

**Natural Sciences and Engineering Research
Council of Canada**

**2010-11
Estimates**

Report on Plans and Priorities

Minister of Industry

Canada

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Section I – Overview of the Agency

Minister's Message

Our government is committed to positioning Canada to exit the current downturn quickly and emerge stronger and more competitive in the global economy. In doing so, Industry Canada and its Portfolio partners will continue to play their key roles in increasing the country's capacity to create jobs and economic growth — for next year and the next decade.

While the recession originated beyond our borders, it had real consequences for Canadians and Canadian business. And despite improving conditions, there is work to be done. In 2010, a major focus will be completing the stimulus measures of [Canada's Economic Action Plan](http://www.actionplan.gc.ca) (www.actionplan.gc.ca). Introduced in Budget 2009, the Plan's full effect will be felt in 2010–11, and its measures will help solidify the recovery.



Over this period, Industry Canada and its Portfolio partners will work with industries and sectors hit hardest by the recession. Initiatives will include activities to boost community economic development and to extend broadband infrastructure to underserved or unserved areas across the country. To build on the momentum gained through our past investments in science and technology, significant effort will be directed to shaping the knowledge-based economy.

Industry Canada will also focus on supporting business and industry to capitalize on emerging opportunities at home and abroad. Getting our economic frameworks right, through forward-looking policies, is central to ensuring Canada's place in the global marketplace. We remain committed to two-way trade and investment, which raises our capacity to create jobs and economic growth and provides for sustainable prosperity.

In 2010–11, the Natural Sciences and Engineering Research Council of Canada will build a competitive advantage in priority science and technology areas by training an increasing number of graduates with the skills needed for today's economy, creating strategic partnerships with the private sector, and providing the best Canadian scientists and engineers with the resources that allow them to develop as leaders in the global research community.

I will work with my colleagues, the private sector and other governments to advance the recovery and build the foundation for a strong, competitive economy.

It is my pleasure to present this year's *Report on Plans and Priorities* for the Natural Sciences and Engineering Research Council of Canada.

Tony Clement
Minister of Industry

Raison d'être

The vision of the Natural Sciences and Engineering Research Council of Canada ([NSERC](#)) is to make Canada a country of discoverers and innovators for the benefit of all Canadians. NSERC aims to maximize the value of public investments in research and development (R&D) and to advance prosperity and quality of life in Canada by supporting the creation and transfer of knowledge in the natural sciences and engineering (NSE) and by ensuring that people are trained to discover, develop and apply knowledge and technology.

Responsibilities

NSERC is a departmental corporation of the Government of Canada and was created in 1978. It is funded directly by Parliament and reports to it through the Minister of Industry. NSERC's [Council](#) is composed of the President and up to 21 other distinguished members selected from the private and public sectors. The elected Vice-President is the Chair of Council and of its Executive Committee. The Council is advised on policy matters by various standing committees. The President of NSERC is the Chief Executive Officer. Funding decisions are approved by the President on the basis of recommendations made by peer review committees.

In fiscal year 2010-11, NSERC will invest over \$1 billion in post-secondary research and training in the NSE. NSERC's budget represents 10 percent of the federal government's expenditures for science and technology (S&T), and 20 percent of all university R&D funding in the NSE.

Mandate

The functions of NSERC, based on the authority and responsibility assigned to it under the *Natural Sciences and Engineering Research Council Act* (1976-1977, c.24), are to:

- promote and assist research in the natural sciences and engineering, other than the health sciences; and
- advise the Minister in respect of such matters relating to such research as the Minister may refer to the Council for its consideration.

NSERC Quick Facts: 2010-11

President: Dr. Suzanne Fortier

Chair: The Honourable James Edwards

Budget: \$1.05 billion

Head Office: Ottawa, Ont.

Regional Offices:

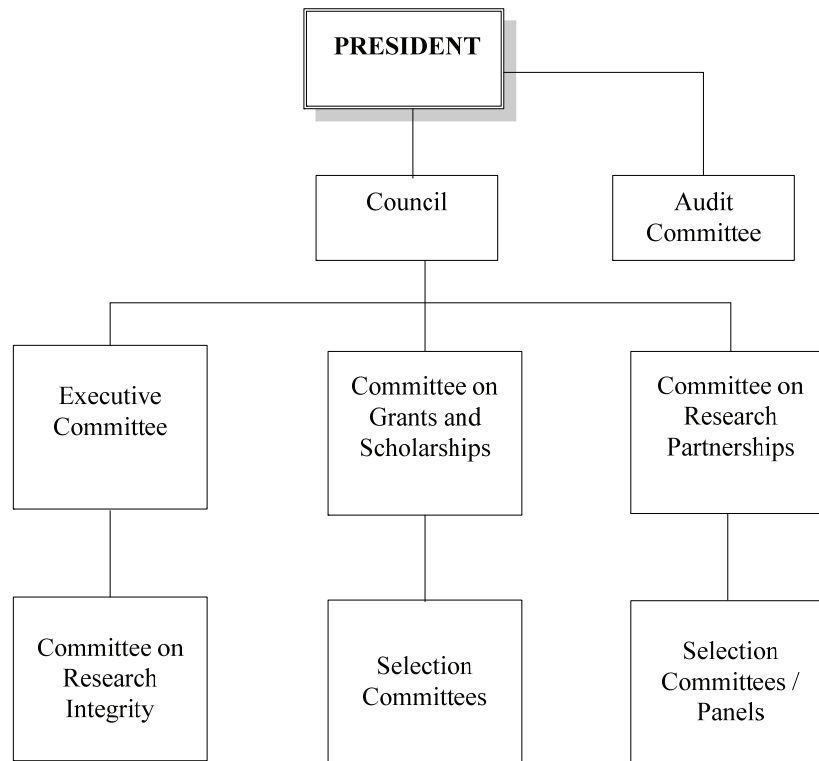
- Moncton, N.B.
- Montreal, Que.
- Winnipeg, Man.
- Vancouver, B.C.
- Mississauga, Ont.

Employees: 372 Full-time Equivalents (FTEs)

Reach:

- 28,000 students and postdoctoral fellows
- 12,000 university professors
- 1,500 Canadian companies
- over 90 universities and colleges

NSERC's Governance Structure



Strategic Outcomes

In order to achieve its mandate, NSERC works toward the following strategic outcomes:

- 1. People: Highly skilled science and engineering professionals in Canada** – *Building our human capital in the natural sciences and engineering by attracting and developing highly skilled science and engineering professionals.*
- 2. Discovery: High quality Canadian-based competitive research in the natural sciences and engineering** – *Unleashing the power of our researchers to create knowledge and opportunities.*
- 3. Innovation: Productive use of new knowledge in the natural sciences and engineering** – *Seizing strategic opportunities for our country and realizing the benefits of research in industry and society.*

NSERC's focus on people, discovery and innovation maps directly onto the [Federal S&T Strategy](#) which emphasizes building a People Advantage, a Knowledge Advantage and an Entrepreneurial Advantage for Canada. All of NSERC's funding relates to these advantages.

Program Activity Architecture

Strategic Outcomes

People

Highly skilled science and engineering professionals in Canada

Discovery

High quality Canadian-based competitive research in the natural sciences and engineering

Innovation

Productive use of new knowledge in the natural sciences and engineering

Program Activities

Promote Science and Engineering

Sub-Activities

- PromoScience
- Centres for Research in Youth, Science Teaching and Learning
- Prizes

Support Students and Fellows

Sub-Activities

- Undergraduate Student Research Awards
- NSERC Postgraduate Scholarships
- Alexander Graham Bell Canada Graduate Scholarships*
- Georges Philias Vanier Canada Graduate Scholarships*
- Postdoctoral Fellowships
- Industrial Research and Development Fellowships
- Industrial Research and Development Internships*
- Collaborative Research and Training Experience

Attract and Retain Faculty

Sub-Activities

- Canada Excellence Research Chairs*
- Canada Research Chairs*
- Industrial Research Chairs
- Chairs in Targeted Areas of Research
- University Faculty Awards

Fund Basic Research

Sub-Activities

- Discovery Grants
- Special Research Opportunity Grants
- General Support

Support for Research Equipment and Major Resources

Sub-Activities

- Research Tools and Instruments
- Major Resources Support Grants

Fund Research in Strategic Areas

Sub-Activities

- Strategic Partnerships
- Collaborative Health Research Projects*

Fund University-Industry-Government Partnerships

Sub-Activities

- Collaborative Research and Development Grants
- Research Partnership Agreements
- Networks of Centres of Excellence*
- Business-Led Networks of Centres of Excellence*

Support Commercialization

Sub-Activities

- Idea to Innovation Program
- College and Community Innovation Program*
- Centres of Excellence for Commercialization and Research*

* Programs involving two or more of the federal granting agencies (NSERC, Canadian Institutes of Health Research [CIHR], Canada Foundation for Innovation [CFI], Social Sciences and Humanities Research Council [SSHRC]).

