



# Evidence First



ANNUAL REPORT 2012/2013

*Science Advice in the Public Interest*



Council of Canadian Academies  
Conseil des académies canadiennes

[www.scienceadvice.ca](http://www.scienceadvice.ca)

# Member Academies

*The founding members of the Council of Canadian Academies are:*

## **THE ROYAL SOCIETY OF CANADA (RSC):**

The RSC is the senior national body of distinguished Canadian scholars, artists, and scientists. The primary objective of the RSC is to promote learning and research in the arts and sciences. The RSC consists of nearly 2,000 Fellows — men and women who are selected by their peers for outstanding contributions to the natural and social sciences, the arts, and the humanities. The RSC exists to recognize academic excellence, to advise governments and organizations, and to promote Canadian culture.

## **THE CANADIAN ACADEMY OF ENGINEERING (CAE):**

The CAE is the national institution through which Canada's most distinguished and experienced engineers provide strategic advice on matters of critical importance to Canada. The Academy is an independent, self-governing, and non-profit organization established in 1987. Fellows are nominated and elected by their peers in recognition of their distinguished achievements and career-long service to the engineering profession. Fellows of the Academy, who number approximately 600, are committed to ensuring that Canada's engineering expertise is applied to the benefit of all Canadians.

## **THE CANADIAN ACADEMY OF HEALTH SCIENCES (CAHS):**

CAHS recognizes individuals of great achievement in the academic health sciences in Canada. Founded in 2004, CAHS has approximately 400 Fellows and appoints new Fellows on an annual basis. The organization is managed by a voluntary Board of Directors and a Board Executive. The main function of CAHS is to provide timely, informed, and unbiased assessments of urgent issues affecting the health of Canadians. The Academy also monitors global health-related events to enhance Canada's state of readiness for the future, and provides a Canadian voice for health sciences internationally. CAHS provides a collective, authoritative, multidisciplinary voice on behalf of the health sciences community.



Council of Canadian Academies  
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## Message from the Chair



“Evidence First” is the premise from which all Council assessments are derived. The knowledge generated by research can tell us a great deal about where we are and where we can go. Evidence-based science assessments, such as those produced by the Council, are highly relevant as they set out a clear foundation of information for the benefit of public policy and ultimately all Canadians. It is therefore reaffirming and exciting for the Board of Governors to witness a growing demand for the Council’s work.

What’s more, as the Council’s body of assessments deepens, a practical growth in areas of expertise occurs within the organization — as portfolios of reports take shape on important topics like business innovation, energy, the environment, and human health. I am confident that over the next decade the Council will further develop these and other areas of expertise, and will be well sought after for its work.

As always, the success of the Council rests on the calibre and dedication of its many volunteers. I would particularly like to draw attention to the volunteer members of the Scientific Advisory Committee who play a key role in the organization’s success as they assess the suitability of subjects proposed to the Council for assessment. This year, SAC has seen a great deal of change. We bid a very fond farewell to six dedicated and longstanding SAC members — Michel G. Bergeron, Margaret Conrad, Judith G. Hall, John P. Smol, Robert Watson, and Joseph D. Wright. Each has played an important role on SAC, and on behalf of the Council, I would like to thank them sincerely for their years of support. At the same time, we are fortunate to welcome five new SAC members — Lorne Babiuk, Clarissa Desjardins, Gregory S. Kealey, Avrim Lazar, and Sarah P. Otto. We look forward to working closely with them as the Council continues to broaden the questions it takes on for assessment.

I would also like to take this opportunity to bid farewell to two valued members of the Board of Governors — to John Leggat, who served as a Canadian Academy of Engineering appointee, and to Richard Drouin, who brought us both a financial and legal perspective from his position as Counsel at McCarthy Tétrault. Their input, thoughtful commentary, and direction have helped ensure the success of the Council in meeting its mandate and realizing its vision. On behalf of the Council, I am pleased to welcome new Board members: Margaret Bloodworth, P. Kim Sturgess, Lydia Miljan, Peter MacKinnon, and Ted Morton.

It has been my pleasure to stay on as Chair of the Council’s Board of Governors through the Board’s transition this year. It has been an honour to work with the dedicated and talented staff and volunteers, and to have had a role in the creation of so many outstanding Council assessments that will ultimately lead to a stronger and more competitive Canada in the 21<sup>st</sup> century.

Sincerely,

Elizabeth Parr-Johnston, C.M., D.Litt, PhD  
 Chair, Board of Governors

## Message from the President



Science is at the centre of our lives in the 21<sup>st</sup> century and impacts all that we do. At the Council, we are interpreters of science for Canadians — every day we work to gather and present the scientific evidence about key issues of importance to the future of Canada and its people. With each assessment we produce, we aim to contribute positively to policies that will better the health, wealth, and prosperity of Canadians.

This past year was a banner year for the Council, marked by the release of a number of important reports including *The State of Science and Technology, 2012* and *Informing Research Choices: Indicators and Judgment*. These two reports will be complemented by the 2013 releases of *The State of Industrial Research and Development in Canada* and *Innovation Impacts: Measurement and Assessment*. I am delighted to share that we have now put together a small group of experts who are reviewing the insights from all of these reports plus our 2009 report, *Innovation and Business Strategy: Why Canada Falls Short*. Their review will be gathered into a synthesis document that will be released in fall 2013.

The picture that emerges is of an active organization fully engaged as never before. We released four assessments and one workshop report, and had another 11 assessments in progress by the end of the year. On top of this, Council staff — with the support of the Scientific Advisory Committee — assembled five more expert panels.

Despite this intense level of activity, I am pleased to say that we never lost sight of the fact that our key priority must always be excellence in all that we do. In keeping with this commitment, we also commissioned an independent performance audit, which was nearing completion at the end of this fiscal year. The goals of this audit were to evaluate internal Council processes and their economy, efficiency, and effectiveness. It is with pride that I can say the results of the audit are overwhelmingly positive, and we will be considering how to best implement its various suggestions in the months to come.

All of this success is due to the amazing people who power our organization — the expert volunteers and outstanding staff who work as part of the Council's secretariat. I'd like to extend my sincere thanks to our volunteers for their enormous contributions. The Council simply would not exist without them — and the energy and expertise they bring with them. The continuing support and guidance of our Board of Governors, through which our founding Member Academies bring their expert voice, is most appreciated. I would also like to thank the Council staff for their tremendous commitment and dedication. It's a pleasure to come to work each day, as I am energized by the passion of the Council's small team and the hard work they do.

Sincerely,

Elizabeth Dowdeswell, O.C.  
President and CEO



# Introduction



Canadians and their governments face questions of enormous importance to the future — and of equally enormous complexity. Whether the question is how to stimulate the economy and spur job growth while curbing spending or how to ensure the health care system is meeting the demands of an aging population, policy- and decision-makers must make informed choices that will have long-term and significant impacts on our country.

The Council of Canadian Academies plays a unique role in Canadian public life. As a neutral body whose interests lie solely in assessing the evidence, it enriches Canadian policy development and decision-making. The Council harnesses the collective wisdom of the finest minds in Canada and throughout the world to conduct independent, authoritative, and evidence-based expert assessments on issues that matter to Canadians. This ability has earned the Council recognition as a trusted voice for science in the public interest. Referring a question to the Council is an efficient and economical way for governments to gain access to multidisciplinary expert input. The government's

*“Our world is experiencing unprecedented rates of change. We live in a time of rapid transformation, characterized by risk and opportunity on a global scale. Because of this, we must always look to the evidence — particularly scientific evidence — to help navigate change and inform our choices.”*

relatively small investment in the Council of Canadian Academies allows the organization to assemble and assess the results of research produced domestically and internationally and make it accessible to all. For the research community, Council assessments provide a mechanism for the expert's voice and wisdom to be heard within the policy-making domain. For Canadians, Council assessments bring together evidence and insight that can support informed public participation in the debates and discussions that are part of the policy-making process.

The purpose of this annual report is to inform Canadians about the commitment and voluntary contribution of Canada's experts to the Council as it applies evidence to the questions that concern Canadians most. It provides details of the assessments completed by the Council in 2012/13 and those currently underway. It also outlines the Council's progress in 2012/13 in achieving the goals set out in its strategic plan.

His Excellency the Right Honourable  
David Johnston, Governor General of Canada  
From *The Globe and Mail*, September 6, 2012





# About the Council



# The Council of Canadian Academies: Science Advice in the Public Interest

Assessments are the *raison d'être* of the Council of Canadian Academies. The work conducted by the Council addresses a wide spectrum of scientific knowledge. The Council defines “science” broadly to encompass the humanities, engineering, and the natural, social, and health sciences.

The Council assesses questions drawn from two sources: questions posed by the federal government, as part of its funding agreement with the Council; and questions submitted by sponsors outside of the funding agreement, such as non-governmental organizations, the private sector, and other levels of government. Council assessments are produced by multidisciplinary, volunteer expert panels that assemble and synthesize the available evidence to identify knowledge gaps, distinguish Canadian strengths and vulnerabilities, and examine international trends to describe the context within which policy-makers operate. All assessment questions, regardless of source, and the resulting reports must be approved by the Council’s Board of Governors. More information about the Council, its governance structure, and operations can be found in Annex I of this report.

The Council systematically works to identify the top minds from within its Member Academies, across various sectors, and internationally, in order to provide the considerable knowledge needed to power its assessments. The Council’s Member Academies are the Royal Society of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences.



## **Vision**

To be Canada's trusted voice for science  
in the public interest.

## **Mission**

To provide Canadians with:

The best available scientific knowledge with the  
objective of informing debate and decision-making;

Independent, authoritative and evidence-based  
assessments on the science underlying current and  
future issues of public interest; and

A science voice nationally and internationally.

## **Value Proposition**

The Council of Canadian Academies offers  
insight and evidence to enrich Canadian policy  
development and decision-making. This is achieved  
by harnessing the collective wisdom of the finest  
minds to develop independent, authoritative, and  
evidence-based expert assessments on the issues  
that matter most to Canadians.

## The Council of Canadian Academies: By the Numbers

**612**

Expert volunteers since 2005

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**110**

New volunteers in 2012/13

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**34**

Panel and governance meetings in 2012/13

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**18**

Unique assessment sponsors since 2005

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**11**

Active panels at the end of 2012/13

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**8**

New assessment questions in 2012/13

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**4**

Public releases of assessments in 2012/13

---

**1**

Workshop report release in 2012/13

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Since 2005, the Council has leveraged over **\$13 million** in expert volunteer time — a significant contribution in support of evidence-based public policy.



# Assessments

# Assessments: Evidence for Sound Public Policy

The Council has had an extremely busy year and is operating at full capacity with a record number of assessments underway. During 2012/13, the Council released four assessment reports and one workshop report, while staff and panels continued work on 11 other projects. By the end of 2012, the Council had received eight new questions for assessment and will proceed with one more that had been paused at the request of the sponsor — Memory Institutions and the Digital Revolution. Four of these had panels actively engaged by the end of the 2012/13 fiscal year.

## Completed Assessments and Workshop Reports

The Council completed and released four assessments and one workshop report in 2012/13:

- *Informing Research Choices: Indicators and Judgment* (public release — July 2012)
- *The State of Science and Technology in Canada, 2012* (public release — September 2012)
- *Strengthening Canada's Research Capacity: The Gender Dimension* (public release — November 2012)
- *Water and Agriculture in Canada: Towards Sustainable Management of Water Resources* (public release — February 2013)
- *40 Priority Research Questions for Ocean Science in Canada* (workshop report; public release — July 2012)

### *Informing Research Choices: Indicators and Judgment*

*Informing Research Choices: Indicators and Judgment*, released in July 2012, was welcomed by its sponsor, the Natural Sciences and Engineering Research Council of Canada (NSERC) and was distributed widely to other interested parties. After examining the available evidence, the Council's Expert Panel, chaired by Rita Colwell, former Director of the National Science Foundation, concluded overall that quantitative indicators should inform, rather than replace, expert judgment in science assessment for research funding allocation. The Expert Panel also developed four guiding principles to support research funding agencies undertaking science assessments in support of budget allocation. They are: context matters; do no harm; transparency is critical; and expert judgment remains invaluable. The principles are expanded upon within the Panel's report.

### Eight Questions Received for Assessment in 2012/13

#### Through the Federal Funding Agreement

1. The State of Canada's Science Culture
2. The Future of Canadian Policing Models
3. STEM Skills for the Future
4. Wind Turbine Noise and Human Health
5. RISK: Is the Message Getting Through?
6. Understanding the Potential Impacts of Energy Technologies on the Oil Sands Development

#### Outside of the Funding Agreement

7. Medical and Physiological Impacts of Conducted Energy Weapons
8. Canadian Ocean Science



PROFILE:

**Dane Berry**

Associate Program Director



**Dane Berry** trained in philosophy and public policy, but he has a passion for science and technology that has always had a place in his professional life. He earned his BA in philosophy from Wesleyan University and his MA in public policy from Simon Fraser University, and while pursuing both degrees took many classes with connections to science. In the policy world, the Council is well known for its unique ability to distill the complex science surrounding important policy issues, and Dane took note of the Council early in his career as a policy consultant — well before he first joined the Council two-and-a-half years ago. His current role as Associate Program Director satisfies many of his passions, giving him the opportunity to help support public policy development while also peering into the world of science and technology. So far, he has brought his research and writing talents to bear on several key Council assessments, including *Informing Research Choices: Indicators and Judgment* and *The State of Science and Technology in Canada, 2012*. Dane says he feels honoured to have the opportunity to work with the influential scientists and experts who serve on the Council's expert panels. As an American by birth, Dane is inspired by organizations like the National Academy of Sciences and the National Research Council in the U.S. — organizations that have become woven into the fabric of government and science over the past 150 years. He is excited to be part of a young, rapidly growing organization that has the potential to become a similarly integral part of the link between policy decisions and science here in Canada.

The report was released electronically to nearly 2,000 recipients, and was disseminated via various university, government, and research-related websites. The report also received attention via Twitter — garnering many positive comments that echoed the Expert Panel's key findings. Approximately 300 hard copy reports were sent to various science-based organizations around the world, with a particular emphasis on organizations and committees in Canada, the United States, and Europe. On the day of the release, the Council's website saw a record 844 visits. Over 600 downloads of the assessment and supplementary materials followed in the ensuing weeks. In addition, an Opinion Leader article about the report and its key findings, co-authored by the Panel Chair, Rita Colwell, and Panel member Max Blouw, was published in *Research Money*, a monthly newsletter that is widely read by those interested in research and innovation.

In early December 2012, NSERC launched a national consultation based on the report. The Expert Panel's findings, combined with feedback from the consultation, will help NSERC to evaluate potential methodologies that can be used to allocate budgets among the various Evaluation Groups funded under the Discovery Grants Program. With the launch of the NSERC consultation, the Council's website saw a spike in activity between December 9 and December 15, 2012, with over 2,500 visits and approximately 630 downloads of the report and supplementary materials. The Council is pleased to see that the report is serving as a tool to inform policy- and decision-making within the natural sciences and engineering communities.

*“I would like to extend my appreciation to the Expert Panel and the Council for an excellent and very useful report. It will provide us with a strong foundation, grounded in thorough analyses, on which to base our discussions and consultations with our community and to seek input from across the country.”*

Suzanne Fortier, former President, NSERC



## The Hallmarks of a Council Report



### *The State of Science and Technology in Canada, 2012*

The September 2012 release of *The State of Science and Technology in Canada, 2012* was one of the Council's most significant in recent years. The report updates and expands upon the Council's inaugural report, published in 2006. This current assessment provides a thorough analysis of the scientific disciplines and technological applications in which Canada excels in a global context. It also identifies Canada's science and technology strengths, regional specializations, and emerging research areas. The Expert Panel, chaired by Eliot Phillipson, FCAHS, former President and CEO of the Canada Foundation for Innovation (CFI), undertook an expansive analysis that included a look at the output and impact of Canadian publications and patents, a survey of over 5,000 top-cited international researchers, a survey of Canadian science and technology experts, and an analysis of highly qualified and skilled personnel.

The Panel was asked to consider the full range of disciplines in which research is conducted, including the humanities, arts, and social sciences. After examining the available evidence, the Panel concluded that Canadian S&T is healthy and growing in both output and impact.

#### The Six Research Fields in Which Canada Excels:

- Clinical medicine
- Historical studies
- Information and communication technologies (ICTs)
- Physics and astronomy
- Psychology and cognitive sciences
- Visual and performing arts

*“I have now had a chance to look at the [S&T] report and the summary, and wanted to offer my congratulations. It is clearly a very insightful and well done report — and I also thought it garnered good media attention, as it should have given the importance of the work. Congratulations on a job very well done.”*

Glenda Yeates, Deputy Minister of Health



The release of this report involved a proactive and multi-pronged communications approach. Initial release activities featured a launch event with the Economic Club of Canada, a national media briefing with the Science Media Centre of Canada, social media engagement, the placement of an op-ed in *The Hill Times*, and one-on-one interviews and story pitching with print, radio, and television journalists.

On the day of release, the Council’s website saw a record 3,408 visits — up from the average of 250 daily visits — and 760 downloads of the assessment. Many Twitter followers re-tweeted the announcement of the report, including those with anywhere from 1,000 to 15,000 followers. Electronic distribution of the report was extensive, reaching over 10,000 people.

Reception of the assessment by the sponsor, Industry Canada, was positive. The Minister of State for Science and Technology, the Honourable Gary Goodyear, issued the following statement on the day of release:

This evidence-based assessment paints a great picture of Canada’s continued strength and growth in science and technology. Our government’s investments have attracted some of the world’s brightest minds from abroad, resulting in Canada being recognized as punching well above its weight in a highly competitive world. Canadian scientists should take pride in this excellent worldwide reputation. I would like to thank the Panel for their work on this assessment.

A number of statements by stakeholder groups were issued at the time of the report’s release. For example, the President of the Association of Universities and Colleges of Canada (AUCC) praised the report by commenting on how it “emphasizes the crucial role Canadian university researchers play on the world stage.” The Canadian Federation for the Humanities and Social Sciences (CFHSS) was also enthusiastic about the report, saying it was “especially pleased that the report also underlines that research in arts, humanities, and social sciences is essential to defining and strengthening Canada’s position as a leader in the international research community.”



Eliot Phillipson, Chair of the Expert Panel, launches the report on *The State of Science and Technology in Canada, 2012* at the Economic Club of Canada.





Since its release, the Council has been asked to present the report at several venues. In November, the Council held a panel session at the Canadian Science Policy Conference. The event was attended by approximately 150 people and allowed for a robust discussion about the science and technology challenges Canada will face in the years to come. Journalist Jeffrey Simpson moderated the session, and the discussion panel participants included Eliot Phillipson (Expert Panel Chair), Lorraine Whale (Expert Panel member), and Peter MacKinnon (former President of the University of Saskatchewan). In addition, Eliot Phillipson has provided briefings at the Alliance for Commercialization of Canadian Technologies (ACCT) Leaders Forum, for the Research Advisory Board at the University of Toronto, and for Industry Canada staff. Council staff provided briefings for science and technology counsellors in Canadian embassies through Foreign Affairs and International Trade Canada (DFAIT). Additionally, DFAIT placed a link on their website to the Council's YouTube video that describes the findings of the report. In December 2012, briefings were provided for the Assistant Deputy Minister (ADM) Committee on Science and Technology, the ADM Integration Board, and the annual Social Sciences and Humanities Research Council (SSHRC) Leaders meeting. In February 2013, the Council's report was profiled at the American Association for the Advancement of Science (AAAS) annual conference in Boston. The session was well attended and allowed the Council to present the report to an international audience. The Council was pleased to collaborate with TRIUMF, Canada's national laboratory for particle and nuclear physics, and with the Social Sciences and Humanities Research Council on this activity.

The Council is satisfied that it was able to provide Canada's S&T community with the most in-depth examination of Canadian science and technology ever undertaken.

### *Strengthening Canada's Research Capacity: The Gender Dimension*

In November 2012 the Council released *Strengthening Canada's Research Capacity: The Gender Dimension*. An expert panel of 15, chaired by Lorna Marsden, C.M., O.Ont., President Emeritus and Professor at York University, was asked to assess the factors that influence university research careers of women, both in Canada and internationally. The Panel determined that the Canadian profile of female researchers is similar to that of other economically advanced nations. Available data also showed that women's progress in Canadian universities is uneven and dependent on discipline and rank. The key factors determined by the Panel to impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. The Panel suggested that these issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions, should be examined to achieve a greater gender balance within academia.



The release of the report was met with considerable public and media attention. Media outlets such as *The Globe and Mail*, *Nature*, *University Affairs* magazine, CBC Radio, and the CTV News network reported on the release. The Council's website saw just under 1,000 visits. Traffic remained high for several days, with downloads of the assessment and supplementary materials from the website and Scribd reaching 840 by the end of the week following the release (November 21 to November 29, 2012).

PROFILE:

## **Laura Bennett**

*Research Associate*



**Laura Bennett** can boil down her personal and professional interests to one fundamental principle — community engagement. From her academic training in political science — she has a BA in Political Science from the University of Calgary and an MA in Political Studies from Queen’s University — to her professional experience working in government and communications, she has remained an engaged citizen herself, and has devoted her career to creating and translating knowledge for the benefit of all Canadians. She sees how public policy affects the everyday lives of Canadians, and how important it is for policy to be based on sound evidence. Her interest in the Council was first piqued by an opportunity to get involved with the Council’s assessment on women in university research — a strong area of personal interest for Laura, and one that relates closely to her work in graduate school. In her year and a half as a Research Associate at the Council so far, Laura says she has been amazed by how multifaceted and interdisciplinary the issues that are most pressing to Canadians really are. Through her time at the Council, Laura has learned more about the high-quality research that is happening in Canada, and she has developed a strong sense of pride in Canada’s research community.

