserve base that is sufficient to ensure the long-term viability of the Corporation;

to manage an increasingly profitable refining and marketing business that contributes cash to the Corporation; and

to emphasize Petro-Canada's unique Canadian identity.

PETRO-CANADA
($ MILLIONS)

	1986	1985
Revenue	5172	5381
Net Earnings (loss) after Dividends on Redeemable Preferred Shares	123	96*

* Before unusual items

PETRO-CANADA RESOURCES

The business objectives developed in 1986 for Petro-Canada Resources were:

to operate the existing business in the most efficient manner possible;

to focus limited new capital investments on the best return/best risk opportunities which generate cash in the short term;

to maintain a flexible resource base that positions the Corporation well, should industry conditions improve; and

to adjust the organization's size and structure consistent with business objectives.

Petro-Canada Resources responded to the collapse of world oil prices and weak natural gas export markets in 1986. Production margins were maximized by reducing operating costs while increasing production rates of crude oil and natural gas liquids. In addition, capital investments were reduced and increasingly directed towards field improvements that would immediately generate cash flow.

In 1986, Petro-Canada maintained its interest in the more promising of Canada's frontier and oilsands development opportunities. During the year, the Corporation continued to work with partners and the federal and provincial governments to ensure that opportunities are advanced with appropriate timing and adequate assurance of economic success.

PETRO-CANADA RESOURCES
($ MILLIONS)

	1986	1985
Revenue	1080	1036
Earnings before Unusual Items and Dividends on Redeemable Preferred Shares	57	197
Capital Expenditures	319	520

PETRO-CANADA PRODUCTS

The business objectives developed in 1986 for Petro-Canada Products were:

to maximize the net present value of cash flow returned to the Corporation;

to balance short-term cash flow against long-term earnings capability;

to focus on improving returns from existing assets, especially through non-capital efficiencies, and ensure that new investments earn a return at least equal to the cost of capital; and

to satisfy customers and other stakeholders.

During 1986, Petro-Canada Products took advantage of the many opportunities afforded by the September 1985 acquisition of refining and marketing assets from Gulf Canada Limited.

Integration of supply, refining, research and development, wholesale marketing and retailing, as well as business systems, was largely completed by the end of 1986.

A significant event in refining for Petro-Canada was the purchase, on April 1, 1986, of the former Gulf Canada Limited refinery at Edmonton.

Petro-Canada also decided in early 1986 to target its product development work on markets where higher standards of performance are required. New gasoline products have keen launched as well as other products for commercial and industrial consumers.

PETRO-CANADA PRODUCTS
($ MILLIONS)

	1986	1985
Revenue	4588	4350
Earnings before Unusual Items and Dividends on Redeemable Preferred Shares	115	(22)
Capital Expenditures (Excluding acquisitions)	118	168

PETRO-CANADA INTERNATIONAL ASSISTANCE CORPORATION

Petro-Canada International Assistance Corporation (PCIAC) was established by Order-in-Council, as a subsidiary of Petro-Canada, in 1981. PCIAC was given the mandate to assist oil-importing developing countries to reduce their dependence on energy imports by using Canadian expertise for oil and gas exploration and related activities.

PCIAC is an instrument of Canadian foreign aid policy using official development assistance funds. PCIAC receives its funding from the Department of External Affairs but through Petro-Canada it retains a reporting relationship to the Department of Energy, Mines and Resources.

PCIAC began operations in 1982 and since that time it has undertaken projects in 35 countries including Barbados, Jamaica, Windward Islands, Haiti, Senegal, Ghana, Tanzania, Kenya, Burma, Thailand, Pakistan, the Philippines, Columbia, Costa Rica, Guinea, Gambia, Morocco, and Sri Lanka. During 1986, 183 Canadian private sector firms have received PCIAC contracts totalling approximately $40 million. Petro-Canada Inc. acts as its executing agent in tendering contracts.

