

## 3.07–Science and Technology

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### BACKGROUND

The mandate of the Ministry of Enterprise, Opportunity and Innovation is to foster competitive businesses and a prosperous economy in Ontario. Through this mandate, the Ministry promotes innovation, economic growth, and job creation. The Ministry's science and technology goals are to provide leadership for and co-ordination of related programs and activities government-wide and to develop strategies that foster a culture of innovation in the Ontario economy.

Between April 1, 1998 and March 31, 2003, the Ministry funded several major science and technology programs and spent \$1.3 billion. The government announced total program commitments (i.e., expected total funding) of \$4.3 billion, as shown in the following table.

**Ministry Science and Technology Commitments and Funding,  
April 1, 1998 to March 31, 2003**

Science and Technology Program	Total Ministry Commitments (\$ million)	Total Ministry Funding (\$ million)
Ontario Innovation Trust	1,050.0	750.0*
Ontario Research and Development Challenge Fund	1,250.0	182.6
Ontario Centres of Excellence	342.5	161.5
Ontario Research Performance Fund	251.3	91.3
Premier's Research Excellence Awards	85.0	45.0
Telecommunications Access Partnerships	32.5	26.0
Ontario Research and Innovation Optical Network	32.3	17.7
Biotech Commercialization Centres Fund	20.0	8.5
Medical and Related Sciences	20.0	7.0
Interactive Digital Media Small Business Growth	10.0	6.9
Ontario Cancer Research Network	100.0	6.1
Connect Ontario	85.0	3.1
Cancer Research Institute of Ontario	1,000.0	0.0
Biotechnology Cluster Innovation Program	30.0	0.0
Premier's Platinum Medal for Research Excellence	10.0	0.0
Other Transfer Payments	21.7	20.4
<b>Total Science and Technology Programs</b>	<b>4,340.3</b>	<b>1,326.1</b>

\* The Ministry had paid the Ontario Innovation Trust \$750 million as of March 31, 2003. As of March 31, 2002, the date of the most recent information available, the Trust had disbursed \$239.6 million to grant recipients and had more than \$500 million on hand.

*Source of data: Funding Pronouncements and Public Accounts of Ontario*

There is no specific legislation related to the Ministry's science and technology programs, as most programs have been established pursuant to approved Cabinet submissions. Each program has specific objectives and provides grants to institutions such as universities, colleges, hospitals, and other not-for-profit organizations to carry out scientific research and technology development. Furthermore, most programs require the research institution to obtain private-sector financial support in addition to program funding, and several programs use advisory boards and panels to review research proposals and recommend specific projects for funding.

The Ministry's Science and Technology Division has approximately 50 staff and, in the 2002/03 fiscal year, spent \$7.8 million on direct operating expenses. These expenses include payments to the Innovation Institute of Ontario, a not-for-profit corporation that provides administrative services for a number of ministry programs.

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## AUDIT OBJECTIVES AND SCOPE

The objectives of our audit of the science and technology programs were to assess whether the Ministry had adequate procedures in place to:

- ensure compliance with Management Board of Cabinet directives, contractual agreements, and ministry policies;
- ensure that resources were managed with due regard for economy and efficiency; and
- measure and report on the ministry's effectiveness in fulfilling its mandate and identifying areas where corrective actions are required.

The criteria used to conclude on our audit objectives were discussed with and agreed to by ministry management and relate to systems, policies, and procedures that the Ministry should have in place.

Our audit was performed in accordance with the standards for assurance engagements, encompassing value for money and compliance, established by the Canadian Institute of Chartered Accountants, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

The scope of our audit, which was substantially completed by March 2003, included an examination of six science and technology programs that together accounted for 90% of the Ministry's science and technology expenditures. We also assessed selected aspects of the Ministry's other science and technology programs. Our audit included discussions with relevant staff, as well as a review and analysis of documentation that was made available to us at the Ministry and at the Innovation Institute of Ontario. Our audit also included a review of the activities of the Ministry's Internal Audit Services Branch. We reviewed the Branch's recent reports and incorporated any relevant concerns into our audit work.

### **ACCESS TO INFORMATION**

We did not receive adequate access to all the information we requested from the Ministry—information that the Ministry must provide to us under section 10 of the *Audit Act*. For example, on October 23, 2002, we requested submissions to Management Board of Cabinet for a number of ministry programs. These submissions outline such program parameters as who is eligible for funding, funding criteria, and grant limits. Such information was vital to the performance of our audit. Also, full access to other ministry documentation was originally denied due to the fact that such documents were based on these submissions. Partial submissions were provided almost three months after we requested the information. Subsequently, we were allowed to read those portions of the documents not previously provided but were not given unfettered and timely access to all the documents we needed to complete our audit work. Such limitations on our access to information prevented us from being able to conclude on our audit objectives and complete this audit in a timely manner.

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The Ministry is of the opinion that it provided the information in accordance with government protocols. However, we continually expressed the view that we were not provided with all the information needed to satisfactorily complete our audit work.

## OVERALL AUDIT CONCLUSIONS

Given the limitations on our access to information as discussed above, we cannot provide reasonable assurance that our audit identified all matters that should be brought to the attention of the Legislative Assembly. However, our review of the Ministry's science and technology spending of \$1.3 billion between April 1, 1998 and March 31, 2003—primarily for research grants—revealed a number of significant concerns. A major concern was that the Ministry had committed to spending \$4.3 billion without an overall strategic plan to set parameters and consistent policies for existing programs or to guide the development of new programs to meet the objectives of promoting innovation, economic growth, and job creation. Other significant concerns and deficiencies in the Ministry's practices and procedures included the following:

- Contrary to government directives on alternative service delivery, the Ontario Innovation Trust was set up through a trust agreement between the former Ministry of Energy, Science and Technology and a trust corporation without a business case justifying its creation. As noted in our previous annual reports (1999–2002), the Ministry did not implement the mandatory accountability controls to ensure that more than \$1 billion in public funding, provided or committed to the Trust, is being spent for the purposes intended. The Ministry receives virtually no information from the Trust and does not have the required monitoring processes in place to ensure compliance with the Trust agreement. Therefore, neither the Legislature nor the Ministry have any control over spending by the Trust.
- The contract between the Ministry and the Innovation Institute of Ontario (IIO) regarding the administration of the Ontario Research and Development Challenge Fund states that no documentation is to be destroyed without ministry approval. But the IIO did not retain panel reviewers' assessments of research proposals and often disposed of these assessments without the Ministry's consent. Therefore, management could not demonstrate that appropriate practices were followed in the decisions made to fund specific projects.
- The Division often did not have the supporting documentation that was necessary to properly calculate Ontario Research Performance Fund grants. We obtained documentation from other sources for a sample of 2001/02 recipients, recalculated the grants, and found that one institution was underpaid by \$277,000 and another was overpaid by \$147,000. We notified the Ministry of these errors, and the errors were subsequently corrected.

