Technology Partnerships Canada

An Agency of Industry Canada

Partenariat technologique Canada

Un organisme d'Industrie Canada

Technology Partnerships Canada

2004–2005 Year in Review

Building Canada's Future

04/05

Canada

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A Year in Review

Technology Partnerships Canada (TPC) is a Special Operating Agency of Industry Canada, established in 1996. With a mandate to provide funding support for strategic research and development (R&D) and demonstration projects that will produce economic, social and environmental benefits for Canadians, TPC invests in innovative technology R&D projects being undertaken across the Canadian economy.

Partnering with industry, TPC acts as a catalyst by investing strategically to accelerate the successful development of key technologies. Canadians benefit from these investments in their everyday lives through enhanced medical and biotech technologies, improved transportation efficiency and safety, and progress in environmental technologies that reduce greenhouse gas emissions and offer solutions for sustainable development.

By investing in ideas early on, when risk is higher but the potential for reward is greater, TPC is helping promote important R&D that might otherwise take place elsewhere in the world or not at all. With the potential to generate invaluable innovations and eventually bring them to market, and the ability to enhance Canada's role as a leader in technology development, these investments hold the promise of returns to Canadians that far outweighs the financial risks involved.

The year 2004–2005 saw a great deal of activity within TPC. In all, 31 projects received investments towards innovative R&D into environmental, enabling, and aerospace and defence technologies. Among the R&D being conducted, these investments hold promise of better antibiotics for health care, improved landing gear and, in turn, enhanced safety for aircraft, and a reduction in vehicle emissions through the development and adoption of hydrogen fuel cells as a power source for a wide variety of applications.

Again this year, TPC continued to review its operations and conduct recipient audits, and incorporate lessons learned to improve internal operations. To strengthen its audit function, TPC established an independent audit committee.

In addition, an integrated planning process has been developed and adopted. To ensure TPC staff have the specific administrative knowledge needed, a training plan was developed and instituted. These measures allow TPC to improve the efficiency and effectiveness of its operations, and its ability to respond to industry and Canadians.

What We Do

Through its R&D and demonstration investment programs, TPC is a key instrument for encouraging innovative technology R&D in Canada.

Under the TPC R&D investment program, TPC makes conditionally repayable contributions to enterprises in Canada engaged in research and development in areas of technology that promote innovation, commercialization, sustainable development and increased investment.

These investments target precompetitive projects across a wide spectrum of technological development. The program focusses on key technology areas such as environmental and enabling technologies, which includes biotechnology and health-related applications, plus aerospace and defence technologies as well as manufacturing and communications technologies.

TPC Industrial Research Assistance Program

TPC is also partnered in a co-operative venture with National Research Council Canada's Industrial Research Assistance Program (IRAP) to deliver the TPC program to Canadian small and medium-sized enterprises (SMEs); these are defined as firms with fewer than 500 employees. This partnership encourages innovation across the country by investing in projects with authorized eligible costs of $3 million or less. TPC and IRAP each provide 50 percent of the budget for the TPC–IRAP program.

This Year's Investments

In 2004–2005, TPC signed 31 new projects for an investment commitment of $256.5 million. Through the TPC–IRAP program, 40 projects were contracted for an additional $15.7 million.

As of March 31, 2005, these investments bring TPC's total R&D portfolio, including the TPC–IRAP program, to 693 projects, totalling more than $2.8 billion, of which $2.1 billion has been disbursed. Of these projects, 88.6 percent target SMEs across Canada.

These projects have leveraged an additional $11.1 billion in private sector innovation spending (almost $4 for each dollar invested by TPC), which means TPC has facilitated investment decisions totalling $13.9 billion.

Hydrogen Early Adopters (h2EA) Program

In fall 2003, TPC announced it would participate in the Government of Canada's commitment to invest in a hydrogen economy through the Hydrogen Early Adopters (h2EA) Program. A five-year, $60-million initiative, the program consists of demonstrations of hydrogen and hydrogen-compatible technologies.

The Government of Canada is committed to working in partnership with industry to build a solid "Hydrogen Team" as it builds a hydrogen economy. Working together, government and industry are fostering the development and early introduction into the Canadian marketplace of hydrogen and hydrogen-compatible technologies such as fuel cells and those used to produce, store and distribute hydrogen.

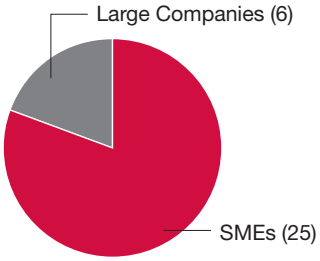
In conjunction with other Government of Canada agencies, h2EA has begun working with Canadian industry on the development of concepts such as "hydrogen villages" and "hydrogen highways" across Canada. These consist of communities where the power source for domestic use or transportation is based on hydrogen.

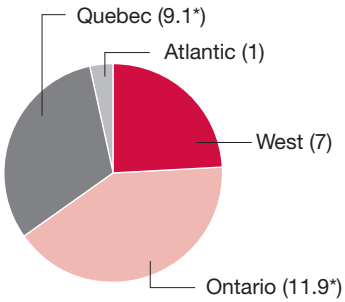
These projects will contribute toward the development of a hydrogen infrastructure in Canada, developing the skills, standards and supply mechanisms required to support a hydrogen economy. Canada's growing expertise can influence the worldwide hydrogen industry as it looks toward finding increased applications for hydrogen technologies in our daily lives.