Since its release, the report has been disseminated at a select number of events; for example, at the Second Annual Networking Reception in celebration of girls and women in science, technology, engineering, and math, hosted by the Museum of Science and Technology. The report was also highlighted at the annual L’Oréal-UNESCO Awards for Women in Science ceremony.

Of particular interest is how the report is being used internationally. In 2013, the European Commission (EC) launched the *European Research Area Initiative* — one pillar of which is Equality in Research. The Council has learned that its report was used extensively as a resource for policy development during the design process of the Equality in Research pillar. Also in 2013, the EC began preparation for a new research and innovation program called Horizon 2020, which will run from 2014 to 2020. Gender dimension will be emphasized in a special article of that program, and the Council’s report has been cited to give more strength to the issues being raised and to validate policies.

The Council is pleased that its report on women in university research has set the stage and is informing policy discussion and debate on this important issue.

### ***Water and Agriculture in Canada: Towards Sustainable Management of Water Resources***

The February 2013 release of *Water and Agriculture in Canada: Towards Sustainable Management of Water Resources*, sponsored by Agriculture and Agri-Food Canada, attracted strong interest, especially in Canada’s prairie provinces and among individuals and media involved in the Canadian agricultural and water sectors.

To conduct the assessment, the Council convened a panel of 15 Canadian and international experts from diverse fields. Howard Wheeler, Canada Excellence Research Chair in Water Security, from the University of Saskatchewan, chaired the Expert Panel.

The Panel explored five key areas where additional science and action can contribute to better sustainable management of water in agriculture. They concluded that more research is needed to better understand and improve upon the following areas:

- risks and uncertainties associated with market conditions, competition for land and water resources, and climate change;
- monitoring, modelling, and forecasting techniques to facilitate adaptive management;
- interactions between land management and water resources — including the assessment of beneficial management practices (BMPs), conservation agriculture, and ecosystem services approaches;
- promising farm-scale technologies that could contribute to efficient water use, reduced environmental impacts, and sound investment decisions; and
- governance structures, valuation techniques, economic incentives, and knowledge transfer strategies that would help facilitate better management decisions and the uptake of sustainable practices.

Positive feedback came in from a number of provincial and federal ministers after the report’s release. For example, Verlyn Olson, Q.C., Minister of Agriculture and Rural Development for Alberta, said “This report will provide valuable information to Alberta Agriculture and Rural Development and the agriculture industry in developing strategies related to key water issues. I particularly like the ‘Report in Focus,’ which provides an excellent overview of the issues and panel recommendations.”



Members of the Expert Panel on Water and Agriculture participating in a panel meeting.

The report release was primarily through electronic means via a targeted distribution list, various listservs and websites, media alerts, and social media posts. At the time of release, visits to the Council’s website were high. There were nearly 700 visits to the website on the day of the release, and visits stayed at around 500 per day for the subsequent four days. The report and its materials were downloaded over 700 times from the Council website and Scribd between February 22 and March 1, 2012, accounting for 75 percent of all Council downloads during that time.

*“I recognize that [the Water and Agriculture report] complements the completed assessment on the Sustainable Management of Groundwater in Canada previously requested by Natural Resources Canada. Together these assessments provide a more comprehensive view of the management of water resources in Canada and governance among multi-stakeholders in support of public policy issues.”*

The Honourable Joe Oliver, Minister of Natural Resources

The report reached a record number of people via social media. Posts made through the Council's Twitter and Facebook accounts were able to reach a combined estimate of over 52,000 accounts, with interest sustained well into March. With respect to mainstream media, reporting came mainly from specialized outlets, such as *Water Canada* and *The Western Producer*.

Dissemination through both online activities and conferences was extensive, reaching over 1,500 people through the Council's email network, and many more through the Waterlution, Biochar Ontario, and Canadian Water Resources Association listservs and newsletter networks. The Council also distributed the report to several conferences, to be handed out to attendees. For example, it was distributed on release day at the Canadian Federation of Agriculture annual meeting in Ottawa. Copies were also provided to delegates to the Connecting Water Resources conference in Ottawa in March 2013 and at the Joint Scientific Congress in Saskatoon in May 2013.

The Council is confident that this report will have a continuing impact in the years to come.

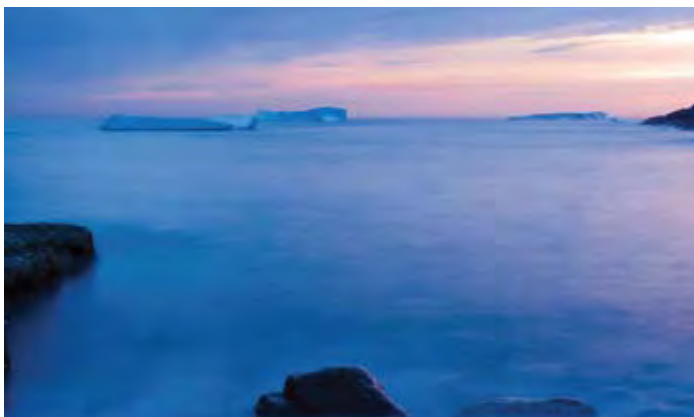
*“Your report on Water and Agriculture is timely, insightful and proactive. [...] I am sure my colleagues on the Standing Senate Committee on Agriculture and Forestry will agree that your efforts will ultimately serve as a valuable tool to aid our ongoing work.”*

Senator Nicole Eaton

#### **40 Priority Research Questions for Ocean Science in Canada**

In March 2011, the Council was asked by the Canadian Consortium of Ocean Research Universities (CCORU) to conduct a workshop on ocean science in Canada. The goal was to identify priority research questions with the support of a Core Group of 22 ocean science experts from Canada and abroad. The Core Group was chaired by David Fissel, Chair and Senior Scientist, ASL Environmental Sciences Inc. This activity culminated in the development of the workshop report, *40 Priority Research Questions for Ocean Science in Canada*. The report was publicly released on July 17, 2012.

The report identifies 40 priority research questions that, if answered, would have the greatest impact on addressing future opportunities and challenges relating to ocean science in Canada. The 40 questions were developed in a collaborative, open, and democratic process during a two-day workshop, and are grouped by the following research themes: improving fundamental scientific understanding; monitoring, data, and information management; understanding impacts of human activities; and informing management and governance. Upon release of the report, CCORU asked the Council to begin a full assessment on ocean science in Canada. This assessment will be completed before the end of 2013.



Icebergs at sunrise in the Atlantic Ocean.

## Assessments in Progress During 2012/13

During the 2012/13 fiscal year, the Council conducted work on 11 diverse assessments – eight within its funding agreement with the Government of Canada and three for external sponsors. These are in addition to the reports released during the fiscal year. The following table summarizes the assessments in progress in fiscal year 2012/13.

Assessments for Federal Government Sponsors	Sponsor	Expected Release Date
The State of Industrial R&D in Canada	Industry Canada	Late summer 2013
Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction	Environment Canada	Early 2014
The State of Knowledge of Food Security in Northern Canada	Health Canada	Early 2014
The Potential for New and Innovative Uses of Information and Communication Technology (ICTs) for Greening Canada	Environment Canada	2014
Canadian Industry's Competitiveness in Terms of Energy Use	Industry Canada	2014
The State of Canada's Science Culture*	Canada Science and Technology Museums Corporation, Natural Resources Canada, and Industry Canada	2014
Therapeutic Products for Infants, Children, and Youth	Health Canada	2014
The Future of Canadian Policing Models*	Public Safety Canada	2014
Assessments for External Sponsors	Sponsor	Expected Release Date
Innovation Impacts: Measurement and Assessment	Ontario Ministry of Research and Innovation	Released April 22, 2013
Medical and Physiological Impacts of Conducted Energy Weapons*	Defence Research and Development Canada	October 2013
Canadian Ocean Science*	Canadian Consortium of Ocean Research Universities	November 2013

\*New questions referred in 2012/13 that had panels assembled and assessments in progress by the end of the Council's fiscal year.

## Assessments for Federal Government Sponsors

### The State of Industrial R&D in Canada

Industrial research and development (IR&D) is a means by which the industry sector can grow by exploring ways to create new products and processes. Industry Canada asked the Council to convene an expert panel to evaluate the state of IR&D in Canada. The Expert Panel, chaired by Kathleen Sendall, C.M., FCAE, Director of CGG Veritas and Vice Chair, Alberta Innovates – Energy and Environment Solutions, is working toward answering the following question: *What is the current state of IR&D in Canada?* The assessment report will provide a broad examination of the state of Canada’s IR&D across many dimensions and will identify Canada’s IR&D strengths based on selected measures of magnitude, impact, and trends. The assessment will use scientific evidence and literature to measure inputs to Canadian IR&D, as well as outputs and outcomes, and provides international comparisons of Canada’s performance in IR&D. It will also highlight some of the limitations of the available evidence and suggest strategies that might be explored for improving the evidence base in the future.

The final report, expected to be released in August 2013, will complement *The State of Science and Technology in Canada, 2012*, as the two assessments deal with related topics and the Expert Panels have used several parallel methodologies to reach their findings.

### Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction

The North American natural gas supply portfolio is shifting from one dominated by conventional resources to one that increasingly includes unconventional resources, such as shale gas. Shale gas is a natural gas trapped in tiny bubbles within highly impermeable shale rock formations. Extraction of this resource has become more cost effective in recent years, in part due to advances in both hydraulic fracturing (“fracking”) and horizontal drilling. Because



Members of the Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction, and Council staff.

of both the reported benefits and drawbacks of this potential energy source, shale gas has become an important public policy issue for Canadians. Environment Canada therefore asked the Council to convene an expert panel to assess the following question: *What is the state of knowledge of potential environmental impacts from the exploration, extraction, and development of Canada’s shale gas resources, and what is the state of knowledge of associated mitigation options?* The Expert Panel is chaired by John Cherry of the University of Guelph. The final report will provide Canadians and policy-makers with an evidence-based and balanced assessment regarding the science of exploration, extraction, and development of Canada’s shale gas resources. It is expected that this report will be ready for release in early 2014.



## The Potential for New and Innovative Uses of Information and Communication Technologies (ICTs) for Greening Canada

For the purposes of this assessment, a greener Canada is defined as one where efficient and sustainable use of resources, such as land, energy, water, infrastructure, and manufactured products, are maximized; waste in all areas of human consumption, particularly harmful waste, is reduced, recycled, or reused appropriately; and adaptation takes place where necessary. This concept also involves producing less polluting emissions, and using non-polluting alternative energy sources. Due to the rising costs of energy production and use, along with expanded awareness about the associated environmental impacts, finding efficiencies in all areas of society has taken on more importance. The global economic situation has also become a motivator for reducing expenditures. There is a significant untapped and undefined potential for energy savings through ICT-enabled efficiency measures and technology improvements. In light of this, Environment Canada requested the Council assemble an expert panel to address the following question: *What existing or potential opportunities exist to use Information and Communication Technologies (ICTs) to create a greener Canada?*

The Expert Panel is chaired by David Miller, Counsel, International Business and Sustainability, Aird & Berlis LLP, and incoming President and CEO of the World Wildlife Federation (WWF) Canada. The report is expected to be released in 2014.

## The State of Knowledge of Food Security in Northern Canada

Food security was defined at the World Food Summit in 1996 as having “physical and economic access to sufficient, safe and nutritious food to meet one’s dietary needs and food preferences for an active and healthy life.” This definition represents the evolution of the food security concept beyond one of simply access and availability; it recognizes the increasing importance of healthy eating and nutrition and the factors that impact healthy food choices. The factors influencing food security are complex and involve individual and community factors as well as global development factors. The direct and indirect influences of environmental contaminants, climate change, and industrial development stand to have major impacts on food security in Northern Canada. The interconnection between all of the factors influencing food security need to be better understood by decision-makers and Canadians at large. This prompted Health Canada to ask the Council the following question: *What is the state of knowledge of the factors influencing food security in the Canadian North and of the health implications of food insecurity for Northern Aboriginal populations?* The Expert Panel on the State of Knowledge of Food Security in Northern Canada is chaired by Harriet Kuhnlein, Professor Emerita of Human Nutrition, Founding Director, Centre for Indigenous Peoples’ Nutrition and Environment (CINE), McGill University. Once complete in early 2014, this assessment will provide an in-depth and balanced report of the current factors influencing food security in the Canadian North.



Members of the Expert Panel on the State of Knowledge of Food Security in Northern Canada.



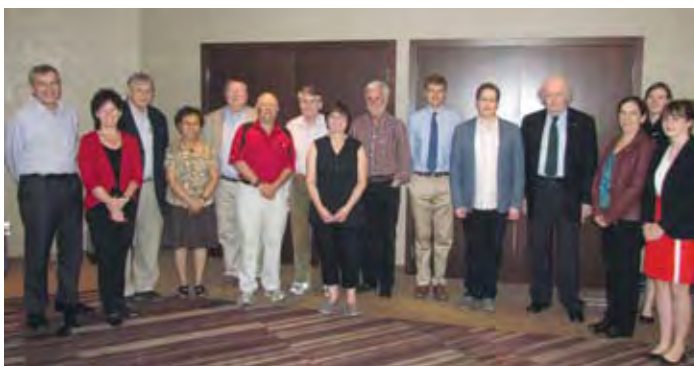
## Canadian Industry's Competitiveness in Terms of Energy Use

Sustained long-term higher energy prices and increased short-term energy price volatility represent the new reality for Canadian industries, businesses, consumers, and communities. While there is some documented and anecdotal evidence of adaptation on the part of these stakeholders, there is no comprehensive assessment related to the impacts and opportunities associated with sustained higher energy prices from a uniquely Canadian perspective. As such, Industry Canada referred the following question to the Council for assessment: *What are the opportunities and risks to Canada related to the potential for sustained higher energy prices?*

The Expert Panel, chaired by Fred Gorbet, C.M., Associate Director of the Financial Services Program at the Schulich School of Business, York University, is considering the ability of Canadian businesses and communities to innovate and adapt to sustained higher energy prices. By highlighting the full range of impacts and examining adaptation and planning strategies relative to international benchmarks, the Council's assessment will be a valuable contribution to informing government policy and improving Canadian resiliency in the face of sustained higher energy prices. The report is expected to be released in 2014.

## The State of Canada's Science Culture

Over the past 30 years, in Canada and abroad, there has been increasing public interest in and debate about the need to foster a science culture as part of the national science and technology agenda. In this period, significant government and private investments have contributed to the development of hundreds of individual science culture programs and institutions. Now more than ever the volume of programs and data supports the need for a national examination of issues, such as the performance indicators that best reflect the vitality of Canada's science culture, and a need to understand where Canada ranks internationally. In this regard, the Canada Science and Technology Museums Corporation, Natural Resources Canada, and Industry Canada asked the Council to assemble an expert panel to answer: *What is the state of Canada's science culture?* Sub-questions focus specifically on what factors influence an interest in science among youth; what are the key components of the informal system that supports science culture; and what strengths and weaknesses exist in the Canadian system.



Members of the Expert Panel on the State of Canada's Science Culture, and Council staff.

Assessments of science culture can focus either on science in the general culture, or the culture among scientists. This assessment focuses principally on the former, with additional interest in understanding the underlying connections among entrepreneurship, innovation, and science. After gaining a better understanding of the elements of a science culture system and the measures of its success, the Panel hopes its assessment will inform policy analysis and help to direct public and private investments in a constructive and timely way. The Panel is chaired by Arthur Carty, O.C., FRSC, FCAE, Executive Director of the Waterloo Institute for Nanotechnology. The report is expected to be released in 2014.



## Therapeutic Products for Infants, Children, and Youth

In the past, it was assumed that the pharmacological effects of drugs on children were similar to their effects on adults. Treatment decisions on how to use drugs in infants, children, and adolescents were drawn from available adult drug study data. However, research has since shown that there are age-related physiological changes in the functioning of tissues and organ systems. As a result, developing safe and effective drug therapies for the youngest age groups presents a particular challenge. The majority (up to 75 percent) of drugs used to treat infants, children, and adolescents have not been systematically evaluated by drug manufacturers for their effects on children and youth. Due to this data gap, infants, children, and adolescents are at higher risk than adults of experiencing an adverse drug event — an unintended or unwanted event linked to the use of drugs. In order to better understand this issue, Health Canada asked the Council to convene an expert panel to assess the following question: *What is the state of clinical pharmacology, in Canada and abroad, that can be applied to the ethical development of safe and effective pharmaceuticals and biologics labelled as therapies for infants, children, and youth?* The Expert Panel is chaired by Stuart MacLeod, Professor of Pediatrics, Faculty of Medicine, University of British Columbia. The report is expected to be released in 2014.

## The Future of Canadian Policing Models

Despite a decline in overall crime rates in most industrialized countries, including Canada, certain types of crime, such as human trafficking and international criminal networks, are on the rise and have increased the difficulty of police work. So too has technological innovation, especially in the area of information and communication technologies. Such technologies have brought both new opportunities for crime and more sophisticated tools to combat crime. All of this has come with an escalation in the cost of policing over the past decade, a challenge further complicated by increases in the time required to carry out policing tasks in response to legislative changes, an expansion in the number of police officers employed, and, not least, by growing compensation packages. These trends have prompted police forces, and all levels of governments that share responsibility for public policing, to search for more sustainable, efficient, and effective policing models that can maintain the current quality of service and meet public expectations.



Members of the Expert Panel on the Future of Canadian Policing Models, and Council staff.

To address these issues, Public Safety Canada submitted the following question for assessment: *Given the evolution of crime, the justice system, and society, what do current evidence and knowledge suggest about the future of the public policing models used in Canada?* The Expert Panel, chaired by Justice Stephen T. Goudge, Court of Appeal for Ontario, will provide a comprehensive analysis of the challenges and opportunities for public policing models in use, drawing from the academic evidence and successful practices from other jurisdictions in Canada and abroad.

## Assessments for External Sponsors

### Innovation Impacts: Measurement and Assessment

In many developed and developing nations, innovation policy has become central to the efforts of governments at all levels to maintain their competitiveness in a global economy that is increasingly becoming knowledge-based. For its part, the Government of Ontario has made substantial investments in innovation, with the explicit aim of strengthening Ontario as a leading innovation-based economy. It is also keen to understand the impacts of these investments. As a result it requested that the Council convene an expert panel to address the following question: *What are the best practices for policy-makers to evaluate and measure the impact of their investments in innovation in terms of socio-economic effects such as output, employment, tax revenue, creation of new ventures, development of entrepreneurship, and social impacts?* The Expert Panel responded to this question by drawing on experiences from other provinces and countries and adapting them to the Ontario context.



Members of the Expert Panel on the Socio-economic Impact of Innovation Investments, and Council staff.

The final report of the Expert Panel, chaired by Esko Aho, Senior Fellow, Harvard University; Consultative Partner, Nokia Corporation; and former Prime Minister of Finland, was released on April 22, 2013. It includes:

- A new conceptual framework that is helpful for understanding innovation impact measurement at the program level and assessment within the innovation ecosystem;
- A catalogue of the portfolio of Ontario's innovation investments;
- An extensive academic and public policy literature review of leading-edge measurement methodologies; and
- An overview of international best practices for measuring the socio-economic impacts of innovation.

This report provides important guidance to the Government of Ontario on how better to target and evaluate its investments in innovation.

## Medical and Physiological Impacts of Conducted Energy Weapons

The use of conducted energy weapons (CEWs) by law enforcement agencies around the world has grown rapidly in recent years. CEWs are a class of weapons that use electrical energy to temporarily incapacitate a human subject. Though CEWs have been in use by Canadian law enforcement officers for over a decade, there is still little independent, peer-reviewed, scientific research available about the medical and physiological effects of CEWs. As public awareness of CEWs has grown, so too has the national dialogue surrounding their safe and appropriate use in maintaining public safety. In the context of this broader dialogue, Defence Research and Development Canada (DRDC) asked the Canadian Academy of Health Sciences (CAHS) to convene an expert panel to address the following question: *What is the current state of scientific knowledge about the medical and physiological impacts of conducted energy weapons? More precisely, what gaps exist in the current knowledge about these impacts, and what research is required to close these gaps?* The CAHS and the Council are working collaboratively on this assessment, with the Council managing the assessment process, publication, and release of the report. A joint CAHS-Council Scientific Advisory Committee was formed to advise on the appointment of the Expert Panel and Chair. After approvals from both the Council's Board of



Members of the Expert Panel on the Medical and Physiological Impacts of Conducted Energy Weapons examining a dart model.



PROFILE:

## Justice Stephen T. Goudge

Expert Panel Chair



As a judge, **Justice Stephen T. Goudge** knows how to evaluate evidence. Drawing conclusions based on evidence is an essential part of the judiciary process. Justice Goudge says that when he first learned about the Council and its approach of using an evidentiary base to support sound policy, its work seemed enormously worthwhile. It didn't take him long to decide he wanted to get involved. The respected judge of the Court of Appeal for Ontario and 2013 Guthrie Award recipient for being an inspirational champion of access to justice was a perfect fit to chair two of the Council's newest panels — *Medical and Physiological Impacts of Conducted Energy Weapons* and *The Future of Canadian Policing Models*. Since beginning his work as Chair of these two panels, Justice Goudge has been impressed with the unique array of talent that the Council has brought together to examine cutting-edge research and distill what this research has to say about key problems. He has seen that the excellent work of the Council is already held in high regard and will be invaluable to policy-makers going forward — in fact, the increasing demand for assessments is evidence that it already is.

