Ministry of State
Science and Technology
Canada

Ottawa, Canada
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# FEDERAL GOVERNMENT INCENTIVES FOR INDUSTRIAL R&D



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## FOREWORD

The attached is a summary of all current federal government incentives which have an impact on R&D and industrial innovation. It includes assistance programs, tax incentives, and descriptions of institutes which disseminate technology to industry. Only essential information about program features, eligibility, total budget and funds available per client, has been provided. Further details can be obtained from the responsible departments. The total funds represented by the activities described in the booklet are estimated at more than $750 million for 1981/82. While much of this funding is for R&D and innovation, much of it benefits the private sector in other ways.

# Federal Government Incentives for Industrial R&D

## Table of Contents

## Federal Government Incentives for Industrial R&D

The Federal Government provides incentives for industrial R&D under a variety of mechanisms, ranging from tax incentives to grants, loans and in some cases contracts.

### A. Tax Incentives

Section 37 of the Income Tax Act allows taxpayers to deduct all current and capital expenditures for R&D in the year in which they were incurred. The government has also introduced in recent budgets two major tax incentives for R&D in Canadian industry.

1. Special Allowance: Since 1978, corporations carrying on business in Canada have been allowed to deduct a further 50 per cent of current and capital R&D expenditures over and above the average of R&D expenditures incurred in the previous three years. The Income Tax Act ensures that this allowance will remain in effect at least until the end of 1987.

2. Investment Tax Credit: Scientific research expenditures made after November 16, 1978, are also eligible for an investment tax credit. The basic credit is 10 per cent of the taxpayers' expenditures on R&D, but for expenditures made in the Atlantic provinces and the Gaspé it is 20 per cent, and for expenditures made by Canadian-controlled private corporations which qualify, in the year in which the expenditure is made, for the small business deduction, it is 25 per cent.

   The amount deductible from the tax otherwise payable in any one year is limited to a maximum of $15,000 plus one half of the federal tax otherwise payable in excess of $15,000. Any balance of the tax credit in the year may be carried forward for five years and deducted under the same rule.

   Individuals and corporations can invest in R&D ventures through a limited partnership to use the 100% deduction and the investment tax credit against

their other income. This will lower the risk/reward ratio of such an investment.

A limited partnership has two classifications of partners. The general partner conducts the business and has joint and several liability for the financial undertakings of the partnership. The limited partners contribute capital and own an interest in the partnership but are prohibited from participating in management. The limited partner is liable only to the extent of capital contributed.

Potential limited partners should seek legal and professional tax advice on the provincial and federal income tax consequences of participating. Each venture should be assessed on its merits.

The value of the Special Allowance and Investment Tax Credit for R&D are estimated to be worth some $100 million.

## B. Programs of Financial Assistance to R&D

### 1. Enterprise Development Program (EDP)

The EDP is a wide-ranging program of assistance to small and medium-sized businesses. It was created on April 1, 1977, and is administered by the Department of Industry, Trade and Commerce.

The Program is administered by a main Enterprise Development Board, based in Ottawa, which handles projects involving companies with annual sales of more than $5 million, and by Regional Boards in the ten provinces which handle projects involving smaller companies.

There are two clear aspects to the operation of the Boards, the first of which is support for innovation. Innovation assistance is designed to increase technological innovation in Canada where it will lead to industrial growth and economic benefit. Grants are provided for selected projects which are concerned with the development of new or improved products and processes. The second aspect of the operation of the Boards is support for companies to adjust to basic changes in their market circum-

stances. This includes assistance for market studies and restructuring of the firm.

Under the Program, up to seventy-five per cent of the costs of approved projects can be contributed by the government for companies with annual sales of less than $10 million and up to 50 per cent for companies with annual sales in excess of $10 million. EDP also provides guarantees for up to 90 per cent of long-term loans made by private lenders to manufacturers for adjustment projects such as the modernization or expansion of production systems including acquisition of plant and equipment. Loan guarantees for the past year were authorized at over $200 million.

Funding for the Innovation Component of EDP is set at $61.1 million for 1981/82.

In January 1982, Cabinet approved the establishment of the Support for Technology Enhanced Productivity (STEP) program. This program replaced the Special Electronics Fund, and the Microelectronics Support Program.

STEP is comprised of three broad elements:

- an industrial education program;

- technology centres operated within the Institution Assistance Program; and

- incentives administered within the Enterprise Development Program.