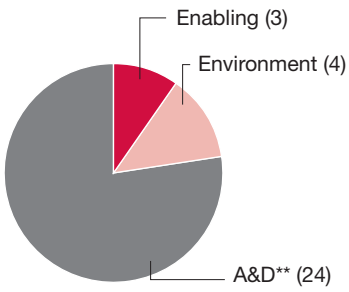
In 2004–2005, the program made its first four investments, with a total commitment of $13.27 million in hydrogen and hydrogen-compatible technologies demonstration projects. As the h2EA program is a separate initiative, it is not included in the TPC R&D totals listed previously.

Portfolio Summary for TPC

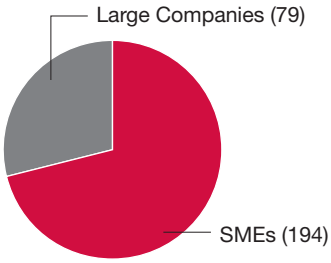
TPC Projects 2004–2005

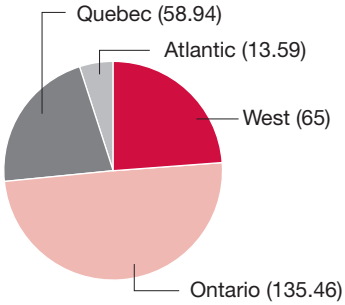


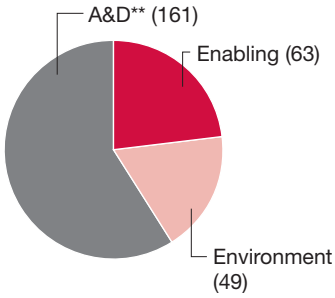




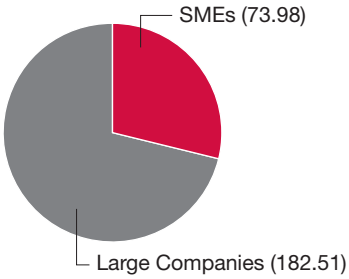
TPC Projects Overall

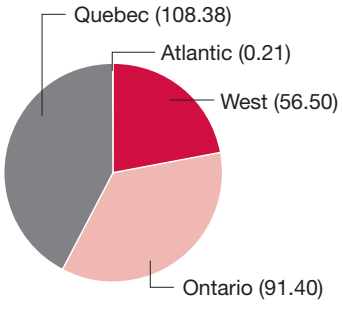


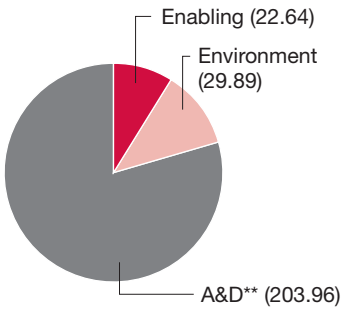




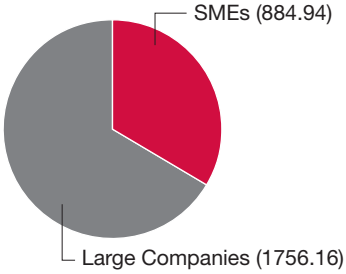
TPC Commitment 2004–2005 ($ millions)

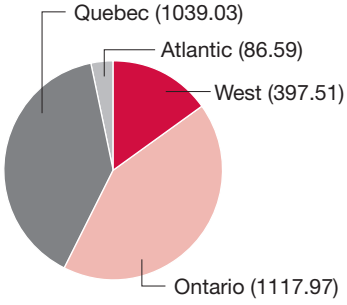


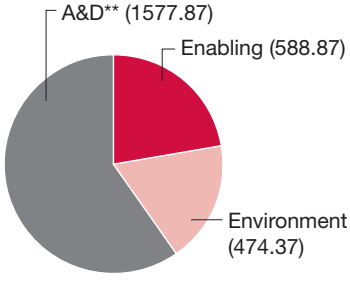




TPC Commitment Overall ($ millions)



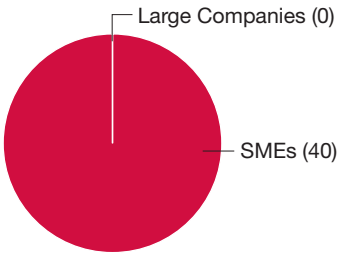


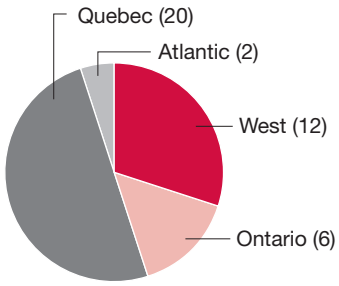


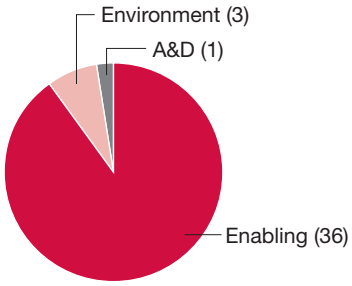
** Work will take place in more than one region. ** Including Supplier Development Initiative (SDI).*