Governors and the Board of CAHS, Justice Stephen T. Goudge, Court of Appeal for Ontario, was appointed as Chair of the Expert Panel on the Medical and Physiological Impacts of Conducted Energy Weapons. The report is expected to be released in fall 2013.

In 2012, the Council's President spoke before a Special BC Legislative Committee studying the use of CEWs. As a result, the Council's work was noted in the Committee's final report and it was recommended to the Legislature that the BC Police Services Division read the Council's report on CEWs once it is complete.

### Canadian Ocean Science

The world's oceans are undergoing unprecedented changes and are being stressed in numerous ways that create societal challenges and have profound implications for future development opportunities. Ocean science problems are complex, and addressing them will require a great deal of coordination among various scientific institutions and technology hubs. While Canada is internationally recognized for its excellence in ocean research and its leading role in international research collaboration, it is still important to determine the required resources, research infrastructure, and collaborative arrangements necessary to address future questions of ocean science. After completion of a related workshop report last summer — *40 Priority Research Questions for Ocean Science in Canada* — the Canadian Consortium of Ocean Research Universities (CCORU) asked the Council to conduct a full assessment on Canadian Ocean Science. The Council's assessment seeks to understand Canada's needs and capacities with regard to the major research questions in ocean science, and how these would help to address Canadian ocean issues and matters relating to Canada's coasts. The assessment will also investigate how

**Members of the Canadian Consortium of Ocean Research Universities**

- Dalhousie University
- Université du Québec à Rimouski
- Université Laval
- University of British Columbia
- University of Victoria
- Memorial University
- University of Prince Edward Island
- University of New Brunswick
- University of Manitoba

Canada can enhance its leading role as an international partner in ocean science.

The Expert Panel on Canadian Ocean Science is chaired by David Strangway, O.C., FRSC, former President and CEO, Canada Foundation for Innovation. Once complete, the Panel's assessment will inform the discussion related to ocean science currently underway with CCORU and other stakeholders and decision-makers. The report is expected to be released in November 2013.



Members of the Expert Panel on Canadian Ocean Science.



## Expert Panels To Be Convened in 2013/14

The Council received eight new questions for assessment in 2012/13. Four of these questions had expert panels in place and were in progress by the end of the fiscal year — two within the federal funding agreement (The State of Canada’s Science Culture and The Future of Canadian Policing Models) and two from external sponsors (Medical and Physiological Impacts of Conducted Energy Weapons and Canadian Ocean Science). These are described under “Assessments in Progress.” The other four — all through the federal funding agreement — will have panels struck in the 2013/14 fiscal year.<sup>1</sup> The Council will also be proceeding with the Expert Panel on Memory Institutions and the Digital Revolution. This project had been paused at the request of the sponsor since 2011.

Since 2005, the Council has had questions referred by 18 different sponsors. A number of new sponsors have come to the Council in recent years, including Public Safety Canada, Defence Research and Development Canada, Human Resources and Skills Development Canada, Canada Science and Technology Museums Corporation, and Library and Archives Canada.

### STEM Skills for the Future

Although there is little disagreement that skilled workers make critical contributions to Canada’s prosperity, uncertainty remains about which skills are needed to participate in tomorrow’s knowledge-based economy, and about the relationship between skills and economic growth. One concern is whether Canada is adequately equipped with the science, technology, engineering, and mathematics (STEM) skills needed to satisfy labour demand and promote business innovation. The Council’s assessment, requested by Human Resources and Skills Development Canada, will examine the role of STEM skills in fostering productivity, innovation, and growth in a rapidly changing demographic, economic, and technological environment, as well as the extent and nature of the global market for STEM skills. It will also assess how STEM skills are likely to evolve, which skills are likely to be most important for Canada, and how well Canada is positioned to meet future STEM skills needs through education and international migration.

### Wind Turbine Noise and Human Health

Wind turbines are becoming an increasingly popular power generation option as many people look for more renewable energy initiatives. Canada is seeing its own steady increase in the number of turbines being installed across the country. Despite the benefits of wind turbines as an energy source, considerable attention has been generated internationally and nationally by concerned citizens and the media over the potential health impacts of the noise produced by these machines. At the request of Health Canada, the Council’s assessment will seek



Wind turbines, Gaspésie, Quebec.



<sup>1</sup> The four Expert Panels to be established in 2013/14 are: STEM Skills for the Future; Wind Turbine Noise and Human Health; RISK: Is the Message Getting Through?; and Understanding the Potential Impacts of Energy Technologies on the Oil Sands Development.

PROFILE:

## **Susan A. McDaniel, FRSC**

*Scientific Advisory Committee,  
Vice-Chair*



**Susan A. McDaniel** is a natural born sociologist. The Canada Research Chair in Global Population and Life Course, Professor of Sociology at the University of Lethbridge, and Director of the Prentice Institute of Global Population and Economy at the University of Lethbridge has a wide range of research interests. However, all of her work is ultimately driven by her fascination with the connection between individual actions and structures of society. There is a real link between individual decisions — such as when to have children — and societal challenges that are linked to those decisions — such as a country's population growth rate and demographic structure. Research is essential for understanding those links, and for positive societal changes to happen, that research needs to inform policy. When the Council first approached Dr. McDaniel about sitting on the Scientific Advisory Committee (SAC) back when it was in its infancy, she saw it as an adventure, and says she was excited by the notion of bringing together evidence on a key question of policy interest, without providing any recommendations. Six years later, now Vice-Chair of SAC, she is passionate about the Council, the importance of the work it does, and the calibre of staff and volunteers who make it all happen. She is the sole social scientist on SAC and she notes that there isn't a question that comes to the Council that doesn't have a social science component. The Council, she says, is extremely important to Canadians. It fills a niche that is not being filled anywhere else. Simply stated, it connects the best research with the best policy questions.

to present the evidence as it relates to wind turbine noise and adverse health effects in humans. It will also seek to identify knowledge gaps in scientific and technological areas, and examine the new engineering technologies and best practices currently employed in other countries.

### **Risk: Is the Message Getting Through?**

Risk communication is an essential part of any risk management program and an important component of risk management strategies. In the field of public health, timely and effective communication is essential to maximizing the health and safety of Canadians. For numerous departments and agencies at all levels of government, as well as public and private organizations, effective risk communication means protecting Canadians from preventable health risks associated with medicine, food, and various consumer products. The Council's assessment, requested by Health Canada, will offer insights and evidence pertaining to the types of tools and instruments currently available for health risk communication, methodological best practices, and existing barriers to effective risk communications.

### **Understanding the Potential Impacts of Energy Technologies on the Oil Sands Development**

This assessment, requested by Natural Resources Canada, will examine how new and existing technologies could be used to reduce the environmental footprint of oil sands development on air, water, and land. Over the past decade, public interest and debate has been steadily growing over different aspects of oil sands operation. In considering the evidence, the Expert Panel, once assembled, will focus on the two ways in which oil sands bitumen can be extracted — through surface mining and through the use of in situ methods including Steam-Assisted Gravity Drainage (SAGD). It will be important to take into account the various new and existing technologies for improving the extraction processes and for minimizing and managing water usage and associated pollution in the air, water, and on land. Specifically, the Council has been asked to assess: *How could new and existing technologies be used to reduce the environmental footprint of oil sands development on air, water, and land?*

## Memory Institutions and the Digital Revolution

Over the past three decades, Canadians have seen a dramatic transformation in both personal and professional forms of communication due to new technologies. Technological advances have enabled people to adopt different approaches to communicating and documenting their lives, culture, and work. Increased computing power, inexpensive electronic storage, and the widespread adoption of broadband computer networks have thrust methods of communication far ahead of our ability to ascertain the implications of these advances.



As such, Library and Archives Canada requested the Council conduct an assessment to address: *How might memory institutions embrace the opportunities and challenges posed by the changing ways in which*

*Canadians are communicating and working in the digital age?* As part of this assessment, the Council's Expert Panel, chaired by Doug Owram, FRSC, from the University of British Columbia, will examine the evidence as it relates to emerging trends, international best practices in archiving, and strengths and weaknesses in how Canada's memory institutions are responding to opportunities and challenges. Once complete, this assessment will provide an in-depth and balanced report that will support memory institutions as they consider how best to manage and preserve the mass quantity of communications records generated as a result of new and emerging technologies.

## Completed Assessments: Continuing Impact

The impact of Council assessments can and does last well beyond their public release dates. The issues and important questions addressed in Council reports are complex and changes to policy take time, creating a need for assessment reports that can serve as a resource for many years. As part of the Council's regular processes, staff systematically gather feedback on how reports are being used.

The Council surveyed the sponsors of two 2011 reports — *Healthy Animals, Healthy Canada* and *Integrating Emerging Technologies into Chemical Safety Assessment* — one year after each report's release. The sponsors of both assessments indicated that the reports met expectations and are informing policy discussions.

Other types of impact monitoring conducted by the Council have also turned up information that shows these reports are being used in training programs and as a basis for scientific presentations. For example, *Healthy Animals, Healthy Canada* was presented at PRION 2013 in Banff, Alberta. The Chair of the Expert Panel for Integrating Emerging Technologies into Chemical Safety Assessment has presented the findings of the report to groups within Health Canada and at the OECD. The report has also been presented to scientific and industry groups across North America and as far away as Japan. Its findings have been a point of discussion at international conferences that attract experts in toxicology and associated fields. Both 2011 reports are also serving as teaching and reference tools within academia.

There is a great deal of evidence that published assessments are continuing to inform discussion. For example, the 2009 report *Innovation and Business Strategy: Why Canada Falls Short* continues to be referenced by thought leaders engaged in policy development. It was cited in a June 2012 Library of Parliament research publication called *The Business of Innovation in Canada: Challenges and Responses* by Dillan Theckedath and also in a June 2012 Library of Parliament background paper called *Canada's Aging Population and Public Policy: The Effects on Employers and Employees* by Sandra Elgersma *et al.* It was also referenced by the President and CEO of CANARIE Inc. during an appearance before the Standing Committee on Industry, Science and Technology; by the Canadian Chamber of Commerce in a 2011 pre-budget submission to the House of Commons Standing Committee on Finance; by Genome Canada in a 2011 brief to Parliament; and by McGill University in another 2011 brief to Parliament.





Another method for monitoring the impact of assessment reports is to count the number of citations in peer-reviewed scientific journal articles. This provides insight into whether the scientific community is using the assessment to inform the creation or interpretation of new research. As a rough benchmark, the average number of citations for a scientific paper four years after publication is about seven. By comparison, the Council’s assessment on gas hydrates, *Gas Hydrates: Assessing the Opportunities and Challenges for Canada*, has been cited 15 times in the four years since its publication. Similarly, the Council’s assessment on nanotechnology, *Small Is Different: A Science Perspective on the Regulatory Challenges of the Nanoscale*, has been cited 11 times, four years after publication. Many of the Council’s assessments clearly continue to be relevant to their respective fields.



Members of an expert panel hard at work.



The Council’s visibility and outreach measured through its online presence continue to grow rapidly; all measurable benchmarks have increased over the last year. The growth in website traffic, social media, and the impact of reports on online traffic is described in detail, under Implementing the Council’s Strategic Plan – Goal 6: Increase Visibility.

*“The 2012 Council report regarding new and integrated approaches to assessing chemicals was highly useful for my work at the Office of the Auditor General of Canada, in helping to identify emerging practices in science-based risk assessments at the international level. It was written in a clear and accessible manner both for specialists and a more general audience, and it was timely given the challenges many public authorities are facing in conducting risk assessments of new chemical substances such as pesticides.”*

Scott Vaughan, former Commissioner of the Environment and Sustainable Development;  
President, International Institute for Sustainable Development





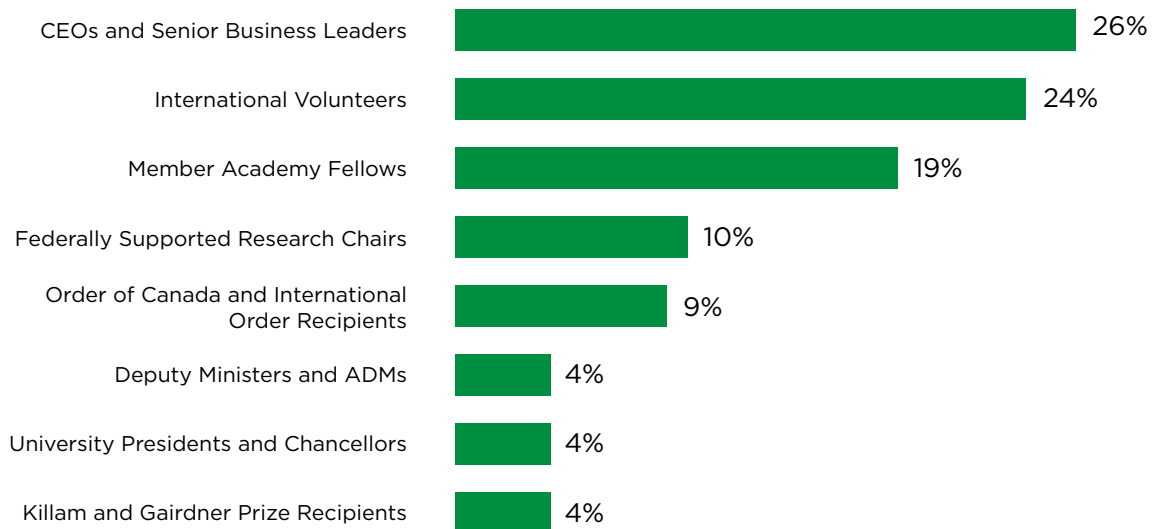
# Council Volunteers

# Council Volunteers: The Lifeblood of the Organization

Each year, growing numbers of Canadian and international experts participate in the Council’s assessment process. These experts serve as the panel members who contribute their time and expertise to produce reports, as the members of the Scientific Advisory Committee who advise on the selection of panel members, as the Board members who provide oversight and approvals, and as the peer reviewers who comment on each panel’s report for quality, accuracy, and neutrality. The depth of expertise among Council volunteers is impressive. They are CEOs of companies, research chairs in academia, and, of course, Fellows of the Member Academies. They have been recognized for their outstanding contributions as recipients of prestigious awards. They are leaders in their fields. The Council simply could not function without its volunteers – they are truly the lifeblood of the organization.

As of March 31, 2013, 612 volunteer experts have contributed their time and expertise to the Council since the organization’s inception. Since 2005, the Council has leveraged \$13.6 million in expert time – a significant contribution in support of evidence-based public policy. As such, the Council is committed to ensuring that its volunteers are recognized for their remarkable contributions both within and outside of their role with the Council. To acknowledge expert panel members and their voluntary efforts, the Council sends a letter to each

## Calibre of Experts

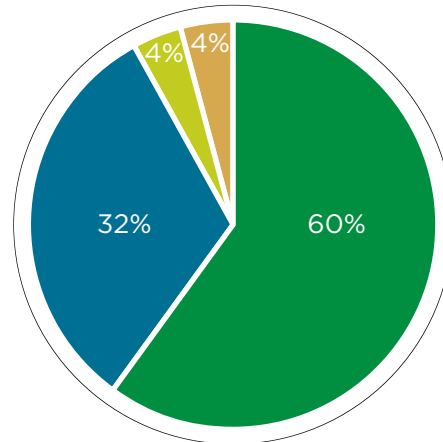


These percentages include individuals who may have served as a volunteer more than once.

panel member’s employer at the beginning and the end of their tenure on an expert panel. Volunteer achievements are posted on the Council’s website, Facebook page, and Twitter feed, and are noted in the quarterly newsletter. The Council’s goal is to ensure that its volunteers understand how valued they are by the Council, and what an important contribution they are making to the Canadian public policy landscape. The Council’s recent performance audit notes that “While panel members and reviewers participate because the question is of research interest to them and for the prestige of being associated with a high calibre report that informs policy discussions, nevertheless they are very appreciative of the acknowledgements.”

Many volunteers generously extend their commitment to the Council well beyond an assessment’s release date, and the Council is humbled by their dedication and enthusiasm. For example, Len Ritter, Professor Emeritus of Toxicology, University of Guelph, remains an extremely committed and active spokesperson on behalf of the assessment for which he was Panel Chair – *Integrating Emerging Technologies into Chemical Safety Assessments* (released in January 2012). And Panel Chair Eliot Phillipson continues to generate generous and unwavering support for *The State of Science and Technology in Canada, 2012* (released in September, 2012) and always makes himself available to speak about and promote the report. This kind of commitment is invaluable for furthering the Council’s awareness and visibility of its work. The Council is honoured to have the support of these and its hundreds of other committed volunteers.

### Volunteer Breakdown



- Panel Member
- Reviewer
- Board
- SAC

These percentages include individuals who may have served as a volunteer more than once.

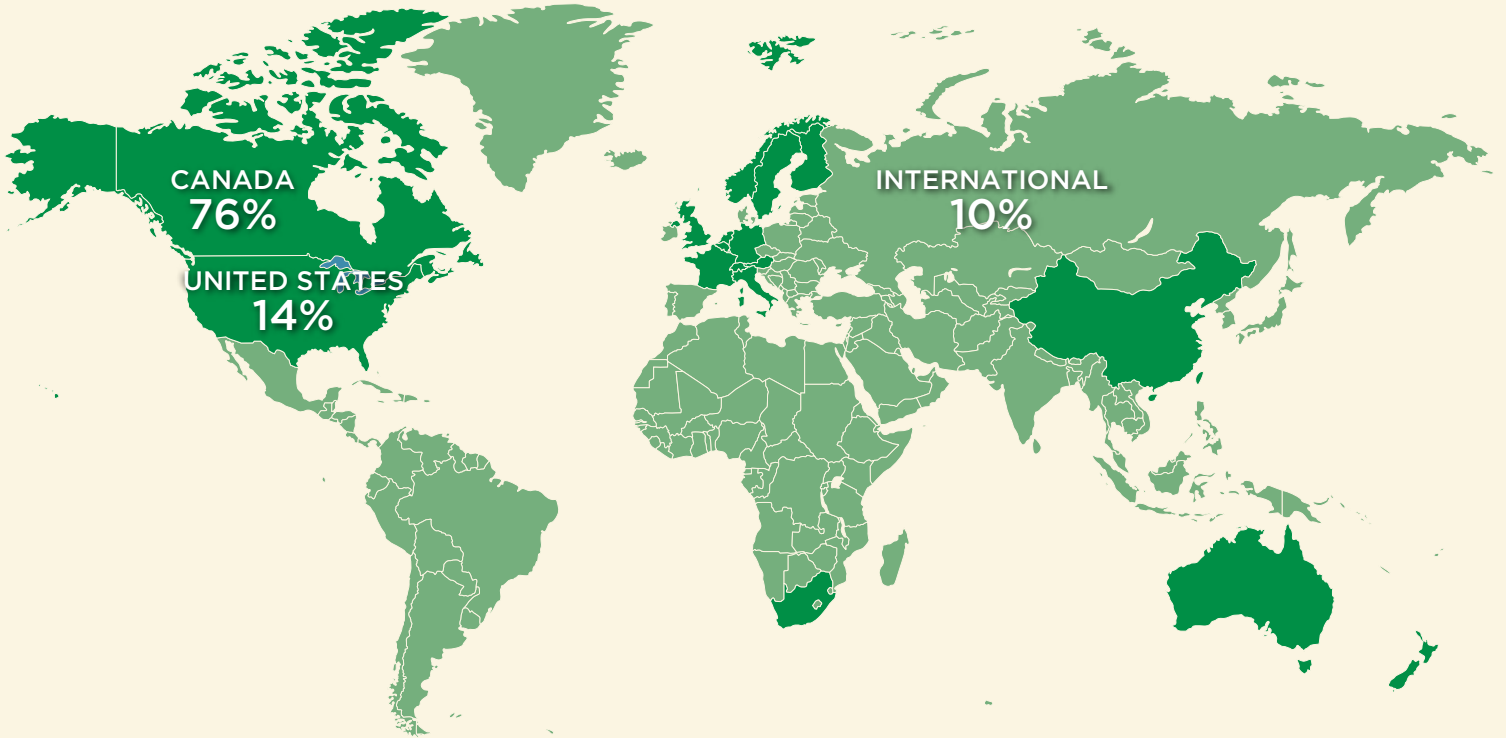
*“As Chair of the Scientific Advisory Committee, I am keenly aware how important it is to recruit excellent members for the expert panels. The ability of Council to provide government with high-quality assessments of the complex questions that are referred to it depends greatly on the qualifications and dedication of our panel members. To date, we have had the good fortune to work with more than 600 experts from around the world who have volunteered substantial amounts of their time and attention in contributing to the authoritative reports through which Council informs public policy.”*

Tom Brzustowski, O.C., FRSC, FCAE, Scientific Advisory Committee Chair



### Expert Volunteer Geographical Breakdown

**Total Volunteers: 612**



Alberta	54
British Columbia	70
Manitoba	10
New Brunswick	12
Nova Scotia	27
Newfoundland	9
Northwest Territories	1
Ontario	178
Prince Edward Island	3
Quebec	89
Saskatchewan	12

**Total Canadian Volunteers: 465**

Austria	1
Australia	3
Belgium	1
China	1
Finland	4
France	3
Germany	3
Italy	1
Netherlands	5
Norway	4
New Zealand	2
South Africa	2
Sweden	2
Switzerland	1
United Kingdom	28

**Total International Volunteers: 61**

Alaska	2
California	14
Colorado	4
Connecticut	2
Delaware	1
District of Columbia	8
Georgia	2
Iowa	1
Kansas	1
Maine	1
Maryland	5
Massachusetts	7
Michigan	3
Minnesota	2
Mississippi	2

Missouri	2
New Mexico	1
New York	8
North Carolina	5
Ohio	1
Oregon	1
Pennsylvania	3
South Carolina	1
Tennessee	2
Texas	1
Virginia	5
West Virginia	1

**Total U.S. Volunteers: 86**



# Strategic Plan

# Implementing the Council's Strategic Plan

The Council's strategic plan, *Insight & Impact*, has established six key interrelated strategic goals to guide its activities through to 2014. All of the work the Council has done this year has been guided by these goals, in support of its central mission to produce nationally and internationally recognized, evidence-based assessments of scientific knowledge on issues of public interest. These strategic goals are as follows:

1. **Improve responsiveness:** Develop and provide, on a timely basis, a line of services that responds to the needs of sponsors.
2. **Achieve potential:** Attract questions of the highest importance and relevance to Canadian well-being.
3. **Maintain excellence:** Maintain and enhance standards for scientific excellence and high-quality services.
4. **Become sustainable:** Establish a long-term, sustainable, and dependable funding stream.
5. **Foster collaboration:** Strengthen collaborative alliances among Member Academies and the Council to achieve the Council's strategic goals.
6. **Increase visibility:** Increase visibility and awareness of the Council's work to further the organization's impact.