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- We reviewed in detail the summary score sheets for one round of competition for the Premier's Research Excellence Awards and found that the marks on the reviewers' individual score sheets did not match the marks on the Ministry's summary score sheet, and the marks on the summary score sheet did not match the summary of scores on the short list of recipients recommended for funding. Such findings limit the Ministry's ability to demonstrate the fairness and transparency of the selection process.
  - The Ministry does not have adequate procedures in place to monitor potential conflicts of interest. For example, a review of advisory board minutes revealed occasions on which a conflict of interest should have been declared, but there was no indication in the minutes that a conflict had been declared.
  - In July 2000, the Ministry single-sourced the administration of the Ontario Research and Development Challenge Fund to the Innovation Institute of Ontario, a subsidiary of the Ontario Innovation Trust. According to ministry documentation, a request for proposals (RFP) was not issued because once an RFP is out, anyone who is eligible must be treated fairly in the process, and problems could arise if a bidder was not dealt with fairly after an investment of time and resources in the preparation of a proposal. Single-sourcing, especially for such a reason, contradicts the basic principles of government procurement.
  - Although the Ministry has spent hundreds of millions of dollars on science and technology research, it has made little effort to ensure that intellectual property rights arising from funded research ultimately benefit the province.
  - The Ministry did not have a process in place for measuring and reporting on the achievement of its overall goals of promoting innovation, economic growth, and job creation. The Ministry measured its performance in terms of growth in the value of non-government-sponsored research over the next five years. This measure is a future-oriented target or benchmark and does not reflect the ongoing impact of the Ministry's expenditures to date.

## **DETAILED AUDIT OBSERVATIONS**

### ***COMPLIANCE WITH GOVERNMENT AND MINISTRY POLICIES***

#### **Governance and Accountability**

The Management Board of Cabinet directive on Transfer Payment Accountability requires the Ministry to establish an effective framework for the prudent management of provincial transfer-payment funds. The mandatory requirements include defining expectations, signing agreements, ongoing monitoring, reporting periodically, and taking corrective

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action when necessary. We reviewed the governance and accountability processes in place for the Ontario Innovation Trust and for the Ontario Research and Development Challenge Fund.

### **ONTARIO INNOVATION TRUST—GOVERNANCE AND ACCOUNTABILITY**

The Ontario Innovation Trust (Trust) was created in March 1999 to help support the capital costs of research performed in Ontario universities, community colleges, hospitals, and research institutions. The Trust was intended to match federal grants from the Canada Foundation for Innovation and to complement the Ontario Research and Development Challenge Fund, which would fund operating costs for research. A governing board was appointed to oversee the Trust, and in 2000, a subsidiary, the Innovation Institute of Ontario, was created to administer Trust grants to research institutions. The Ministry has committed to pay the Trust more than \$1 billion, and as of March 31, 2003, had paid \$750 million. The Trust had more than \$500 million on hand as of March 31, 2002—the date of the most recent information available.

The Trust was created by an agreement between the former Minister of Energy, Science and Technology and a private-sector corporation that was designated as the Trustee. But contrary to government directives on alternative service delivery, we were informed that there was no submission to Cabinet and no business case to justify the Trust's creation. Also, as noted in our previous annual reports (1999–2002), contrary to the Management Board of Cabinet directive on Transfer Payment Accountability, the Ministry did not enter into an agreement with the Trust to define provincial expectations or outline how the Trust would be held accountable for its spending of public funds.

The Transfer Payment Accountability directive specifies that the Ministry must routinely obtain and review information on the status of recipient eligibility and performance and that the Ministry is responsible for identifying non-compliance with agreements and initiating corrective action. However, we observed that the Ministry receives virtually no information from the Trust and does not have the required monitoring process in place to ensure compliance with the trust agreement. For instance, the trust agreement specifies maximum amounts that can be provided for an eligible project, but ministry management cannot monitor whether eligible projects have been split into several components to circumvent these funding limits. Also, without a process for verifying eligibility, the Ministry has no assurance that the Trust is spending public funds in compliance with the trust agreement.

The Trust is not required to report to the Ministry or through the Minister to the Legislature. While the Trust has voluntarily posted selected information on its public Web site, the Trust's first annual report was not released until three years after the Trust's creation. In addition, although ministry staff indicated that the Trust's Board had hired a consultant to report on whether the Trust implemented best practices in accountability, the Ministry did not know whether the review actually took place or whether a report was ever issued. We also requested, but did not receive, the consultant's report.

Having representation on the Trust's Board could help the Ministry monitor the Trust's activities. The trust agreement states that of the seven members of the Trust's Board, three shall be appointed by the Lieutenant Governor in Council on the Minister's recommendation. Although the trust agreement stipulates that a member whose term has expired shall remain in office until a successor is appointed, the wording used in the Lieutenant Governor's appointments states that these appointments are "not to exceed" the time period stipulated. Yet one government appointment expired in May 2001 and another in May 2002, and the government has not yet appointed replacements. In addition, none of the three government employees appointed to the Board by the Lieutenant Governor were ministry staff. We are concerned that even this basic oversight provision to monitor the planned spending of \$1 billion in public funds is not being achieved.

In summary, neither the Legislature nor the Ministry has control over the spending of taxpayers' funds by the Trust.

### **Recommendation**

**To ensure the effective oversight of the Ontario Innovation Trust's spending of potentially more than \$1 billion in public funds, the Ministry should:**

- **negotiate an agreement with the Trust to establish proper governance and accountability arrangements;**
- **implement procedures for routinely obtaining and reviewing information on the status of recipient eligibility and ongoing results;**
- **implement procedures for identifying areas of non-compliance and initiating corrective action where required; and**
- **ensure that all government Board appointments are up to date.**

### ***Ministry Response***

***The Ministry will make its best efforts to ensure accountability. However, it should be noted that the Ministry does not have the authority to impose an agreement on the Ontario Innovation Trust (Trust), although the Ministry could take steps to negotiate an agreement as suggested.***

***In order to try and ensure that the Trust is in compliance with the accountability framework established in the March 31, 1999 Trust Agreement, the Ministry will:***

- ***formally request a quarterly update from the Trust to confirm recipient eligibility and results of investments beginning in the fourth quarter of the 2003/04 fiscal year;***
- ***work with the Trust to put in place process tools to identify and address any non-compliance matters; and***
- ***ensure that the government appointments are brought up to date as quickly as possible, recognizing that they are Order-in-Council appointments.***

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**ONTARIO RESEARCH AND DEVELOPMENT CHALLENGE FUND—  
GOVERNANCE AND ACCOUNTABILITY**

In 1997, the Ontario Research and Development Challenge Fund (Challenge Fund) was established as a 10-year program to promote research of interest to the private sector and encourage collaboration between research institutions and the private sector. The Challenge Fund was also designed to improve Ontario's ability to attract and keep researchers in the province and to help Ontario universities compete for federal research funding. As of March 2003, the Minister had approved more than 100 Challenge Fund projects, for a total ministry commitment of \$435 million. We were advised that the sponsoring research institutions and private-sector organizations had made additional funding commitments of \$437 million and \$510 million, respectively.

At the Challenge Fund's inception in 1997, a Challenge Fund Board was created as an independent body to provide advice and recommendations to the Ontario government on individual research and development proposals. The Ontario government was represented on that Board by the Ministries of Energy, Science and Technology; Economic Development and Trade; Training, Colleges and Universities; Agriculture, Food and Rural Affairs; and Finance. A 1997 submission to Cabinet established the former Ministry of Economic Development, Trade and Tourism as the lead ministry responsible for administering the Challenge Fund and being accountable to the Legislature. In August 1999, a Memorandum of Understanding (MOU) between the Ministries and the Board outlined their respective roles and responsibilities. This MOU was to be formally reviewed every two years.

The first MOU review should have been completed in August 2001 but had not been done as of March 2003. Significant changes have occurred in the Challenge Fund that would warrant updating the MOU. For example, a program objective to match federal grants for capital infrastructure was dropped with the creation of the Ontario Innovation Trust. Also, since November 2000, the monitoring of grants and other responsibilities of the Challenge Fund have been delegated to the Innovation Institute of Ontario, a subsidiary of the Trust.