Planning Summary

Financial Resources (\$ millions) [†]		
2010-11	2011-12	2012-13
\$1,050.69	\$1,036.35	\$1,010.93

[†] The \$40M decrease in planned financial resources between 2010-11 and 2012-13 is an outcome of the 2008 Strategic Review, temporary funding from [Budget 2009](#) (Canada's Economic Action Plan) which increased NSERC's budget between 2009-10 and 2011-12, and targeted funding scheduled to end in 2012-13. See the Expenditure Profile section of this report for further detail on NSERC's budget increases and decreases over this timeframe.

Human Resources (Full-time Equivalents – FTEs)		
2010-11	2011-12	2012-13
372	372	372

Strategic Outcome 1.0: People – Highly skilled science and engineering professionals in Canada					
Performance Indicator			Target		
Total researchers per thousand employed relative to other Organization for Economic Cooperation and Development (OECD) countries			Maintain top 10 world ranking (Canada was eighth in 2005 ¹)		
Program Activity ² (\$millions)	Forecast Spending 2009-10	Planned Spending			Alignment to Government of Canada Outcomes ³
		2010-11	2011-12	2012-13	
1.1 Promote Science and Engineering	\$6.59	\$5.66	\$5.54	\$5.54	Innovative and Knowledge-based Economy
1.2 Support Students and Fellows	\$168.79	\$166.08	\$157.07	\$143.78	
1.3 Attract and Retain Faculty	\$165.21	\$175.78	\$177.55	\$177.55	
Total Planned Spending for SO 1.0		\$347.52	\$340.16	\$326.87	

¹ OECD Main Science and Technology Indicators, Volume 2009/1

² For program activity descriptions, please access the Main Estimates online at <http://www.tbs-sct.gc.ca/est-pre/estime.asp>

³ While outcomes of the activities supported can affect several of the Government of Canada outcomes such as strong economic growth, income security and employment for Canadians, a clean and healthy environment, healthy Canadians with access to quality health care, and safe and secure communities; “Innovative and Knowledge-based Economy” is most appropriate to link NSERC's resources and results.

Strategic Outcome 2.0: Discovery – High quality Canadian-based competitive research in the natural sciences and engineering					
Performance Indicator			Target		
Average number of times that Canadian papers in the NSE are cited by other researchers (Average Relative Citation factor of Canadian publications in the NSE – comparison with other countries)			Maintain top eight world ranking (Canada was fifth among G8 countries in 2007 ⁴)		
Program Activity (\$millions)	Forecast Spending 2009-10	Planned Spending			Alignment to Government of Canada Outcomes
		2010-11	2011-12	2012-13	
2.1 Fund Basic Research	\$364.98	\$356.43	\$352.84	\$351.94	Innovative and Knowledge-based Economy
2.2 Support for Research Equipment and Major Resources	\$40.11	\$38.49	\$36.53	\$26.08	
Total Planned Spending for SO 2.0		\$394.92	\$389.37	\$378.02	

Strategic Outcome 3.0: Innovation – Productive use of new knowledge in the natural sciences and engineering					
Performance Indicator			Target		
Percentage growth in the number of partner companies annually			Greater than five percent per year		
Program Activity (\$millions)	Forecast Spending 2009-10	Planned Spending			Alignment to Government of Canada Outcomes
		2010-11	2011-12	2012-13	
3.1 Fund Research in Strategic Areas	\$124.22	\$134.00	\$135.60	\$135.52	Innovative and Knowledge-based Economy
3.2 Fund University-Industry-Government Partnerships	\$110.44	\$107.57	\$104.87	\$104.65	
3.3 Support Commercialization	\$44.47	\$40.60	\$40.79	\$41.45	
Total Planned Spending for SO 3.0		\$282.17	\$281.26	\$281.62	

⁴ Observatoire des sciences et des technologies, 2007.

Strategic Outcome 4.0: Internal Services				
Program Activity (\$millions)	Forecast Spending 2009-10	Planned Spending		
		2010-11	2011-12	2012-13
4.1 Internal Services [‡]	\$28.61	\$26.08	\$25.56	\$24.42

[‡] Internal Services include activities and resources that apply across NSERC. These do not include activities and resources provided for specific programs.

Total Planned Spending	\$1,050.69	\$1,036.35	\$1,010.93
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Contribution of Priorities to Strategic Outcomes

Operational Priorities			
Priority 1. People Advantage: Inspire new generations of students to pursue careers in science and engineering, and provide them with the means to develop their full potential.			
Type	Ongoing	Link to Strategic Outcomes	1.0 People
<p>Why this is a priority</p> <ul style="list-style-type: none"> To build a stronger culture of science and innovation in our country and to encourage young people to study science and engineering, a need identified in the Federal S&T Strategy; To ensure Canada has a supply of highly qualified people (HQP) by supporting university students and fellows during their training in research and by providing them with opportunities to develop professional, job-ready skills and to experience enriched and varied research environments; and To position Canada as a destination of choice for top foreign students and researchers as many foreign students will elect to stay in Canada at the end of their studies. <p>Plans for meeting the priority</p> <ul style="list-style-type: none"> Identify opportunities to streamline and integrate the delivery of the Canada Graduate Scholarships (CGS) with SSHRC and CIHR; (New) Make efforts to increase available support for postdoctoral fellows to attract the world's top talent to conduct research in Canada, for example, through the Collaborative Research and Training Experience (CREATE) program or the Discovery Accelerator Supplements; (New) Partner with the National Research Council Industrial Research Assistance Program (NRC-IRAP) to create opportunities to place more Industrial Research and Development Fellowships (IRDF) candidates with Canadian small and medium enterprises (SMEs); (New) Review NSERC's suite of scholarship and fellowship programs to ensure optimal results in relation to the evolving environment; (New) Enable more students to gain research experience in industry while undertaking advanced studies in Canada; (Ongoing with new elements) and Implement the strategies of <i>Budget 2009</i> (Canada's Economic Action Plan) to further develop a highly skilled workforce by promoting the training of highly qualified personnel to meet the needs of Canada's knowledge-based economy. (Ongoing with new elements) 			

Priority 2. Knowledge Advantage: Fuel the advancement of knowledge in science and engineering and ensure that Canadian scientists and engineers can be leaders and key players in a global knowledge economy.			
Type	Ongoing	Links to Strategic Outcomes	1.0 People 2.0 Discovery
Why this is a priority			
<ul style="list-style-type: none"> To ensure that Canada strives for excellence in developing and maintaining the capacity to conduct world-class research in the broad areas of NSE; To seed creativity that will become future innovation; and To capitalize on benefits arising from Canadians leading or participating in international collaborations. 			
Plans for meeting the priority			
<ul style="list-style-type: none"> Raise the bar of excellence and creativity by increasing the competitiveness of the Discovery Grants (DG) program to provide the opportunity for significant increases for those with superior proposals; (New) Fully implement the new peer review structure by replacing the 28 grant selection committees with 12 broader Evaluation Groups to reflect the evolving research environment (e.g. multidisciplinary research); (Previously committed to, with new elements) Continue to implement the expansion of the Discovery Accelerator Supplements (DAS) for researchers who can capitalize on research breakthroughs, particularly in the priority areas identified in the Federal S&T Strategy; (Previously committed to) and Enable new faculty with high research potential to firmly launch their research programs and realize their creative potential as competitive contributors to Canada's research, research training and innovation base. 			
Priority 3. Entrepreneurial Advantage: Connect and apply the strength of the academic research system to addressing the opportunities and challenges of building prosperity for Canada.			
Type	Ongoing	Link to Strategic Outcomes	3.0 Innovation
Why this is a priority			
<ul style="list-style-type: none"> To stimulate business investment in R&D in Canada. Business investment in R&D in Canada is low relative to other OECD countries with the majority of private sector R&D investment in Canada being concentrated in a small number of very large companies. To enable innovation to enhance the productivity of Canadian industry. Canadian industry has a productivity gap with other leading nations, one that can partly be addressed through innovation⁵. To connect Canada's research strength to industry to promote innovation and prosperity in Canada. Canada ranks first in the G8 for R&D performed in the higher-education sector as a percentage of Gross Domestic Product (GDP)⁶. Innovation and prosperity in Canada can be enhanced by more effectively connecting this research strength to industry, particularly in areas of strategic importance. 			