## Values

The following values underpin all of the Council's activities:

- Excellence
- Independence
- Integrity
- Collaboration
- Innovation

## Goal 1: Improve Responsiveness

**Develop and provide, on a timely basis, a line of services that responds to the needs of sponsors.**

To be effective, the Council must be responsive to the pressing needs of government and other sponsors. To achieve this, in 2012/13, the Council took several new steps to ensure its assessments were meeting the needs of sponsors and to speed up assessment delivery. Additional work with sponsors at the front end of the assessment process is sharpening assessment questions and ensuring that evidence-gathering is focused on core knowledge needs that can provide a sound basis for decision-making once the assessment is publicly released. The Council also engaged in several pilot projects that fell outside of the federal funding agreement, for which the Council's assessment process was modified to meet the very specific needs of each assessment sponsor.

For example, *Informing Research Choices: Indicators and Judgment*, requested by the Natural Sciences and Engineering Research Council of Canada (NSERC), provided the sponsor with an assessment of the



qualitative and quantitative indicators used to inform funding decisions related to discovery-based research. NSERC used the report to set the stage for a widespread consultation on its Discovery Grants Program.

In the case of the assessments for external sponsors in 2012/13, each project was uniquely designed to meet the needs of its sponsor:

- *Medical and Physiological Impacts of Conducted Energy Weapons*, sponsored by Defence Research and Development Canada, has a shortened timeframe and is a joint effort of the Council and the Canadian Academy of Health Sciences.
- The process for *Innovation Impacts: Measurement and Assessment*, sponsored by the Government of Ontario, included a closed workshop, attended by representatives from other provincial governments, at which the Panel heard from invited guests. This modified process was designed to create an opportunity for additional experts to share their knowledge with the Expert Panel in an effort to capture the most leading-edge practices and evidence on the subject.
- *Canadian Ocean Science*, sponsored by the Canadian Consortium of Ocean Research Universities (CCORU), was requested after the completion of a related workshop report of a deliberative dialogue. The workshop report — *40 Priority Research Questions for Ocean Science in Canada* — responded to an immediate policy need and was conducted in a compressed timeframe. A report was released in July 2012. It will inform the full assessment.

Feedback from the 2012/13 performance audit indicates the Council is achieving success in this drive to respond to its sponsors' needs. It notes that the Council "has developed economical and efficient practices and processes in understanding the context of the assessment and sponsor needs, defining scope of assessments and recruiting high-calibre experts as panel members."

## Goal 2: Achieve Potential

### Attract questions of the highest importance and relevance to Canadian well-being.

For evidence-based assessments to have the greatest impact, they must explore significant issues that are important to the well-being of Canadians. The process by which the Council solicits questions ensures that the assessments it undertakes are particularly germane to public policy and connected to the lives of Canadians.

The federal government's Call for Proposal process, led by Industry Canada, provides a systematic means through which to solicit and receive proposed assessment questions. Potential sponsors (federal departments and agencies) must submit a detailed proposal which is then evaluated against a stringent set of selection criteria

*"At a time when innovation and the discovery and application of new knowledge have never been more important, the Council of Canadian Academies continues to produce material that informs public discussion and to bring together some of the country's top minds to help steer a path towards a better future."*

Jeffrey Simpson, National Affairs Columnist, *The Globe and Mail*

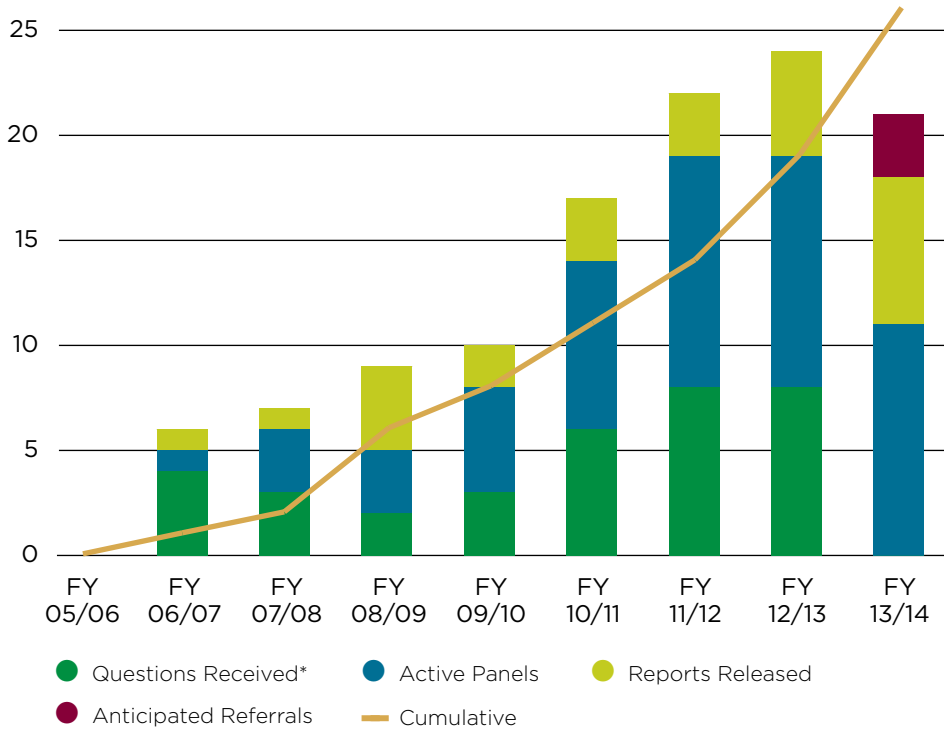




by a working group of officials from science-based departments and agencies. This process, combined with the Council’s increased visibility and strong reputation for excellence, has resulted in increased interest in the work of the Council and subsequently more questions being referred on an annual basis.

The diversity of assessment topics has also increased since the Council’s inception. In 2013/14, the Council will initiate assessments on subjects as varied as *Wind Turbine Noise and Human Health*, *The Future of Canadian Policing Models*, *STEM Skills for the Future*, and *Understanding the Potential Impacts of Energy Technologies on the Oil Sands Development*. This broad range of subjects speaks to the agility of the Council and its capacity to take on a mix of multi-faceted public policy issues.

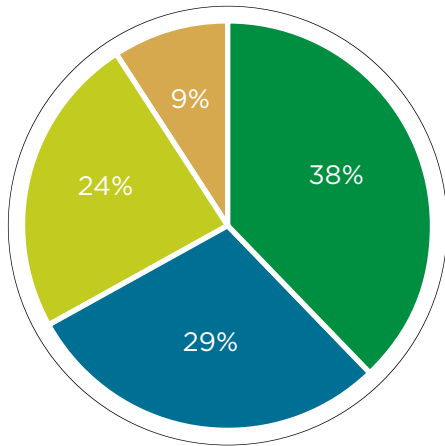
### Intensity of Assessment Activity by Fiscal Year



\*Graph does not include *Catalyzing Canada's Digital Economy* (2010) or the Council's ongoing synthesis of report findings in the areas of S&T, R&D, and innovation, as these are self-initiated assessments.

The Council's and government's strong commitment to a rigorous process for identifying relevant and meaningful questions for assessment means that Canadians can have confidence that in-depth analysis and consideration are taking place on the issues of greatest importance to Canada.

**Breadth of Report Subjects**  
(Reports 2005–2013)



- Natural Sciences and Engineering
- Health Sciences
- Social Sciences
- General

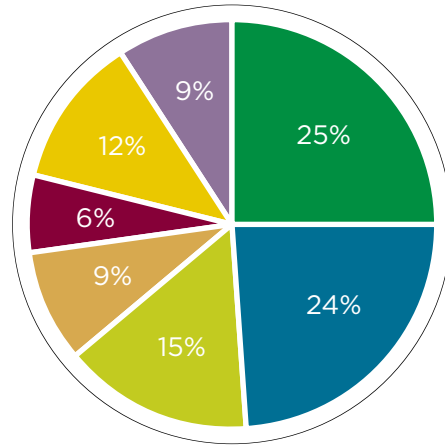
**General** – Assessments with a more overarching scope crossing numerous research fields, e.g., *The State of Science and Technology in Canada, 2012*.

**Health Sciences** – Assessments on the influences, risks, and factors affecting human health.

**Social Sciences** – Assessments related to business, economics, industry, and academia, among others.

**Natural Sciences and Engineering** – Assessments related to biology, chemistry, earth science, the environment, and engineering.

**Diversity of Sponsors**  
(Percentage of Reports Sponsored)



- Industry Canada
- Federal Agencies, Museums, and Councils
- Health Canada
- Natural Resources Canada
- Environment Canada
- Other Federal Ministries
- Non-federal Sponsors

## Goal 3: Maintain Excellence

### Maintain and enhance standards for scientific excellence and high-quality services.

The Council must set high standards to maintain the quality of its work and its reputation as a trusted source of evidence-based scientific assessments. It does this through the processes by which it accepts questions and by using a detailed methodology for conducting assessments. The rigour and discipline of these processes in turn demonstrate to those expert volunteers that they can have confidence in the Council.

Questions that are assessed by the Council are, as outlined in relation to Goal 2, selected through a careful application and review process. But the high standards under which the Council operates do not stop there. The process of conducting assessments is also subject to rigorous specifications.

The Council uses a proprietary project management tool called the Council Assessment Lifecycle Methodology (CALM). CALM is an extensive document that is used by Council staff at every step of the assessment process to set standards, timelines, and deliverables, and to provide a continuous system of checks and balances. The recent performance review recognized the strengths of CALM and described it as “an excellent and detailed guide on implementation steps for assessments, methodologies, and report distribution that is reviewed regularly, reflecting the organization’s continuous learning philosophy.” This detailed methodology ensures that every step of this complex and demanding process is completed to the acceptable level of excellence. Some of the key steps include the following:

- Once an assessment question has been referred to the Council, the Scientific Advisory Committee is critical to ensuring that high-quality and multidisciplinary panels are assembled and that the questions can be appropriately assessed by an expert panel.
- Once a report has been written, it goes through an independent peer-review process to evaluate the scientific accuracy and merit of the assessment.
- As the report is prepared for print and release, it goes through a series of steps to ensure it is properly referenced, well-written, highly readable, and contains accurate and understandable data and figures.
- Once a report has been translated, Council staff take time to ensure it is of the highest quality in both official languages, and that English and French texts are consistent with each other.
- As the report nears completion, staff create a release plan that will ensure the report reaches the right people – those who can use it to inform both policy discussions and decisions.
- Before release, each report must be reviewed and approved by the Council’s Board of Governors.

*“It is clear the Council is well on its way to becoming recognized as a powerful organization for all aspects of research and evidence critical to Canadian policy development and, at the same time, useful for science globally.”*

Rita R. Colwell, former Director,  
National Science Foundation

CALM has proven to be essential for maintaining the quality of the Council’s assessment work. In 2012/13, Council staff conducted a detailed review of CALM to update the methodology based on lessons learned and also the Council’s experience with a growing diversity of report topics and sponsors. The review of CALM will be finalized in the 2013/2014 fiscal year. By setting stringent standards at every stage of the assessment process, the Council has created consistent, yet evolving procedures that promote a high standard of excellence.

*“[Council] staff is of high quality and is broadly and deeply knowledgeable. They are well chosen to support the Council’s assessment process. This view of Council staff is shared by external respondents who are impressed with the quality of the Council reports and the competence of the staff in research and writing.”*

Performance Audit Finding



The Council also recognizes that in the search for excellence effective processes have to be supported and complemented by the attraction of human resources of the highest quality. A preceding section of this Annual Report clearly demonstrates the stature, expertise, and experience of our expert panel members. The Council strives to provide a workplace that is driven by continuous learning for its talented staff, including a very effective internship program.



Council staff participating in the Annual Retreat.



## Goal 4: Become Sustainable

### Establish a long-term, sustainable, and dependable funding stream.

In 2012, Council management, with the direction of the Board of Governors and the support of Board Champion, Dr. Henry Friesen, initiated a specific project to seek renewal of the 2005 funding agreement with the Government of Canada. At the time of writing this report, a sub-committee of the Board, including those appointed to the Board by Member Academies, were engaged in the project. The Council’s objective is to see the Council’s funding agreement renewed before the current agreement expires in March 2015.

To inform the funding renewal process, the Council has conducted a performance audit, which was nearing completion at the end of the 2012/13 fiscal year, and initiated an external evaluation, which will be completed in fall 2013. The performance audit focused on internal Council processes and their economy, efficiency, and effectiveness. In contrast, the purpose of the independent external evaluation is to assess the relevance of the Council and the impact of its work. The External Evaluation Panel struck by the Council’s Board of Governors is chaired by Richard Dicerni, former Deputy Minister of Industry Canada. He is joined by Stephen Toope, President and Vice-Chancellor, University of British Columbia; Julie Maxton, Executive Director for the Royal Society in the U.K.; and James Reisa, Director, Board on Environmental Studies and Toxicology for the National Research Council, National Academy of Sciences.

The External Evaluation Panel has been asked to assess the main corporate objectives set out in the Council's funding agreement:

- To provide credible, independent, expert assessments with respect to the sciences, on matters of public interest and, through public release of assessments, to enhance public awareness and understanding of the sciences;
- To enhance government's, industry's, and the public's ability to access the best available scientific knowledge on pressing issues with the objective of informing debate and decision-making; and
- To provide a voice for Canadians with respect to the sciences, both nationally and internationally.

The evaluation will follow and respond to requirements laid out by the Treasury Board for program evaluations.

The Council makes every effort to collaborate with its Member Academies, and is working with Member Academy Board members on the funding renewal project. In January 2013, the Council hosted a day-long meeting with representatives of the Member Academies to discuss funding renewal, how to improve communications, and the value the Member Academies bring to the Council's work.

As the Council proceeds with its performance audit, external evaluation, and funding renewal process, producing high-quality reports remains its priority. The assessments are the Council's *raison d'être*, and as such will remain the central focus of its work.

PROFILE:

## **Tom Marrie, FCAHS**

*Board of Governors, Member*



Becoming a physician, for **Tom Marrie**, was just the right thing to do. His path to becoming a leading expert in infectious disease, and ultimately the 12<sup>th</sup> Dean of Medicine at Dalhousie University, was a more complicated journey. It began at a young patient's bedside in the early 1970s, where he passed five days and nights struggling to find a solution to the man's serious brain infection. Though Dr. Marrie had been on the road to a career in internal medicine, the experience led him to specialize in infectious diseases — a field that, he realized, was then desperately short of expertise. He brings his lifelong commitment to making a genuine impact on the lives of others to his role at the Council. Dr. Marrie is nearing the end of his four-year term on the Council's Board of Governors, which he has held by virtue of his roles as President-Elect and then President of the Canadian Academy of Health Sciences. He says that serving on the Council's Board of Governors has been an invaluable experience. The Council provides a rare opportunity to work with and learn from a diverse and talented group of professionals — whether they are Panel Experts, other volunteers, or Council staff. He is honoured to see results of experts' hard work, and to participate in the process of producing assessments that will be recognized internationally and will benefit all Canadians. He would advise anyone to go to the Council's website and read the reports — the information contained in them is relevant to every Canadian, and has real potential to change all of our lives for the better.

## Goal 5: Foster Collaboration

### **Strengthen collaborative alliances among Member Academies and the Council to achieve the Council's strategic goals.**

The Council values and benefits from the collective expertise and intellectual resources of its expert volunteers, many of whom are Fellows of the Council's Member Academies. Ensuring the success of its relationships with the Member Academies has been a priority of the Council's Board of Governors, Scientific Advisory Committee, and management. As such, it continues to seek out Fellows of the Member Academies to sit on expert panels and to serve as report reviewers.

Of particular note from 2012 was a joint assessment the Council undertook with the Canadian Academy of Health Sciences (CAHS), which related to the medical and physiological impacts of conducted energy weapons. As part of this collaboration the Council is overseeing the expert panel process, and the publication and release of the report. This is the second assessment activity the Council has conducted with the CAHS – the first was *Canadians Making a Difference*, a report on Canada's current role in global health, released in November 2011.

A number of activities that serve to foster collaboration and build the Council's relationship with its Member Academies occur as part of the Council's regular practices.

- The Council continues to offer secretariat and IT support (at cost) to the CAHS, specifically in the form of staff support to their Standing Committee on Assessments, to their general operations, and for the creation and maintenance of a Fellows database.
- The Council and Member Academies keep each other informed of key activities through a quarterly teleconference between the Presidents of the four organizations.
- The Council seeks Member Academy input for names of Fellows to sit on expert panels and act as peer reviewers.
- A Council representative attends the Annual General Meetings held by the Member Academies, and in some cases has the opportunity to welcome new Fellows.
- The Council promotes the work of the Member Academies through its quarterly e-newsletter and social media feeds.
- The Council always provides references to the Member Academies and a descriptor for each organization within its reports and on its website.

The Council looks forward to continuing to work closely with the Member Academies and to seeking further means of collaboration in 2013/14.

## Goal 6: Increase Visibility

### Increase visibility and awareness of the Council's work to further the organization's impact.

The Council is committed to increasing visibility and awareness of its work among key stakeholders and research communities with a specific interest in an assessment topic. In the past year, Council staff implemented or refined activities such as the following:

- Identifying potential audiences for each report, and developing targeted distribution lists.
- Promoting assessments at relevant science or policy-based conferences such as the Canadian Science Policy Conference, Association francophone pour le savoir (ACFAS), and the annual American Association for the Advancement of Science (AAAS) meeting.
- Notifying specialized websites and listservs about Council report releases.
- Expanding dissemination activities by leveraging the Council's online presence through social media, video, and the Council's website.
- Designing strategic advertisements for individual assessments and placing them in targeted publications, such as trade magazines or conference programs that are read by key audiences.
- Publishing a quarterly electronic newsletter that includes updates about Council assessments, expert panel members, and science policy news.
- Reaching out to the university communication offices of expert panel members to notify them about the work of their faculty and the pending release of a Council report.

These efforts are the result of the dedication of the Council's small communications team. This able group of professionals conduct all communication on behalf of the Council, including overseeing the planning and publication of assessments in both official languages, release of assessments, and the Council's outreach and impact monitoring work.

The Council's online presence continues to grow; all measurable benchmarks have increased over the last fiscal year. The Council's website now attracts more than 250 visitors on an average day, reaching anywhere from 700 to nearly 3,500 on the day an assessment is released. Over the entire year, the website saw 80,737 visits, 55,635 of them unique visitors — up dramatically from 30,746 unique visitors in 2011/12. The role of social media in promoting the Council's work is growing rapidly, with 2,732 visits to the website via social media in 2012/13, up from 515 in the previous year. The role of social media in bringing visitors to the Council's website will certainly continue to increase in importance in the coming year.



Council President, Elizabeth Dowdeswell, speaks at the launch of the report on the State of Science and Technology in Canada, 2012.





*“The Council’s [...] separate communication and distribution plans for each assessment are efficient and effective in creating awareness of the Council and its programs and activities. For a young organization, it has done remarkably well in being recognized nationally as a highly credible scientific organization providing independent, authoritative, expert advice in public policy making.”*

Performance Audit Finding



The strategic distribution of Council reports has also reached substantial new audiences in the past year. The Council distributed approximately 4,324 hard copy reports and Reports in Focus in fiscal year 2012/13 and saw over 14,000 downloads of Council reports and materials from its website. In all, visitors to the Council website came from 176 countries around the globe and from 536 cities across Canada. This compares with visitors from 158 countries and 395 Canadian cities in the year before.

