Ontario Research Fund

Follow-up on VFM Section 3.10, *2009 Annual Report*

Background

The Ontario Research Fund (Fund) was created in 2004 to "support scientific excellence by supporting research that can be developed into innovative goods and services that will boost Ontario's economy." The Ministry of Research and Innovation (Ministry), itself created in 2005, is responsible for the Fund, which focuses on activities that support Ontario's knowledge economy and create high-value jobs.

The Fund makes grants to cover the direct and indirect operational costs of research through its Research Excellence Program. It supports the capital costs of research through its Large Infrastructure Program and Small Infrastructure Program.

Total spending on these programs in the seven years between the Fund's inception in 2004 and the end of the 2010/11 fiscal year was $569 million ($303 million in the five years from 2004/05 through 2008/09), with total announced program commitments from 2004/05 through 2010/11 of $1.077 billion ($623 million from 2004/05 through 2008/09). The Ministry has approximately 15 staff involved in delivering these programs.

In our 2003 audit of the Science and Technology Division of the former Ministry of Enterprise, Opportunity, and Innovation, we reported significant concerns about the lack of effective governance and accountability mechanisms. The consolidation of operating and capital research funding into one program managed and administered by the Ministry helped address these concerns. However, in our *2009 Annual Report*, we noted that there were still a number of areas that required improvement.

Some of our most significant observations were as follows:

- The Fund's overall mandate emphasizes the support of research that will provide economic and social benefits for the people of Ontario through the commercialization of such research. However, most of the $623 million committed to projects at the time was for basic theoretical research that was not focused on commercial potential.
- The Ministry measured the performance of its projects against three targets: the dollar value of investments made by the private sector, the number of individuals with enhanced skills involved in its projects, and the number of active licences for intellectual property rights resulting from Ministry-funded projects. However, it did not measure the Fund's contribution to the overall goal of creating high-paying jobs and commercializing research.
- The Ministry based its Large Infrastructure Program funding decisions on the decisions of the Canada Foundation for Innovation (CFI). As a result, we noted that the Fund granted $41.5 million to projects that did not directly support Ontario's strategic priorities.

- The Ministry relied on the CFI to monitor Research Infrastructure Program grants and did not sufficiently assess or review the CFI's work to ensure that funding commitments worth more than $300 million at that time were being spent for the approved purpose.

- Ontario's colleges tend to focus on applied programs and research, and on helping small- and medium-sized businesses develop technologies and processes for the marketplace. However, the Fund had awarded no grants directly to colleges. It was our view that the Ministry should assess the potential benefits of applied-research projects that address both the unique needs of Ontario's colleges and offer enhanced commercialization potential.

- The Ministry received reports from grant recipients as part of the monitoring process for the Research Excellence Program. However, we found that the Ministry performed no formal monitoring of these reports to ensure that program funds were being spent for the intended purpose.

Status of Actions Taken on Recommendations

According to information received from the Ministry of Research and Innovation (Ministry), some progress was made on implementing all of the recommendations in our *2009 Annual Report*, with substantial progress being made on several, including:

- implementation of a new process called the Ontario First approach to ensure that research infrastructure projects co-funded with the federal Canada Foundation for Innovation (CFI) provide strategic benefits to Ontario;

- launch of the Fund's College-Industry Innovation Fund to provide co-funding with the CFI

to meet the research infrastructure needs of Ontario colleges; and

- development of a computer system called eRIMS to improve the accountability and transparency of the grant application, adjudication, and contract-management processes.

For some recommendations, further progress will depend on data collection and reporting of new proposed performance measures in late 2011 and early 2012, and the development of an information-sharing agreement with the CFI that sets out the responsibilities of each party in sharing monitoring, audit, and site-visit reports. The current status of action taken on each of our recommendations is as follows.

PROGRAM OBJECTIVES, BENEFITS, AND REPORTING EFFECTIVENESS

Program Objectives

Recommendation 1
To ensure that the Ontario Research Fund (Fund) program supports the Ministry of Research and Innovation's (Ministry's) overall strategy of job creation and is consistent with the Fund's commercialization objective, the Ministry should place more emphasis on funding projects that have viable commercial potential.

Status
The Ministry informed us that it continues to emphasize commercial potential as one of the key assessment criteria for research proposals, although it has implemented no new project-application policies and procedures.

Proposals under the Research Excellence Program are formally evaluated by peer-review panels that include at least two commercialization experts who help assess each application's market potential, while technology-development proposals for the Large Infrastructure Program must provide commercialization plans. The importance of potential commercialization has also been reiterated in program guidelines and project contracts.

The Ministry indicated that it does not formally track the percentage of funds granted under the Research Excellence or Research Infrastructure programs that have commercial value. However, it continues to collect and report preliminary data on patents granted, new and active licences established, and spinoff companies created. The Ministry also collects anecdotal evidence of commercialization in the form of success stories shared by researchers.