⁵ Recent analyses and strategies the [Federal S&T Strategy \[2007\]](#), the [Science and Technology Innovation Council \[STIC\] State of the Nation Report \[2008\]](#), the [Council of Canadian Academies \[CCA\] Innovation and Business Strategy: Why Canada Falls Short \[2009\]](#) indicate that Canada needs to better leverage its R&D and accelerate innovation and that public-private R&D partners will help achieve this goal.

⁶ Government of Canada Science and Technology Data – 2007 (March 2009)

Plans for meeting the priority

- Implement [NSERC's Strategy for Partnerships and Innovation \(SPI\)](#)⁷ as follows: (New)
 - Build sustainable relationships by facilitating interactions between industry and post-secondary researchers to create a strong foundation for future collaborations; (Ongoing, with new elements)
 - Streamline NSERC's existing innovation-oriented policies and programs to increase the success of academic-industry collaborations and their productivity; and develop new approaches to ease business access to the expertise and specialized facilities within colleges and universities; (Ongoing, with new elements)
 - Connect people and skills by advancing "innovation skills" in students and making it more attractive for innovating companies, particularly small companies, to involve students in their business and hire graduates; (Ongoing, with new elements)
 - Focus on national priorities by supporting large-scale research groups seizing exceptional opportunities to advance solutions to some of Canada's most challenging economic, environmental and societal problems; (New)
 - Focus NSERC's five regional offices on facilitating industry-academic partnerships; (New)
- Continue to implement the industry-driven strategies addressed in [Budget 2008](#) aimed at the following sectors: automotive, manufacturing, forestry, and fisheries; explore means to increase and sustain existing partnerships across all sectors during the current economic situation; (Previously committed to) and
- Continue to increase the number of partnerships in priority areas identified in the Federal S&T Strategy: environment, energy, health and related life science technologies, and information and communication technology (ICT).

Management Priorities

Priority 4. Demonstrate NSERC's accountability and how the results of its investments in Canadian research and training benefit Canadians.

Type	Ongoing	Links to Strategic Outcomes	1.0 People 2.0 Discovery 3.0 Innovation
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Why this is a priority

- To demonstrate accountability and stewardship in the management of Canada's investments in S&T;
- To increase effectiveness and client service; and
- To measure the results and impacts of the government's investments.

Plans for meeting the priority

- Continue to develop NSERC-Stats, NSERC's new system to track investments including those in priority areas, present an integrated picture of Canada's investments in postsecondary R&D and measure Canada's performance in relation to international benchmarks; (New)

⁷ NSERC, among the largest federal funders of public-private R&D partnerships, has launched a new Strategy for Partnerships and Innovation to enhance the quality and quantity of industry-academic research partnerships and accelerate innovation so that Canada realizes more value from the government's investment in post-secondary R&D capabilities.

<ul style="list-style-type: none"> • Ensure compliance with all new policies and frameworks (i.e., Internal Audit, Evaluation, Management Accountability Framework [MAF], Policy on Transfer Payments); • With SSHRC and CIHR, revise the Tri-Council Policy Statement: Integrity in Research and Scholarship (TCPS-I) in consultation with universities and colleges; (New) and • With CIHR, SSHRC and CFI, work to improve reporting and integrated measurement of results and impacts of investments in post-secondary research and advanced training. (Previously committed to) 			
Priority 5. Increase visibility of Canadian research			
Type	Ongoing	Links to Strategic Outcomes	1.0 People 2.0 Discovery 3.0 Innovation
<p>Why this is a priority</p> <ul style="list-style-type: none"> • To demonstrate value of federal government investment in science and technology to Key Opinion Leaders (KOLs) and to demonstrate to industry that there is value in partnering with federally supported researchers to achieve mutually beneficial objectives. <p>Plans for meeting the priority</p> <ul style="list-style-type: none"> • Showcase the science and engineering community to KOLs, including federal government decision makers, key media, industry partners and influential business leaders; (New) • Increase Canada’s awareness of groundbreaking research partnerships that fuel Canada’s knowledge-based economy; (Previously committed to, with new elements) and • Launch e-Bulletin to increase awareness in industry about benefits of collaborating with academia. (New) 			

Risk Analysis

NSERC’s strategic and operational priorities are managed and are monitored according to NSERC’s integrated Management and Accountability Framework (MAF) and Risk-based Audit Framework (RBAF). In the development of the MAF-RBAF, a number of different types of risks were identified and four risks are considered significant. These four significant risks, which may impact NSERC’s plans and priorities over the reporting period, are summarized below:

Risk	Mitigation
Ability to meet the needs for support, remain relevant and implement strategic decisions that align with the evolving context.	NSERC ensures the relevance of its activities and investments by aligning very closely with the priorities of the Federal S&T Strategy. NSERC actively consults stakeholders through various governance and advisory committees. NSERC conducts reviews, surveys and consultations to keep abreast of issues, opportunities and challenges and to ensure the continued effectiveness of its progress. For example, NSERC’s Strategy for Partnerships and Innovation (SPI) was developed after extensive consultations with hundreds of representatives of industry, government and academia. An advisory committee of leaders from these sectors was mobilized to help develop the Strategy based on what we learned from the consultations.

<p>Ability of the peer review process to operate efficiently and effectively.</p>	<p>NSERC's funding decisions are informed by a rigorous peer review process to foster excellence and ensure that the research supported is gauged against the highest international standards. The blue-ribbon committee that conducted the International Review of the Discovery Grants Program concluded that the program "is an unusually effective and efficient method of research support, particularly in the Canadian context." As recommended, NSERC implemented changes to its peer review of Discovery Grants to ensure emphasis on merit and impact of contribution to research and to training of highly qualified people. This has enabled a more dynamic system that raised the bar of excellence.</p>
<p>Ability to ensure integrity in research.</p>	<p>NSERC grant recipients must abide by the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS) which outlines guidelines for the ethics of research involving humans. In order to be eligible for NSERC support, institutions must develop an institutional human research ethics policy and institutional guidelines and procedures to review the ethics of research involving humans that, as a minimum, meets the requirements set out in the TCPS. Institutions may release research funds to researchers only after an Institutional Research Ethics Board (REB) has approved the research.⁸ Reflecting the agencies' commitment to make the TCPS a "living" document, in 2001 NSERC, together with SSHRC and CIHR, created the Interagency Advisory Panel on Research Ethics (PRE or the Panel), to provide independent, multidisciplinary advice on the evolution and use (interpretation, education, and implementation) of the TCPS. NSERC, together with SSHRC and CIHR, conducted a review of the TCPS policy framework and process, and identified improvements that can be made.⁹ The second edition of TCPS will be released in the fall of 2010. NSERC will be implementing these improvements over the coming year.</p>
<p>The capability of NSERC to ensure that the administration of its programs operates efficiently.</p>	<p>NSERC is currently making progress in developing the Enterprise Awards Management System (EAMS) to better manage the applications and awards process, and eventually replace a paper-based system. In addition NSERC, together with SSHRC and CIHR, have a Memorandum of Understanding with the institutions that administer funds from the federal granting agencies on behalf of researchers, to ensure that the funds entrusted to NSERC are well managed and are used effectively, economically and in the best interest of the research supported by the award.</p>

NSERC continues to assess and update its risk profiles to ensure that they remain relevant. Periodic reviews are fundamental to ensure that the risk assessment process is adequately robust in highlighting key risk areas.