The MOU permits the Challenge Fund Board's Chair to appoint special advisory committees to assist in evaluating proposals for research funding. To date, a non-medical panel and a medical panel have been established to assess proposals and provide summaries to the Board for decision-making. But there are no terms of reference outlining key features of such panels, including the panels' role, who can serve on them, the length of members' terms, and the panels' policies, procedures, and processes. Furthermore, the MOU does not establish performance targets or a lead ministry for the program.



## Recommendation

To ensure that the required accountability mechanisms are in place for the management of the Ontario Research and Development Challenge Fund (Challenge Fund), the Ministry should:

- update the Memorandum of Understanding between the Challenge Fund and the ministries to outline the responsibilities of the Challenge Fund Board and special advisory committees and to reflect current program objectives and suitable performance measures; and
- ensure that primary and direct oversight responsibility for the Challenge Fund rests with a lead ministry.

## Ministry Response

*The Ministry agrees that it must update the Memorandum of Understanding (MOU) to reflect the changes to the Ontario Research and Development Challenge Fund since the program was established. The update will be completed by December 31, 2003, and will include: the role of the Challenge Fund Board and ongoing special advisory committees; program objectives; and performance measures. The changes to the MOU will also incorporate the best-practice advice that the Ministry has recently received from an International Review Panel and will reflect the Ministry's role as lead ministry.*

## Project Selection

The Ministry is ultimately responsible for ensuring that the selection of potential research and development projects meets the program's specific objectives and specified eligibility requirements. To ensure that funds are provided for the most deserving proposals, a fair, transparent selection process must be in place. We examined the selection process and supporting documentation for the Ontario Research and Development Challenge Fund, the Ontario Research Performance Fund, the Premier's Research Excellence Awards, and the Premier's Platinum Medal for Research Excellence.

### **ONTARIO RESEARCH AND DEVELOPMENT CHALLENGE FUND— PROJECT SELECTION**

Since November 2000, the Innovation Institute of Ontario (IIO) has administered the Ontario Research and Development Challenge Fund (Challenge Fund), which was formerly administered by the Ministry. The IIO's responsibility is to review and analyze proposals for Challenge Fund grants to ensure that the documentation submitted is complete and that proposals meet program eligibility criteria. The IIO then is to prepare project summaries for use by the Challenge Fund Board. In conjunction with the Board, the IIO is expected to determine which proposals require expert assessments and the type of panel review required. Panels are then to be set up to review proposals, and the IIO is to

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summarize these panels' recommendations and forward the summaries to the Board for further consideration. The Board's recommendations are then to be forwarded to the five Ministers for final approval.

We reviewed the selection process and found that procedures were not in place to ensure that only eligible projects were selected and that the process was fair and transparent. Some of our key concerns are as follows:

- The contract between the Ministry and the IIO states that no documentation is to be destroyed without the Ministry's prior written approval. Documentation, such as evaluations by individual panel members, is to be retained to help ensure that a fair and transparent evaluation process was followed, that conflict-of-interest guidelines were observed, and that the projects recommended for approval were ranked higher than those recommended for rejection. But the IIO did not routinely keep on file panel reviewers' individual assessments of proposals, retaining only the summaries. We found no evidence that the Ministry had given written consent to dispose of these documents. As a result, the IIO could not demonstrate that panel members' evaluations were consistent with the summary recommendations prepared by the IIO and presented to the Board.
- To stimulate job creation and economic growth, Challenge Fund policy requires that a third of any project's costs be received from or committed by private-sector partners. These commitments cannot be made more than six months before the deadline for submitting an application. Contributions committed before that time are not eligible because they do not represent newly created partnerships or incremental funding. We found that the Ministry and the IIO did not always ensure compliance with these eligibility requirements. For example, an applicant applying for a grant with a private-sector partner was awarded \$9.3 million from the Challenge Fund. Contrary to Fund policy, the project had started and the private-sector partner had made commitments to the project a year before applying for the grant. This project did not create new partnerships and did not generate incremental or new private-sector funding.
- The Memorandum of Understanding (MOU) between the Challenge Fund Board and the five ministers responsible for the program requires the Board to provide written recommendations of each proposal to be considered to all ministers who are a party to the agreement. The Ministry requires the Challenge Fund Board to provide written recommendations regarding each proposal to the five ministers within 70 days of the application deadline. We reviewed the timeliness of the process for the last several competitions and found that the process was not completed in a timely manner. The IIO could not provide evidence of when recommendations were submitted to the Minister, and there are no guidelines for the timeliness of the Minister's approval. Overall, the time taken from the application deadline to ministerial approval ranged from 89 to 273 days. In addition, the Ministry could not provide any evidence that written recommendations were provided to, and approval was received from, any of the other ministers who were party to the agreement, as required by the MOU.

## Recommendation

To ensure that the Ontario Research and Development Challenge Fund selection process is timely, fair, and transparent, and that adequate procedures are in place to assess project eligibility, the Ministry should:

- require the Innovation Institute of Ontario to retain all relevant documentation;
- implement procedures for periodically verifying eligibility and ensuring that any exceptions to program eligibility criteria are well supported;
- ensure that all applicable ministers are apprised of the Board's recommendations or, if appropriate, obtain a delegation of authority for the Minister of Enterprise, Opportunity and Innovation to approve projects for funding on behalf of all ministers who are party to the agreement; and
- ensure that applications for research funding are reviewed within the specified time frame and that recommendations are made to the required ministers on a timely basis.

## Ministry Response

*The Ministry will work with the Innovation Institute of Ontario (IIO) to ensure appropriate procedures are being implemented for retaining documents, verifying eligibility, and supporting any exceptions. The service agreement with the IIO requires the IIO to retain all relevant documentation, and the Ministry will strictly enforce this requirement.*

*The Ministry agrees that there are administrative efficiencies to be achieved with delegated authority to the Minister of Enterprise, Opportunity and Innovation. The Ministry will pursue this approach with its partner ministries by December 31, 2003.*

*The Ministry is committed to finding ways to ensure that applications are reviewed in a timely manner and that recommendations are made on a timely basis.*

## **ONTARIO RESEARCH PERFORMANCE FUND—PROJECT SELECTION**

The Ontario Research Performance Fund (Performance Fund) was introduced in the *2000 Ontario Budget* to provide overhead funding for institutions conducting Ontario-government-sponsored research. For eligible research projects, the Performance Fund contributes to overhead costs (such as heat and hydro) at a rate calculated at 40% of the project's direct costs. The rate is reduced when overhead support is received from other ministries. During the 2001/02 fiscal year, the Performance Fund made payments for 218 research projects. In its first two years, the Performance Fund was to spend \$30 million annually. If the total overhead funding for all eligible recipients exceeded this amount, each recipient's funding was to be reduced to ensure that the total final payments for the year did not exceed \$30 million.

A July 2000 Management Board submission outlined the Performance Fund's administrative framework and noted that those institutions designated as eligible research institutions in a provincial tax bulletin would be deemed eligible for program funding. Institutions not listed in that bulletin could apply to the Ministry for an assessment of their eligibility status. However, we found that the Ministry did not have documentation to demonstrate the process or rationale used to approve the eligibility of 41 new recipients that were not listed in the tax bulletin. In the 2001/02 fiscal year, the Performance Fund paid these recipients \$8.7 million.

Eligibility is also contingent on a signed confirmation letter from the lead ministry that provided the initial research funding. This letter confirms the amount of the initial grant for direct costs. This amount is used to calculate the Performance Fund's overhead grant. Since confirmation letters were not on file for a number of projects, the Ministry often did not have sufficient documented evidence regarding the amounts used to calculate the Performance Fund grants. We recalculated the grants for a sample of 2001/02 recipients and found that one institution had been underpaid by \$277,000 and another had been overpaid by \$147,000. We notified the Ministry of these errors, which were subsequently corrected.