The industrial education program will have two elements which will be implemented in parallel. It will involve the development, design, preparation and delivery of general awareness seminars in all regions of Canada and, jointly with industry associations or groups of companies, the development of intensive sector specific seminars or workshops on the application of electronics within the industry.

The Special Electronics Fund provided for the establishment of six centres of advanced technology in microelectronics. Five centres

have been selected, at the Universities of British Columbia, Alberta, Manitoba, Toronto, and Sherbrooke. Applications have been received from universities in Nova Scotia and New Brunswick. Appropriate institutions in the three unrepresented provinces will be invited to submit proposals.

The incentives include:

1. Support for first time users of microelectronics, feasibility studies, $10,000 grant, 100% funding.

2. Support for first time users of microelectronics, implementation/ application, $100,000 contribution, 75% funding.

3. Support for the use of electronics in the production process, feasibility studies, $100,000 contribution, 50% funding.

4. Support for the use of electronics in the production process, implementation/ application, $1,500,000 contribution, 50% funding.

5. Support for the development of custom integrated circuits, $500,000, 75% funding.

6. Support for major investment projects in electronics and electronic dependent advanced equipment manufacturing industry as follows:

   - R&D, 75% funding

   - Machinery and Equipment, 50% funding

   - Buildings, 15% funding.

## 2. Industrial Research Assistance Program (IRAP)

This Program was established in 1962, and is administered by the National Research Council. It constitutes the main thrust of NRC's effort to aid Canadian companies wishing to expand

through new product development. It encourages applied research in Canadian industry with the objective of increasing the calibre and scope of industrial R&D in Canada in a business environment.

IRAP pays staff salary costs which normally account for about 50 per cent of the overall costs of selected research projects. The company is responsible for performance of the research and commercialization of the results. Companies are required to undertake the exploitation of the research results in Canada, and they retain the rights to the research results.

All companies incorporated federally or provincially in Canada and engaged in activities based to a significant extent on technology derived from the physical and life sciences and engineering are eligible for consideration. So are groups of Canadian enterprises or producers, consulting firms, engineering and construction contractors, and other enterprises if they intend to maintain a research facility for the duration of the project and are able to fund and apply the research through an appropriate Canadian company or association.

Selection of projects is based primarily on their likelihood of successfully initiating a significant technological advance of benefit to Canadian industry and society through commercial development and application in Canada. Suitability of projects will be judged in the light of the applicant's expertise in the relevant field, and ability to commercialize effectively the research findings.

Projects directed to the development of marketable products or hardware in the fields of medical technology, social science and the humanities in an industrial context may be eligible, but projects comprising geological and geophysical explorations, market research and routine minor product improvements or technical service activities are ineligible.

The Technical Information Service (TIS) was amalgamated with the Industrial Research

Assistance Program (IRAP) in 1981/82. The TIS is the only federal government service designed expressly to assist manufacturers to adapt existing scientific and technological knowledge for their own specific operations. Its services are of particular use for industries that have few technical resources to solve technical problems; improve production operations; increase productivity; develop new processes, products and markets; and to reduce costs.

TIS provides in-plant field services free of charge across Canada. Industrial engineers visit companies to assist them with the resolution of plant problems. In addition, other staff respond to both telephone and written requests for help. In six provinces these services are delivered by Provincial Research Organizations, under contract to NRC. The field staff is backed up by a staff of technical sector experts resident at NRC's Canada Institute for Scientific and Technical Information in Ottawa, which receives the more complex problems for further study, and also responds directly to industrial inquiries.

In 1978, TIS activities were expanded to include a pilot scheme, Science and Engineering Student Program (SESP), under which university or technical college students could be engaged, usually free of charge, by firms on short-term scientific, engineering and technological problems.

The TIS funding is covered by the IRAP budget. IRAP's budget for 1981/82 is $37.8 million.

Mini-IRAP, which was initiated in 1978/79, assists firms which are not large enough to maintain a separate research facility of their own, by paying the salaries of individuals in research organizations working on projects for business clients. The expenditures on Mini-IRAP are covered under the IRAP budget.

## 3. Defence Industry Productivity Program (DIPP)

This Program was established in 1968 and is administered by the Department of Industry,

Trade and Commerce. It replaced the Defence Development Sharing Program and the Industry Modernization for Defence Exports Program.