In addition, NSERC experiences risks related to the current economic situation that are integral to all of its programs and that could influence plans, priorities, performance and decision making over the three-year reporting period. For example, the reduced capacity

⁸ As outlined in Schedule 2 of the agencies' Memorandum of Understanding on the Roles and Responsibilities in the Management of Federal Grants and Awards (MOU)

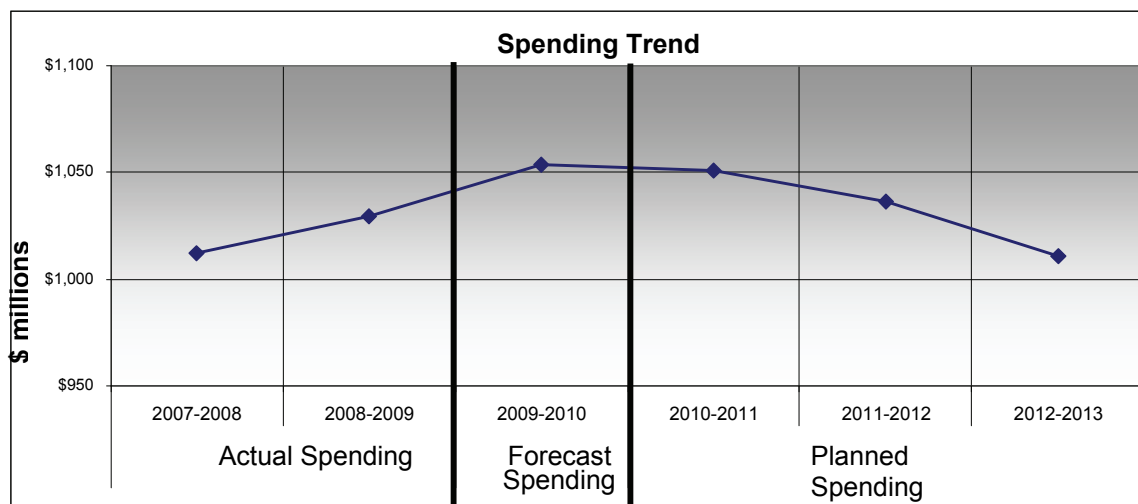
⁹ See the [Summative Evaluation of the Interagency Advisory Panel and Secretariat on Research Ethics](#) and the accompanying [Management Response](#) for details of the review and improvements identified by management.

of Canadian industry to engage in R&D in times of economic uncertainty may compromise NSERC's ability to deliver on partnership programs that require contributions from industrial partners. NSERC's Strategy for Partnerships and Innovation serves as a framework to reduce further risks for industry to keep them engaged. A risk in launching our new Strategy for Partnerships and Innovation is in the modest amount of resources available at this time. The mitigation strategy is an approach to SPI that is scalable; progress toward achieving the SPI goals will be achieved through pilots and the internal reallocation of resources.

While NSERC administers a significant budget, the Council's overall risk level compared to other government entities is considered low, in terms of continuity of government operations and the maintenance of services to, and protection of interests of, the Canadian public. This assessment of risk level is further supported by the *Blue Ribbon Panel report on Grants and Contributions* which stated, "The record of performance by the federal research granting agencies, including CFI, has been deemed high by international standards. The two councils and CIHR have successfully managed their own research portfolios, using a rigorous system of oversight, including detailed memorandum of understanding signed by all recipient institutions and regular financial monitoring visits of recipient universities."

Expenditure Profile

For the 2010-11 fiscal year, NSERC plans to spend \$1,050.7 million to meet the expected results of its program activities and contribute to its strategic outcomes. The figure below illustrates NSERC's spending trend from 2007-08 to 2012-13.



Spending increase:

From 2007-08 to 2009-10, NSERC's total budget increased as a result of the following new investments:

- \$34 million increase to core funding for collaborative research that directly contributes to the knowledge and innovation needs of Canada's automotive, manufacturing, forestry and fishing industries (*Budget 2008*);
- \$19.1 million in 2008-09 and 2009-10, respectively, for the Centres of Excellence for Commercialization and Research (CECR) program (*Budget 2007*);
- \$7.0 million in 2008-09 and \$7.4 million in 2009-10 for the Business Led Networks of Centres of Excellence (BL-NCE) program (*Budget 2007*);
- \$4.2 million in 2008-09 and \$6.9 million in 2009-10, for the Industrial R&D Internships (IRDI) program (*Budget 2007* and *Budget 2009*);
- \$2.1 million in 2008-09 and \$14.6 million in 2009-10, for the College and Community Innovation (CCI) program (*Budget 2007*);
- \$14 million in 2009-10 for a temporary expansion of the Canada Graduate Scholarships (CGS) program (*Budget 2009*); and
- \$11 million in 2009-10 for the Canadian Light Source (*Budget 2008*).

Spending decrease:

In 2008, NSERC conducted a comprehensive review of the funding, relevance and performance of all its programs. The conclusions of this Strategic Review were accepted by Treasury Board and reflected in *Budget 2009*. As a result of this exercise, NSERC's core funding will decline by \$11.2 million in 2009-10, \$23.3 million in 2010-11 and \$34.7 million in subsequent years (relative to 2008-09 spending levels).

A second reason for the spending decrease observed since 2009-10 is that the BL-NCE program will cease to have funding in 2012-13. The BL-NCE program will have administered the \$34.8 million over five years that was earmarked for this program in *Budget 2007* and administered through NSERC.

Also, the last of the \$38.5 million received by NSERC as part of Canada's Economic Action Plan for increased CGS and IRDI programs will be spent in 2010-11.

Voted and Statutory Items Displayed in the Main Estimates

(\$ millions)

Vote # or Statutory Item	Truncated Vote or Statutory Wording	2009-2010 Main Estimates	2010-2011 Main Estimates
70	Operating expenditures [¥]	\$41.39	\$42.51
75	Grants	\$922.90	\$973.26
(S)	Contributions to employee benefit plans	<u>\$4.10</u>	<u>\$4.42</u>
	Total for Agency	\$968.39	\$1,020.19

¥ The authorities for the operating budget in the Main Estimates increased in 2010-11 in the amounts of \$1.4M and \$0.7M as a result of a new compensation agreement and *Budget 2008*, respectively. They also decreased by \$1.0M in 2010-11 as a result of the 2008 Strategic Review. The net result is an increase of \$1.12M.

NSERC's administration costs are just over four percent of its total budget and this percentage is decreasing. This is low compared to similar agencies in Canada and around

the world. NSERC is able to maintain this low level of overhead expenses by extensively using volunteer committee members and peer reviewers, obtaining agreement from Canadian universities that receive NSERC funds to participate in their administration, and sharing the costs of common administrative services through a successful partnership with SSHRC.

Section II – Analysis of Program Activities by Strategic Outcome

Strategic Outcome 1.0 – People: Highly skilled science and engineering professionals in Canada

Successfully conducting research and putting new knowledge to work requires a pool of highly qualified people. Universities offer the best training ground for the next generation of researchers—our human capital—whether they ultimately work in industry, in post-secondary education or in the public sector. NSERC’s people-oriented programs promote science and engineering to a diverse audience, support undergraduate, graduate and doctoral research experience and training in academic and industrial settings, and attract highly qualified faculty to our universities and into industry-university chairs.

Program Activity 1.1 Promote Science and Engineering					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
1	\$5.66	1	\$5.54	1	\$5.54
Program Activity Expected Results		Performance Indicators		Targets	
Student interest in research in the sciences, math and engineering is encouraged		Percentage of science promotion projects that successfully complete the planned activity		Greater than 80 percent	

Program Activity Summary: To ensure that Canada has an ongoing supply of future discoverers and innovators, NSERC encourages interest in science and engineering in Canadian youth and in the broader population.

Subactivities include:

- [PromoScience](#)
- [Centres for Research in Youth Science Teaching and Learning \(CRYSTAL\)](#)
- [Prizes](#)

Planning Highlights:

Through **PromoScience** grants, NSERC assists approximately 120 community-based organizations, museums, science centres, non-government organizations and universities, to promote science and engineering to youth. Program resources are comparatively small and effectively leveraged.

NSERC **prizes** recognize and highlight Canadian achievements in training, research and innovation. Prizes are awarded for example for outstanding achievements by doctoral students and for innovations resulting from university-industry partnerships.