Performance Fund grants are provided to reimburse overhead costs for the preceding year. Under the terms of the contract between the institutions and the Ministry, institutions must submit a performance report outlining the use of grant monies in the year in which the grant was received. However, because the funds are to be used to reimburse the previous year's costs, not the current year's, which could be significantly different than the prior year's overhead costs, this reporting requirement does not meet its intended purpose.

Since there is no deadline for eligible recipients to submit funding requests, submissions can be received after all of the program's annual funding has been paid out. In 2000/01 and 2001/02, late submissions totalling \$590,000 and \$116,000, respectively, were paid in the subsequent fiscal years. Since no adjustments were made to the amounts paid to other recipients, these payments resulted in overpayments or payments in excess of the total annual program funding for that particular year. At the time of our audit, program payments for the 2002/03 fiscal year, including any adjustments or overpayments, had not been finalized.

#### **Recommendation**

**To help ensure that recipients of Ontario Research Performance Fund grants meet eligibility criteria and are paid the proper amounts, the Ministry should:**

- ensure that all new recipients meet program eligibility requirements;
- ensure that signed confirmation letters are on file verifying the amount of grants provided by other ministries to eligible recipients;
- implement procedures for verifying that grant amounts are calculated accurately; and

- establish a deadline for submissions and for finalizing annual payments under the program.

#### **Ministry Response**

***The Ministry agrees and is in the process of updating its procedures for the Ontario Research Performance Fund to address these issues. Specifically:***

- ***The Ministry has put in place an administrative practice to require lead ministries to be accountable for ensuring that all new recipients meet program eligibility requirements.***
- ***Copies of all signed confirmation letters verifying the amounts of grants provided by other ministries will be kept on file at the Ministry in a new database tracking-and-management system that is currently being implemented.***
- ***The Ministry has implemented new procedures for verifying that grant amounts are calculated accurately.***
- ***The Science and Technology Division will undertake an internal review of its submission and payment processing system prior to the end of the 2003/04 fiscal year.***

### **PREMIER'S RESEARCH EXCELLENCE AWARDS—PROJECT SELECTION**

The Premier's Research Excellence Awards (PREA) program was established in 1998 to attract, develop, and keep talented graduate students and researchers in Ontario. The awards are made on a competitive basis to principal researchers through their research institutions. PREA's nine-member volunteer advisory board reviews all applications and makes award recommendations to the Minister. While each recipient is eligible for up to \$100,000 in program funding, an additional 50% funding from either a research institution or a private-sector partner is required. As of March 31, 2003, approximately \$45 million had been awarded to 438 recipients.

Potential award recipients must submit a standard application, letters of reference, and letters guaranteeing the 50% matching private-sector contribution. Ministry staff distribute the applications to pairs of Board members for review. Each pair jointly recommends 10 applications for further consideration by the entire Board. The Board Chair reviews all applications, and especially complex applications may also undergo an external expert peer review. The score sheets and ratings from the review pairs, external expert peer reviewers, and the Board Chair are forwarded to the Ministry. The Ministry is to summarize the score sheets and prepare a short list of applicants. The PREA Board considers the Ministry's short list, determines final recommendations, and forwards these to the Minister for approval.

We reviewed the PREA selection process and found that the Ministry had not maintained sufficient documentation to support the selection decisions. For example, the Ministry retained score sheets for successful applicants only. Consequently, it was not possible to verify

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whether the most deserving applicants, as assessed by the review panel, were those recommended for awards. In addition, the reasons for rejecting applicants were not documented in the available Board minutes, and as of March 31, 2003, the minutes regarding all 2002 awards had not yet been prepared. Furthermore, the Ministry was unable to provide the summary score sheets for five of the seven competitions completed to date. We reviewed in detail the Ministry's summary score sheets for one of the two competitions that were available and noted that:

- one out of every four individual score sheets reviewed included only an overall score, as opposed to a separate score for each of the selection criteria;
- the overall marks on the individual score sheets did not match the marks on the Ministry's summary score sheet; and
- the scores on the summary score sheet did not match with the summary of scores on the Ministry's short list.

The selection criteria were also not clearly communicated to potential applicants. Award recipients are selected based on four criteria: the applicant's publication record, the ability to attract financial support from other sources, letters of reference, and the merits of the proposed research plan. The Ministry's Internal Audit Services Branch surveyed grant recipients following the first round of competition and found that the selection process and program criteria were unclear. We reviewed the more recent competitions and noted that the evaluation criteria, scoring process, and weightings for each criteria were still not explicitly communicated to applicants. Guidelines are provided to reviewers on scoring and weighting for each criterion, but the guidelines state that reviewers have the discretion to change the criteria's weightings for the final score. Ministry staff informed us that the assigned scores were only a guide and that reviewers' comments had a greater impact on the final recommendations. In such an environment there is no assurance that the scoring criteria for all proposals are comparable.

There were other inconsistencies in the evaluation process. For instance, a different rating system was available for new researchers. The guidelines state that given new researchers' lack of granting history and independent publications, more weighting should be placed on letters of support and on the research plan. The Board also recommended that all applications by new researchers be externally reviewed. There is merit in using an alternative evaluation method for these applicants; however, the practice was not consistently applied. We identified examples where each of the four criteria were given equal weighting, and others where applicants were evaluated in only three of the four categories. In addition, only two-thirds of the applications by new researchers were externally reviewed.

### Recommendation

To provide assurance that a fair and transparent selection process is followed and that due diligence is demonstrated when assessing proposals for the Premier's Research Excellence Awards, the Ministry should ensure that:

- all selection documents—including proposals, individual score sheets, summary score sheets, and written recommendations—are kept on file for a specified retention period;
- all individual and summary score sheets are reviewed for accuracy; and
- the selection process and evaluation criteria are explicitly stated to potential applicants and applied consistently.

### Ministry Response

*The Ministry agrees and will review, update, and document its procedures for Premier's Research Excellence Awards (PREAs) to address these issues.*

*Specifically:*

- *All relevant selection documents will be kept on file for a specified retention period.*
- *The Ministry will work with the PREA Board to review the evaluation methods to improve accuracy and consistency prior to the spring 2004 round of the PREA program.*

### **PREMIER'S PLATINUM MEDAL FOR RESEARCH EXCELLENCE— PROJECT SELECTION**

The Premier's Platinum Medal for Research Excellence (Premier's Platinum Medal) was created in 2001 to keep outstanding senior researchers in the province. The award is intended for researchers at the mid-career level who have carried out a substantial amount of their work in Ontario, who have an international reputation for excellence, and whose body of research has contributed significantly to furthering knowledge in their field. The program is slated to cost the province \$10 million over six years. The award includes a platinum medal, a citation, and a \$1 million cash prize to support the winner's research at an eligible Ontario research institution, either by covering direct research costs or by endowing a scholarship, research fellowship, or chair in the recipient's name.

The Ministry's June 2001 Management Board of Cabinet submission established the Premier's Platinum Medal and assigned the responsibility for overseeing the new program to the Premier's Research Excellence Awards (PREA) Advisory Board. The Cabinet submission indicated that the Ministry would amend the Memorandum of Understanding (MOU) between the government and the PREA Board to outline terms of reference specific to the new program, the Board's mandate and responsibilities with regard to the new program, and the performance measures by which the new program's success would be evaluated. As of March 31, 2003, no changes had been made to the MOU.