In 2011, the Ministry began to evaluate a revised annual progress report for projects under the Research Excellence Program intended to capture more information on commercialization achievements, including the number of spinoff firms created and new employees hired. As more data becomes available, the Ministry plans to perform more in-depth analysis of research projects to compare actual commercialization activity with intended goals.

Benefits of Research Projects

Recommendation 2

To better promote the commercialization of research done at Ontario's publicly funded research institutions and ensure that the social and economic benefits of the research are retained in Ontario, the Ministry of Research and Innovation should continue to review best practices for intellectual property management in other jurisdictions and, on the basis of the best practices identified, implement consistent guidelines for the management of intellectual property across Ontario's publicly funded research institutions.

Status

The Ministry informed us that, in December 2010, it consulted with Industry Canada to share information on effective practices in the field, and it researched intellectual-property ownership models at Ontario universities. As part of the study, the Ministry also examined other jurisdictions in Canada and the United States to identify best practices in this field.

The Ministry concluded from its research that approaches vary widely among universities, with no consensus as to what works best. The study also noted that there is no clear link between intellectual-property ownership policy and the rate of commercialization of research at universities. The Ministry informed us that it concluded from its research that no single approach is ideal for all situations, so it has implemented no standard guidelines in this area. However, the Ministry continues to talk to its federal and provincial counterparts, and plans to encourage the development of intellectual-property models and approaches that will maximize the benefits to Ontario.

Measuring and Reporting on Program Effectiveness

Recommendation 3

To improve its accountability to the public and its ability to measure the results being obtained for the grants provided by the Ontario Research Fund (Fund), the Ministry of Research and Innovation should:

- *develop program-specific measures, targets, and benchmarks to assess the Fund's contributions to its overall goals of supporting job creation and the commercialization of research; and*
- *periodically report to the Legislature and the public on the achievement of these measures.*

Status

In 2010, the Ministry engaged a consultant to assess the performance of many of its programs and their contribution to job creation in Ontario. The report found that more than 7,000 jobs created in Ontario were attributable directly or indirectly to the Fund since its inception in 2004, although the report noted that there were gaps in the Ministry's data. The report further indicated that bigger programs like the Fund contribute proportionately more to job creation than smaller ones.

In 2011, the Ministry contracted an independent research firm to collect and analyze the information needed to assess the long-term outcomes of

Ministry-funded programs, including the Fund. As part of the study, the firm sent an on-line questionnaire to 1,274 researchers and companies, and followed up with 129 interviews with senior representatives of organizations that received direct or indirect funding through ministry programs. The study noted some key findings attributable to ministry funding, including:

- significant research discoveries or technology developments, such as a new process, product, or service;
- the number of jobs created, with the proportion that were high-paying and low-paying, and the proportion of high-skilled versus low-skilled; and
- the number of spinoff companies created.

The Ministry anticipates that the proposed performance measures derived from the study will be implemented in fall/winter 2011/12.

PROJECT SELECTION

Research Excellence Program

Recommendation 4

To ensure that the Research Excellence Program follows a selection process that is not only fair and transparent but promotes the program's goals, the Ministry of Research and Innovation should ensure that all approved proposals meet program-eligibility requirements.

Status

The Ministry informed us that the Fund will no longer support projects that fail to meet eligibility requirements. In 2009, for example, the Ministry excluded two high-performance computing projects because they did not meet the Research Excellence Program's eligibility requirements. Although the projects were important to Ontario researchers, the Research Excellence Program's Advisory Board recommended that the Program was not the best mechanism for funding such projects and suggested, instead, a separate process to fund proposals that do not strictly meet the Program's eligibility

requirements. The Minister upheld the Board's recommendation, and the Ministry provided short-term funding to these projects through a special request to Treasury Board.

The Ministry is currently reviewing options for the most cost-effective ways to fund projects like the high-performance computing platforms. A report outlining the different options for funding and delivery of such projects, with recommendations on preferred approaches, was expected for fall 2011. In addition, the Ministry reiterated in updated program guidelines on its website that projects such as the high-performance computing platforms are ineligible for Ontario Research Fund/ Research Excellence support.

Research Infrastructure Program

Recommendation 5

To ensure that projects funded by the Research Infrastructure Program are economically beneficial to Ontario, the Ministry of Research and Innovation should:

- *only fund projects that are highly aligned with Ontario's priorities; and*
- *consider funding projects that have not applied to, or received funding from, the Canada Foundation for Innovation, if they offer significant benefits to Ontario.*

Status

In 2009, the Ministry implemented an Ontario First approach to funding decisions for the Large Infrastructure Program, under which it no longer automatically matches CFI investments. Instead, funding decisions are now based on a proposal's strategic benefits to Ontario and its scientific merits. The Ministry will co-fund projects only where provincial and federal priorities are aligned.