Benefits to Canada:

Canada is ranked 21st among OECD countries in the number of science and engineering degrees as a percentage of new degrees¹⁰. This speaks directly to the need, identified in the Federal S&T Strategy, for building a stronger culture of science and innovation in our country and for encouraging young people to study science and engineering.

Program Activity 1.2 Support Students and Fellows					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
24	\$166.08	24	\$157.07	24	\$143.78
Program Activity Expected Results		Performance Indicators		Targets	
A supply of highly-qualified Canadians with leading-edge scientific and research skills for Canadian industry, government and universities		Percentage of students supported that are actively employed in Canada after graduation		75 percent	
		Average completion rates among NSERC award recipients vs. general NSE student population		Completion rate 10 percent greater than NSE student population	

Program Activity Summary: This program activity supports the training of highly qualified people through programs of scholarships, fellowships and student stipends. Support is provided at all levels of university studies from undergraduate awards for four-month research terms to postdoctoral fellowships in academia or industry.

Subactivities include:

- [Collaborative Research and Training Experience \(CREATE\)](#)
- [Undergraduate Student Research Awards \(USRA\)](#)
- [NSERC Postgraduate Scholarships \(PGS\)](#)
- [Alexander Graham Bell Canada Graduate Scholarships \(CGS\)](#)

¹⁰ [Science and Technology Innovation Council \(STIC\) State of the Nation Report \(2008\)](#), Talent Indicators Assessment.

- [Georges Philias Vanier Canada Graduate Scholarships \(Vanier CGS\)](#)
- [Postdoctoral Fellowships \(PDF\)](#)
- [Industrial Research and Development Fellowships \(IRDF\)](#)
- [Industrial Research and Development Internships \(IRDI\)](#)

Planning Highlights:

Direct funding to students in the form of **Graduate Scholarships and Postdoctoral Fellowships** provides incentives and support to the best and brightest of the next generation of discoverers and innovators for the continuation of their training. Through its competitive scholarship and fellowship programs and through stipends paid from research grants, NSERC supports undergraduates (10,709), graduate students (15,142) and postdoctoral fellows (2,136). In total, over 28,000 students are supported by NSERC. In recognition of the fact that different activities and settings offer unique learning experiences, students are offered opportunities to gain exposure to industrial as well as academic environments.

The **Georges Philias Vanier Canada Graduate Scholarships Program** awards top tier scholars who have achieved exceptional success in their studies and will pursue a doctoral program in a Canadian university. Unlike the Alexander Graham Bell CGS, both Canadian and international doctoral candidates are eligible to receive Vanier CGS awards to study at Canadian universities. In 2009, 54 doctoral students pursuing studies in the natural sciences and engineering received Vanier CGS awards. Of these, 16 were awarded to foreign citizens who would not be eligible for the Alexander Graham Bell CGS.

Vanier CGS and Alexander Graham Bell CGS award recipients who are Canadian citizens or permanent residents in Canada are eligible to receive [Michael Smith Foreign Study Supplements](#) of up to \$6,000 for a period of research study abroad. Thirty-nine doctoral and 12 masters students received Foreign Study Supplements in 2008.

NSERC will complete the ramping up of the Vanier CGS program and Foreign Study Supplements maximizing student mobility and the international elements of our Scholarships and Fellowships programs.

The **Collaborative Research and Training Experience** program supports the training of teams of outstanding students and postdoctoral fellows through innovative programs that encourage collaborative and integrative approaches to address significant scientific challenges, and facilitate the transition of new researchers from trainees to productive employees in the Canadian workforce. CREATE also encourages acquisition and development of important professional skills (to complement the trainees' qualifications and technical skills), student mobility and interdisciplinary research. In 2008-09, 20 CREATE projects were awarded at universities across Canada. The projects focus on a variety of research areas, including nanotechnology, aquaculture, biomedical engineering and biodiversity. NSERC will enhance the CREATE program with increased focus on "innovation ready" skills, an important element for fulfilling NSERC's Strategy for Partnerships and Innovation.

The **Industrial R&D Fellowships Program** provides financial contributions that support the most promising recent doctoral graduates to engage in research and development in the private sector and with not-for-profit and non-governmental organizations. In 2008-09, the IRDF program awarded 80 fellowships. This year, NSERC will partner with NRC-IRAP in a pilot program to create opportunities to place more **Industrial R&D Fellowship** candidates with Canadian SMEs.

NSERC regularly monitors the effectiveness of its scholarships programs and the needs of all sectors of the research and research user communities. Success is measured by a number of indicators, including the percentage of supported students finding gainful employment in Canada after their studies, the average salary of scholarship recipients versus the general population a few years into their career, and the average degree completion rates among recipients versus the general natural sciences and engineering student population. Continuation of this monitoring plan will enable effective monitoring of the new programs and inform the planned review of NSERC's suite of scholarships and fellowships programs.

Lessons Learned:

A recent evaluation of the PGS and CGS programs recommended continued funding. It was generally supportive of these scholarship programs but identified the need to consider harmonizing them. NSERC, together with SSHRC and CIHR, will analyze the potential to streamline the CGS delivery process with a view to achieve greater harmonization.

NSERC will also review its suite of scholarship and fellowship programs to ensure optimal results in relation to the evolving environment, including the need for international mobility that was identified in the evaluation of the PGS and CGS programs. NSERC will make efforts to increase available support for postdoctoral fellows to attract the world's top talent to conduct research in Canada, for example through the Collaborative Research and Training Experience (CREATE) program.

Canada's Economic Action Plan:

Canada's Economic Action Plan which was implemented in [Budget 2009](#) provided new funding to temporarily expand the CGS and IRDI programs.

As a result of the new CGS funding, NSERC awarded 200 additional doctoral scholarships, effective for up to three years each in 2009-10, and an additional 400 one-year master's level scholarships in 2009-10. NSERC will also award 400 one-year master's level CGS awards in 2010-11 for a total of 1000 awards over three years as a result of the CGS stimulus funding. This is in addition to the 350 CGS doctorate and 700 CGS master's scholarships awarded by NSERC each year before the stimulus funding.

NSERC received \$3.5 million over two years for the temporary expansion of the IRDI program in order to provide an additional 600 graduate internships over two years thus reaching a total target of 1,000 internships per year. Accelerate Canada was awarded \$2.5 million of the \$3.5 million as supplement to their current grant to provide an additional 350 internships in 2009-10, for a total of 1000 internships. In addition, following a

satisfactory performance review, their award is being extended by one year using the remaining \$1 million from *Budget 2009* and the original \$5.8 million from *Budget 2007*, to deliver 1000 internships in 2010-11.

Benefits to Canada:

Student scholarship programs are a vital part of NSERC’s efforts to ensure that Canada produces a sufficient number of people with advanced degrees in science and engineering. This is essential to our future competitiveness, as is pointed out in the Federal S&T Strategy and *Budget 2009*. Industrial R&D interns and fellows will undertake research that enhances the innovation capacity of the host firms. Improved harmonization of NSERC’s suite of scholarship and fellowship programs will better supply Canada with highly qualified people with advanced degrees in the natural sciences and engineering. By accessing international scientific research and training, the Vanier CGS award holders who receive a Foreign Study Supplement will contribute to strengthening the potential for collaboration between Canadian universities and other affiliated research institutions outside of Canada.

Program Activity 1.3 Attract and Retain Faculty					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
11	\$175.78	11	\$177.55	11	\$177.55
Program Activity Expected Results		Performance Indicators		Targets	
Enhanced research capacity in science and engineering		Number of foreign-educated new applicants to NSERC's Discovery Grants program		Greater than 100 per year	
		Number of NSERC-funded professors leaving the country		Less than 100 per year	
		Number of industrial partners supporting and participating in industrial chairs		Five percent growth per year	
Canada Research Chairs Database ; NSERC Chairholders Database					

Program Activity Summary: This program activity aims to attract and retain faculty in Canada. Faculty Chair holders in the natural sciences and engineering fulfil three crucial functions — they build capacity in areas relevant to industry, they conduct leading-edge research and they ensure that students receive the best possible training.