The potential recipients of the Premier's Platinum Medal were nominated by their peers, and the selection process began by establishing a six-member subcommittee drawn from the PREA Advisory Board and the Ontario Science and Innovation Council, an independent body created to provide the government with long-term strategic advice on science, technology, and innovation. The subcommittee conducted an initial assessment of candidates to create a short list of seven nominees. The short list was forwarded to six international reviewers for their opinions and recommendations. After reviewing the international reviewers' assessments, the PREA Advisory Board recommended two nominees to the Minister for approval. At the time of our audit, although payments had not yet been made, the first two award winners had been announced.

Given the profile and prestige of the Premier's Platinum Medal, a fair and transparent selection process is essential. However, we noted that one candidate's nomination letter was dated 19 days after the competition's October 31, 2001, nominations deadline. The Ministry had not stamped the nomination package or recorded when the nomination was received. Also, adequate documentation to support the selection of the seven shortlisted candidates was not maintained by the Ministry. Subcommittee documentation was available from only four of the six members. In addition, most individual nominee score sheets were not on file. For many of the individual score sheets that were on file, there was no indication who had performed the evaluation. According to the subcommittee's recommendation letter to the Minister, 25 people were nominated for the award. However, one subcommittee member had made an attempt to categorize all the nominations reviewed, yet that categorization included only 14 of the 25 candidates. Without complete score sheets from all reviewers for each nominee, there is no documented assurance that the review process had been conducted in a fair and transparent manner.

### **Recommendation**

**To ensure that a fair and transparent selection process is in place for selecting recipients of the Premier's Platinum Medal for Research Excellence, the Ministry should:**

- update the Memorandum of Understanding with the Advisory Board to reflect the Board's responsibility for the program; and
- retain all documentation necessary to adequately support the eligibility and selection of each recipient of the Premier's Platinum Medal for Research Excellence.

### ***Ministry Response***

***The Ministry agrees and is currently updating the Memorandum of Understanding to outline the terms of reference for the program, the Board's mandate and responsibilities, and the performance measures.***



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*All documentation necessary to adequately support the eligibility and selection of each recipient of the Premier's Platinum Medal for Research Excellence will be retained.*

## Program Monitoring

The Management Board of Cabinet directive on Accountability states that once expectations are clearly defined, effective accountability requires that there be reporting on and monitoring of performance in relation to those expectations. We reviewed the Ministry's monitoring efforts for three major grant programs: the Ontario Research and Development Challenge Fund, the Ontario Centres of Excellence, and the Premier's Research Excellence Awards. We also examined the Ministry's monitoring of potential conflicts of interest.

### **MONITORING THE ONTARIO RESEARCH AND DEVELOPMENT CHALLENGE FUND GRANTS**

The Transfer Payment Accountability directive of the Management Board of Cabinet states that program managers must routinely obtain and review information on the status of recipient eligibility and performance. Program managers must also ensure that all required reports are received when due, and they must review and analyze these reports on a timely basis. In addition, program managers are responsible for identifying non-compliance with agreements and any failure by recipients to demonstrate continued eligibility. The Management Board of Cabinet's Accountability Directive states that the obligation to answer for results and for how responsibilities are discharged cannot be delegated to other parties.

The Ontario Research and Development Challenge Fund (Challenge Fund) has an established monitoring process that requires research institutions to submit quarterly disbursement requests, annual progress reports, audited reports at various stages of the project, and a final report when the project is completed. Research institutions are to submit the required reports to the Innovation Institute of Ontario (IIO), which administers the Challenge Fund. We reviewed this monitoring process and noted the following:

- In accordance with the agreement between the Minister and the research institution, an institution that has not requested a quarterly disbursement for the last six months is deemed to have abandoned the project. At the time of our audit, the IIO was administering approximately 60 projects that were listed as active. But almost half these projects had not received funding for more than six months. More than 20 projects had not received funding from the program in more than a year, and one of these projects had not received a payment in more than three years. IIO staff told us that some of these projects were delayed, others had not submitted the required quarterly reports or had submitted information that had proven to be problematic, and the status of seven of the projects was not known. These levels of inactivity warranted a more thorough

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follow-up, which could result in termination of the agreement between the Minister and the research institution. Funds could then be allocated to other projects that could help the Ministry meet its objectives in a more timely manner.

- Program staff use annual progress reports to determine whether milestones and targets agreed to in the project contract have been met and whether the project is on schedule. From our sample of active projects, we found that only about 10% had submitted the required annual report on time. Most annual reports were submitted late—missing the deadline by an average of eight months—and 30% of these projects had never submitted an annual report. The IIO did not follow up to ensure that all annual reports were submitted on time. Periodic reporting and follow-up are essential to help identify, for corrective action, situations where funds are not being used for the purposes intended.
- The Ministry has not established an overall policy regarding when audited reports, outlining where grant monies were spent, are required. Consequently, the requirement for audited reporting was inconsistent. The frequency of reporting was loosely based on the value of the approved grant. Some projects were required to submit audited reports annually, others at the end of a project, and still others at other specified times. In addition, there are no clear guidelines on the audited report's required contents. Some projects submit financial statements, while others submit only a statement of expenses. Based on the scheduled dates when audited reports were to be submitted, only one of the audited reports we tested had been submitted on time. Almost half had been submitted late, and the other half had not been submitted at all. On average, audited reports were overdue or submitted late by almost one year; some reports were two years overdue and had still not been received. According to the contract between the Ministry and the IIO, the Ministry must review and examine financial reports from recipients. There was little evidence on file that the Ministry had formally reviewed the audited reports that had been received.
- When a project is completed, program policy requires recipient institutions to submit a final report summarizing the project's accomplishments in relation to the milestones and deliverables agreed to in the contract. At the time of our review, 15 projects had been completed, but only three of these projects had submitted their final reports on a timely basis. The other 12 final reports either had been submitted late or remained outstanding.

The lack of follow-up to ensure that the required reports were received indicates that the IIO and the Ministry cannot demonstrate that project milestones have been achieved or that program funds have been used for the purposes intended.

## Recommendation

To ensure that Ontario Research and Development Challenge Fund (Challenge Fund) grants are used for the purposes intended and that project performance is reported on and monitored, the Ministry should:

- review for continued eligibility all projects that have not received payments from the Challenge Fund in the previous six months, and implement an ongoing process for identifying and following up on such projects;
- establish an overall policy regarding when audited reports are required, implement clear guidelines on the form and content of these reports, and ensure that quarterly, annual, audited, and final project reports are received when due; and
- on a timely basis review and analyze all reports received to ensure that projects remain eligible, to determine whether milestones have been met, and to assess whether performance has been satisfactory.

## Ministry Response

*The Ministry agrees with the recommendation and will work with the Innovation Institute of Ontario (IIO) to update policies and procedures for the monitoring of the Ontario Research and Development Challenge Fund (Challenge Fund) program, as outlined. Specifically:*

- *The Ministry will ask the IIO to provide, by December 31, 2003, a project review and recommendations on projects that have not been funded in the past six months and will work with the IIO to develop a quarterly reporting process.*
- *A review of procedures and of the form and content of reports will be undertaken by March 31, 2004, to ensure that quarterly, annual, audited, and final project reports are received in a timely manner.*
- *Ministry staff will review and analyze reports received from its service provider to assess performance.*

## **MONITORING THE ONTARIO CENTRES OF EXCELLENCE**

The Ontario Centres of Excellence (OCE) program was established in 1987 to provide industry with greater access to leading edge ideas and to help transform such knowledge into new products and services. There are currently four Centres of Excellence: Materials and Manufacturing Ontario, Communications and Information Technology Ontario, Photonics Research Ontario, and the Centre for Research in Earth and Space Technology. Annual funding for all four centres combined is approximately \$33 million.