Portfolio Summary for TPC–IRAP

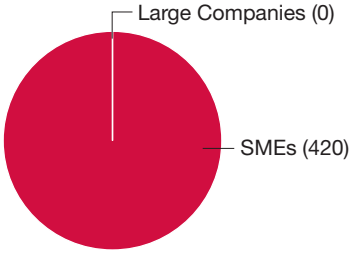
TPC–IRAP Projects 2004–2005

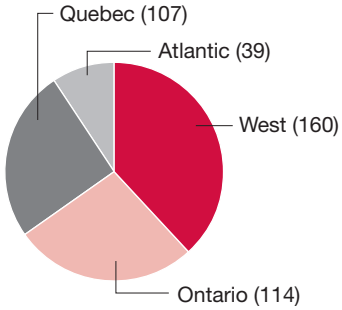


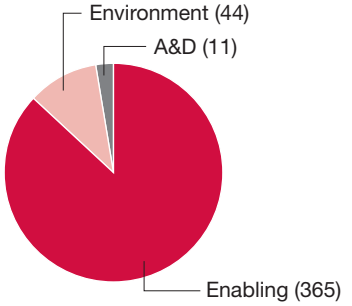




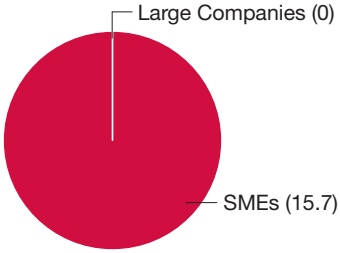
TPC–IRAP Projects Overall

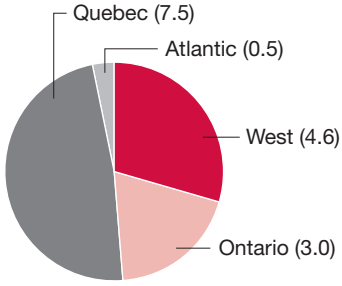


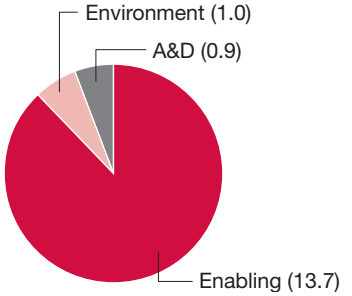




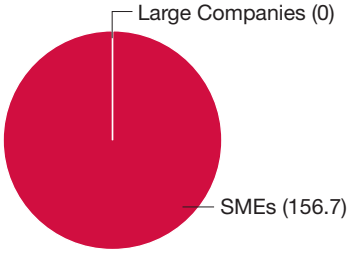
TPC–IRAP Commitment 2004–2005 ($ millions)

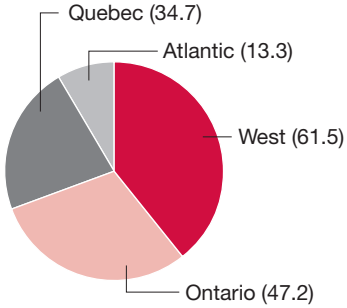


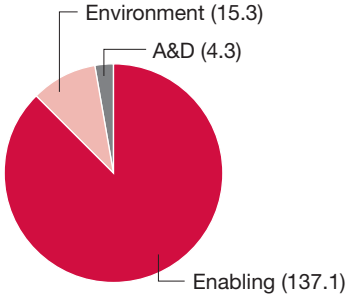




TPC–IRAP Commitment Overall ($ millions)







How Canadians Benefit from TPC Investments

TPC's investments are designed to encourage private sector investment in innovative R&D and advance the technological capabilities of Canadian industry. The focus is on the kinds of key technologies that can improve the lives of Canadians by contributing to our health, safety and quality of life.

Research In Motion was an SME with just over 200 people when it first came to TPC for support, and went on to commercial success with the creation of the BlackBerry™, the award-winning standard in wireless communication.

Technologies to assist the more than 600 000 Canadians who are blind or visually impaired are being developed by VisuAide Inc. to improve both their safety on city streets and their access to print and electronic materials.

An innovative water filtration system that is now being used to provide safe drinking water in Canada and abroad was developed by Zenon.

In order to maintain a strong economy, we need to create an environment where companies of all sizes and a variety of industries can grow and be successful. TPC investments help to create that environment by supporting innovation across Canadian industry. New partnerships, new skills and new ideas are all benefits of TPC investment.

Focus on Innovation for Health and the Environment

TPC invests in technologies that help to find solutions to some of Canadians' key concerns, including enabling technologies in biotechnology to cure and treat illness and improve our health-care system. These are projects that will improve our well-being and our environment as well as preventing, or protecting us from, pollution.

Developing a Stronger Aerospace and Defence Sector

TPC has been a key instrument in the Government of Canada's ongoing commitment to the continued growth and development of the country's aerospace and defence industry. TPC's investments help ensure that Canada maintains its status and competitive edge in this industry — a critical driver of jobs, opportunities and wealth for Canadians — and allow it to contribute to the growth of hundreds of suppliers across the country.

Hybrid electric delivery vehicles that are now being used in a pilot project by a major courier company were developed by Azure Dynamics.

Bristol Aerospace is developing a mechanism to keep satellites pointing in the right direction to enhance the accuracy of data gathered by orbiting satellites.

Encouraging SMEs to Fulfil Their Potential

TPC encourages the development of SMEs in all regions of Canada. Each dollar invested by TPC leverages additional investments both nationally and internationally, which encourages SMEs to grow, exploring good ideas and developing them into practical technologies. New alliances and working relationships are encouraged and developed among suppliers and industry, increasing Canada's overall innovation capacity. TPC investments are vital to these companies, helping them move ahead with the speed and scope required to succeed and become leaders in their fields.