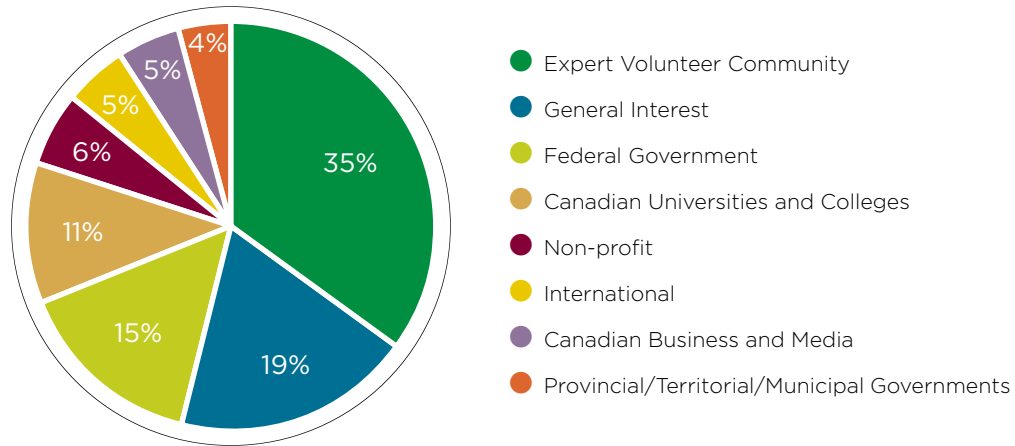
Each newly released assessment is actively disseminated to thousands of strategically selected people and organizations that are most likely to benefit from the report. The Council uses all media tools that are available and appropriate, and tailors the approach to the needs of each assessment. For example, a proactive and multi-pronged communications approach was used for the release of *The State of Science and Technology in Canada, 2012*. Initial release activities featured a release event with the Economic Club of Canada, a national media briefing with the Science Media Centre of Canada, social media engagement, placement of an op-ed in *The Hill Times*, and one-on-one interviews and story pitching with print, radio, and television reporters. The Council also produced a video in both official languages and an English podcast to help explain details of the report. Electronic distribution of the report was extensive, reaching close to 10,000 people – it went out to a specialized list of approximately 8,000 people and/or organizations, and to the Council’s mailing list of over 1,500.



News releases and other notifications were sent out via Canada News Wire, the Science Media Centre of Canada, the Canadian Association of University Research Administrators (CAURA) listserv, the Partnership Group for Science and Engineering (PAGSE) email list, the Canadian Science Policy Centre, the American Association for the Advancement of Science (AAAS) Policy Alert, and EurekAlert. The EurekAlert notification alone reached over 8,200 journalists.

In the weeks and months following a report release, the Council receives requests for hard copy reports. The Council tracks these requests to better understand who is interested in the organization’s work. Council materials are being requested by a wide audience of policy and research professionals in government, academia, and industry. Materials are also being requested by people outside of Canada from countries such as China, France, and Austria. All of this indicates that Council reports are relevant both domestically and internationally – there is demand for Council reports from Canadian decision-makers and international interest in learning from the available knowledge and experience here in Canada.

**Mailing List Composition**  
(Approx. 1,300 people, March 2013)





# Conclusion



2012/13 was an impressive year for the Council. Generating assessment reports was the core of the Council's work, as always, and last year was the most active yet. The Council's expert volunteer capacity continued to expand, reflecting the enormous contribution that Canada's expert community continues to make to gather and evaluate evidence in support of policy for the benefit of all Canadians. The Council's ceaseless commitment to strive for excellence led to important initiatives toward the end of the fiscal year. The Council commissioned an independent performance audit of its operations and an evaluation of its relevance and impact. The Council advanced its efforts to secure sustainable funding past 2015. And it continued to build its visibility and foster its relationships with its Member Academies, and with its volunteers and sponsors, new and old.

In the coming year, the Council's standards for excellence and commitment to producing high-quality, evidence-based assessments will not falter. The Council looks forward to releasing a new wave of timely reports that address pressing policy issues that have the potential to influence the lives of Canadians far into the future. The Council has emerged as a mature organization that has hit its stride. It is an exciting time for the organization, and the need and demand for its work — and the value of its work — are now clearer than ever. The Council takes seriously the unique role it exercises within the science and technology ecosystem, providing decision-makers and all Canadians with the evidence and expert insight needed to inform today's policy discussions and tomorrow's policy decisions.



# Expert Volunteers

# Expert Volunteers Active in 2012/13

## The Expert Panel on Science Performance and Research Funding

Affiliations as of July 2012

- **Rita R. Colwell** (Chair), Distinguished University Professor, University of Maryland, College Park and Johns Hopkins University Bloomberg School of Public Health; Senior Advisor and Chairman Emeritus, Canon U.S. Life Sciences, Inc.; and President and CEO, CosmosID, Inc. (College Park, MD)
- **Max Blouw**, President and Vice-Chancellor, Wilfrid Laurier University (Waterloo, ON)
- **Linda Butler**, Visiting Fellow, Australian National University; Conjoint Professor, University of Newcastle (Soldiers Point, Australia)
- **Susan E. Cozzens**, Professor of Public Policy, Director of the Technology Policy and Assessment Center, and Associate Dean for Research, School of Public Policy, Ivan Allen College, Georgia Tech (Atlanta, GA)
- **Irwin Feller**, Senior Visiting Scientist, American Association for the Advancement of Science (State College, PA)
- **Yves Gingras**, Professor and Canada Research Chair in History and Sociology of Science, Université du Québec à Montréal (Montréal, QC)
- **Jacques Hurtubise**, FRSC, Chair, Department of Mathematics and Statistics, McGill University (Montréal, QC)
- **Gretchen Jordan**, Principal Member of Technical Staff, Sandia National Laboratories (Albuquerque, NM)
- **John S. MacDonald**, O.C., FCAE, Chairman, Day4 Energy, Inc. (Burnaby, BC)
- **Marja Makarow**, Chief Executive, European Science Foundation (Strasbourg, France); and Professor of Applied Biochemistry and Molecular Biology, University of Helsinki (Helsinki, Finland)
- **James (Jim) C. McGroddy**, Retired, International Business Machines (IBM) (New York, NY)
- **Tim McTiernan**, President and Vice-Chancellor, University of Ontario Institute of Technology (Oshawa, ON)
- **Sir Keith O'Nions**, Rector, Imperial College London (London, United Kingdom)
- **René Simard**, O.C., FRSC, FCAE, Professor Emeritus, Université de Montréal (Montréal, QC)
- **Alan E. Winter**, FCAE, President and Chief Executive Officer, Genome British Columbia (Vancouver, BC)
- **Ronald Woodward**, President, Clockbuilder Consulting, Ltd.; President Emeritus, Red Deer College (Red Deer, AB)

## Report Reviewers for Science Performance and Research Funding

Affiliations as of July 2012

- **Claire Donovan**, Reader, HERG at Brunel University (London, United Kingdom)
- **Stevan Harnad**, Canada Research Chair, Cognitive Science, Université du Québec à Montréal (Montréal, QC)
- **Diana Hicks**, Professor and Chair, Georgia Institute of Technology (Atlanta, GA)
- **Kari Kveseth**, Science Counsellor, Royal Norwegian Embassy (Beijing, China)
- **Cheryl Oros**, Founder and CEO, Oros Consulting (Washington, DC)
- **Pekka Sinervo**, FRSC, Professor, University of Toronto (Toronto, ON)
- **David Strangway**, O.C., FRSC, President and Chancellor, Quest University (Squamish, BC)
- **Robert Tijssen**, Professor, Science and Innovation Studies, Leiden University (Leiden, Netherlands)
- **Don Wright**, President, British Columbia Institute of Technology (Burnaby, BC)
- *Report Review Monitor:* **Judith Hall**, O.C., FRSC, FCAHS, Professor of Pediatrics and Medical Genetics, University of British Columbia (Vancouver, BC)

## The Expert Panel on the State of Science and Technology in Canada

Affiliations as of September 2012

- **Eliot A. Phillipson** (Chair), FCAHS, Sir John and Lady Eaton Professor of Medicine Emeritus, University of Toronto (Toronto, ON)
- **Neil Branda**, Professor and Canada Research Chair in Materials Science and Executive Director, 4D LABS, Simon Fraser University (Burnaby, BC)
- **Eric L. Cook**, Executive Director and CEO, New Brunswick Research and Productivity Council (Fredericton, NB)
- **Pierre Côté**, President, CÔTÉ Membrane Separation Ltd. (Hamilton, ON)
- **Sara Diamond**, O.Ont., President, Ontario College of Art and Design (OCAD U) (Toronto, ON)
- **Rosa M. Fernández**, Economic Advisor, U.K. Department for Business, Innovation and Skills (London, United Kingdom)
- **R.J. (Bob) Fessenden**, Fellow of the Institute for Public Economics, University of Alberta (Edmonton, AB)
- **Fred Gault**, Professorial Fellow, UNU-MERIT (Maastricht, Netherlands) and Professor Extraordinaire, Tshwane University of Technology (Pretoria, South Africa)
- **Gregory S. Kealey**, FRSC, Provost and Vice-President (Research), University of New Brunswick (Fredericton, NB)
- **Robert Luke**, Assistant Vice-President, Research and Innovation, George Brown College (Toronto, ON)

- **Roderick R. McInnes**, C.M., O.Ont., FRSC, FCAHS, Director, Lady Davis Institute for Medical Research, Jewish General Hospital; Canada Research Chair in Neurogenetics and Alva Chair in Human Genetics, McGill University (Montréal, QC)
- **Janet L. Ronsky**, FCAE, Professor, Schulich School of Engineering and Faculty of Kinesiology, University of Calgary; Executive Director, Biovantage Inc., Alberta Ingenuity Centre (Calgary, AB)
- **Noralou Roos**, C.M., FRSC, Professor, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba (Winnipeg, MB)
- **Jacquelyn Thayer Scott**, O.C., Professor, Organizational Management & Strategy, Shannon School of Business, and Past President, Cape Breton University (Sydney, NS)
- **Adel Sedra**, FRSC, FCAE, Dean, Faculty of Engineering, University of Waterloo (Waterloo, ON)
- **Luc Vinet**, Professor of Physics and Past Rector, Université de Montréal (Montréal, QC)
- **Lorraine M.A. Whale**, Manager of Unconventional Research, Shell Global Solutions (Canada) (Calgary, AB)
- **Jeffrey L.C. Wright**, C.M., Carl B. Brown Distinguished Professor of Marine Science and Professor of Chemistry and Biochemistry, University of North Carolina Wilmington (Wilmington, NC)

## Report Reviewers for the State of Science and Technology in Canada

Affiliations as of September 2012

- **Arthur J. Carty**, O.C., FRSC, FCAE, Executive Director, Waterloo Institute for Nanotechnology (Waterloo, ON)
- **Paul Cunningham**, Senior Research Fellow, Manchester Institute of Innovation Research, University of Manchester (Manchester, United Kingdom)
- **Max Fehlmann**, President and CEO, Québec Consortium for Drug Discovery (Île-des-Soeurs, QC)
- **Peter J. Nicholson**, C.M., Inaugural President, Council of Canadian Academies, 2006–2009 (Ottawa, ON)
- **John (Jack) N. Saddler**, FRSC, Professor, Department of Wood Science, University of British Columbia (Vancouver, BC)
- **Daniel Savas**, Adjunct Professor, Master of Public Policy Program, Simon Fraser University (Vancouver, BC)
- **Ronald Stewart**, FRSC, Professor, Department of Environment and Geography, University of Manitoba (Winnipeg, MB)
- **Tom Traves**, President and Vice-Chancellor, Dalhousie University (Halifax, NS)
- **Catherine Wild**, Dean, Faculty of Fine Arts, Concordia University (Montréal, QC)
- *Report Review Monitor:* **Marcel Côté**, Founding Partner of SECOR Inc. (Montréal, QC)

## Core Group for 40 Priority Research Questions for Ocean Science in Canada

Affiliations as of July 2012

- **David B. Fissel** (Chair), Chair and Senior Scientist, ASL Environmental Sciences Inc. (Victoria, BC)
- **Marcel Babin**, Canada Excellence Research Chair in Remote Sensing of Canada's New Arctic Frontier and Director of the Takuvik Joint International ULaval-CNRS Laboratory, Department of Biology, Université Laval (Québec, QC)
- **Ralf Bachmayer**, Associate Professor, Faculty of Engineering and Applied Science; Canada Research Chair in Ocean Technology, Memorial University (St. John's, NL)
- **Kenneth Denman**, FRSC, Professor, School of Earth and Ocean Sciences; Chief Scientist VENUS Coastal Network, University of Victoria (Victoria, BC)
- **Eric Dewailly**, Professor, Centre de Recherche du Centre hospitalier universitaire de Québec, Université Laval (Québec, QC)
- **Kathryn M. Gillis**, Professor, School of Earth and Ocean Sciences and Associate Dean, Faculty of Science, University of Victoria (Victoria, BC)
- **Louis Fortier**, O.C., O.Q., Professor, Department of Biology, Université Laval (Québec, QC)
- **Roy Hyndman**, FRSC, Senior Research Scientist, Pacific Geoscience Centre, Geological Survey of Canada and Professor, School of Earth and Ocean Sciences, University of Victoria (Victoria, BC)
- **Daniel Lane**, Professor, Telfer School of Management, University of Ottawa (Ottawa, ON)
- **Marlon Lewis**, Professor, Department of Oceanography, Dalhousie University (Halifax, NS)
- **Robie Macdonald**, FRSC, Senior Research Scientist, Institute of Ocean Sciences, Department of Fisheries and Oceans Canada (Sidney, BC)
- **Kate Moran**, President and CEO, Ocean Networks Canada; Emeritus Professor of Oceanography, University of Victoria (Victoria, BC)
- **Barbara Neis**, Professor, Department of Sociology, Memorial University; Co-Director, SafetyNet (St. John's, NL)
- **Mark Nuttall**, FRSC, Professor and Henry Marshall Tory Chair, Department of Anthropology, University of Alberta (Edmonton, AB)
- **Émilien Pelletier**, Professor, Chemical Oceanography; Canada Research Chair in Marine Ecotoxicology, Institut des sciences de la mer de Rimouski (Rimouski, QC)
- **Lori Ridgeway**, Senior Advisor to the Associate Deputy Minister, Fisheries and Oceans Canada (Ottawa, ON)
- **Stéphane Roussel**, Professor, Department of Political Science, École nationale d'Administration publique (Montréal, QC)
- **Paul Snelgrove**, Professor and Canada Research Chair, Boreal and Cold Ocean Systems, Memorial University (St. John's, NL)



- **William J. Sutherland**, Professor, Miriam Rothschild Chair in Conservation Biology, Department of Zoology, University of Cambridge (Cambridge, United Kingdom)
- **Curtis Suttle**, FRSC, Professor, Earth and Ocean Sciences, Microbiology and Immunology, and Botany; Associate Dean of Science, University of British Columbia (Vancouver, BC)
- **Douglas Wallace**, Canada Excellence Research Chair in Ocean Science and Technology, Dalhousie University (Halifax, NS)
- **Melanie G. Wiber**, Professor, Department of Anthropology, University of New Brunswick (Fredericton, NB)

## The Expert Panel on Women in University Research

Affiliations as of November 2012

- **Lorna Marsden** (Chair), C.M., O.Ont, President Emeritus and Professor, York University (Toronto, ON)
- **Janice G. Dodd**, Professor and Department Head, Physiology; Professor, Women's and Gender Studies, University of Manitoba (Winnipeg, MB)
- **Nadia Ghazzali**, Rector, Université du Québec à Trois-Rivières; Full Professor, Department of Mathematics and Statistics; NSERC-Industrial Alliance Chair for Women in Science and Engineering in Québec, Université Laval (Québec, QC)
- **Alison M. Konrad**, Professor, Organizational Behaviour, Western University; Corus Entertainment Chair in Women in Management, Richard Ivey School of Business (London, ON)
- **Yvonne A. Lefebvre**, FCAHS, Vice-President (Research and Academic Affairs), Providence Health Care (PHC); President, PHC Research Institute; Associate Dean of Research, Faculty of Medicine, University of British Columbia (Vancouver, BC)
- **Geoffrey Oldham**, CBE, Honorary Professor and Former Director, Science Policy Research Unit (SPRU), University of Sussex; Former U.K. Delegate, UN Commission on Science and Technology for Development (Seaford, United Kingdom)
- **Lynne-Marie Postovit**, Assistant Professor, Anatomy and Cell Biology, Western University; Canada's Young Researcher Award Winner (London, ON)
- **Luisa Prista**, Head, Environmental Technologies Unit, European Commission's Research and Innovation Directorate-General (Brussels, Belgium)
- **Wendy J. Robbins**, Full Professor, Department of English, and Coordinator of Women's Studies, University of New Brunswick; Former Vice-President, Women's Issues, Canadian Federation of the Humanities and Social Sciences (Fredericton, NB)
- **Pamela Robinson**, Associate Professor, School of Urban and Regional Planning, Ryerson University (Toronto, ON)
- **Rima Rozen**, FRSC, FCAHS, Associate Vice-Principal (Research and International Relations); James McGill Professor, McGill University (Montréal, QC)
- **Karen Sobel**, Senior Vice-President, Business Sustainability, Hydrocarbons & Chemicals, SNC-Lavalin (Calgary, AB)

- **Veronica Strong-Boag**, FRSC, Professor, Women's and Gender Studies and Educational Studies; Founding Director, Centre for Women's and Gender Studies, University of British Columbia (Vancouver, BC)
- **Lorna Williams**, Associate Professor, Faculty of Education and Department of Linguistics, University of Victoria; Canada Research Chair in Indigenous Knowledge and Learning (Victoria, BC)
- **Michael C. Wolfson**, FCAHS, Canada Research Chair in Population Health Modelling/Populomics, University of Ottawa (Ottawa, ON)

## Report Reviewers for Women in University Research

Affiliations as of November 2012

- **Hans M. Borchgrevink**, Special Advisor, the Research Council of Norway (Oslo, Norway)
- **Valerie Davidson**, Professor, University of Guelph (Guelph, ON)
- **Margrit Eichler**, FRSC, Professor Emerita, University of Toronto (Toronto, ON)
- **Monique Frize**, O.C., FCAE, Distinguished Professor, Carleton University (Ottawa, ON)
- **Janet E. Halliwell**, President, J.E. Halliwell Associates Inc. (Salt Spring Island, BC)
- **Chaviva Hošek**, O.C., President Emeritus, Canadian Institute for Advanced Research; Professor, School of Public Policy and Governance, University of Toronto (Toronto, ON)
- **Victoria Kaspi**, FRSC, Professor, McGill University (Montréal, QC)
- **Kellie A. McElhaney**, Alexander Faculty Fellow in Corporate Responsibility, Haas School of Business, University of California, Berkeley (Berkeley, CA)
- **Bonnie G. Neuman**, Vice-President (Student Services), Dalhousie University (Halifax, NS)
- **Londa Schiebinger**, Hinds Professor of History of Science, Stanford University (Stanford, CA)
- **W. (Bill) Schipper**, Associate Professor, Department of English, Memorial University of Newfoundland (St. John's, NL)
- **Vianne Timmons**, President and Vice-Chancellor, University of Regina (Regina, SK)
- **Harvey P. Weingarten**, President & CEO, Higher Education Quality Council of Ontario (Toronto, ON)
- *Report Review Monitor:* **Susan A. McDaniel**, FRSC, Director, Prentice Institute & Canada Research Chair in Global Population & Life Course, Prentice Research Chair & Professor of Sociology (Lethbridge, AB)

## The Expert Panel on Water and Agriculture

Affiliations as of February 2013

- **Howard Wheeler** (Chair), Canada Excellence Research Chair in Water Security, Professor, School of Environment and Sustainability and Department of Civil and Geological Engineering, College of Engineering, University of Saskatchewan (Saskatoon, SK)
- **Elena Bennett**, Assistant Professor, Department of Natural Resource Sciences and McGill School of Environment, McGill University (Montréal, QC)
- **Rob de Loë**, University Research Chair, Water Policy and Governance, University of Waterloo (Waterloo, ON)
- **Bob Friesen**, CEO, Farmers of North America Strategic Agriculture Institute (Ottawa, ON)
- **Kirk E. Hamilton**, Lead Economist, Development Research Group, The World Bank (Washington, DC)
- **Lorne Hepworth**, President, CropLife Canada (Ottawa, ON)
- **Dave McGee**, Senior Policy and Implementation Manager, Alberta Environment (Lethbridge, AB)
- **Diane Parent**, Professor, Department of Animal Science, Faculty of Agriculture and Food Science, Université Laval (Québec, QC)
- **John Pomeroy**, Canada Research Chair in Water Resources and Climate Change, University of Saskatchewan (Saskatoon, SK)
- **David Rudolph**, Professor, Department of Earth and Environmental Sciences, University of Waterloo (Waterloo, ON)
- **Stephen R. Smith**, Professor of Bioresource Systems, Department of Civil and Environmental Engineering, Imperial College London (London, United Kingdom)
- **Ronald Stewart**, FRSC, Professor and Department Head, Department of Environment and Geography, University of Manitoba (Winnipeg, MB)
- **P. Kim Sturgess**, FCAE, CEO, and Founder, Alberta WaterSMART (Calgary, AB)
- **Barry Thompson**, Manager and Agriculture Resource Development Coordinator, Agriculture Resource, Government of Prince Edward Island (Charlottetown, PE)
- **Rene Van Acker**, Professor, Department of Plant Agriculture and Associate Dean External Relations, Ontario Agricultural College, University of Guelph (Guelph, ON)