The Ministry has provided the OCE program with more than \$500 million since the program was established in 1987. To ensure that these funds are used to achieve program objectives, Management Board of Cabinet directives require the Ministry to implement an effective monitoring process. Such a process would require the Ministry to receive from

each of the four centres performance reports demonstrating the prudent use of public resources in compliance with defined expectations. The Ministry requires the centres to submit annual operating plans, audited financial statements, and reports from the president. We reviewed the Ministry's monitoring process and noted the following:

- The Ministry is required to review and approve an annual operating plan for each centre that is to be submitted 60 days before the fiscal year starts. The operating plan is to include a comprehensive budget, general objectives, strategies for achieving those objectives, a list of research projects to be funded, and commentary on initiatives to be undertaken throughout the year. We reviewed the operating plans submitted for the 2002/03 fiscal year and found that although three of the four plans had been submitted late, all four were eventually submitted; all the major requirements were included in each plan; and the Ministry had reviewed and approved all four before the fiscal year began.
- Within 90 days after each fiscal year-end, the four Ontario Centres of Excellence are required to submit audited financial statements and a report from the centre's auditor reconciling ministry funding with actual spending. Although the receipt dates were unknown, at the time of our audit the Ministry had received audited financial statements from all four centres for the 2001/02 fiscal year.
- Within 90 days after each fiscal year-end, each centre's president is required to submit for the Ministry's review and approval a report detailing the program's status, the centre's affairs and progress, all sources of funds and spending, and performance measures of the centre's activities. Ministry staff informed us that none of the centres had ever submitted such a president's report, but that all had submitted annual reports that contained some of this report's required elements. However, at the time of our audit (in March 2003), none of the centres had submitted an annual report for the 2001/02 fiscal year. The most recent annual reports on file at the Ministry were for the 2000/2001 fiscal year, and some of the financial information in these annual reports did not match other information received by the Ministry. There was no evidence on file that the Ministry had followed up on these discrepancies.

#### **Recommendation**

**To help ensure that an adequate monitoring process is in place to demonstrate that the Ontario Centres of Excellence use public resources prudently and in compliance with defined performance expectations, the Ministry should:**

- **implement a process for tracking the receipt of all required monitoring reports, and follow up on any outstanding reports in a timely manner; and**
- **adequately review all reports received and reconcile the annual reports' information with that contained in the audited financial statements to ensure that reported information is accurate and complete.**

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**Ministry Response**

*The Ministry agrees and will ensure that appropriate monitoring and reporting is put in place for the Ontario Centres of Excellence Program.*

*The Ministry is currently implementing a new governance structure for the Centres through the Ontario Centres of Excellence Inc., a not-for-profit corporation that will be under contract to the Ministry to manage the Centres. The contract will set out performance measures and requirements for accountability and good governance. This contract will be completed by March 31, 2004.*

**MONITORING THE PREMIER'S RESEARCH EXCELLENCE AWARDS**

Institutions whose researchers receive grants from the Premier's Research Excellence Awards (PREA) program are required, by the terms of their contracts with the province, to submit annual financial and performance reports to the Ministry within six months after fiscal year-end. This reporting requires the institution to set up and maintain a separate accounting for each grant, allowing it to track project spending and to record any other financial support received. Performance reports should include the amount of private-sector money contributed or committed; the number of researchers supported by the award; and the number of publications, patents, and licences resulting from award recipients' research. The Ministry is responsible for tracking performance measures and is required to consolidate the performance information into an annual report to the PREA Board for review and transmission to the Minister.

By October 1, 2002, a third of the PREA recipients we sampled had not submitted the required financial reports, and more than half had not submitted performance reports, for the previous fiscal year. Some reports were outstanding by as much as three years. Most of the reports that had been received were submitted late. The Ministry did not track submissions from award recipients to ensure that all required reports were received on time, nor was there evidence of adequate follow-up action by the Ministry.

Financial reports are necessary to allow the Ministry to verify that recipients are complying with the terms of their contract—for example, by ensuring that funds are being used for the purposes intended and that the required private-sector contributions have been received. But the Ministry did not adequately review the financial reports submitted by recipients, and the accuracy of many such reports was questionable. For several of the reports we reviewed, the cumulative value of the province's contribution as reported by the recipients in successive periods exceeded the maximum provincial contribution under the funding agreement. The Ministry had not identified these discrepancies for follow-up.

Performance reports help enable the Ministry to assess whether a program is accomplishing its goals of attracting, developing, and keeping talented graduate students and researchers in Ontario. Recipient institutions are responsible for tracking and reporting specific

performance measures, including the number of researchers supported by the award and the number of students in the research group ultimately employed in Ontario industries. The Ministry is responsible for consolidating performance information (such as the movement of researchers into and out of the province) and for reporting annually on the program's results. However, in addition to not ensuring that all required performance reports were received, the Ministry had not consolidated the information that was submitted and had not reported to the PREA Board and the Minister as required.

### **Recommendation**

**To help ensure that the Premier's Research Excellence Awards program meets its objectives of attracting, developing, and keeping talented graduate students and researchers in Ontario and that funds are spent appropriately, the Ministry should:**

- **ensure that all required financial and performance reports are received on a timely basis;**
- **verify that funds are being spent for the purposes intended, that the information submitted is accurate, and that project targets and milestones are being met; and**
- **analyze and consolidate the performance information reported by recipient institutions to assess the program's accomplishments, and report this information annually to the program's board and to the Minister as required.**

### ***Ministry Response***

***The Ministry agrees and will review current practices to verify that funds are being used for the purpose intended and that appropriate information on performance results for the Premier's Research Excellence Awards program is being received, analyzed, consolidated, and reported on a timely basis.***

## **MONITORING POTENTIAL CONFLICTS OF INTEREST**

To ensure that government activities are conducted in an open, fair, and transparent manner, the Management Board of Cabinet has issued two directives that address potential conflict-of-interest situations for public servants and for individuals appointed by the government—the Conflict of Interest and Post-service Directive for Public Servants and Public Officials, and the Government Appointees directive. A conflict of interest occurs when someone's private interests may be incompatible or in conflict with that individual's public responsibilities. The Ministry is responsible for monitoring potential conflicts of interest for its current and former employees as well as (by virtue of agreements with program boards) for many government appointees. All boards must notify the responsible Minister of any potential conflicts of interest so that corrective action can be taken if necessary.

The Ministry relies on individuals from both the academic and the industry research communities to provide their expertise by reviewing research funding proposals and sitting on program boards and panels. Many program advisory boards, which typically comprise academic, industry, and government appointees, recommend to the Minister which research proposals should be funded. While board and panel members generally receive little or no remuneration, they may be involved in research proposals presented for funding or be shareholders in companies that are partnered with researchers submitting proposals. In addition, appointees may sit on several boards and panels. Consequently, clear, consistent, and rigorously enforced conflict-of-interest rules should be in place for all science and technology programs. However, the Ministry has no procedures in place for monitoring potential conflicts of interest.

Members of program boards and review panels who have an interest in a research proposal, through their connection either to a private-sector partner or to the applicant institution, are expected to withdraw from any discussion of that proposal for funding. We reviewed the board minutes of several programs and noted instances where board members appropriately self-declared numerous instances of potential conflicts and withdrew from discussions on related proposals. However, we also noted instances, which we brought to the Ministry's attention, where a conflict of interest should have been declared, but there was no indication in the minutes that a conflict had been declared. The Ministry did not have sufficient information to determine whether all conflicts had been appropriately declared, because the Ministry does not require Board appointees or advisory panel members to disclose potential or real conflicts of interest either when they are appointed or if their circumstances later change. We also found no evidence that the Minister was notified of all potential conflicts of interest as required by Management Board of Cabinet directives.