Subactivities include:

- [Canada Excellence Research Chairs \(CERC\)](#)
- [Canada Research Chairs \(CRC\)](#)
- [Industrial Research Chairs \(IRC\)](#)
- [Chairs in Targeted Areas of Research](#)

Planning Highlights:

Research chairs have proven to be a very effective tool for attracting world-class researchers and retaining the best in Canada. The **Canada Research Chairs** program has provided universities with the means to attract or retain up to 2,000 such researchers. Nine hundred Chairs are allocated in the NSE. Thirty-one percent of chairholders were recruited from outside of Canada.

NSERC is involved in the management and governance of the new **Canada Excellence Research Chairs** program announced in *Budget 2008* and launched in September 2008. This tri-agency program will fund up to 20 Chair positions from among 36 proposals from 17 universities. The announcement of the results of the first competition are anticipated for the spring of 2010. All proposals must meet the highest standards of research excellence, and the selection process involves a rigorous multi-level merit review process that engages prominent Canadian and international experts and distinguished Canadian and international leaders. NSERC will provide up to \$10 million over seven years to support CERC holders in the natural sciences and engineering fields to establish ambitious research programs in Canada.

NSERC's Chairs Programs, particularly its **Industrial Research Chairs** program, support long term academic-industry collaborations and build research and training capacity in areas of need for industry. NSERC's IRC program is one of the key platforms on which it is building its new Strategy for Partnerships and Innovation.

Benefits to Canada:

Top scientists and engineers serve as magnets to other high-calibre researchers and students to come to, or to remain in, Canada so that they can work with the best in the world. IRCs build capacity in areas of importance to industry. Financial and commercial impacts of IRCs are evident after several years of leveraged funding. Approximately 80 percent of IRCs work in the priority areas identified in the Federal S&T Strategy and in *Budget 2008*.

Strategic Outcome 2.0 – Discovery: High quality Canadian-based competitive research in the natural sciences and engineering

The knowledge generated through basic research provides a critical foundation for all scientific and technological advances. NSERC's discovery-based programs support long-term, ongoing programs of research, shorter-term research projects, the acquisition of research equipment and access to national research facilities. The high quality and impact of Canadian research is evident in its ranking among the five top countries in the G8 in terms of the average number of times Canadian papers are cited by other researchers¹¹.

¹¹ Observatoire des sciences et des technologies, 2007.

Program Activity 2.1 Fund Basic Research					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
53	\$356.43	53	\$352.84	53	\$351.94
Program Activity Expected Results		Performance Indicators		Targets	
The discovery, innovation and training capability of university researchers in natural sciences and engineering is enhanced by the provision of support for ongoing programs of basic research		World ranking in number of publications		Maintain top 10 world ranking (Canada was seventh in 2005 ¹²)	
		Percentage of funds spent on training of students and postdoctoral fellows		35 percent	
		Higher education expenditure on R&D (HERD) as a percentage of gross domestic product (GDP) compared to G8 countries		Maintain current world ranking (Canada was first in 2007 among G8 countries ¹³)	

Program Activity Summary: This program activity promotes and enables global excellence in discovery research. Having a solid capacity for basic research across a broad range of traditional fields from astronomy, biology, chemistry, electrical engineering, mathematics, mechanical engineering, physics and psychology to newly established fields like genomics, nanotechnology and quantum computing ensures that Canada remains at the leading edge of knowledge creation. It also ensures that Canada can access and exploit S&T developments from other countries.

Subactivities include:

- [Discovery Grants Program \(DGP\)](#)
- [Special Research Opportunity \(SRO\) Grants](#)

Planning Highlights:

The **Discovery Grants Program** is NSERC's flagship program for building and maintaining a strong research base in Canada in the natural sciences and engineering. Thousands of international and national experts volunteer annually to review and evaluate applications to the Discovery Grants program and to ensure that only excellent researchers and research programs are selected to receive NSERC grants. In two years NSERC has succeeded in doubling the number of international experts on its peer review committees, reaching 16 percent of the membership. Such participation is crucial in fostering world-class excellence and ensuring that supported research is continuously gauged against the highest international standards.

¹² National Science Board Science and Engineering Indicators 2008, Volume 1, Table 5-21

¹³ Government of Canada Science and Technology Data – 2007 (March 2009)

A recent initiative within the program is the creation of [Discovery Accelerator Supplements](#). These supplemental grants give a boost to 100 top-flight researchers each year who are at a critical, high potential stage in their research programs. This additional support helps to increase research capacity in priority areas and builds global excellence and impact more quickly than otherwise. Accelerator Supplements are targeted in a timely way to those select researchers who have made a significant breakthrough in their research and who are expected to add significantly to Canadian global excellence. In the past year, 69 of the 100 Accelerator Supplements awarded were in areas deemed to be of importance to the four priority areas identified in the Federal S&T Strategy: environmental science and technologies; natural resources and energy; health and related life sciences and technologies; and information and communication technologies. NSERC will again concentrate at least half of its Discovery Accelerator Supplements exclusively to researchers with research programs that impact the government priority areas.

Lessons Learned:

Over the past year, NSERC adopted new peer review structures and processes which serve to increase the competitiveness of the Discovery Grants Program, rendering the program more dynamic to raise the bar of excellence. Following the recommendations of the [International Review of the Discovery Grants Program and the Grant Selection Committee \(GSC\) Structure Review](#), NSERC introduced a new two-step evaluation process which separates merit review indicators and funding recommendations. In the upcoming year, NSERC will reorganize its 28 discipline-based committees to implement 12 evaluation groups. Members of these evaluation groups will be assigned to various peer review sections on the basis of expertise and subject matter. The increased flexibility in this structure will enable the program to adapt to the changing research environment and ensure that all applications (e.g. multidisciplinary proposals) have the best possible review.

The **Special Research Opportunities** program was set up by NSERC as a separate mechanism to evaluate and select for support those researchers who are presented with an opportunity, often with the possibility of international collaboration, to pursue a time-sensitive, high-risk research initiative. While the program has helped Canada establish international collaborations and respond to unique research opportunities as they have arisen, the scale of the program had been too small to have a major impact. For this reason and as a result of NSERC's 2008 Strategic Review, NSERC will not continue this program. NSERC will continue to support research that is urgent and has a strong potential for breakthroughs through other programs such as the Discovery Grants and Strategic Partnerships programs.

Benefits to Canada:

Global excellence in discovery research allows Canada to participate as a full player in the international research community. Canadian researchers are developing new knowledge and are also accessing and exploiting knowledge developed outside Canada, thereby generating new opportunities for innovation. National governments around the world recognize the critical role a basic research foundation plays in maintaining a competitive economy. All OECD governments support basic research in their universities. When fully implemented, NSERC's new peer review process and structure for the Discovery Grants Program will

better respond to the changing research environment which involves more multidisciplinary research and will serve to raise the bar of excellence.

Program Activity 2.2 Support for Research Equipment and Major Resources					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
10	\$38.49	10	\$36.53	10	\$26.08
Program Activity Expected Results		Performance Indicators		Targets	
The discovery, innovation and training capability of university researchers in the NSE is supported by their access to research equipment and major regional or national research facilities		Average number of researchers benefiting from equipment awards		Over 1500	
		Average number of researchers benefiting from a Major Research Support award		Greater than 10	

Program Activity Summary: NSERC programs in this area help support the maintenance and operation of research equipment and major research resources. Funds are also used to facilitate researchers’ access to major research facilities in Canada and around the world.

Subactivities include:

- [Research Tools and Instruments \(RTI\)](#)
- [Major Resources Support \(MRS\)](#)

Planning Highlights:

NSERC facilitates access of Canadian researchers to more than 50 international or national experimental and thematic facilities through the **Major Resources Support** program. International resources must be located in Canada. Examples of major facilities in Canada are the Canadian Light Source (CLS) in Saskatchewan, the Sudbury Neutrino Observatory (SNO) Lab and the NorthEast Pacific Time-series Undersea Networked Experiments (NEPTUNE) in the Pacific Ocean. All research equipment and major resource support funding decisions are carried out with external expert review and advice. After NSERC’s 2008 Strategic Review, the Major Resource Support Program was focused to provide support only for major resources which are unique on a national or international scale.