## Report Reviewers for Water and Agriculture

Affiliations as of February 2013

- **Ken W. Belcher**, Department of Bioresource Policy, Business and Economics, School of Environment and Sustainability, University of Saskatchewan (Saskatoon, SK)
- **Safia Hamoudi**, Associate Professor, Department of Soil Sciences and Agrifood Engineering, Université Laval (Québec, QC)
- **Isobel W. Heathcote**, Professor, University of Guelph (Guelph, ON); President, Wyndham Research Inc. (Bracebridge, ON)
- **Calestous Juma**, Professor of the Practice of International Development, Harvard Kennedy School (Cambridge, MA)
- **Gary Kachanoski**, President and Vice-Chancellor, Memorial University of Newfoundland (St. John's, NL)
- **Kerry T.B. MacQuarrie**, Professor and Canada Research Chair, Department of Civil Engineering and Canadian Rivers Institute, University of New Brunswick (Fredericton, NB)
- **Nancy Olewiler**, Professor and Director, School of Public Policy, Simon Fraser University (Vancouver, BC)
- **Alain N. Rousseau**, Full Professor-Researcher, INRS-ETE (Québec, QC)
- **Robert Sandford**, Chair, Canadian Partnership Initiative UN Water for Life Decade (Canmore, AB)
- **David Sauchyn**, Research Professor, Prairie Adaptation Research Collaborative, University of Regina (Regina, SK)
- **Gord Surgeoner**, President, Ontario Agri-Food Technologies (Guelph, ON)
- **Harry Swain**, Senior Research Associate, Centre for Global Studies, University of Victoria (Victoria, BC)
- *Report Review Monitor:* **Daniel Krewski**, Professor of Epidemiology and Community Medicine and Scientific Director of the McLaughlin Centre for Population Health Risk Assessment, University of Ottawa (Ottawa, ON)

## The Expert Panel on the State of Industrial R&D in Canada

- **Kathleen E. Sendall** (Chair), C.M., FCAE, Director, CGG Veritas (Paris, France); Director of Enmax Corporation (Calgary, AB); Vice-Chair, Alberta Innovates – Energy and Environment Solutions (Calgary, AB); Co-Chair, Canada West/Asia Pacific Foundation Task Force (Calgary, AB)
- **Marcel Boyer**, FRSC, Professor Emeritus, Department of Economics, Université de Montréal; Fellow of the C.D. Howe Institute (Toronto, ON); Associate Member of the Toulouse School of Economics (Toulouse, France); Fellow of CIRANO, the Centre for Interuniversity Research and Analysis on Organizations (Montréal, QC)
- **Kelly Cantwell**, Senior Director, Corporate Strategy and Planning, Emera Inc. (Halifax, NS)

- **Eric L. Cook**, Executive Director & CEO, New Brunswick Research and Productivity Council (Fredericton, NB)
- **Lisa Crossley**, CEO, VitalHub Corporation (Toronto, ON)
- **Sean Donnelly**, Vice-President, Technology and Continuous Improvement, ArcelorMittal Dofasco (Hamilton, ON)
- **R.J. (Bob) Fessenden**, Fellow of the Institute for Public Economics, University of Alberta (Edmonton, AB)
- **Camille Gagnon**, President, Innovitech Inc. (Montréal, QC)
- **Claude Lajeunesse**, FCAE, Former President and Chief Executive Officer, Aerospace Industries Association of Canada (Ottawa, ON)
- **Hadi Mahabadi**, O.C., FCAE, President, CanWin Consulting Inc.; Retired, Former Vice-President and Director, Xerox Research Centre of Canada (Mississauga, ON)
- **Pierre Mohnen**, Professor, Maastricht University (Maastricht, Netherlands)
- **Ian de la Roche**, Adjunct Professor, University of British Columbia (Vancouver, BC)
- **Harvey P. Weingarten**, President & CEO, Higher Education Quality Council of Ontario (Toronto, ON)
- **Rosemary Zigrossi**, Director, Promontory Financial Group (Toronto, ON)

## The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction

- **John Cherry** (Chair), Associate Director of G360 – Centre for Applied Groundwater Research, and Adjunct Professor in the School of Engineering at the University of Guelph (Guelph, ON)
- **Michael Ben-Eli**, Founder & Director of the Sustainability Laboratory (New York, NY)
- **Lalita Bharadwaj**, Associate Professor, Toxicologist, School of Public Health, University of Saskatchewan (Saskatoon, SK)
- **Rick Chalaturnyk**, Professor of Geotechnical Engineering, Department of Civil and Environmental Engineering, University of Alberta (Edmonton, AB)
- **Maurice B. Dusseault**, Part-Time Professor of Engineering Geology, Department of Earth and Environmental Sciences, University of Waterloo (Waterloo, ON)
- **Bernard Goldstein**, Professor of Environmental and Public Health, Graduate School of Public Health, University of Pittsburgh (Pittsburgh, PA)
- **Jean-Paul Lacoursière**, Associate Professor, Chemical Engineering Department, University of Sherbrooke (Sherbrooke, QC)
- **Ralph Matthews**, Professor, Department of Sociology, University of British Columbia (Vancouver, BC); Professor Emeritus of Sociology, McMaster University (Hamilton, ON)
- **Bernhard Mayer**, Professor of Isotope Geochemistry, Department of Geoscience, University of Calgary (Calgary, AB)

- **Jennifer Miskimins**, Associate Professor, Petroleum Engineering Department, Colorado School of Mines (Golden, CO)
- **John Molson**, Canada Research Chair in Quantitative Hydrogeology of Fractured Porous Media, Department of Geology and Geological Engineering, Laval University (Québec, QC)
- **Kelly Munkittrick**, Scientific Director, Canadian Water Network; Professor, Department of Biology, University of New Brunswick (Saint John, NB)
- **Naomi Oreskes**, Professor of History and Science Studies, Department of History, University of California (San Diego, CA)
- **Beth Parker**, Director, G360 Centre for Applied Groundwater Research, University of Guelph (Guelph, ON)
- **Paul Young**, FRSC, Vice-President (Research) & Professor of Geophysics, University of Toronto (Toronto, ON)
- **Mark D. Zoback**, Professor of Geophysics, Stanford University (Stanford, CA)

## The Expert Panel on the State of Knowledge of Food Security in Northern Canada

- **Harriet V. Kuhnlein** (Chair), Professor Emerita of Human Nutrition; Founding Director, Centre for Indigenous Peoples' Nutrition and Environment (CINE), McGill University (Montréal, QC)
- **Fikret Berkes**, Distinguished Professor and Canada Research Chair (Tier I) in Community Based Resource Management, University of Manitoba (Winnipeg, MB)
- **Laurie Hing Man Chan**, Professor and Canada Research Chair in Toxicology and Environmental Health; Director, Centre for Advanced Research in Environmental Genomics, University of Ottawa (Ottawa, ON)
- **Treena Wasontio Delormier**, Assistant Professor, Office of Public Health Studies, Native Hawaiian and Indigenous Health, University of Hawaii at Manoa (Oahu); Research Team and Community Advisory Board Member, Kahnawake Schools Diabetes Prevention Project (Kahnawake, QC)
- **Asbjørn Eide**, Professor Emeritus and Senior Fellow, Norwegian Centre for Human Rights, University of Oslo (Oslo, Norway)
- **Chris Furgal**, Associate Professor, Departments of Environmental Resource Sciences/Studies and Indigenous Studies, Trent University (Peterborough, ON)
- **Murray Humphries**, Associate Professor of Natural Resource Sciences, McGill University (Montréal, QC)
- **Henry Huntington**, Arctic Science Director, Pew Environment Group (Eagle River, AK)
- **Constance MacIntosh**, Director, Dalhousie Health Law Institute; Associate Professor, Schulich School of Law, Dalhousie University (Halifax, NS)

- **Ian Mauro**, Canada Research Chair in Human Dimensions of Environmental Change; Associate Professor, Department of Geography and Environment, Mount Allison University (Sackville, NB)
- **David Natcher**, Associate Professor, Department of Agriculture and Resource Economics, University of Saskatchewan (Saskatoon, SK)
- **Barry Prentice**, Professor, Department of Supply Chain Management, I.H. Asper School of Business, University of Manitoba (Winnipeg, MB)
- **Chantelle Richmond**, Assistant Professor and CIHR New Investigator, Department of Geography and First Nations Studies, Western University (London, ON)
- **Cecilia Rocha**, Director and Associate Professor, School of Nutrition, Ryerson University (Toronto, ON)
- **Kue Young**, FCAHS, C.M., Professor and TransCanada Chair in Aboriginal Health, Dalla Lana School of Public Health; Director, Collaborative Program in Aboriginal Health, School of Graduate Studies, University of Toronto (Toronto, ON); Canadian Representative, Arctic Human Health Expert Group, Arctic Council; Past President, International Network for Circumpolar Health Research

### The Expert Panel on the Potential for New and Innovative Uses of Information and Communication Technologies (ICTs) for Greening Canada

- **David Miller** (Chair), Counsel, International Business and Sustainability, Aird & Berlis LLP (Toronto, ON); Incoming President & CEO, World Wildlife Federation (WWF) Canada
- **Christine Chan**, Canada Research Chair in Energy and Environmental Informatics; Professor of Engineering in Software Systems Engineering, University of Regina (Regina, SK)
- **Charles Despins**, President and CEO, Prompt, Inc.; Adjunct Professor, Université du Québec à Montréal (Montréal, QC)
- **Gordon Feller**, Director, Urban Innovations, Practice Internet Business Solutions Group, Cisco (San Rafael, CA)
- **Ingrid Götzl**, Project Manager, International ICT Affairs, City of Vienna (Vienna, Austria)
- **Anthony Heyes**, Professor of Economics and Canada Research Chair in Environmental Economics, University of Ottawa (Ottawa, ON)
- **Steve Liang**, Assistant Professor in Geographical Information Systems and AITF-Microsoft Industry Chair in Open Sensor Web, University of Calgary (Calgary, AB)
- **Benoit Montreuil**, Professor, Canada Research Chair in Enterprise Engineering, Department of Operations and Decision Systems, Faculty of Administration Sciences, Université Laval (Québec, QC)
- **Kip Morison**, Chief Technology Officer, BC Hydro (Vancouver, BC)

- **Jatin Nathwani**, Ontario Research Chair in Public Policy and Sustainable Development, Faculty of Engineering and Faculty of Environment, University of Waterloo; Executive Director, Waterloo Institute for Sustainable Energy, University of Waterloo (Waterloo, ON)
- **Jane Pagel**, President and CEO, Ontario Clean Water Agency (Toronto, ON)
- **Tom Rand**, Cleantech Lead Advisor, MaRS Discovery District (Toronto, ON)
- **John Robinson**, Associate Provost, Sustainability, University of British Columbia; Professor, Institute for Resources, Environment and Sustainability and Department of Geography, University of British Columbia (Vancouver, BC)

### The Expert Panel on Canadian Industry's Competitiveness in Terms of Energy Use

- **Fred Gorbet** (Chair), C.M., Associate Director of the Financial Services Program at the Schulich School of Business, York University (Toronto, ON)
- **Michelle Adams**, Associate Professor, School for Resource and Environmental Studies, Dalhousie University (Halifax, NS)
- **Jean-Thomas Bernard**, FRSC, Chair of Electricity Economics, Université Laval (Québec, QC); Visiting Scholar, University of Ottawa (Ottawa, ON)
- **Paul Boothe**, Professor and Director, Lawrence National Centre for Policy and Management at the Richard Ivey School of Business, Western University (London, ON)
- **Ujjayant Chakravorty**, Professor of Economics, Tufts University (Medford, MA)
- **Robert L. Evans**, FCAE, Professor Emeritus of Mechanical Engineering, University of British Columbia (Vancouver, BC)
- **Oliver Inderwildi**, Head, Low Carbon Energy Centre, Smith School of Enterprise and the Environment, Oxford University (Oxford, United Kingdom)
- **David Lindsay**, President and CEO, Forest Products Association of Canada (Ottawa, ON)
- **Wade Locke**, Professor of Economics, Memorial University of Newfoundland (St. John's, NL)
- **John Muir**, Former Director, Energy Policy and Government Affairs, General Electric Canada (Mississauga, ON)
- **Ken Norrie**, Professor of Economics, McMaster University (Hamilton, ON)
- **John Nyboer**, Adjunct Professor, School of Resource and Environmental Management, Simon Fraser University (Burnaby, BC)
- **Denise Young**, Professor of Economics, University of Alberta (Edmonton, AB)



## The Expert Panel on the State of Canada's Science Culture

- **Arthur Carty** (Chair), O.C., FRSC, FCAE, Executive Director, Waterloo Institute for Nanotechnology (Waterloo, ON)
- **Adam Bly**, Founder and Chairman, Seed (New York, NY)
- **Karen A. Burke**, Director, Regulatory Affairs, Drug Safety and Quality Assurance, Amgen Canada Inc. (Mississauga, ON)
- **Edna F. Einsiedel**, Professor, Department of Communication and Culture, University of Calgary (Calgary, AB)
- **Tamara A. Franz-Odenaal**, NSERC Chair for Women in Science and Engineering (Atlantic Canada) and Associate Professor of Biology, Mount Saint Vincent University (Halifax, NS)
- **Ian Hacking**, C.C., FRSC, University Professor Emeritus, Philosophy, University of Toronto (Toronto, ON)
- **Jay Ingram**, C.M., Chair, Science Communications Program, Banff Centre; Former Co-Host, Discovery Channel's "Daily Planet" (Calgary, AB)
- **Sidney Katz**, C.M., Professor of Pharmacology and Toxicology, Faculty of Pharmaceutical Sciences, University of British Columbia (Vancouver, BC)
- **Marc LePage**, President and CEO, Génome Québec (Montréal, QC)
- **James Marchbank**, Former CEO, Science North (Sudbury, ON)
- **Timothy I. Meyer**, Head, Strategic Planning and Communications, TRIUMF (Vancouver, BC)
- **Jon Miller**, Research Scientist, Center for Political Studies, University of Michigan (Ann Arbor, MI)
- **Bernard Schiele**, Professor of Communications, Université du Québec à Montréal (UQAM) and Researcher, Centre interuniversitaire de recherche sur la science et la technologie (CIRST) (Montréal, QC)
- **Dawn Sutherland**, Canada Research Chair in Science Education in Cultural Contexts, University of Winnipeg (Winnipeg, MB)
- **James Wilsdon**, Professor of Science and Democracy, University of Sussex (Brighton, United Kingdom)

## The Expert Panel on Therapeutic Products for Children

- **Stuart MacLeod** (Chair), Professor of Pediatrics, Faculty of Medicine, University of British Columbia (Vancouver, BC)
- **Denise Avard**, Research Director for the Centre of Genomics and Policy and Associate Professor in the Faculty of Medicine, Department of Human Genetics at McGill University (Montréal, QC)
- **Luis Barreto**, President of Dr. Luis Barreto & Associates (Toronto, ON)
- **Brian Feldman**, Professor of Pediatrics, Medicine, Health Policy Management and Evaluation, and the Dalla Lana School of Public Health at University of Toronto (Toronto, ON)
- **Terry Klassen**, FCAHS, Director of Research, Manitoba Institute of Child Health (Winnipeg, MB)
- **David Knoppert**, Scientist, Division of Children's Health and Therapeutics, Children's Health Research Institute (London, ON)
- **Michael Kramer**, FCAHS, FRSC, Professor, Department of Epidemiology and Biostatistics and Department of Pediatrics, Faculty of Medicine, McGill University (Montréal, QC)
- **Catherine Litalien**, Pediatric Intensivist and Medical Director of the Clinical Pharmacology Unit, CHU Sainte-Justine Research Centre (Montréal, QC)
- **Robert Nelson**, Senior Pediatric Ethicist/Lead Medical Officer in Office of Pediatric Therapeutics, FDA (Silver Spring, MD)
- **Martin Offringa**, Staff Neonatologist at the Hospital for Sick Children (Toronto, ON)
- **Robert Peterson**, Senior Associate Clinician Scientist, Child and Family Research Institute (Vancouver, BC)
- **Michael Rieder**, Professor, Department of Pediatrics, Physiology and Pharmacology and Medicine, Western University (London, ON)
- **Agnes Saint-Raymond**, Head of Human Medicines and Special Areas, European Medicines Agency (London, United Kingdom)
- **Wendy Ungar**, Senior Scientist, Child Health Evaluative Sciences at the Hospital for Sick Children (Toronto, ON)

## The Expert Panel on the Future of Canadian Policing

- **Stephen T. Goudge** (Chair), Justice, Court of Appeal for Ontario (Toronto, ON)
- **Margaret E. Beare**, Professor, Osgoode Hall Law School, York University (Toronto, ON)
- **Benoît Dupont**, Professor, School of Criminology, and Director, International Centre for Comparative Criminology, Université de Montréal (Montréal, QC)
- **Linda Duxbury**, Professor, Sprott School of Business, Carleton University (Ottawa, ON)
- **Laura Huey**, Associate Professor, Department of Sociology, Western University (London, ON)
- **Ian Mackenzie**, Instructor, Criminology and Criminal Justice, University of the Fraser Valley (Abbotsford, BC)
- **Christopher Murphy**, Professor, Department of Sociology and Social Anthropology, Dalhousie University (Halifax, NS)
- **Peter Neyroud**, Resident Scholar at Jerry Lee Centre for Experimental Criminology, University of Cambridge; Research Associate, Centre for Criminology, University of Oxford (Oxford, United Kingdom)
- **Kent Roach**, FRSC, Professor and Prichard Wilson Chair in Law and Public Policy, Faculty of Law, University of Toronto (Toronto, ON)
- **Clifford Shearing**, Chair of Criminology and Director of the Centre of Criminology, Faculty of Law, University of Cape Town; South African National Research Foundation Chair in Security and Justice (Cape Town, South Africa)
- **Darrel Stephens**, Executive Director, Major Cities Chiefs Association, and Faculty Member, Public Safety Leadership Program, School of Education, Johns Hopkins University (Charlotte, NC)
- **Irvin Waller**, Professor of Criminology, University of Ottawa (Ottawa, ON)

## The Expert Panel on Memory Institutions and the Digital Revolution

- **Doug Owram** (Chair), FRSC, Professor and former Deputy Vice-Chancellor and Principal, University of British Columbia Okanagan Campus (Kelowna, BC)
- **Sebastian Chan**, Director of Digital and Emerging Media, Smithsonian Cooper-Hewitt National Design Museum (New York, NY)
- **C. Colleen Cook**, Trenholme Dean of Libraries, McGill University (Montréal, QC)
- **Luciana Duranti**, Chair and Professor of Archival Studies, the School of Library, Archival and Information Studies at the University of British Columbia (Vancouver, BC)
- **Lesley Ellen Harris**, Copyright Lawyer; Consultant, Author, and Educator; Owner, Copyrightlaws.com (Washington, DC)

- **Kate Hennessy**, Assistant Professor, Simon Fraser University, School of Interactive Arts and Technology (Surrey, BC)
- **Kevin Kee**, Associate Vice-President Research (Social Sciences and Humanities) and Canada Research Chair in Digital Humanities, Brock University (St. Catharines, ON)
- **Slavko Manojlovich**, Associate University Librarian (Information Technology), Memorial University of Newfoundland (St. John's, NL)
- **David Nostbakken**, President/CEO of Nostbakken and Nostbakken, Inc., Instructor of Strategic Communication and Social Entrepreneurship at the School of Journalism and Communication, Carleton University (Ottawa, ON)
- **George Oates**, Art Director, Stamen Design (San Francisco, CA)
- **Seamus Ross**, Dean and Professor, iSchool, University of Toronto (Toronto, ON)
- **Bill Waiser**, SOM, FRSC, Professor of History and A.S. Morton Distinguished Research Chair, University of Saskatchewan (Saskatoon, SK)
- **Barry Wellman**, FRSC, S.D. Clark Professor, Department of Sociology, University of Toronto (Toronto, ON)

## The Expert Panel on Socio-economic Impacts of Innovation Investments

- **Esko Aho** (Chair), Senior Fellow, Harvard University (Cambridge, MA); Consultative Partner, Nokia Corporation; Former Prime Minister of Finland (Helsinki, Finland)
- **Martin Buxton**, Professor, Health Economics, Brunel University (London, United Kingdom)
- **Margaret Dalziel**, Associate Professor, Conrad Business, Entrepreneurship and Technology Centre, University of Waterloo; Co-founder and VP Research, The Evidence Network (Waterloo, ON)
- **A.E. (Ted) Dixon**, Vice-President, Science & Technology, Founder and Director, Huron Technologies International Inc.; Professor Emeritus, Department of Physics and Astronomy, University of Waterloo (Waterloo, ON)
- **David Dolphin**, O.C., FRSC, Professor Emeritus, Department of Chemistry, University of British Columbia; Former Vice-President, Technology Development, Quadra Logic Technologies (Vancouver, BC)
- **Fred Gault**, Professorial Fellow, UNU-MERIT (Maastricht, Netherlands); Professor Extraordinaire, Tshwane University of Technology (Pretoria, South Africa)
- **Chaviva M. Hošek**, O.C., President Emeritus, Canadian Institute for Advanced Research (CIFAR); Professor, School of Public Policy and Governance, University of Toronto (Toronto, ON)

- **Hadi Mahabadi**, O.C., FCAE, President, CanWin Consulting Inc.; Former VP and Director, Xerox Research Centre of Canada (Mississauga, ON)
- **Vicki Saunders**, Special Advisor, Innovation, Ryerson University (Toronto, ON)
- **Pierre Therrien**, Director, Market Structure and Framework Policy Analysis, Economic Research and Policy Analysis Branch, Industry Canada (Ottawa, ON)
- **David B. Watters**, President, Global Advantage Consulting Group (Ottawa, ON)
- **Stian Westlake**, Executive Director, Policy and Research, National Endowment for Science Technology and the Arts (London, United Kingdom)
- **David A. Wolfe**, Royal Bank Chair in Public and Economic Policy, Munk School of Global Affairs, University of Toronto (Toronto, ON)