Based in Calgary and Ottawa, PCIAC works closely with CIDA and the" World Bank. A Corporate Plan and Operating Budget is submitted annually to the respective Ministers. PCIAC's Budget for 1986 was $56.9 million. PCIAC publishes its own Annual Report.

c) The Special Projects Demonstration supports innovative projects that hold promise for significant contribution to the development and application of active and passive solar, photovoltaics, wind and small hydro technologies and that can accelerate the acceptance of such systems by the Canadian public and the commercial sector.

ELIGIBILITY:
Private companies (manufacturers, installers, designers, building contractors, etc.) and owners/operators of commercial/industrial buildings.

ASSISTANCE:
This program is designed to provide the opportunity for companies and individuals who have unique ideas for exploiting these technologies and that can be adapted commercially. The scope of the program is meant to be sufficiently large to cover a wide range of activities from prototype applications in passive solar, large-scale solar collectors for process heating to the demonstration of wind/diesel systems.

Proposals will be accepted from Canadian sources only as current year funding allows. In their proposals, proponents must demonstrate they are capable of investing a minimum of 25% into the project; provide expertise to ensure adequate maintenance, modifications, monitoring and reporting of the project; and agree to a negotiated sharing of the benefits with the government in terms of intellectual property resulting from this project. Proposals will be evaluated according to specified criteria and must meet a minimum rating to be considered for funding. Negotiations will follow to establish the project details and the terms and conditions of an agreement with prospective proponents.

Expiration date: March, 1988.

AUTHORITY
National Conservation and Alternative Energy Initiative announced May 24, 1985.

BUDGET
For FY 87-88 - $12 million.

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TITLE
Super Energy Efficient (R-2000) Home Program

OBJECTIVE
To increase awareness and promote the adoption of super energy-efficient construction techniques for new homes by the residential building sector.

DESCRIPTION
This program will support the construction of approximately 20 000 energy-efficient housing units to be built across the country by 1991. Funds will be available to develop and refine the technologies, to train builders and tradesmen, to assist in promoting R-2000 homes and to develop the infrastructure necessary to support the commercialization of R-2000 homes without long-term government support. The program is developed and delivered in full partnership with the Canadian Home Builders' Association (CHBA) and other major industry representatives.

AUTHORITY
National Energy Program (NEP) Page 71. Tress'~ry Board (TB) approved the program in principle (TB 775210), and on March 18, 1982, the terms and conditions were also approved (TB 781503). The current expanded program was approved by Cabinet (December 1983) and by Treasury Board (TB 793346) on May 31, 1984.

BUDGET ($ million)
(National)

Fiscal Year 1982-83	$2.50	(grants, contributions, operating)
Program total to Mar 31/84	$6.00	(grants, contributions, 'operating}
Fiscal Year 1984-85	$4.51	(grants, contributions, operating)
Fiscal Year 1985-86	$13.20	(grants, contributions , operating)
Fiscal Year 1986-87	$13.80	(grants, contributions, operating)
Fiscal Year 1987-88	$13.80	(grants, contributions, operating)
Fiscal year 1988-89	$7.55	(grants, contributions, operating)
Fiscal Year 1989-90	$4.32	(grants, contributions, operating)
Fiscal Year 1990-91	$2.81	(grants, contributions, operating)

TIME
Commenced in July 1982; the program is approved to continue until 1991.

IMPACT
(National, estimated over duration cf program)

Estimated number of units to be built: 20 000

In Northwest Territories, the estimated percentage of units to be built is 10% of the national total. This percentage will be modified on the 'oasis of the level of construction activity in the region.

The publicity and technology transfer associated with the program should result in greater awareness of, and demand for, energy-efficient homes, and improved technical knowledge and capability in the construction community.

It is expected that each builder will apply his acquired knowledge to most of the homes he constructs subsequently, and thus much larger savings in energy spending should be realized as time goes on.

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