### **Recommendation**

**To ensure compliance with the government's post-service and conflict-of-interest requirements and to ensure that its science and technology activities are conducted in an open, fair, and transparent manner, the Ministry should:**

- **develop consistent conflict-of-interest policies that apply to all science and technology grant programs;**
- **develop standardized procedures for adequately monitoring potential conflicts of interest; and**
- **inform the responsible Minister of all conflicts of interest as required.**

### ***Ministry Response***

***The Ministry agrees that there should be openness, fairness, and transparency in the conduct of the science and technology programs.***

***The Ministry will establish a working committee to develop consistent conflict-of-interest policies for its programs and will work with central ministries in this***

*regard. The Ministry will use the conflict-of-interest provisions applicable to members of advisory boards and expert panels under Management Board Directives and Guidelines as a basis for the review.*

*The Ministry will take any necessary steps to ensure that the policies are followed and, where appropriate, will bring conflict-of-interest matters to the attention of the Minister.*

## Project Benefits

The benefits of science and technology programs include the retention of intellectual property rights and industry support. Retaining intellectual property rights for use in Ontario benefits the province economically, because successful research can stimulate economic activity (such as creating jobs). Industry support also benefits the province economically, because most programs are designed to encourage industry participation, and such participation generally encourages commercially beneficial research, which in turn benefits the whole economy.

### **INTELLECTUAL PROPERTY RIGHTS**

Intellectual property rights represent the legal ownership resulting from research and academic activities that can result in patents, trademarks, and copyrights. The owner of intellectual property has the right to exclude others from using it, and ownership can be transferred or sold. One of the Ministry's major objectives is to support job creation and economic growth. Consequently, grant recipients have a responsibility either to use intellectual property in Ontario or to use their best efforts to license the intellectual property for use in Ontario.

We reviewed a number of the Ministry's science and technology programs to determine whether research discoveries were benefiting the province and ultimately its taxpayers. We found that the Ministry had no general guidelines for safeguarding its interests regarding intellectual property rights. For example, ministry contracts under the Premier's Research Excellence Awards program contained no clauses regarding intellectual property rights. Ministry requirements under other programs were equally deficient:

- The Memorandum of Understanding (MOU) between the Ministry and the Ontario Research and Development Challenge Fund Board requires that contracts with Challenge Fund grant recipients include an intellectual property clause ensuring that the applicant institution possess the right to use the intellectual property necessary to complete the project and that it will not dispose of those rights without the province's consent. However, we found that more than 80% of the contracts we reviewed did not include the required clause. We were informed that funds had been committed to projects that were later delayed indefinitely because of disputes over intellectual property rights.



- The MOU also requires that any intellectual property rights arising from ministry-funded research be owned by the applicant institution rather than by researchers or private-sector partners. The applicant institution is expected to make mutually agreeable commercialization arrangements with its business partners and to demonstrate how the project's economic benefits extend beyond the business partners to the Ontario economy. This clause is intended to ensure that research funded by the province benefits the people of Ontario first. But contrary to program policy, 73% of the contracts we reviewed stated that intellectual property could belong to either the inventor or the recipient institution, and that it was up to these parties to determine who would own these rights. Furthermore, the contracts did not obligate intellectual property owners to confer the benefits to Ontario. Consequently, the province's economic interests may not be sufficiently protected. An expert panel's 1999 report to the Prime Minister's Advisory Council on Science and Technology titled *Public Investments in University Research: Reaping the Benefits* concluded that vesting intellectual property ownership with university researchers instead of the university itself is one of the single biggest factors accounting for lost commercialization opportunities in Canada.

#### **Recommendation**

**To help meet its overall objectives of supporting job creation and economic growth that benefits the people of Ontario, the Ministry should:**

- ensure compliance with program policies on intellectual property rights;
- review existing policies and develop consistency among programs regarding the ownership of intellectual property; and
- formally assess the various programs' success in meeting their objectives.

#### **Ministry Response**

*The current trend across North American jurisdictions is to permit research institutions to vest the intellectual property rights with either the institution or the researcher. Accordingly, the Ministry will establish a working committee to work with central ministries and review the policies on intellectual property rights for all the science and technology programs to assess the best approach to achieve ministry objectives and ensure all research institutes in Ontario are treated fairly and have access to funding from the science and technology programs.*

### **INDUSTRY SUPPORT**

Industry participation is required for most ministry programs to help ensure that the research being conducted is of commercial interest to the business community and will therefore bring about economic growth. The private sector's interest in the research

conducted influences its willingness to support the research through various forms of contributions. In-kind contributions include such items as equipment, proprietary software, researchers' salaries, and overhead. Such contributions must be properly valued to ensure that each funding partner contributes its fair share as established under the funding program policies.

We reviewed industry's cash and in-kind contributions to ministry-funded projects and found that the Ministry had not ensured recipient compliance with program requirements for industry participation or established consistent policies for assessing in-kind contributions. For example:

- The Ontario Research and Development Challenge Fund (Challenge Fund) requires that all approved proposals have confirmed private-sector contributions or commitments totalling at least a third of the proposal cost "in order to ensure that funds are committed to proposals relevant to business and industry." But 30% of the projects we reviewed did not have commitment confirmation letters from private-sector partners on file. The unconfirmed commitments totalled \$38 million in cash and in-kind contributions. Also, the policy requiring a one-third contribution from the private sector has not been consistently applied across projects. Ministry contributions ranged from 4% to almost 60% of the total project cost. While some projects were approved when ministry contributions exceeded the one-third guideline, other projects were required to find additional funding within a specified period to make up the 33% requirement.
- In-kind contributions are accepted if they are critical to the proposal's success and if their monetary value is assigned in a reasonable manner, normally through third-party valuations. The Memorandum of Understanding requires the Challenge Fund Board to develop criteria for the valuation of in-kind contributions and to ensure that applications conform to these criteria. Fair valuations of private-sector contributions are necessary to ensure that the Challenge Fund is not contributing disproportionately to projects by matching in-kind contributions whose values have been inflated. But at the time of our audit, despite \$113.6 million in private-sector in-kind contributions having been reported, no criteria for the valuation of in-kind contributions had been put in place. We reviewed each private-sector in-kind contribution valued at more than \$2 million and found no evidence on file of independent third-party evaluations to confirm that reported in-kind contributions had been fairly valued.

### **Recommendation**

**To better ensure that the required private-sector contributions are actually made, the Ministry should:**

- **verify that the required commitment confirmation letters are received before funding research projects;**
- **consistently apply the criteria for proportionate program funding and document justification for any exceptions; and**

- develop policies for the independent valuation of in-kind contributions.

### **Ministry Response**

*The Ministry agrees that private-sector contributions must be made for the research projects and has placed the responsibility for obtaining the private-sector funding with the research institute under the contract agreement with the Ministry.*

*The Ministry will ensure that the private-sector contributions are made for each project, will document exceptions, and will develop appropriate policies for independent valuation of all in-kind contributions of a material value.*

## **PROGRAM FINANCIAL AND ADMINISTRATIVE CONTROLS**

### **Program Administration**

The Science and Technology Division has approximately 50 staff and annual direct operating expenses of about \$7.8 million. The Division paid out more than \$1.3 billion in transfer payments between April 1, 1998 and March 31, 2003 and has made commitments to spend \$3.0 billion more. Advisory boards provide the Minister with a list of projects to approve for funding, often without the benefit of a review by and assurance from ministry staff that all significant policies have been complied with. We were informed that the Minister had approved every grant recipient recommended for funding by the advisory boards of the Ontario Research and Development Challenge Fund (Challenge Fund), the Premier's Research Excellence Awards, and the Premier's Platinum Medal for Research Excellence.