## Report Reviewers for Socio-economic Impacts of Innovation Investments

- **Derek H. Burney**, O.C., Senior Strategic Advisor, Norton Rose Canada LLP (Ottawa, ON)
- **Adam Chowaniec**, CEO, Amiga2 Corporation (Ottawa, ON)
- **Maryann Feldman**, S.K. Heninger Professor of Public Policy, University of North Carolina (Chapel Hill, NC)
- **Cy Frank**, FCAHS, Professor, Department of Surgery, University of Calgary (Calgary, AB)
- **Richard Hawkins**, Professor, Science, Technology and Society Program, University of Calgary (Calgary, AB)
- **Kevin Keough**, FCAHS, Principal, Kevin Keough Consulting Incorporated (Edmonton, AB)
- **Josh Lerner**, Jacob H. Schiff Professor of Investment Banking, Harvard University (Cambridge, MA)
- **John L. Mann**, FCAE, President, Mann Consulting (Amherstburg, ON)
- **Roger Miller**, FCAE, Founding Partner, SECOR (Montréal, QC)
- **Alan Pelman**, Former Vice-President, Technology, Weyerhaeuser Company Limited (Vancouver, BC)
- **Andrew Sharpe**, Executive Director, Centre for the Study of Living Standards (Ottawa, ON)
- **James Stanford**, Economist, Canadian Auto Workers Union (Toronto, ON)
- *Report Review Monitor:* **Murray S. Campbell**, Senior Manager, Business Analytics Research, IBM T.J. Watson Research Center (Yorktown Heights, NY)

## The Expert Panel on the Medical and Physiological Impacts of Conducted Energy Weapons

- **Stephen T. Goudge** (Chair), Justice, Court of Appeal for Ontario (Toronto, ON)
- **Mark Bisby**, Independent Consultant; Advisor, Canadian Health Services Research Foundation (CHSRF) and Brain Canada (Ottawa, ON)
- **James Brophy**, Professor, Departments of Medicine, Epidemiology and Biostatistics, McGill University; Staff Physician, Cardiology Division, McGill University Health Centre (MUHC) (Montréal, QC)
- **George Carruthers**, FCAHS, Retired; Former Professor and Chair of Medicine, Dalhousie University; Former Professor in the Departments of Medicine and Pharmacology and Toxicology, London Health Sciences Centre and Western University; Former Dean of Medicine, United Arab Emirates University (Lisburn, United Kingdom)
- **Igor R. Efimov**, Lucy and Stanley Lopata Distinguished Professor of Biomedical Engineering, Washington University; Professor of Radiology, Medicine (Cardiology), and Cell Biology and Physiology, Washington University School of Medicine (St. Louis, MO)
- **Derek V. Exner**, FRSC, Cardiologist, Heart Rhythm Specialist, and Professor, University of Calgary; Canada Research Chair in Cardiovascular Clinical Trials, Medical Director of Cardiac Pacing and Electrophysiology, Libin Cardiovascular Institute of Alberta (Calgary, AB)
- **Robert Gordon**, Professor and Director of the School of Criminology, Simon Fraser University (Vancouver, BC)
- **Christine Hall**, Clinical Assistant Professor, Department of Emergency Medicine, Faculty of Medicine, University of British Columbia; Emergency Room Physician, Vancouver Island Health Authority (Victoria, BC)
- **Stan Kutcher**, FCAHS, Professor, Department of Psychiatry, Dalhousie University; Staff Psychiatrist and Sun Life Financial Chair in Adolescent Mental Health, IWK Health Centre; Director, WHO Collaborating Centre (Halifax, NS)
- **Bruce McManus**, FRSC, FCAHS, Professor, Department of Pathology and Laboratory Medicine, University of British Columbia; Co-Director, Institute for Heart + Lung Health; Director, UBC James Hogg Research Centre; Director, NCE CECR Centre of Excellence for Prevention of Organ Failure, St. Paul's Hospital, University of British Columbia (Vancouver, BC)
- **Jason Payne-James**, Honorary Senior Lecturer at Cameron Forensic Medical Sciences, Barts and the London School of Medicine and Dentistry, University of London; Director, Forensic Healthcare Services Ltd and Payne-James Ltd; External Consultant, National Policing Improvement Agency and National Injuries Database (Essex, United Kingdom)
- **Susan Sherwin**, FRSC, FCAHS, Research Professor Emeritus, Department of Philosophy and Department of Gender and Women's Studies, Dalhousie University (Halifax, NS)
- **Christian Sloane**, Associate Clinical Professor, Department of Emergency Medicine, University of California (San Diego, CA)
- **Mario Talajic**, Chair, Department of Medicine, Université de Montréal; Director, Cardiovascular Genetics Centre, Montreal Heart Institute (Montréal, QC)

## The Expert Panel on Canadian Ocean Science

- **David Strangway** (Chair), O.C., FRSC, Former President and CEO, Canada Foundation for Innovation; Former President and Vice-Chancellor, University of British Columbia; Former Chief of Geophysics, NASA; Founding Chancellor, Quest University (Kelowna, BC)
- **Louis Fortier**, O.C., O.Q., Full Professor, Department of Biology, Université Laval (Québec, QC)
- **Jim Hanlon**, Chief Executive Officer, Halifax Marine Research Institute (HMRI) (Halifax, NS)
- **Peter Herzig**, Executive Director, GEOMAR-Helmholtz Centre for Ocean Research (Kiel, Germany)
- **Barbara Neis**, Professor, Department of Sociology, Memorial University; Co-Director, SafetyNet (St. John's, NL)
- **R. Ian Perry**, Research Scientist, Fisheries and Oceans Canada (Nanaimo, BC); Adjunct Professor, University of British Columbia (Vancouver, BC)
- **Martin Taylor**, Professor of Geography, University of Victoria; Former President and CEO of Ocean Networks Canada (Victoria, BC)
- **Wendy Watson-Wright**, Executive Secretary and Assistant Director General, Intergovernmental Oceanographic Commission, UNESCO (Paris, France)



# Annexes



## Annex I – Council of Canadian Academies: Corporate Profile

The Council of Canadian Academies is a not-for-profit organization registered under the *Canada Corporations Act*. It began operation in 2005.

### Assessments

Proposed assessment topics requested by the Government of Canada are selected through a cross-government competitive process and submitted to the Council for consideration. The criteria applied to evaluate proposed assessments are as follows:

#### Government Criteria:

- The proposal is relevant to the agenda of the department/agency and to Canada's policy agenda.
- The assessment topic is timely and the timeframe for assessment is consistent with the needs of the department/agency and of Canada.
- The value provided by the Council is unique.
- The assessment topic is a science-based question that has been coordinated with relevant departments/agencies and external stakeholders.

#### Council Criteria:

- The topic is of importance to Canada and its citizens.
- The appropriate expertise can be assembled and the required timeline can be met.
- The existing state of knowledge merits the assessment.
- Science underpins the question and its response.

#### Asset Criteria:

- The report is likely to be widely consulted within and outside government (i.e., other levels of government or organizations have a demonstrated interest in the outcome of the assessment).
- The topic is uniquely relevant to Canada.
- The topic is an international issue for which a Canadian assessment is important at this time.

The Council's Board of Governors, assisted by the Scientific Advisory Committee, oversees the integrity of the assessment process. The Board formally approves assessment questions, expert panel membership, assessment budgets and timelines, and report review processes.

To protect the independence of the assessment process, the sponsor of an assessment does not participate in the conduct of the assessment, review drafts of the report, or propose any changes to the report before its release. Assessment reports undergo a formal expert (“peer”) review process to assure quality and objectivity. The Board is responsible for authorizing the public release of final assessment reports and is advised in this regard by a report review monitor who ensures that expert panels give full and fair consideration to the comments of the external reviewers of every Council report. All final assessment reports are posted on the Council’s website, [www.scienceadvice.ca](http://www.scienceadvice.ca), in both official languages, and may be downloaded free of charge to ensure their availability to the public.

## Funding

The Council operates with 10-year funding of \$30 million provided by the Government of Canada. This founding grant is intended to support core operations of the Council through to March 31, 2015. Conditions on the use of the funds provided by the government are set out in a formal funding agreement between the Council and the Government of Canada as represented by the Minister of Industry. The Council also receives direct revenue in relation to any assessments conducted outside the scope of the Council’s funding agreement.

## Structure and Governance

The Council is governed by a 12-member Board of Governors. The Board is responsible for setting the strategic direction of the organization, ensuring the fulfillment of the Council’s mandate, and providing oversight to the Council’s operations.

Each founding Member Academy appoints two governors. These six governors nominate two additional governors from the general public. The remaining four governors are proposed to the Board by the Minister of Industry and are formally appointed through a resolution of the Board. Importantly, to maintain its independence from government, the majority of governors must not have status as Agents of Canada (employees of the Crown).

Governance of the Council is supported by five committees of the Board of Governors:

- Executive Committee
- Finance and Audit Committee
- Investment Committee
- Nominations, Selection, and Governance Committee
- Human Resources and Compensation Committee

The work of the Council is also supported by a Board-appointed Scientific Advisory Committee that provides advice on the substance and procedures of expert assessments, and particularly on the following aspects:

- The generation of potential subjects for future assessments.
- The suitability of subjects proposed to the Council for expert assessment.
- The terms of reference for the independent expert panels that carry out the assessments.
- Potential membership of expert panels.
- The process of peer review of draft assessment reports.
- Communication of final assessment reports with the objective of enhancing impact.

Day-to-day operations of the Council are carried out by a small staff, under the direction of a full-time president. Council staff provides support to expert panels with research, writing, and overall management of logistics in the production of assessments. The staff also supports the work of the Scientific Advisory Committee, particularly with respect to analysis of proposed assessment topics, identification of panel membership, and report review processes.

Members of the Board of Governors, Scientific Advisory Committee, and staff are listed in Annex II.

## Statement of Investment Policy

The Council's founding grant is overseen, on behalf of the Board, by the Investment Committee. The Committee appointed Towers-Perrin Inc. as the Council's investment consultant to advise on the development of a Statement of Investment Policy. The policy was formally approved by the Board of Governors and is appended as Annex IV. Subsequently, Phillips, Hager & North were selected as the Council's investment manager and Desjardins Trust as custodians.

## Financial Statements: Fiscal year ended March 31, 2012

The Council retained the Ottawa-based accounting firm, Parker Prins Lebrano, to audit the financial results for the fiscal year 2012/13. Their report, including the Council's financial statements for 2012/13, is provided in Annex III.

## Revenue from Other Sources

In 2012/13 the Council enhanced assessment services by undertaking projects outside of the funding agreement with the Government of Canada. At the start of the fiscal year (April 2012) the Canadian Academy of Health Sciences (CAHS) approached the Council about an assessment on the medical effects of conducted energy weapons for Defence Research and Development Canada. The Council undertook this assessment and is managing the project management, research, report development, publication, and release. In July 2012, the Canadian Consortium of Ocean Research Universities (CCORU) asked the Council to undertake a full expert assessment of ocean science in Canada. This project followed on the workshop report the Council completed and released on July 17<sup>th</sup>, 2012.

## Human Resources

In 2012/13, the Council continued to demonstrate success in recruiting high-quality professional staff, with the recruitment of 11 employees. The Council focuses its human resource activity by emphasizing the values outlined in its strategic plan. Those values are: excellence, independence, integrity, collaboration, and innovation.

In light of the organization's modest size relative to the breadth of its mandate, it is clear that, in addition to the foundation of a permanent, professional Council staff, there will be an ongoing need to bring in specialized experts on a temporary basis.

One way this is achieved is through the Graduate Internship Program, launched in late 2009. To date, the Council has engaged a total of 17 interns through this program. The internship program was designed to provide participants with relevant experience in the area of science and policy. The program exposes successful applicants to the interface of scientific enterprise and society, helping interns to determine whether they have the passion for the work involved.



Left: 2013 Council interns. From left to right: Aatif Baskanderi, Rachel Savidge, Megan Dodd.



Right: 2012 Council interns. From left to right: Monica Harvey, Jennifer Bassett, CarolAnne Black.



## Annex II – Board of Governors, Scientific Advisory Committee, and Staff of the Council of Canadian Academies

### Board of Governors

*(As of March 31, 2013)*

**Elizabeth Parr-Johnston**, C.M., Chair  
Former President,  
University of New Brunswick and Mount Saint  
Vincent University  
(Chester Basin, NS)

**Margaret Bloodworth**, C.M.<sup>1</sup>  
Former Federal Deputy Minister and National  
Security Advisor  
(Ottawa, ON)

**John Cairns**, FCAHS  
Professor of Medicine,  
University of British Columbia  
(Vancouver, BC)

**Marie D'Iorio**, FRSC  
Executive Director,  
National Research Council Canada  
National Institute of Nanotechnology  
(Edmonton, AB)

**Richard Drouin**, C.C.<sup>2</sup>  
Counsel,  
McCarthy Tétrault  
(Québec City, QC)

**Henry Friesen**, C.C., FRSC, FCAHS, Vice-Chair  
Distinguished Professor Emeritus  
and Senior Fellow,  
Centre for the Advancement of Medicine,  
Faculty of Medicine,  
University of Manitoba  
(Winnipeg, MB)

#### **Claude Jean**

Executive Vice-President and General Manager,  
Foundry Operation,  
Teledyne DALSA Semiconductor  
(Bromont, QC)

#### **John Leggat**, FCAE<sup>2</sup>

Associate Consultant,  
CFN Consultants  
(Ottawa, ON)

#### **Tom Marrie**, FCAHS

Dean of Medicine,  
Dalhousie University  
(Halifax, NS)

#### **Jeremy McNeil**, FRSC

Helen Battle Visiting Professor,  
Department of Biology,  
Western University  
(London, ON)

#### **Axel Meisen**, FCAE

Former Chair of Foresight,  
Alberta Innovates – Technology Futures (AITF)  
(Edmonton, AB)

#### **Lydia Miljan**<sup>1</sup>

Associate Professor of Political Science and  
Chair, Arts and Science Program,  
University of Windsor  
(Windsor, ON)

#### **P. Kim Sturgess**, FCAE<sup>1</sup>

CEO and Founder,  
Alberta WaterSMART  
(Calgary, AB)

<sup>1</sup> Joined the Board in fiscal year 2012/13

<sup>2</sup> Left the Board in fiscal year 2012/13

## Scientific Advisory Committee

(as of March 31, 2013)

**Tom Brzustowski**, O.C., FRSC, FCAE, Chair  
Chair of the Board, Institute for  
Quantum Computing,  
University of Waterloo  
(Waterloo, ON)

**Lorne Babiuk**, O.C., FRSC, FCAHS<sup>1</sup>  
Vice-President (Research),  
University of Alberta  
(Edmonton, AB)

**Michel G. Bergeron**, C.M., O.Q., FCAHS<sup>2</sup>  
Director, Division of Microbiology and  
le Centre de recherche en infectologie,  
University of Laval  
(Québec City, QC)

**Murray S. Campbell**  
Senior Manager, Business Analytics Research,  
IBM T.J. Watson Research Center  
(Yorktown Heights, NY)

**Margaret Conrad**, O.C., FRSC<sup>2</sup>  
Professor Emerita,  
University of New Brunswick  
(Fredericton, NB)

**Marcel Côté**  
Founding Partner,  
SECOR Inc.  
(Montréal, QC)

**Clarissa Desjardins**<sup>1</sup>  
Former CEO,  
Centre of Excellence in Personalized Medicine  
(Montréal, QC)

**Jean Gray**, C.M., FCAHS  
Professor of Medicine (Emeritus),  
Dalhousie University  
(Halifax, NS)

**Judith Hall**, O.C., FRSC, FCAHS<sup>2</sup>  
Professor of Pediatrics and Medical Genetics,  
University of British Columbia  
(Vancouver, BC)

**John Hepburn**, FRSC  
Vice-President (Research and International),  
University of British Columbia  
(Vancouver, BC)

**Gregory S. Kealey**, FRSC<sup>1</sup>  
Professor, Department of History,  
University of New Brunswick  
(Fredericton, NB)

**Daniel Krewski**  
Professor of Epidemiology and Community  
Medicine and Scientific Director  
of the McLaughlin Centre for Population  
Health Risk Assessment,  
University of Ottawa  
(Ottawa, ON)

**Avrim Lazar**<sup>1</sup>  
Former President and CEO,  
Forest Products Association of Canada  
(Ottawa, ON)

**Susan A. McDaniel**, FRSC, Vice-Chair  
Director, Prentice Institute and Canada Research  
Chair in Global Population and Life Course,  
Prentice Research Chair and Professor  
of Sociology,  
University of Lethbridge  
(Lethbridge, AB)

**Norbert R. Morgenstern**, C.M., FRSC, FCAE  
Professor (Emeritus), Civil Engineering,  
University of Alberta  
(Edmonton, AB)

**Sarah P. Otto**, FRSC<sup>1</sup>  
Professor and Director of the Biodiversity  
Research Centre,  
University of British Columbia  
(Vancouver, BC)

**John P. Smol**, FRSC<sup>2</sup>  
Co-Director of the Paleoecological  
Environmental Assessment and  
Research Laboratory,  
Queen's University  
(Kingston, ON)

## Scientific Advisory Committee *continued*

**Robert Watson<sup>2</sup>**  
Chief Scientific Advisor,  
Department for Environment,  
Food and Rural Affairs  
(London, United Kingdom)

**Joseph D. Wright, FCAE<sup>2</sup>**  
Retired President and CEO,  
Pulp and Paper Research Institute (PAPRICAN)  
(Gibsons, BC)

<sup>1</sup> Joined SAC in fiscal year 2012/13

<sup>2</sup> Left SAC in fiscal year 2012/13

## Staff of the Council of Canadian Academies

**Elizabeth Dowdeswell**  
President and CEO

**Marija Curran<sup>1</sup>**  
Corporate Affairs Coordinator

**Tom Bursey**  
Vice-President, Corporate Services, and CFO

**Marc Dufresne**  
Senior Bilingual Publications Specialist

**Aled ab Iorwerth<sup>1</sup>**  
Research Associate

**Eleanor Fast**  
Program Director

**Michelle Auger**  
Program Coordinator

**Andrea Hopkins**  
Program Coordinator

**Jennifer Bassett<sup>1</sup>**  
Researcher

**Stefan Jungcurt**  
Research Associate/Acting Program Director

**Janet Bax**  
Program Director

**Jeff Junke<sup>1</sup>**  
Coordinator, Communications and Website

**Laura Bennett**  
Researcher

**Tim Krywulak<sup>3</sup>**  
Program Director

**Dane Berry**  
Research Associate/Associate Program Director

**Suzanne Loney<sup>1</sup>**  
Research Associate

**Anna Buczek**  
Communications Specialist

**Kelly Loverock<sup>2</sup>**  
Coordinator, Communications and Website

**Rebecca Chapman<sup>1</sup>**  
Researcher

**Emily Maddocks<sup>1</sup>**  
Research Associate

**Jody Cooper<sup>1</sup>**  
Coordinator, Assessment Communications

**Tracey McKinlay**  
Executive Assistant to the President

**Tijs Creutzberg<sup>1</sup>**  
Program Director

**Cate Meechan**  
Director, Communications

**Kristen Cucan**  
Program Coordinator

**Emmanuel Mongin**  
Research Associate/Acting Program Director

## Staff of the Council of Canadian Academies *continued*

### **Nancy Neil**

Manager, Office Operations

### **Samantha Rae Ayoub**

Senior Manager, Publishing and Planning

### **Joe Rowsell**

Research Associate

### **Christina Stachulak<sup>2</sup>**

Senior Program Director

### **Kori St. Cyr**

Research Associate

### **Andrew Taylor<sup>1</sup>**

Program Director

### **Jonathan Whiteley<sup>1</sup>**

Researcher

### **Doug Wright<sup>1</sup>**

Program Director

### **Weronika Zych**

Program Coordinator

<sup>1</sup> Joined the Council in fiscal year 2012/13

<sup>2</sup> Maternity leave (September 2012 through September 2013)

<sup>3</sup> Left the Council in fiscal year 2012/13

## Council Interns 2012/13

**Atif Baskanderi** (January 2013 to July 2013)

**Jennifer Bassett** (July 2012 to December 2012)

**CarolAnne Black** (July 2012 to December 2012)

**Megan Dodd** (January 2013 to July 2013)

**Monica Harvey** (July 2012 to December 2012)

**Rachel Savidge** (January 2013 to July 2013)

Ranges of remuneration: For the fiscal year ending March 31, 2013, compensation was within the following salary ranges: Council Management (senior officers): President (\$180,000 to \$230,000), Vice-President, Corporate Services and CFO (\$110,000 to \$170,000), Director, Communications (\$100,000 to \$160,000). Employees whose remuneration exceeds \$100,000, including any fee, allowance, or other benefits paid in year: Senior Program Director (\$100,000 to \$130,000), Program Director (\$100,000 to \$130,000), Research Associate (\$100,000 to \$130,000).



# Annex III – Financial Statements for 2012/13

## Independent Auditors' Report

To the Board of Governors,

COUNCIL OF CANADIAN ACADEMIES

### Report on the Financial Statements

We have audited the accompanying financial statements of the COUNCIL OF CANADIAN ACADEMIES, which comprise the Statement of Financial Position as at March 31, 2013, and the Statements of Operations and Cash Flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### Auditors' Responsibility

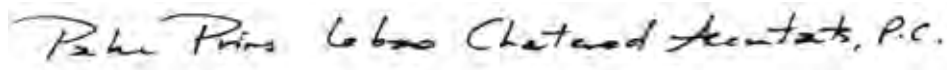
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the organization's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the organization's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the COUNCIL OF CANADIAN ACADEMIES as of March 31, 2013, and its financial performance and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.