DIPP is designed to enhance the technological competence of the Canadian defence industry in its export activities by providing financial assistance to industrial firms for selected projects. Emphasis is placed on those areas of defence technology having potential for defence or associated civil export sales. Assistance may cover: the development of products for export purposes; the acquisition of modern machine tools and other advanced manufacturing, test and quality control equipment to meet exacting military standards; and assistance with pre-production expenses to establish manufacturing sources in Canada for export markets.

Only companies in the defence industry, or subcontractors to the defence industry, are eligible. Assistance is given in the form of grants and repayable loans on a shared-cost basis. Allied governments and other companies may be involved. The Crown generally contributes approximately 50 per cent of the total costs of all development projects. The DIPP budget for 1981/82 has been set at $151.6 million, of which $131.6 million is for contributions and $20.0 million is for loans.

## 4. Program for Industry/Laboratory Projects (PILP)

This Program was initiated in 1975 and is administered by NRC. It is designed to promote a more rapid transfer to industry of the results from NRC laboratories and other federal laboratories to situations where there are important opportunities for Canadian industrial exploitation. The Program is designed to help overcome barriers to industrial use of the research results of government laboratories by funding work that will advance development, allow better identification of the eventual product, expose the economic factors, determine social and other acceptability and identify place and position in the marketplace.

Projects for funding under PILP are selected from proposals which:

a) are aimed at an important Canadian need or opportunity;

b) derive from federal research or are in an area of interest to federal agencies where their staff and facilities can make significant contributions;

c) involve as prime performers Canadian companies with technical capability and an adequate business base;

d) give evidence of intent of the performer to commercialize the results either by himself or along with other identified parties in Canada;

e) identify the major barriers to commercialization and describe a procedure to overcome the barriers identified.

The proposals selected are ones which NRC and other federal laboratories consider to have the best combination of these factors. A major consideration is also the probability of high economic return if the project is successful.

Funds are provided through the negotiation of license contracts or through a contribution arrangement with Canadian companies. The PILP budget for 1981/82 is set at $12.8 million.

## 5. New Technology Employment Program (NTEP)

This Program began its operations in September 1980. The Program is administered by the Canada Employment and Immigration Commission (CEIC) with support from NRC; Energy, Mines and Resources (EMR) and MOSST. It provides salary assistance to small firms, individuals, associations and non-profit research institutes to hire technically qualified recent post-secondary graduates in the development of innovations in manufacturing products or processes, and in the development and application of conservation and alternate energy techniques

and programs. Priority attention is given to projects in the following areas:

1) microelectronics
2) biotechnologies
3) materials technology
4) manufacturing science - including robotics and CAD/CAM
5) communications technology
6) energy-related R&D
7) geophysical exploration
8) instrumentation technologies
9) transportation technologies
10) ocean technology
11) toxicology

The federal contribution under this Program applies only to wages. The contribution can amount up to 75 per cent of the wages paid to an eligible individual to a maximum contribution of $290 per week per job. Contributions are provided for a maximum of twelve continuous months, and are limited to a maximum of $150,000 for each employer. The NTEP budget for 1981/82 is $8 million.

## C. Scientific and Technical Information

### 1. Canada Institute for Scientific and Technical Information (CISTI)

This Institute, which is part of NRC, provides a general library service by acquiring and storing material on a wide range of scientific and technical information. This information is made available to businesses of all sizes. CISTI can also furnish regular reports tailored to the needs of specific firms, at minimal or no cost.

## D. Technology Support through Institutes

The Department of Industry, Trade and Commerce administers three (3) types of programs to encourage the diffusion of technology in the private sector. In 1981/82, the budget for the following programs will be $1.45 million.

## 1. The Industrial Research Association (IRA)

Four industrial research associations have been created, in co-operation with industrial groups, for the purpose of organizing the conduct of research and development activity important to these groups. In the early years, the general work of the associations is supported by grants from the Department of Industry, Trade and Commerce ($200,000 per annum for 5 - 7 years) and membership subscriptions obtained from participating companies. As the associations develop, membership subscriptions and contracts with individual firms for specific, proprietary, R&D work are expected to defray the total operating costs of the associations.