The Ministry established five expert strategic review panels in various sectors such as health sciences and clean technologies to review and assess the strategic value of 172 funding requests in 2009. Each panel consisted of 10 experts from the

academic and business communities who in their recommendations for project funding considered CFI expert-committee reports. To help guide panel reviews, the Ministry also provided assessment forms requiring panellists to consider key issues relating to the strategic value to Ontario of the proposals. Panels were asked to group proposals into priority categories and on the basis of that advice, the Fund's Advisory Board made funding recommendations to the Minister, who made the final approvals.

As a result of the new Ontario First approach, the Ministry provided $243.3 million in funding to priority projects for Ontario in the 2009 infrastructure competition. The Ministry also funded four projects that did not receive CFI funding but were a priority for Ontario, and it chose not to fund seven proposals that received CFI assistance because they did not rank as high as others in terms of strategic benefit to Ontario.

In addition, the Ministry informed us that it formed a working group to provide feedback on ways to improve the Ontario First process in 2012 for future large infrastructure competitions, and to continue to ensure that Ontario derives a strategic benefit from all research infrastructure projects that get provincial funding.

Colleges and Smaller Institutions

Recommendation 6

To ensure that the Ontario Research Fund selection process is accessible to all eligible applicants, and to help meet the program's overall goal of commercialization of research, the Ministry of Research and Innovation should work with colleges, smaller institutions, and federal research agencies to ensure that the specific requirements and infrastructure needs of Ontario colleges and smaller institutions that focus on applied research are given appropriate consideration.

Status

The Ministry informed us that it communicated with all 24 Ontario colleges and with their advo-

cacy organization as part of its funding selection process for the Research Excellence Program. The Ministry also launched its College-Industry Innovation Fund (Innovation Fund) program to provide co-funding ($10 million) with a similar CFI program. The Innovation Fund's purpose is to bolster the capacity of Ontario colleges to support businesses by providing an industry-relevant research infrastructure that fosters partnerships with the private sector.

The Ministry said that it invited all colleges to information sessions about the Innovation Fund competition in 2011, and encouraged them to seek assistance from the Ministry for their applications. The Ministry also set up a website to inform colleges of program details. Notices of intent to apply to this fund were to be submitted for the first time in June 2011, and 14 colleges submitted applications.

In addition, the Ministry informed us that two college representatives were appointed to the Ontario First Working Group, alongside two from the Ontario Council on University Research and two from the Council of Academic Hospitals of Ontario. The Working Group provided input on the adjudication process to be used in the 2012 Large Infrastructure Program competition.

The Ministry also indicated that it will continue to look for ways to strengthen research capacity in colleges and smaller institutions. In 2009, for example, it committed $10.2 million over three years to the Colleges Ontario Network for Industry Innovation (Network) to allow it to expand to 20 colleges from 10. The Network, founded in 2006, began as an applied research and development network of leading post-secondary institutions with a goal to help small- and mid-sized enterprises solve technical problems, adapt new technologies for the marketplace, and develop new or improved products and processes.

In the most recent round of Ontario Research Fund proposals, there were seven funding submissions from colleges—five for the Large Infrastructure Program (October 2008) and two for the

Research Excellence Program (October 2010). One of these seven submissions was selected, and the college received funding for its proposal.

PROJECT MONITORING

Research Excellence Program

Recommendation 7

To ensure that Research Excellence Program grants are used for the purposes intended and that project performance is effectively monitored, the Ministry of Research and Innovation should:

- *implement a process to identify and follow up on projects that are not reporting quarterly as required;*
- *perform routine, formal monitoring visits to verify the information submitted by grant recipients, to ensure that program funds are being used for the approved research and that research milestones have been met; and*
- *develop clear guidelines for what independent audits are expected to accomplish and report, ensure that audit reports are received when due, and follow up on issues they identify on a timely basis.*

Status

The Ministry informed us that it established a working group for the Research Excellence Program to conduct a review of program systems, including guidelines, contracting, and project-management processes, to improve expenditure management and accountability.

The Ministry also advised us that a Contract Management Tool (CMT) has been implemented in its research-awards database to assist with the management and monitoring of contract compliance of all Research Excellence projects. The CMT was incorporated into the approvals process for program reporting in mid-2010 and provides a mechanism for collecting financial and performance information over the life of a project. This will enable quick identification of projects that are not meeting contracted reporting dates so that program

staff can take follow-up action. To date, CMT reports have been used to ensure that the Program receives quarterly requests for payments from recipients, and to track the amounts paid out.