Keeping Skills and Ideas in Canada

Finally, by supporting R&D activities and technological innovation, TPC attracts and retains highly paid, skilled employment in Canada. Creating and keeping these knowledge-based jobs in Canada is essential for sustaining our economy and the well-being of communities, because these workers make significant contributions that benefit all regions of Canada and all sectors of our economy.

TPC's Share of Project Success

TPC invests in higher-risk R&D initiatives that may encounter technical failures, enterprise hardships, market shifts and previously unforeseen competition. This means TPC faces, at a minimum, the same kind of risks faced by equity investors in emerging and advanced technology companies.

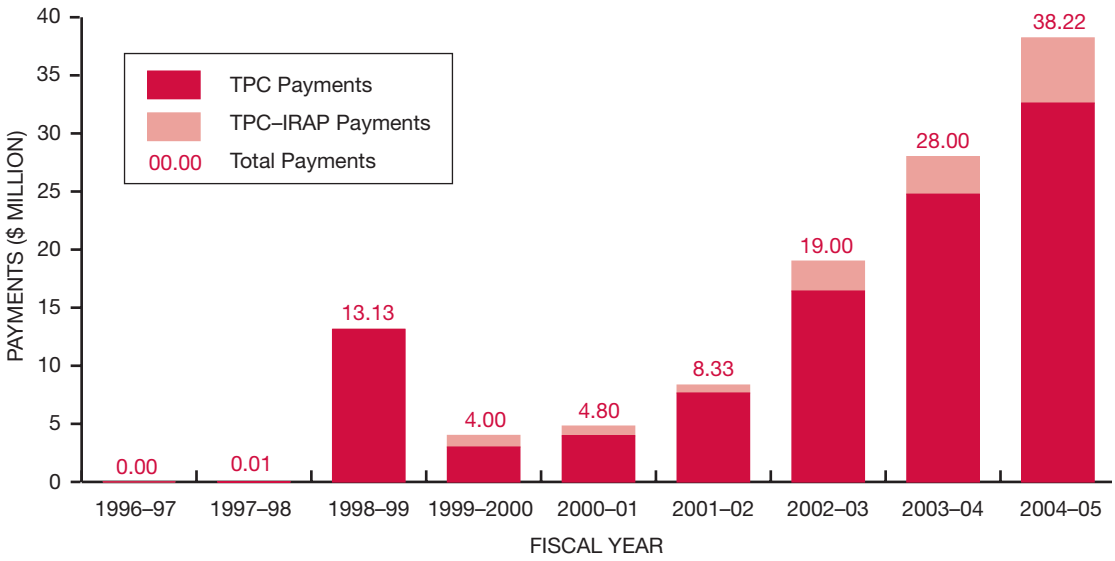
Projects advanced with TPC's investments have the prospect of commercial success, which TPC takes into account. Success in the marketplace, however, may not begin for several years. Depending on the project, commercial success may not achieve its full potential for 20 years or more, so the valuation of our portfolio payments will vary with markets and factors that affect the pace of innovation and adoption of technology.

Payments from projects that have completed the R&D or work phase and that are currently showing financial returns are continuing to grow.

In fiscal year 2004–2005, payments to TPC totalled $38.2 million (including $5.6 million from TPC–IRAP, but not including warrants* received), an increase of 36 percent over the previous year's level. The total cumulative payments as of March 31, 2005, amounted to more than $115.4 million; of this total, $101 457 356 came from TPC projects and $13 947 975 came from TPC–IRAP.

Acquiring warrants from private sector partners is one of the various payment options TPC uses in its investment strategy. Diversifying payment methods supports risk management and can generate additional returns for the Government of Canada.

Payments to TPC



Totals collected as of March 31, 2005 = $115.4 million.
Totals include TPC–IRAP investments.

Through forecasts of the market and of the likely pace of success of innovation in Canada, payment expectations are subjected to regular assessments and are amended to reflect the uncertainties and risks that characterize continuously changing market conditions.

As at the end of fiscal 2004–2005, the payment forecasts for 2005–2007 are:
2005–2006 = $52 576 000
2006–2007 = $76 697 000

Program Management Update

In 2004–2005, TPC undertook a number of changes to be more responsive to the needs of industry and to streamline operational processes. These changes were supported by program evaluation studies.

To capture a more comprehensive picture of the program's achievements, a performance measurement initiative is being developed that will focus on its broader public policy benefits.

Recognizing TPC as a key instrument supporting leading edge R&D, the Minister is reviewing the balance, scope and focus of TPC activities to ensure that they can provide optimum support for innovation in Canadian industry.

To improve its internal operations, TPC has established an audit function and an independent audit committee and has enhanced its already stringent audit plan. An integrated planning process has been adopted. Since TPC began reporting to the Operations Sector of Industry Canada in September 2004, implementation of our strengthened planning process is being aligned with theirs.

Performance tracking was automated by deploying new project performance systems. These included systems for measuring audit coverage, cash flow and project summary reporting.

As part of its operations, TPC responded to a total of 74 requests for information and documentation through the *Access to Information Act*. Although this was a reduction from the 93 requests received in 2003–2004, it is estimated that the volume of the records, consultations and staff involvement remained relatively the same.