The **Research Tools and Instruments** program enhances research capacity in Canadian universities by supporting the purchase of necessary equipment of smaller size than is funded by CFI. While CFI is very effective in supporting the acquisition of large pieces of equipment and the creation of new laboratories, it falls to NSERC to support the purchase, replacement and maintenance of a large number of smaller tools and

instruments that run all day, every day, in thousands of academic research labs across the country and that are necessary for both basic and targeted research.

Benefits to Canada:

Top researchers need state-of-the-art equipment and facilities to carry out research at world-class levels. Access to top facilities plays an important role in attracting the best minds to Canada and keeping them here.

Strategic Outcome 3.0 – Innovation: Productive use of new knowledge in the natural sciences and engineering

Turning knowledge into innovative products and services forms the basis for a competitive economy. Federal investments play an important role in stimulating innovation through the promotion of university-industry and college-industry partnerships, technology transfer activities and the training of people with appropriate scientific and business skills. Equally important is focusing research resources on areas that will have the greatest economic, social or policy impact.

NSERC **Research Partnerships Programs** take advantage of Canada’s robust capacity in research and offer a means to connect and apply knowledge and technologies generated in universities and colleges to industry, and to connect industry challenges and training capacity to universities and colleges. NSERC’s integrated set of partnerships programs ensure that support is available for the various aspects of applying research talent, expertise and research results to the benefit of Canada. Targeted projects in strategic areas build capacity and accelerate research and training in topics of identified national interest and concern. Collaborative R&D grants encourage academic researchers and graduate students to undertake joint projects with industry to address identified industrial research challenges. Commercialization programs facilitate the transfer of research results into the economy. [NSERC’s Strategy for Partnerships and Innovation](#) will increase the reach and impact of NSERC’s Research Partnership Programs in building innovation in Canada and responds to the call to action presented in the [Science, Technology and Innovation Council’s \(STIC\) State of the Nation 2008](#) report (May 2009) and the [Council of Canadian Academies Innovation and Business Strategy: Why Canada Falls Short](#) (April 2009).

Program Activity 3.1 Fund Research in Strategic Areas					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
22	\$134.00	22	\$135.60	22	\$135.52
Program Activity Expected Results		Performance Indicators		Targets	
Research and training in		Percentage of researchers		Five percent	

targeted and emerging areas of national importance is accelerated	applying for a strategic grant for the first time (or who have never applied in a specific area)	

Program Activity Summary: This program activity funds research in areas of national importance and in emerging areas that are of potential significance to Canada.

Subactivities include:

- [Strategic Partnerships Programs](#)
- [Collaborative Health Research Projects \(CHRP\)](#)

The **Strategic Partnerships** programs require researchers to focus their efforts within seven targeted areas and to work with partners who can use and exploit the results of their projects. These areas were identified, after extensive consultations with industry, government departments and universities, as offering significant economic or social benefits in areas of government priority. In most cases, these correspond to existing research and economic strengths (e.g., advanced communications); in others, they correspond to areas where Canada needs to bolster its research capacity (e.g., safety and security). The seven target areas include four that directly address the priorities identified in the S&T Strategy: environmental science and technologies, natural resources and energy, information and communications technologies (ICT), and health, and related life sciences and technologies.

NSERC supports nearly 500 projects and networks in its Strategic Partnerships programs, each having the potential to strongly enhance Canada’s economy, society and/or environment within the next 10 years. More than \$22 million was contributed by 500 firms to support research in strategic areas in 2009-10.

The Strategic Partnerships programs—the Strategic Network Grants, the Strategic Project Grants and the Strategic Workshops Program—each have components to support international collaboration and exchanges. For example, NSERC is collaborating with the Agence Nationale de la Recherche (ANR) in France to jointly fund Canadian/French research and innovation projects conducted by teams from both countries. The application and funding for Canadian researchers is through NSERC’s Strategic Project Grants program. Similar initiatives may be launched with other countries in order to strengthen the collaboration between Canadian and international research and innovation communities to achieve world-class scientific and technical results, leading toward new innovative technologies.

Special supplemental competitions for Strategic Project Grants and Strategic Network Grants are held as part of NSERC’s efforts to address the government’s priorities. For example, through Strategic Partnerships, NSERC is supporting collaborative research that directly contributes to the knowledge and innovation needs of Canada’s automotive, manufacturing, forestry and fisheries industries, as identified in *Budget 2008*. Over the next five years, NSERC’s efforts will be to maintain linkages with these industrial sectors: a) to ensure our investment strategy remains aligned with the needs of the industries; b) to monitor and report

on adoption, early impact and longer-term outcome of the investments; and c) to enable efficient technology and knowledge transfer to the industrial sectors to maximize utilization and impact of the supported research activities.

The 31 Strategic Networks currently supported by NSERC represent national platforms with sufficient critical mass to have significant impact on research areas of importance to Canada. Safer drinking water, better treatments for vision loss, faster cancer diagnoses and more accurate earthquake predictions are among the goals of the networks announced following the most recent Strategic Networks competition.

Another component of NSERC’s programs in strategic areas is the **Collaborative Health Research Projects** program. This is a collaborative effort in the priority area of health that is co-funded by NSERC and CIHR. The program integrates the efforts of natural scientists and engineers with health scientists and funds research targeted on improving the health of Canadians. In 2009, NSERC and CIHR collaborated to support multidisciplinary teams of researchers from the health sciences, physics, chemistry and engineering disciplines in the quest to find non-nuclear isotopes that can be used to replace Technetium-99m, an isotope commonly used in medical imaging procedures.

Benefits to Canada:

To take advantage of Canada’s established excellence in research and innovation, and to build capacity in areas critical to the Canadian economy, NSERC invests in carefully selected strategic priorities for the country. For maximum effect, these investments support a range of activities with the common goal of connecting researchers with end users in order to transfer and exploit knowledge and to increase Canadian prosperity.

Program Activity 3.2 Fund University-Industry-Government Partnerships					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
47	\$107.57	47	\$104.87	47	\$104.65
Program Activity Expected Results		Performance Indicators		Targets	
Mutually beneficial collaborations between the private sector and researchers in universities, resulting in industrial or economic benefits to Canada		Increase in the number of industrial partners supporting and participating in university-industry collaborations		Greater than five percent per year	
		Partner satisfaction with research results		75 percent of partners indicating satisfaction	

Program Activity Summary: NSERC’s programs under this activity foster collaborations between university researchers and industry in order to develop new knowledge and expertise

and to transfer this knowledge and expertise to Canadian-based companies. The selected projects lever more industrial R&D spending than is invested by NSERC.

Subactivities include:

- [Collaborative Research and Development \(CRD\)](#)
- [Networks of Centres of Excellence \(NCE\)](#)
- [Business-Led Networks of Centres of Excellence \(BL-NCE\)](#)

Planning Highlights:

NSERC supports more than 1,200 university researchers working in partnership with industry through the **Collaborative Research and Development Program**. NSERC's CRD projects lever the investment of more than \$50 million of industrial funding in joint industry-university research projects. These partnership programs and projects address real-world challenges and help train an estimated 325 undergraduate students, 800 postgraduate students and approximately 125 postdoctoral fellows in collaboration with industry.

Indicators of success in this activity include the high cash and in-kind contributions of partners to joint industry-university projects, high partner satisfaction with the results of the research as reported in progress and final reports and follow-up studies on the projects. Other measures are partner use of results in new products and processes, the number of start-up companies, the growing numbers of companies involved in collaborative projects, and continuing growth in the employment of qualified graduates in these firms. Demand in this program is growing at better than six percent per year, with a strong growth in the number of small and mid-sized businesses participating. NSERC allocates sufficient funding each year to meet the growing demand for these projects.

A summative evaluation of the CRD program is currently underway and is scheduled for completion in early 2010-2011. The evaluation is addressing issues of relevance, design and delivery, success and impact, and cost-effectiveness. Preliminary data from the evaluation suggests that the program is relevant, well designed and delivered and provides long-term benefits to industrial partners, researchers and HQP.

NSERC's experience has shown that successful long-term collaborations often begin first as a small joint CRD project that tests the value of the university-industry relationship. These small projects often progress to larger collaborative projects and, in some cases, to an Industrial Research Chair, a major financial commitment for both the company and the university researcher that extends over the long term (a minimum of five years). NSERC's Strategy for Partnerships and Innovation will encourage growth in the university-industry partnerships required by the Collaborative Research and Development Program.