The Ministry also informed us that it makes site visits to funded projects, but there is currently no formal process or schedule regarding these visits. The development of a formal process is to be discussed as part of a business transformation project that is currently under way.

In addition, the Ministry indicated that it continues to work with its internal audit department on implementing strengthened program-monitoring processes, including at least two audits each year of selected recipients that receive a large number of grants. In May 2011, the Ministry released the first such audit report of two funding recipients, including responses from the recipients. The audits found that there was generally adequate governance over contracts, and that recipients complied with contract terms and with the government's transfer-payment accountability directive. The audits also noted areas for improvement, including program monitoring and timeliness of project reporting.

Research Infrastructure Program

Recommendation 8

To more effectively monitor Research Infrastructure Program grants and ensure adequate co-ordination of oversight processes with the Canada Foundation for Innovation (CFI), the Ministry of Research and Innovation should:

- *periodically obtain and review the CFI monitoring reports and audits for selected larger Ontario-funded projects to ensure that provincial funds are being used for their intended purpose and funded institutions comply with program policies and guidelines;*
- *assess the need for ministry staff to conduct site visits, especially on the larger projects; and*
- *establish a formal agreement with the CFI that clearly defines the roles and expectations of each*

party in the oversight processes for co-funded projects.

Status

In May 2011, ministry and CFI staff met to discuss creation of a formal information-sharing agreement for project oversight. They planned to develop an agreement to set out the responsibilities of each organization in sharing of monitoring, audit, and site-visit reports. The Ministry planned to have a memorandum of understanding in place with the CFI by December 2011, at which time it expected to regularly obtain and review audit and monitoring reports, and collaborate with the CFI on site visits. The Ministry and its internal audit department have also been discussing greater Ministry–CFI co-operation, including a review of past projects audited by the CFI to look for possible gaps in CFI monitoring. The Ministry expected to begin receiving audit reports from the CFI in fall 2011.

PROGRAM ADMINISTRATION

Information Systems

Recommendation 9

To ensure that the Ministry of Research and Innovation has the information needed to effectively oversee its Ontario Research Fund program, its information system should provide ministry staff with timely program-level and project-specific information.

Status

The Ministry informed us that it launched the Electronic Research and Innovation Management System (eRIMS) project in November 2009 to implement an electronic grants-management system. The system aims to enhance customer service and improve the accountability and transparency of the grant application, adjudication, and management process.

The Ministry indicated that the scope of the project includes automation or streamlining of the following grant-management processes:

- application submission, allowing applicants to complete and submit application forms on-line;
- application eligibility processing;
- peer-review management;
- application adjudication and selection;
- timely communication of key decisions;
- contracts and payment authorizations;
- disbursement and report-back requirements; and
- project management , including project budgeting, accounting, information management, and performance measurement.

The Ministry informed us that it selected the Premier's Discovery Awards program as the pilot program for eRIMS to test the processes using transactions from an actual project. According to the Ministry, some core functionality issues discovered during the pilot have been resolved and as of August 2011, the application was in the final testing stage. After the completion of testing, the Ministry will roll out the system for its Premier's Discovery Awards program, with more programs to be added shortly thereafter.

Private-sector Partner Contributions

Recommendation 10

To provide assurance that in-kind private-sector contributions are fairly valued, the Ministry of Research and Innovation should:

- *ensure that grant recipients comply with the policies adopted for the program to assess the value of in-kind contributions; and*
- *periodically verify that independent valuations of substantial in-kind contributions have been performed to support values reported by grant recipients.*

Status

The Ministry advised us that it removed from the Research Excellence Program guidelines a reference to CFI policy on the valuation of in-kind contributions. It also published more specific

guidelines on how to determine the value of some eligible in-kind contributions, and defined others that are ineligible.

The Ministry informed us that it continues to assess in-kind contributions from private-sector partners during the contracting process, as it did at the time of our 2009 audit. However, it has stated more clearly in its latest guidelines the level of detail required in supporting documents.

With regard to the Research Infrastructure Program, the Ministry continues to rely on CFI due diligence to ensure that reliable valuations are done in accordance with the federal guide on the audit of contributions. Although it has not reviewed CFI work in this area, the Ministry was working with the federal organization on a new agreement about verifications.

After consulting stakeholders, the Ministry concluded that requiring third-party verifications would be unreasonable, given that it can be difficult to find the appropriate expertise and that obtaining such verifications is often prohibitively expensive relative to the funding provided.

Instead, the Ministry relies on the institutions and their private-sector partners to justify how they determined the value of in-kind contributions. The Ministry has indicated that it requires the institutions to provide support to justify the value of all in-kind contributions, regardless of the amount. An institution must, for example, attest to the fact that the valuations for services from its staff are based on actual salaries and benefits of those staff.