The industrial areas to which the associations are directed are:

a) welding technology (Canadian Welding Development Institute);

b) equipment and services related to the transport and use of natural gas (Canadian Gas Research Institute);

c) new uses for elemental sulphur presently accumulating in Western Canada (Sulphur Development Institute of Canada);

d) building technology (Masonry Research Institute of Canada).

The first three associations are now financially self-sufficient.

## 2. The Industrial Research Institutes (IRI)

The Department of Industry, Trade and Commerce introduced this Program in January of 1967. It is designed to assist Canadian universities to establish and administer industrial research institutes to provide scientific services for industrial firms unable to maintain research facilities and personnel of their own.

Assistance is provided by grants to help cover the costs of salaries of a director, an assistant, and small secretarial staff, and certain of the travelling and administrative costs of maintaining an office for the Institute. Assistance is limited to a maximum of seven years.

Industrial research institutes have been established at the following educational institutions:

Nova Scotia Technical College

University of Windsor

McMaster University

University of Waterloo

McGill University

École Polytechnique

Université du Québec à Montréal

University of Manitoba

University of Ottawa

## 3. Centres for Advanced Technology

This Program was instituted by the Department of Industry, Trade and Commerce in 1968 to provide funds to permit universities and other institutions to establish and operate units with specialized capabilities for the benefit of industry. Support is limited to a maximum of seven years.

These centres, under contract to individual firms, provide training and assistance with development projects.

| Institution | Centre |
|---|---|
| University of British Columbia | -Microelectronics |

| | |
|---|---|
| University of Alberta | -Microelectronics |
| University of Manitoba | -Microelectronics |
| Université de Sherbrooke | -Microelectronics |
| McMaster University | -Canadian Institute of Metalworking |
| Ontario Research Foundation | -Centre for Powder Metallurgy |
| University of Toronto | -Biomedical Instrumentation Development Unit<br>-Microelectronics |
| British Columbia Research Council | -Centre for Ocean Engineering |
| University of Western Ontario | -Systems Analysis, Control and Design Activity |
| Nova Scotia Research Foundation | -Centre for Ocean Technology |
| Manitoba Research Council | -Canadian Food Products Development Centre |
| | -Health Industry Development Centre |
| McGill University | -Program for the Measurement and Control of Particles and Vapours |
| University of Waterloo | -Waterloo Process Development Centre |

## 4. Canadian Industrial Innovation Centres (Formerly Industrial Research and Innovation Centres)

There are two of the CIIC centres to date. One was founded at the University of Waterloo but is becoming an independent institution. The other is located at the École Polytechnique at the Université de Montréal.

The purpose of these centres is to teach entrepreneurship by involving students in the

commercialization of innovations. The innovations themselves can originate in any sector of the economy. For example, a businessman who has developed an innovation can propose its commercialization as a project for the centres. The student at the centre can tap university faculty, lawyers, consultants, etc., to get the project done.

Federal funding for these centres is up to $1 million per year for each centre for five years.

## E. Contracting

### 1. Contracting-Out Policy

In 1972, the government established a contracting-out policy which directs that government requirements for mission-oriented science and technology are to be contracted out, preferably to Canadian industry, unless a department can justify intramural or foreign performance.

The policy applies to present and new requirements in all scientific activities in the natural sciences and to human science requirements in the fields of urban, regional and transportation studies.

Although the contracting-out policy is primarily a procurement policy, it is intended to promote the development of Canadian industrial R&D capability. It is expected that $160 million of government science requirements will be contracted out in 1981/82.

### 2. Unsolicited Proposals (UP)

In 1974, the government expanded the contracting-out policy to cover unsolicited science and technology proposals which are submitted by industry and which fall within the mission of a government department. The UP Program is intended to permit the government to respond quickly to sound, unique proposals from the private sector in support of government science missions.

The Department of Supply and Services administers a fund which provides bridge financing for proposals which are accepted from the point of view of sponsorship, scientific merit and uniqueness, but which cannot be funded from the sponsoring department's current appropriations.

The UP Fund has a budget of $15 million for 1981/82.

## 3. Source Development Fund (SDF)

The SDF is a tool which allows the government to make better use of procurement as an industrial development tool. The Fund was designed as an adjunct to the Procurement Review Mechanism. It is a vehicle to meet the costs of developing a source to be a supplier for government, when there are indications that the source would have a market beyond the governments and that Canada would derive significant economic benefit from this investment. Approved in May 1981, the SDF will pay for the incremental costs needed to ensure that, among other things, (1) high technology procurement-related developments which need up-front funding can and will be undertaken in Canada; and (2) especially in procurements involving "offsets" from foreign suppliers, the cost to Canadian firms for upgrading their technology and production capability can be borne as an "investment" to ensure their access to continued world markets (e.g. F-18 New Fighter Aircraft).