NSERC's Strategy for Partnerships and Innovation presents a four-point plan to more than double the number of companies participating in NSERC innovation focused programs over the next five years. As part of this strategy, NSERC will launch two pilot initiatives which are aimed at fostering new collaborations between academics and companies. **Engage Grants** will provide short term support for academics and companies

which have never worked together, to solve a focused company specific problem. They will enable researchers to conduct short-term projects that allow them to demonstrate their capabilities in addressing company problems without requiring company cash leverage up front. **Interaction Grants** will allow academics and companies to meet and discuss potential company specific problems that could be solved in subsequent research collaboration. NSERC is also exploring a **Relationship Builder** initiative to support professionals dedicated to linking researchers with companies and building collaborations. NSERC will also explore support for exchanges between professionals in industry and academia.

The CRD program mechanism is one of the approaches used to fund projects in the new **Automotive Partnership Canada (APC)**. The Partnership, which involves collaboration between NSERC, Industry Canada, SSHRC, CFI, NRC and the automotive industry, aims to foster an innovative and competitive Canadian auto industry through industry-led collaborative research and development. A flexible and integrated approach to project review and funding will be used to build a critical mass of research in the priority areas. It is anticipated that the Partnership will proactively engage industry with academic and NRC researchers through the dedicated Project Office, which is co-located with an Ontario Centre of Excellence and NSERC's Ontario Regional Office. NSERC will explore the possibility of applying the Automotive Partnership Canada initiative as a model to support other large-scale efforts by leading research groups seizing exceptional opportunities to advance solutions to some of Canada's most challenging economic, environmental and social problems.

The **Networks of Centres of Excellence Program**, established in 1989, is a unique tri-agency approach to mobilize Canada's research talent in the academic, private and public sectors, and to apply it to the task of developing the economy and improving the quality of life of Canadians. Networks funded by the NCE program lead the world in research areas as diverse as stroke treatment, natural resource management and industrial information technology and provide opportunities for Canadian researchers and students to work with sector partners and accelerate the exchange of knowledge and transfer of technological innovations. The NCE Program currently supports 20 NCE networks.

A new suite of programs to be managed by the NCE Tri-agency Secretariat was announced in *Budget 2007*. Among these, four new **Business-Led NCEs** launched in 2008, fund large-scale collaborative research and commercialization activities to support private sector innovation in areas of strategic importance to Canada. The Business-Led NCE program will further academic-industry partnerships particularly with SME's which is a goal of NSERC's Strategy for Partnerships and Innovation.

Benefits to Canada:

CRD and NCE partnership programs and projects address real-world challenges and train highly qualified personnel in collaboration with industry.

Program Activity 3.3 Support Commercialization					
Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
18	\$40.60	18	\$40.79	18	\$41.45
Program Activity Expected Results		Performance Indicators		Targets	
The transfer of knowledge and technology residing in Canadian universities and colleges to the user sector is facilitated		Increase in technology and knowledge transfer activities		Five percent growth per year	

Program Activity Summary: NSERC's programs under this activity aim to build the capacity of Canadian universities and colleges to transfer knowledge and technology from academic research laboratories to Canadian companies. They support the pre-commercial development of promising innovations and help build capacity to manage intellectual property. Canadian companies have access to publicly supported research results, licences are granted and spin-off companies are created. As with NSERC's partnerships programs, federal funding serves to leverage significant amounts of private funding.

Through a number of subactivities, NSERC will foster:

- [Ideas to Innovation \(I2I\)](#)
- [Centres of Excellence for Commercialization and Research \(CECR\)](#)
- [College and Community Innovation \(CCI\)](#)

Planning Highlights:

Through the **Ideas to Innovation** program (cited in *Budget 2007*), NSERC currently supports 125 projects to accelerate the pre-competitive development of promising university and college-developed technology and promotes its transfer to industry. This year, the I2I program will be expanded to enable institutions to do a market study on a product, process or technology that they plan to develop. A better assessment of the market potential for a technology will serve to better position a technology for further support by industry.

The **Centres of Excellence for Commercialization and Research Program** launched six new centres in 2009 for a total of 17 CECR centres since the program was launched in 2007. Examples of the most recently funded centres include the Centre of Excellence in Energy Efficiency, the Canadian Digital Media Network, the Centre for Surgical Invention and Innovation, and the Oceans Network Canada Centre for Enterprise and Engagement. Established in areas of strategic importance to Canada, these world-class centres bring together researchers and partners from companies and universities who work collaboratively on leading edge research and on the practical application of that

research to benefit Canadians through commercialization. Preliminary evaluation of the CECR program suggested that the peer review and excellence-based approach of its selection process is key to achieving the program's intended research and commercialization outcomes. NSERC will explore the possibility of implementing technology access centres to provide access to college and university capability in time frames and with approaches that suit SMEs.

Colleges play an important role in local and regional development. Colleges are located in over 900 communities across the country. The **College and Community Innovation Program** successfully builds bridges between community colleges and local industry. The past year saw the launch of 22 new college and innovation projects at 21 colleges across Canada as a result of the CCI program. The funded projects focus on a variety of research areas, including forestry product transformation, green building technologies and the aviation training industry. This year, the CCI program will be enhanced through entry level grants to bridge the gap for colleges who have achieved NSERC eligible status but are not yet able to demonstrate significant applied research capabilities.

Lessons Learned:

The **Intellectual Property Mobilization (IPM)** program support activities related to managing and transferring intellectual property resulting from academic research. The IPM program encouraged institutions to coordinate their approaches and activities in support of innovation on a local, regional and national basis and to increase the pool of trained technology transfer personnel with hands-on experience available to Canadian academic institutions.

Since the IPM program was launched in 1994, NSERC has served its catalyst function to kick-start universities' technology transfer activities, and universities now see technology transfer as a key part of their mandate. For this reason, and as a result of the Strategic Review process, the IPM program was discontinued in 2009.

Benefits to Canada:

Canada has been evaluated as being among the world leaders in the excellence of our academic research. Transferring and translating this excellence into societal and economic benefit is a high priority for NSERC. Success in these efforts requires not only expertise in technology transfer and the careful management of intellectual property, but also building expertise in entrepreneurship and creating an environment that allows potential business ventures to thrive. The CECR is changing the context for academic technology transfer and commercialization, bringing new strength to an already productive area.

Program Activity 4.1 – Internal Services

The following program activity supports all three of NSERC’s strategic outcomes.

Human Resources (FTEs) and Planned Spending (\$ millions)					
2010-11		2011-12		2012-13	
FTE	Planned Spending	FTE	Planned Spending	FTE	Planned Spending
186	\$26.08	186	\$25.56	186	\$24.42

Program Activity Summary: NSERC and SSHRC share internal services for general administration, human resources, finance, awards administration, information management and technology, and audit services. This common administrative services model has proven highly efficient for the two federal granting agencies. In addition, NSERC has its own corporate services to address the agency’s distinct needs in terms of governance, policy, planning, statistics, program evaluation, performance measurement, communications and international relations.

Planning Highlights:

From 2010-11 to 2011-12, NSERC will:

- receive the results of the most recent Management Accountability Framework assessment, and address any identified areas for improvement;
- develop an action plan to address the new Treasury Board Policy on Transfer Payments;
- with SSHRC and CIHR, revise the Tri-Council Policy Statement: Integrity in Research and Scholarship in consultation with universities and colleges;
- enhance capacity and stay at the forefront of the field of performance measurement for S&T investments;
- increase Canada’s awareness of research achievements by leveraging existing relationships with core audiences through the NSERC regional offices, former NSERC Council members and former NSERC prize winners and journalists, to ensure that audiences are reached at national, regional and local levels;
- increase awareness in industry, particularly SMEs, about benefits of collaborating with academia; and
- create and distribute an eBulletin that raises awareness of the impacts of R&D projects supporting partnerships between post-secondary researchers and industry.

Section III – Supplementary Information

List of Tables

The tables listed below are available at the Treasury Board Secretariat's website at <http://www.tbs-sct.gc.ca/rpp/2010-2011/index-eng.asp> :

- Details on NSERC's Transfer Payment Programs
- Internal Audits
- Evaluations
- Sources of Non-Respendable Revenue