Parker Prins Lebano Chartered Accountants  
Professional Corporation  
Authorized to practice public accounting by The Institute of Chartered Accountants of Ontario

Ottawa, Canada  
May 21, 2013

**COUNCIL OF CANADIAN ACADEMIES STATEMENT OF FINANCIAL POSITION**  
 AS AT MARCH 31, 2013

	<b>2013</b>	<b>2012</b>
<b>ASSETS</b>		
CURRENT		
Cash	\$ 671,420	\$ 818,961
Investments (note 4)	11,433,190	16,590,922
Accounts receivable (note 7)	368,387	487,387
Prepaid expenses (note 10)	64,436	34,316
	12,537,433	17,931,586
CAPITAL (note 5)	181,299	198,363
	\$ 12,718,732	\$ 18,129,949
<b>LIABILITIES</b>		
CURRENT		
Accounts Payable	\$ 359,945	\$ 207,765
DEFERRED REVENUE (note 6)	-	260,000
DEFERRED CONTRIBUTIONS (note 6)	12,358,787	17,662,184
NET ASSETS (note 8)	-	-
	<b>\$ 12,718,732</b>	<b>\$ 18,129,949</b>

The accompanying notes are an integral part of the financial statements.

**COUNCIL OF CANADIAN ACADEMIES STATEMENT OF OPERATIONS**

FOR THE YEAR ENDED MARCH 31, 2013

	<b>2013</b>	<b>2012</b>
<b>REVENUE</b>		
Investment income	\$ 547,179	\$ 769,008
Add: grant revenue	5,194,980	3,921,220
Revenue from other sources	813,858	545,000
	6,556,017	5,235,228
<b>EXPENDITURE</b>		
Amortization	99,436	91,335
Assessment consultants	383,459	311,847
Central operations	361,044	323,622
Governance	94,645	151,856
Investment consultants	60,866	78,077
Panel meetings	1,089,190	945,979
Publications	620,977	385,814
Rent	380,999	394,708
Salaries and benefits	3,297,087	2,452,051
Other activities	168,314	99,939
	6,556,017	5,235,228
<b>EXCESS OF REVENUE OVER EXPENDITURES FOR THE YEAR</b>	<b>\$ -</b>	<b>\$ -</b>

The accompanying notes are an integral part of the financial statements.

**COUNCIL OF CANADIAN ACADEMIES STATEMENT OF CASH FLOWS**  
 FOR THE YEAR ENDED MARCH 31, 2013

	<b>2013</b>	<b>2012</b>
<b>CASH FLOWS FROM (USED FOR) OPERATING ACTIVITIES</b>		
Excess of revenue over expenditure for the year	\$ -	\$ -
Items not requiring an outlay of cash:		
Amortization	99,436	91,335
Unrealized loss (gain) on	108,415	117,518
Net change to non-cash items related to operations:		
Accounts receivable	119,000	(107,627)
Prepaid expenses	(30,120)	(898)
Accounts payable	152,180	118,794
Deferred revenue	(260,000)	260,000
Deferred contributions	(5,303,397)	(3,873,729)
	(5,114,486)	(3,394,607)
<b>CASH FLOWS FROM (USED FOR) INVESTING ACTIVITIES</b>		
Purchase of capital assets	(82,371)	(35,950)
Redemption of investments	5,049,316	3,581,085
	4,966,945	3,545,135
<b>NET (DECREASE) INCREASE IN CASH</b>	(147,541)	150,528
<b>CASH, BEGINNING OF YEAR</b>	818,961	668,433
<b>CASH, END OF YEAR</b>	<b>\$ 671,420</b>	<b>\$ 818,961</b>

The accompanying notes are an integral part of the financial statements.

**COUNCIL OF CANADIAN ACADEMIES NOTES TO FINANCIAL STATEMENTS**

MARCH 31, 2013

**1. Adoption of Canadian Accounting Standards for Not-for-profit Organizations**

Effective April 1, 2012, the organization adopted the requirements of the Canadian Institute of Chartered Accountants (CICA) Handbook – Accounting Part III, electing to adopt the new accounting framework: Canadian accounting standards for not-for-profit organizations (ASNFPO). Organizations that adopt Part III of the Handbook also adopt the accounting standards for private enterprises (ASPE; Part II of the CICA Handbook) to the extent accounting standards are not specifically addressed in Part III. These are the organization's first financial statements prepared in accordance with ASNFPO which has been applied retrospectively. The accounting policies set out in the significant accounting policy note below have been applied in preparing these financial statements for the year ended March 31, 2013, and the comparative information presented in these financial statements for the year ended March 31, 2012. Management has determined the changes to the financial statements resulting from the adoption of ASNFPO are not material and thus have not presented an opening Statement of Financial Position as at April 1, 2011 (the organization's date of transition).

The organization issued financial statements for the year ended March 31, 2012 using Canadian generally accepted accounting principles prescribed by CICA Handbook – Accounting Part V. The adoption of ASNFPO had no impact on the previously reported assets, liabilities, or net assets of the organization, and accordingly, no adjustments have been recorded in the comparative statements of financial position, operations, net assets, and cash flows. Certain of the organization's disclosures included in these financial statements reflect the new disclosure requirements of ASNFPO.

**2. Organization's Purpose**

The Council of Canadian Academies is a not-for-profit organization incorporated in April 2002 under the Canada Corporations Act and began operations in 2005.

The Council's main purpose is to provide a source of credible, independent, expert assessments and evidence-based advice on the science that is relevant to matters of public interest, and to provide a voice for Canadians on behalf of the sciences on the national and international scene.

### 3. Significant Accounting Policies

#### Capital Assets

Capital assets consisting of furniture and fixtures, computer equipment and software, and leasehold improvements are stated at cost. Amortization has been provided on the diminishing balance or straight-line basis as follows with half of amortization taken in the year of acquisition:

Furniture and fixtures	30% per annum
Computer and software	45% per annum
Leasehold improvements	10 years

#### Revenue Recognition

The organization follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

#### Investments

Investments are recorded at market value.

#### Investment Income

Investment income is recorded as earned.

Unrealized gains on investments are recognized as an increase in deferred contributions while unrealized losses on investments are recognized as a decrease in deferred contributions.

Investment income on investments is recorded as income on the statement of operations.

#### 4. Financial Instruments

Financial instruments reflected in the statement of financial position consist of cash, investments, accounts receivable, and accounts payable. The Council does not hold or issue financial instruments for trading purposes and does not hold or issue derivative financial instruments.

##### Interest Rate Risk

The Council is subject to cash flow risk with respect to its holdings of investments.

Bonds and term deposits, with market values of \$11,432,489, include Government of Canada, Provincial Government and Corporate Bonds with a similar amortized cost value. The bonds and term deposits mature at varying dates between June 1, 2013 and June 1, 2014.

Cash funds on deposit at an investment brokerage account receive interest at rates that fluctuate with bank prime.

#### 5. Capital Assets

	<b>Cost</b>	<b>Accumulated Amortization</b>	<b>2013 Net Book Value</b>	<b>2012 Net Book Value</b>
Furniture and fixtures				
	\$ 375,250	\$ 316,467	\$ 58,783	\$ 69,240
Computer and software	362,419	265,579	96,840	81,333
Leasehold improvements	94,754	69,078	25,676	47,790
	\$ 832,423	\$ 651,124	\$ 181,299	\$ 198,363

#### 6. Deferred Contributions

Grant revenue and interest revenue received that is in excess of expenses is deferred to offset expenses in future years. Included in deferred contributions is a cumulative reduction in the value of the bond since purchase of \$209,440 (2012 – \$101,024) as a result of the purchase premium and nearing maturity dates. Premium bonds were initially purchased in order to obtain bond rates in excess of current and forecasted market rates while maintaining a conservative underlying investment model.

#### 7. Accounts Receivable

Accounts receivable consist of trade receivables of \$50,000, GST receivable of \$258,078, and accrued interest of \$60,309 for a total of \$368,387.



**8. Net Assets**

The net assets of the organization are recorded at zero since all funding received is recorded as deferred contributions until expenses are incurred.

**9. Commitments**

The organization entered into a 10-year lease commencing February 1, 2006, as well as office equipment contracts. As of January 1, 2010, the organization entered into a second lease agreement for additional continuous space for a three-year period with an option for two additional years. The annual payments over the next three years are as follows:

F/Y 2014	\$ 350,599
F/Y 2015	266,423
F/Y 2016	211,215

**10. Prepaid Expenses**

Prepaid expenses consist of prepaid rent of \$20,492, a hotel deposit of \$7,954, D&O liability insurance of \$3,337, an Art Bank rental deposit of \$3,360, prepaid postage of \$32, a software support contract of \$1,225, a commercial insurance policy of \$562 and a vendor credit of \$27,474 for a total of \$64,436.

## Annex IV – Statement of Investment Policy

### Section I – Introduction

- 1.1 This document constitutes the Statement of Investment Policy (the “Policy”) applicable to the assets of the fund (the “Fund”) created by the Council of Canadian Academies (the “Council”) from proceeds of the Council’s \$30 million funding grant from the Government of Canada.
- 1.2 The purpose of this Policy is to formulate those investment principles, guidelines, and monitoring procedures which are appropriate to the needs and objectives of the Fund, in a manner conforming to the funding agreement (the “Funding Agreement”) with the Minister of Industry on behalf of the Government of Canada.
- 1.3 Any investment manager or other party providing services in connection with the investment of the Fund shall accept and adhere to this Policy.

### Section II – Administration

- 2.1 The Board of Governors (the “Board”) of the Council has the ultimate responsibility to ensure that the Fund is invested and managed in accordance with the prudent person principle.
- 2.2 The Board is responsible for all aspects of the operations of the Fund including this Policy. The Investment Committee (the “Committee”) assists the Board in fulfilling its responsibilities.
- 2.3 The Committee is composed of at least three Governors who are not officers or employees of the Council. Members of the Committee shall be financially literate and have broad knowledge or experience in investment matters.
- 2.4 The custodian of the Fund (the “Custodian”) shall be a trust company duly registered in Canada or a financial institution in Canada. Assets of the Fund shall be segregated from all other assets of the Council and held by the Custodian in a separate account or accounts in accordance with an agreement that clearly indicates that the assets are held for the Council.
- 2.5 Where the Committee desires to invest in pooled funds or mutual funds (“Pooled Fund”) eligible for investment of the Fund, the Committee must satisfy itself that the investment policy of such Pooled Fund is consistent with this Policy.
- 2.6 Neither the Committee nor any employee of the Council shall select securities on behalf of the Fund except for the selection of Pooled Funds or short-term deposits with banks or trust companies.
- 2.7 The Committee and the Board may rely on independent experts for certain aspects of the Fund’s operations.

## Section III – Roles and Responsibilities

### The Committee

- 3.1 The Committee shall:
- (a) recommend a written Statement of Investment Policy to the Board,
  - (b) recommend to the Board the appointment of one or more independent external advisors to provide investment advice (the “Investment Consultant(s)”<sup>1</sup>),
  - (c) approve an Investment Strategy and review it at least annually,
  - (d) recommend to the Board the appointment of one or more independent professional investment managers (the “Manager(s)”) to invest the Fund,
  - (e) recommend to the Board the appointment of the Custodian,
  - (f) regularly advise the Board on any significant financial risks or potential significant losses of investments,
  - (g) monitor the activities and performance of the Fund, and
  - (h) make other decisions that may be required to fulfill the terms of this Policy.

### The Board

- 3.2 The Board shall:
- (a) approve the Statement of Investment Policy,
  - (b) approve the appointment of an Investment Consultant,
  - (c) ensure that proper external custodial arrangements are established for the Fund, and
  - (d) review the Policy at least annually.

### The Manager

- 3.3 The Manager shall:
- (a) invest the assets allocated to it in accordance with the Policy and the Investment Strategy,
  - (b) comply with the terms of an Investment Manager Agreement (“Agreement”),
  - (c) report to the Committee in writing on a quarterly basis in respect of performance for the quarter, the investment holdings and transactions, the intended strategy for the following quarter, deviation from the intended strategy for the preceding quarter and compliance with the Policy, the Investment Strategy and the Agreement,

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<sup>1</sup> Defined as Investment Advisor in the Funding Agreement.

- (d) provide to the Committee upon appointment, and whenever changes occur thereafter, its policies and procedures relating to professional standards, conflicts of interest, internal controls and trading policies,
- (e) advise the Committee on an ongoing basis of any relevant changes in its organization, personnel or investment process, and
- (f) be available for meetings or discussions with the Committee on a reasonable basis.

### The Custodian

3.4 The Custodian shall:

- (a) act under the terms of a custodial agreement,
- (b) hold custody of the assets of the Fund and execute transactions,
- (c) maintain records that are sufficient to allow the ownership of any investment to be traced to the Fund at any time, and
- (d) provide financial statements detailing all changes in the value of the Fund.

### The Investment Consultant

3.5 The Investment Consultant shall:

- (a) prepare and deliver a report on the Fund and the Manager's performance to the Committee at least twice a year using investment returns calculated independently of the Manager,
- (b) advise the Committee of issues relating to the Fund and the Manager as they arise,
- (c) advise the Committee as requested, on other matters arising in the context of this Policy.

## Section IV – Fund Overview

- 4.1 The assets of the Fund were provided through a founding grant from the Government of Canada for the purpose of financing the core activities of the Council for a period of 10 years. It is the Council's responsibility to ensure that sufficient financial resources exist to deliver independent, expert assessments of the science that is relevant to important public issues.
- 4.2 It is expected that disbursements to cover eligible expenditures will exceed interest or other earnings from the Fund on an annual basis and that all assets will be fully disbursed at the end of the 10-year period. Therefore, sufficient liquidity to meet disbursements is an important consideration in the development of the Policy.

## Section V – Permitted Categories of Investment

- 5.1 From time to time, and subject to this Policy, the Fund may invest in any or all of the following asset categories and subcategories of investment either directly or through Pooled Funds which hold these investments:
- (a) **“Fixed Income”:**
    - bonds and notes issued by the federal government, provincial governments, municipal governments and corporations
    - asset-backed securities
    - mortgage-backed securities
  - (b) **“Cash or Cash Equivalents”**
    - bank certificates of deposit
    - banker’s acceptances
    - treasury bills, commercial paper and other short-term securities
- 5.2 The Fund may not invest or engage in the following categories of assets or instruments:
- (a) equities or shares issued by any corporation,
  - (b) hedge funds or funds of hedge funds,
  - (c) fixed-income instruments rated below A- by Standard & Poors or Fitch Ratings; A3 by Moody’s or A- by DBRS; Unrated securities will be assumed to fail such credit ratings,
  - (d) derivatives or any instruments that have derivative holdings or features,
  - (e) non-marketable securities,
  - (f) commodities,
  - (g) repurchase agreements against securities which are not permitted to be held in the portfolio, and
  - (h) margin transactions or any form of leveraging.
- 5.3 The assets of the Fund shall not, directly or indirectly, be invested in securities of a listed person as defined by the United Nations Suppression of Terrorism Regulations, or loaned to or used for the benefit of such a person.
- 5.4 No part of the Fund shall be invested in securities that are not denominated in Canadian dollars.

## Section VI — Asset Allocation

- 6.1 The primary objective is to reduce the uncertainty in the Fund's ability to meet a schedule of disbursement to cover eligible expenditures. Maximizing return is a secondary objective. The objectives in the design of the Policy are:
- (a) maintaining the safety of capital,
  - (b) ensuring adequate protection against inflation, and
  - (c) maximizing the return on investment while staying within the constraints of the Funding Agreement.
- 6.2 The maturities and terms of investments shall reasonably match the profile of the Fund's forecasted disbursements. To the extent that the timing of disbursements is unknown, investments shall be held in securities with term to maturity of one year or less.
- 6.3 The Policy mix between Cash or Cash Equivalents and Fixed Income will vary over time to reflect the anticipated disbursements and the remaining investment horizon.
- 6.4 The Fund performance will be assessed based on a customized benchmark using Scotia Capital indices weighted to approximate the modified duration of the disbursements.
- 6.5 The risks faced by the Council include:
- (a) the risk that long-term market returns will not be in line with expectations,
  - (b) the risk of annual volatility in returns, meaning that in any one year the actual return may be very different from the expected return (such return may also be negative), and
  - (c) to the degree that active management is employed, the risk that the added return expected of active management over passive management will not be realized, or will be negative.

## Section VII — Portfolio Diversification and Constraints

- 7.1 The Fund will maintain a prudent level of diversification, subject to the exclusions in 5.2, 5.3 and 5.4 and the limits listed below based on the market value of the Fund.
- 7.2 In respect of the Fixed Income portfolio of the Fund:
- (a) All securities must be readily marketable.
  - (b) Investments in the securities of any one issuer, or two or more affiliated entities, shall be limited to no more than 10% of the Fund except those issued or guaranteed by the Government of Canada or a province of Canada having at least an "A" rating.
  - (c) Investments in the securities with a credit rating of "A" (including all sub-classifications of this rating category) by at least one of the recognized credit rating agencies shall be limited to no more than 20% of the Fund.
  - (d) Investments in the securities with a credit rating of "AA" (including all sub-classifications of this rating category) by at least one of the recognized credit rating agencies shall be limited to no more than 70% of the Fund.

- (e) Investment in securities that are not issued by, or carry the full faith and credit of either the Government of Canada or the government of a province shall be limited to no more than 80% of the Fund.
  - (f) Asset-backed securities shall be rated by a U.S. rating agency to ensure liquidity.
  - (g) Mortgage-backed securities shall be fully guaranteed by the Government of Canada or a province of Canada having at least an “A” rating.
- 7.3 All investments of the Fund in Cash Equivalents shall have a minimum credit rating of “R-1 (low)” or equivalent and be readily marketable or redeemable.
- 7.4 All debt ratings refer to the ratings of Dominion Bond Rating Service (DBRS) or comparable ratings of other major credit rating agencies. In the case of split-rated securities, the lowest rating by a major credit rating agency shall be used.
- 7.5 If a security’s credit rating falls below the required level after purchase, the Manager shall remove it from the Fund as soon as practicable, but taking care not to unduly impair performance. The Manager shall notify the Committee promptly in writing when such a rating change results in non-compliance.

## Section VIII – Loans and Borrowing

- 8.1 No part of the Fund shall be loaned to any party, other than by purchasing securities which otherwise meet the requirements of this Policy for Fixed Income or Cash Equivalents.
- 8.2 The Manager shall not borrow money, pledge or otherwise encumber any of the Fund’s assets, except to the extent that temporary overdrafts occur in the normal course of day-to-day portfolio management.

## Section IX – Valuation of Investments

- 9.1 Investments in marketable securities shall be valued by the Custodian no less frequently than monthly at their market value at that time.
- 9.2 Investment in a Pooled Fund shall be valued according to the unit values calculated at least monthly by the custodian of that Pooled Fund. The Custodian shall be responsible for requesting and recording the unit values on a monthly basis.

## Section X – Conflicts of Interest

- 10.1 If a member of the Committee, or any agent of or advisor to the Committee, or any person employed in the investment or administration of the Fund has, or acquires, any material interest, direct or indirect, in any matter in which the Fund is concerned or may benefit materially from knowledge of, participation in, or by virtue of an investment decision or holding of the Fund, the person involved shall as soon as practicable, disclose in writing this potential conflict of interest to the Chair of the Committee. The Chair shall immediately advise all members of the Committee, and the Committee shall decide upon a course of action. Any such person will thereafter abstain from any decision making with respect to the area of conflict, unless otherwise determined by unanimous decision of the remaining members of the Committee.

- 10.2 A Manager shall provide the Committee with its internal guidelines on purchasing securities of members of the Manager’s organization, affiliates, or entities in which the Manager or its affiliates have a substantial interest or in which any employee of the Manager or that employee’s spouse or children have a substantial investment.
- 10.3 Every disclosure of interest under this Section shall be recorded in the minutes of the relevant Committee meeting.
- 10.4 The failure of a person to comply with the procedures described in this Section shall not of itself invalidate any decision, contract or other matter.
- 10.5 The Committee shall satisfy itself that an appropriate policy regarding conflicts of interest exists and is followed by any Manager. As a minimum, the Code of Ethics and Standards of Professional Conduct adopted by the CFA Institute shall be expected to apply to such Manager.

## Section XI – Monitoring

- 11.1 The Committee, in conjunction with its Investment Consultant, shall review on a regular basis, as needed, and at least once a year:
- (a) the assets and net cash flow of the Fund,
  - (b) the investment performance and management of the Fund and the Manager relative to the objectives of the Policy and of the Investment Strategy,
  - (c) portfolio holdings,
  - (d) the fees and expenses incurred in managing the Fund, and
  - (e) compliance with this Policy and Investment Strategy.

Following such review, the Committee shall take such action as it deems prudent and appropriate.

- 11.2 The Committee, in conjunction with its Investment Consultant, shall meet at least once a year with the Manager to discuss investment performance, investment strategies, expected future performance and any changes in that Manager’s organization, investment processes and professional staff.
- 11.3 The Committee shall evaluate whether any information discovered through the foregoing monitoring activities require specific communication to the Board.

## Section XII – Policy Review

- 12.1 This Policy shall be reviewed at least annually in order to determine whether any modifications are necessary or desirable. Such review shall include but not be limited to:
- (a) changes in the expected projected expenditures of the Fund,
  - (b) revisions to the expected long-term trade-off between risk and reward,
  - (c) shifts in the financial objectives and risk tolerance of the Council,
  - (d) shortcomings of the Policy that emerge in its practical operation, and
  - (e) recommendations by a Manager.