The Source Development Fund has been allocated $10 million for each of the three fiscal years starting in 1981/82.

## 4. Profit Policy

Administered by the Department of Supply and Services, this directive sets out the policy and guidelines for the calculation of the amount of profit applicable to negotiated contracts with Canadian suppliers for both products and services to special specifications with total costs of $1 million or over.

The amount of profit to be applied will be calculated on the basis of four (4) factors: capital employed, general business risk, contractual risk, and contractor's contribution to a Canadian Value Added Strategy. The following are the areas in which recognition of the Canadian Value Added will be made for profit purposes along with potential profit rates:

1) reduction of regional disparities (up to 10%)

2) promotion of R&D in Canada (50%)

3) Canadian content program (up to 5%)

4) subcontracting to support special programs (10%)

## F. Departmental Programs

Several federal departments have programs designed to assist R&D in specific industries or areas. These include:

### 1. Canadian Manpower Industrial Training Program (CMITP)

This Canada Employment and Immigration Commission (CEIC) Program is designed to encourage employers to establish or improve training programs; to expand employment opportunities; to alleviate skill shortages; to prevent lay-offs; and to support regional industrial development strategies. (1981/82 Budget - $103 million)

### 2. Critical Trade Skills Program

The objective of CTSP is to encourage industry to develop and expand the training of Canadian tradesmen or workers in skilled occupations which experience chronic shortages and require large and more technologically complex training than is given in CMITP. While the occupations in question differ regionally, some of them are industrial electrician, instrument maintenance mechanic, zero engine mechanic, geophysical technician, electronic engineer technician,

computer programmer and aircraft instrument mechanic. The budget for this program is $36 million in 1981/82.

### 3. Industrial Energy Research and Development Program (IERD)

This IT&C Program, introduced in 1977, encourages and assists in the development of more energy efficient industrial processes through grants for approved projects undertaken by individuals, companies or other organizations. Normally, 50 per cent of the total estimated cost of an approved project is contributed by IT&C. (1981/82 Budget - $1.5 million)

### 4. New Crop Development Fund (NCDF)

This Agriculture Canada Program is designed to bridge the gap between basic research and commercial production through development research and to share the financial risk and burden of larger scale field testing. It can also apply to testing new equipment. (1981/82 Budget - $750,000)

### 5. Purchase and Use of Solar Heating (PUSH)

This Program allows for the preferential purchase of Canadian-made solar space and water heating equipment for Government of Canada buildings. (1981/82 Budget - $11.5 million)

### 6. Energy from the Forest (ENFOR)

This Environment of Canada Program finances innovative R&D on biomass energy issues. The Program is conducted by contracting (to the private sector) research, development and demonstration projects which have the potential of increasing biomass fields or providing new processes and energy products.

The ENFOR Program has a proposed budget of $6.1 million for fiscal year 1981/82.

### 7. Development and Demonstration of Resource and Energy Conservation Technology (DRECT)

The DRECT Program funds the development of new technologies to produce energy from industrial and municipal wastes and is administered by Environment Canada. It supports feasibility studies and development and analysis of energy recovery proposals and cost benefits.

This Environment Canada Program has a proposed budget of $867,000 for 1981/82.

## G. Intellectual Property

### 1. Canadian Patents and Development Limited (CPDL)

CPDL is the Crown Corporation responsible for arranging the commercial exploitation of inventions arising from research carried out by government departments, universities and public research institutions. Businesses and individual entrepreneurs may obtain rights to develop and produce inventions that have been assessed for patentability and commercial use.

CPDL maintains an inventory of such inventions, which are available for licence, and which it advertises to industry by means of trade shows, technical publications and an "Inventions Catalog."

The Company is presently co-operating with the University of Waterloo in providing a cost-shared pilot invention screening program which is designed to offer inventors an assessment of the technical and commercial feasibility of their inventions along with recommendations as to the need for further development, markets, etc. This service is provided to inventors for a flat fee of $50. The inventor retains full rights to the invention.