Finally, in 2004–2005, TPC took a number of steps to educate its client base about their obligations to, and ensure compliance with, the *Lobbyist Registration Act* (LRA) and the use of contingency fees. With respect to client education, we have enhanced our website to highlight rules around lobbyists and contingency fees. We have implemented processes to send information letters at every stage of the TPC application process to clients reminding them of their obligations. We have improved our contractual agreements to more clearly identify TPC requirements on these issues.

In addition to client-focussed measures, we introduced a number of internal activities related to the LRA. These included a mandatory training program for all TPC staff, and the development of an enhanced process that requires client certification at each of the stages of the TPC application process.

This Year's TPC R&D Investments

In 2004–2005, contracts were signed for 31 R&D projects, valued at a total of $256.5 million.

Enabling Technologies

Three projects totalling $22.6 million.

Company	Project Description	Approved Contribution
CellFor Vancouver, British Columbia	CellFor's research project will develop and scale up a novel plant reproduction system for the selection and mass production of naturally occurring, genetically superior conifer seeds and seedlings.	$9.8 million
MIGENIX Inc. Vancouver, British Columbia	The project will further research and development of an antibiotic drug that preclinical trials have shown could be effective in treating several kinds of hospital-acquired infections.	$9.3 million
Quantiam Technologies Inc. Edmonton, Alberta	Quantiam will research and develop new nanotechnology-based coatings to be used in the production of olefins — the building blocks of plastics, textiles, consumer goods and other chemicals.	$3.6 million

Environmental Technologies

Four projects totalling $29.89 million

Company	Project Description	Approved Contribution
Cellex Power Products Richmond, British Columbia	Cellex's project will develop hydrogen fuel cell power units suited for use by industrial lift trucks such as forklifts. They are developing a hybrid fuel cell/battery technology to replace standard lead acid batteries.	$9.5 million
General Hydrogen (Canada) Corporation Richmond, British Columbia	This project will develop self-contained fuel cell power packs for industrial vehicles and associated process control and management modules.	$9 million
Magellan Aerospace Corp. Mississauga, Ontario	Magellan will develop innovative technology to reduce greenhouse gases and waste.	$2.3 million
Petrobank Energy and Resources Ltd. Calgary, Alberta	Petrobank will field demonstrate its new Thai™ (Toe-to-Heel Air Injection) heavy oil recovery process, which combines a vertical air injection well with a horizontal production well.	$9 million

Aerospace and Defence

24 projects for $203.95 million (including Supplier Development Initiatives).

Company	Project Description	Approved Contribution
Axys Technologies Inc. Sidney, British Columbia	Axys is developing advanced environmental and ocean monitoring technologies with enhanced real-time monitoring and improved forecasting ability for marine operations.	$1.5 million
EMS Technologies Canada Ltd. Ottawa, Ontario	EMS is developing satellite communications technologies to support broadband communications services over standard Internet protocols in aeronautical, portable, maritime and land-mobile applications.	$4.6 million
GasTOPS Ltd. Gloucester, Ontario	This investment will be used to further develop the company's MetalSCAN debris detection system for use in the F-35 JSF military aircraft.	$1.4 million
Héroux-Devtek Inc. Longueuil, Quebec	This project will focus on the design, development, fabrication, testing and certification of the landing gear system for the Joint Unmanned Combat Air System (J-UCAS) being developed for the United States Air Force and Navy.	$3.7 million
Héroux-Devtek Inc. Longueuil, Quebec	The second project consists of designing and developing components for the J-UCAS, and functional prototypes of door-locking mechanisms for the Joint Strike Fighter aircraft. The initiative will also include flight demonstrations and qualification testing and airworthiness certification activities.	$2.2 million
Honeywell ASC Inc. Mississauga, Ontario	This initiative will develop new electric power aerospace technologies. It targets future aerospace applications and will include greater integration of components through advanced software and hardware, and increased functionality and reliability.	$9.4 million

Aerospace and Defence (continued)

Company	Project Description	Approved Contribution
Integran Technologies Inc. Toronto, Ontario	Integran is developing nanotechnology-based coatings for the aerospace industry as an environmentally friendly and commercially viable alternative to the current hard-chrome plating process.	$3.4 million
Offshore Systems Ltd. North Vancouver, British Columbia	This project will advance the implementation of electronic charts into navigation systems and will integrate electronic geography into other applications of military command and control.	$3.8 million
Pratt & Whitney Canada Longueuil, Quebec	The company will conduct a series of research and development initiatives under its Advanced Capabilities and Technologies Program.	$72 million
Pratt & Whitney Canada Longueuil, Quebec	The company will conduct a series of research and development initiatives under its Pre-Competitive Engine Technology Program.	$93 million

Supplier Development Initiative

The following SMEs received assistance from the Aerospace and Defence Supplier Development Initiative (SDI). This three-year program was designed to help SMEs improve their technical, quality assurance and management systems or capabilities in order to better position them for growth beyond their current tier in the aerospace and defence supply chain. The SDI program concluded on March 31, 2005. During the three years in which it operated, this $30-million initiative provided assistance to 49 companies.

Company	Project Description	Approved Contribution
Alberta Aircraft Overhaul Ltd. [Hyperion Technologies Inc.] Calgary, Alberta	TPC's investment will allow the company to upgrade its professional accreditation and certification and its management information system, and also to install a computer-controlled, spray coating system.	$1 million
Apollo Microwaves Inc. Pointe-Claire, Quebec	The project to upgrade its operational capabilities will include an upgraded planning system, improved quality control and acquisition of specialized equipment.	$753 600
B-CON Engineering Inc. Ottawa, Ontario	The project will enable B-Con to develop new moulding techniques and tools using sapphire-based materials, enhancing their capabilities to produce large volumes of high-quality optic components.	$900 000
Dominis Engineering Ltd. Ottawa, Ontario	The investment will allow Dominis to become more efficient in its production of propellers and impellers by upgrading its CAD/CAM system, achieving the ISO 9001:2000 standard and acquiring a portable measurement system.	$428 734
E.T.M. Industries Inc. Renfrew, Ontario	The project to upgrade its moulding capabilities to optical quality could eventually allow E.T.M. to produce polymer-based, free-form optic components.	$192 400
Elisen Technologies Inc. Montréal, Quebec	Elisen's project consists of developing a specialized computer-based technical analysis and reporting system for use in the aerospace design industry.	$218 800
ExelTech Aero Inc. [3682986 Canada Inc.] Dorval, Quebec	This project will implement a specialized aircraft maintenance system, consisting of two connected information management systems.	$675 000

Supplier Development Initiative (continued)

Company	Project Description	Approved Contribution
Excentrotech Precision Inc. Woodbridge, Ontario	The project will include upgraded certifications and internal information technology systems, an advanced inspection machine and training for employees that will allow them to operate the new equipment and adopt "lean manufacturing" practices.	$498 300
Hyperion Technologies	[see Alberta Aircraft Overhaul]	
Interfast Inc. Toronto, Ontario	Interfast's project is to achieve ISO 14001 certification and also develop more efficient electronic systems to assist with planning, inventory management and document sharing with customers.	$925 125
MBM Tool & Machine Co. Ltd. Woodbridge, Ontario	MBM's project to upgrade its services includes achieving ISO 9001-2000 certification, obtaining Transport Canada approval to sell directly to airlines and starting a new service to test complex landing gear and flight actuators, plus building a new clean room.	$797 700
MDS-PRAD Technologies Corp. Saint-Laurent, Quebec	This project will enable the company to develop a quality assurance system that meets the requirements of the National Aerospace and Defence Contractors Accreditation Program.	$207 126
Minicut International Inc. Anjou, Quebec	Minicut will improve its manufacturing and business capabilities by implementing quality management systems and also developing a production planning system, a technical data transfer system and new manufacturing systems.	$735 600
NordTech Aerospace NTA Inc. Sainte-Foy, Quebec	NordTech is upgrading its productivity by acquiring a production management system that will also afford customers direct access to information concerning the progress of work on their orders.	$803 500
Sargent Aerospace Canada Inc. Montréal, Quebec	This project will upgrade Sargent's manufacturing by adopting an integrated management system and computer-assisted processes, plus an accredited quality control system.	$888 188

This Year's Hydrogen Early Adopters (h2EA) Investments

Four projects for $13.27 million

Company	Project Description	Approved Contribution
Ballard Power Systems Inc. Burnaby, British Columbia	This investment will support the integration, testing, validation and demonstration of a hydrogen-fuelled uninterruptible power supply (UPS) for buildings, telecommunications and server room backup, based on Ballard's fuel cell technology.	$2 million
Fuel Cell Technologies Ltd. Kingston, Ontario	Partnering with the University of Toronto and Ontario Power Generation Inc., the project will showcase the use of four 5kWe solid oxide hydrogen fuel cells in providing heating and power generation at a University of Toronto student residence.	$935 000
Hydrogenics Corporation Mississauga, Ontario	The project will demonstrate hydrogen fuel cell solutions for transportation, using hydrogen-powered delivery and utility vehicles and a refuelling facility at the Canadian National Exhibition site in Toronto.	$4.3 million
Sacré-Davey Innovations Inc. North Vancouver, British Columbia	Sacré-Davey Innovations is leading a three-company consortium working with Westport Innovations and Sacré-Davey Consultants. Working together, they are creating a demonstration project to show how a hydrogen fuel system can be established to power trucks and buses and even a car wash.	$6 million

Success Stories

Powering Up! Cellex Power Products Inc.

Today, lead acid batteries are used to power many lift trucks, golf carts, mining vehicles and other industrial utility vehicles. Cellex Power — a Canadian company — is hoping to change that with help from TPC.

These industrial batteries contain lead and acid and can weigh over 1000 kg, giving rise to workplace safety and recycling issues as well as logistical challenges. In contrast, hydrogen fuel cells offer an environmentally friendly, clean and sustainable power source alternative.

Cellex Power of Richmond, British Columbia, has recognized this opportunity and — through $9.5 million in funding assistance from TPC — is completing the R&D required to reduce the costs and improve the reliability, longevity, durability and performance of its hydrogen fuel cell power units for small industrial vehicle applications.

While initially focussed on battery replacement applications, in the longer term Cellex intends to expand and adapt its fuel cell power units for use in a variety of applications across the industrial and utility vehicle market, including some that currently use internal combustion engines.

Combining leading-edge R&D and a drive to continuously innovate, companies like Cellex Power are working hard to change the way Canadians power the future.

Fighting Infection, Saving Lives — MIGENIX Inc.

With the costs of health care rising, and the growing prevalence of drug-resistant, infectious bacteria, the need for effective infection treatment options has become a real concern for all Canadians. Through a $9.3 million investment from TPC, MIGENIX Inc. of British Columbia is working to provide a reliable, cost-effective and durable treatment solution.

It is estimated that national health-care costs due to antibiotic resistance total $700 million annually. Many strains of bacteria once treated with antibiotics are now resistant to conventional antimicrobial drugs. The result has been a limitation in the options available for treatment and an increase in the number of deaths due to infectious disease.

As a new-generation drug alternative, MIGENIX's lipopeptide-based drug derived from amphomycin — MX-2401 — represents a high degree of innovation and hope. Lipopeptides are derived from a family of antimicrobial agents active against aerobic and anaerobic Gram-positive bacteria and thus are effective in combatting a wide variety of infections. In addition, MX-2401 is expected to have a low likelihood of rapid development of resistance and a low likelihood of cross resistance.

It is expected that the first indication for MX-2401 would target complicated skin and skin structure infections, which include deep wounds, surgical incisions and diabetic foot ulcers. Promising a more effective treatment, more rapid recovery from infection and a longer-lasting antibiotic treatment option, the potential benefits for patients and for our health-care system are evident.

To See at Sea — Offshore Systems Limited

With maritime operations transporting goods and people across waterways increasing around the world, the need for improved navigation tools has never been greater. Add to this the potential for threats to the safety and security of Canadians from maritime sources as well as the need for an accurate and effective means of detecting, mapping and displaying what lies on and in our waterways.

Offshore Systems Limited (OSL) of North Vancouver, British Columbia, is responding to this critical need. Developing advanced technologies that will make Canadian — and international — military marine operations safer, Offshore is integrating high-performance mapping and imagery displays and is developing tools to enhance the identification of threats and obstacles on and in the water.

By converting paper charts to electronic ones, OSL delivers highly sophisticated digital navigation systems that enable ships to navigate more easily and accurately as well as to move faster and more securely with fewer groundings and collisions. Costs are reduced through decreased maritime incidents, and increased operational effectiveness. In addition, the ability to review and exchange these critical navigational data during military operations will enhance the interoperability of armed forces, thus improving their capacity to assess and respond to existing and emerging threats in our waterways. Finally, by providing electronic maps and navigational tools, OSL offers users paperless navigation.

On the leading edge of navigational mapping systems, OSL has committed itself to developing the navigational mapping tools that today's maritime environment demands. By providing innovative technologies, OSL is helping Canada's maritime sector successfully meet the challenges of the environment in which it operates, and is assisting the military in defending the safety and well-being of all Canadians.

Fuelling the Future — Hydrogenics Corporation

At the unveiling of Hydrogenics' HyLYZER™ hydrogen refueller at the Canadian National Exhibition (CNE) in August 2004, the audience recognized that the hydrogen fuel cell industry in Canada was taking an important step forward.

Through an investment made under the Hydrogen Early Adopters (h2EA) program, Hydrogenics and its consortia partners were unveiling a demonstration project that would highlight the capabilities of the fuel cell industry in Canada and the potential for early market adoption of hydrogen as a fuel source in several key industries, including fleet and light mobility transportation and backup power generation.

The Toronto HyLYZER at Exhibition Place is the city's first public hydrogen refuelling station. Capable of using electricity generated by the on-site wind turbine to produce hydrogen, the HyLYZER has been used to refuel a range of fuel cell-powered demonstration vehicles all powered by Hydrogenics' fuel cell power module technology. At the unveiling of the refuelling station at the 2004 CNE, these demonstration vehicles included a forklift, a John Deere commercial work vehicle and a GEM™ "neighbourhood" electric vehicle.

Starting in summer 2005, the refueller will service a small fleet of fuel cell-powered John Deere work vehicles to be used in daily operations at Exhibition Place. In addition, this hydrogen station may be called into service to refuel zero-emission Purolator Courier electric/fuel cell curbside delivery vans, such as the one going into service in summer 2005 in downtown Toronto, to demonstrate commercial fleet applications of hydrogen and fuel cell technology.

Through demonstration projects like this, Hydrogenics and its consortia partners — John Deere, Greenlight Power Technologies, Purolator, Bell and Emerson — are encouraging awareness and acceptance of this sustainable, renewable and potentially zero-emission fuel source in Canada, and are proving the capabilities of this growing industry.

For Canadians, the potential is limitless and the future is promising as these demonstrations prove the effectiveness of hydrogen and hydrogen fuel cells across industry, thus offering Canadians a viable green energy solution for the future.

Financial Statements

STATEMENT OF EXPENDITURES ($000)

(For the year ended March 31, 2005)

TECHNOLOGY PARTNERSHIPS CANADA	2004–2005	2003–2004
OPERATING		
TPC		
SALARY		
Regular salaries	7 339	7 380
Employee benefits	1 467	1 476
PWGSC accommodations	242	216
Total Salary	9 048	9 072
NON-SALARY		
Transportation and communications	335	513
Information	99	384
Professional and special services	1 757	2 274
Other	1 517	1 154
Total Non-Salary	3 708	4 325
Surplus of Operating	99	224
TPC Operating	12 855	13 621
IRAP–TPC		
SALARY		
Regular salaries	1 968	1 938
Employee benefits	394	388
NON-SALARY	789	825
IRAP–TPC Operating	3 151	3 151
TOTAL OPERATING	**16 006**	**16 772**
CONTRIBUTIONS		
Environmental Technologies	58 170	60 258
Enabling Technologies	49 775	57 667
Aerospace and Defence	181 250	173 670
Industrial Research Assistance Program (IRAP–TPC)	14 841	20 190
Sub-total Contributions	304 036	311 785
Contributions under sunsetted programs:		
Environmental Technology Commercialization Program (ETCP)	0	33
TOTAL CONTRIBUTIONS	**304 036**	**311 818**

STATUS OF CONTRIBUTION PORTFOLIO ($000)

TECHNOLOGY PARTNERSHIPS CANADA	ACTUAL 2004–2005	PLANNED SPENDING 2005–2006	2006–2007	2007–2008	2008–2009
TOTAL PROGRAM FUNDING:	300 000	300 000	300 000	300 000	300 000
Funding from National Research Council for IRAP–TPC	15 000	15 000	15 000	15 000	15 000
Allocation for Program Operations (1)	(16 006)	(16 426)	(16 494)	(16 530)	(16 530)
Funds reprofiled from previous years	63 885	38 224	11 172	0	0
Funds lapsed in 2004–2005 carried forward	(60 000)	0	60 000	0	0
Funds lapsed in 2004–2005 in excess of carry forward authority	(12 622)				
TPC repayments (2)	24 763	32 598	46 914	71 085	100 349
IRAP–TPC repayments (2)	3 235	5 613	5 613	5 613	5 613
Program reductions	(6 000)	(6 000)	(6 000)	(6 000)	(6 000)
Share of $1 billion reallocation	(4 900)	(15 100)	(39 800)	(40 000)	(40 000)
Share of Expenditure Review Reductions	0	(13 900)	(27 800)	(35 900)	(35 900)
Other adjustments (ARLU/Internal)	(3 319)	2 612	680	316	316
AVAILABLE CONTRIBUTION FUNDING	**304 036**	**342 621**	**349 285**	**293 584**	**322 848**
COMMITMENTS UNDER SUNSETTED PROGRAMS:					
Environmental Technology Commercialization Program (ETCP)	0				
TOTAL COMMITMENTS UNDER SUNSETTED PROGRAMS					
COMMITMENTS UNDER TPC as of March 31, 2005:					
Environmental Technologies	58 170	70 418	41 668	22 551	9 514
Enabling Technologies	49 775	56 664	33 726	50 874	20 049
Aerospace and Defence Industries	181 250	146 991	77 741	21 054	17 046
Industrial Research Assistance Program (IRAP–TPC) (3)	14 841	13 819	1 742	260	0
TOTAL COMMITMENTS UNDER TPC	**304 036**	**287 892**	**154 877**	**94 739**	**46 609**
TOTAL PORTFOLIO COMMITMENTS	**304 036**	**287 892**	**154 877**	**94 739**	**46 609**
TOTAL FUNDS AVAILABLE FOR NEW CONTRIBUTIONS IN FUTURE YEARS	**0**	**54 729**	**194 408**	**198 845**	**276 239**
FUNDS AVAILABLE FOR NEW TPC CONTRIBUTIONS		37 448	174 910	178 695	255 829
FUNDS AVAILABLE FOR NEW IRAP–TPC CONTRIBUTIONS		17 281	19 498	20 150	20 410

Note (1) Program Operations includes funds for TPC and IRAP–TPC, as well as administration of repayments.

Note (2) Figures represent amount collected or forecasted to be collected, in the previous year. Repayments collected in a given year are deposited in the Consolidated Revenue Fund, which are then made available to TPC the following year through its access to repayments authority. Contrary to repayment amounts listed in prior year Annual Reports/Year in Review, the figures above include the portion related to repayment administration.

Note (3) IRAP–TPC projects have a shorter disbursement phase than those of TPC, which in part would explain the relatively low future years commitments.

STATEMENT OF EXPENDITURES ($000)

(For the year ended March 31, 2005)

HYDROGEN EARLY ADOPTERS (h2EA) PROGRAM	2004–2005	2003–2004
OPERATING		
SALARY		
Regular salaries	287	433
Employee benefits	58	87
PWGSC accommodations	37	63
Total Salary	382	583
NON-SALARY		
Transportation and communications	37	78
Information	57	63
Professional and special services	98	341
Other	13	120
Total Non-Salary	205	602
Surplus of Operating	588	115
TOTAL OPERATING	**1 175**	**1 300**
CONTRIBUTIONS		
Contribution disbursements	2 811	–
TOTAL CONTRIBUTIONS	**2 811**	**0**

STATUS OF CONTRIBUTION PORTFOLIO ($000)

HYDROGEN EARLY ADOPTERS (h2EA) PROGRAM	ACTUAL 2004–2005	PLANNED SPENDING 2005–2006	2006–2007	2007–2008	2008–2009
TOTAL PROGRAM FUNDING:					
Funding for Hydrogen Early Adopters (h2EA) program	6 000	6 000	10 000	12 000	0
Hydrogen Early Adopters program funds reprofiled to future years	(300)	13 000	6 000	4 300	0
Hydrogen Early Adopters lapse in 2004–2005	(1 714)				
Allocation for Program Operations	(1 175)	(1 175)	(1 175)	(1 175)	0
AVAILABLE CONTRIBUTION FUNDING	**2 811**	**17 825**	**14 825**	**15 125**	**0**
COMMITMENTS as of March 31, 2005:	2 811	8 429	1 921	3 156	0
TOTAL FUNDS AVAILABLE FOR NEW CONTRIBUTIONS IN FUTURE YEARS	**0**	**9 396**	**12 904**	**11 969**	**0**