We reviewed the Division's financial and administrative controls and concluded that controls over its funding of transfer-payment recipients needed to be improved. Some of our concerns are as follows:

- For the Challenge Fund program, program policy requires that a contract between the province and the applicant be signed within 90 days of project approval and that funding not be provided until a signed contract is in place. Contractual arrangements are necessary to ensure that the interests of the province, the institution, the researcher, and the private-sector contributors are protected and that each participant's roles and responsibilities are clear. Since the program's 1997 inception, more than 100 projects have been approved, for a total of \$435 million in program funding. But almost 30% of these projects, approved to receive a total of \$128 million from the Challenge Fund, were without contracts. Although the program administrator had ensured that no money had been paid out for projects with no contracts, \$128 million in program

funds had been committed to inactive projects where the average length of time since the project was approved was more than 18 months and some projects had been approved up to three years ago.

- Several science and technology programs provided funds in excess of the recipients' current needs. For example, other ministries prepaid funds to recipients of top-up grants from the Ontario Research Performance Fund that resulted in a corresponding prepayment by the Ministry. In addition, the Ontario Innovation Trust was provided with \$510 million more than its current needs, and as of the beginning of the 2002/03 fiscal year, the Trust had earned \$72 million in interest. Conversely, the Ministry made a conscious effort to reduce the prepayment of funds to the Ontario Centres of Excellence, and as a result, the government may have saved more than \$500,000 in interest annually.
- A member of the Ontario Research and Development Challenge Fund Advisory Board and a member of the board of the IIO (essentially a private corporation) signed a contract with an individual to work for the Challenge Fund. This individual was to receive \$100,000 annually, plus office and travel expenses. However, neither board member had the authority to hire staff for a ministry program.
- Although the Ministry acknowledges the need for information systems that provide timely, relevant, accurate, and complete program information, no such systems are in place to help ministry staff manage transfer-payment programs. Within the Ministry, there is a reliance on computer-assisted or manually maintained lists of projects and key activities that may need action. A well-designed management information system could capture the key data necessary for tracking performance and compare those data against contracted milestones and established targets, for the program as a whole and for individual grant recipients.

### **Recommendation**

**To improve the Division's financial and administrative controls, help achieve due regard for economy, and improve staff efficiency, the Ministry should:**

- **assess the continued merit of any approved research projects that are inactive and, where necessary, terminate funding commitments to inactive projects;**
- **review prepaid funding, so that payments are made to cover only current needs;**
- **clarify the roles and responsibilities of advisory board members and others involved in administering science and technology programs; and**
- **develop an information system to provide the Ministry's staff with the information needed for effectively overseeing its transfer-payment programs.**

### **Ministry Response**

*The Ministry agrees and notes that, over the past two years, the number and size of the science and technology programs have increased significantly. As a consequence, the Ministry is undertaking a review to determine the level of resource requirements required to effectively administer these programs.*

*The Ministry will also review all projects that are currently inactive and take appropriate action to restart or terminate any projects identified by March 31, 2004. The Ministry is also currently developing an information system for transfer-payment programs.*

*The Ministry will assess the need for prepaid funding and clarify the role of advisory board members as part of its review of administrative policies.*

*The Ministry will clarify the roles and responsibilities of advisory board members with respect to the administration of any programs.*

## **Innovation Institute of Ontario—Administration**

In June 2000, the Innovation Institute of Ontario (IIO), a subsidiary of the Ontario Innovation Trust, was created to provide support services for the Trust and potentially for other ministry programs. In July 2000, the Ministry requested permission to single-source administration of the Ontario Research and Development Challenge Fund (Challenge Fund) to the IIO. But contrary to the government's Framework for Alternative Service Delivery, the Ministry did not perform a detailed analysis of alternative delivery options. In addition, the Ministry did not want to issue a request for proposals (RFP) because once an RFP is out, anyone who is eligible must be treated fairly in the process, and problems could arise if a bidder was not dealt with fairly after an investment of time and resources in the preparation of a proposal. Single-sourcing, especially for this reason, contradicts the basic principles of government procurement.

The Ministry stated that the IIO was designed to provide administrative and support services in the most cost-effective way possible. But no cost analysis was done to support outsourcing. Furthermore, the Ministry noted that the outsourcing would not lead to substantial cost savings, and although a number of qualitative benefits were expected, the Ministry did not subsequently assess the outsourcing arrangements to determine whether these benefits were realized.

The Division's payments to the IIO for administering the Challenge Fund are to be based on actual costs incurred and are to be negotiated every year based on operating plans and budgets submitted by the IIO. But neither negotiations with the IIO nor submissions of annual operating plans and budgets by the IIO are timely. At the time of our audit in March 2003, the Ministry had not received the budget for the fiscal year ended March 31, 2003. Likewise, the fees for the 2001/02 fiscal year were not approved until after that year ended.

Moreover, the Ministry does not know whether the amounts being charged by the IIO are reasonable. The Ministry does not receive audited financial statements from the IIO. Such statements could provide assurance that expenses reported by the IIO were incurred as reported. We requested financial statements from the IIO and received unaudited statements for the 2000/01 and 2001/02 fiscal years. Although the expense categories in these financial statements differed from those in the funding requests, the salaries and benefits paid to the IIO (based on the funding request) for administering the Challenge Fund exceeded the salaries reported for the corporation as a whole in the financial statements by \$200,000 in the 2000/01 fiscal year and by \$120,000 in the 2001/02 fiscal year. This may be partly due to the difference between the financial statements' expense categories and those in the funding requests. However, the Ministry had not identified or followed up on those discrepancies.

The Challenge Fund should pay only a fraction of IIO costs, because the IIO provides administrative services to other ministry-funded programs. But the Ministry has never received a workload assessment to justify the amounts being charged to the Challenge Fund and other government-funded programs. In addition, in its first two years of operations, the IIO, which is a not-for-profit corporation, received total revenues of \$4 million, which exceeded total expenses by \$700,000.

Furthermore, it is unclear how expenses are being managed between the IIO and its parent, the Ontario Innovation Trust. For example, the Trust's 2001/02 financial statements disclosed a \$400,000 loan to IIO. According to the agreement between the Ministry and the Trustee, Trust disbursements are allowable only for the purposes of funding eligible research projects and administering the Trust, not for providing loans to other entities.

#### **Recommendation**

**To ensure that the fees paid to the Innovation Institute of Ontario (IIO) for administering the Ontario Research and Development Challenge Fund (Challenge Fund) are reasonable, the Ministry should:**

- **assess whether the expected benefits of outsourcing have been achieved;**
- **insist on receiving a budget and operating plans from the IIO before each fiscal year begins, instead of after the year has been completed;**
- **ensure that it receives audited financial statements from the IIO for use in assessing the appropriateness of fees charged for administering the Challenge Fund; and**
- **ensure that the detailed breakdown of the budget submissions correlates with the expense categories used in the financial statements and follow up on any discrepancies.**

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### **Ministry Response**

*The Ministry agrees that the fees paid to the Innovation Institute of Ontario (IIO) for the administration of the Ontario Research and Development Challenge Fund (Challenge Fund) should be reasonable and transparent and is working with the IIO to improve both the timing of reporting and reports received; areas in which reports would be improved would include the details for services provided and fees charged.*

*The Challenge Fund is on the Ministry's list of programs to be evaluated for the 2003/04 fiscal year, per Management Board guidelines. The service agreement will be reviewed as part of this program evaluation.*

## **MEASURING AND REPORTING ON PROGRAM EFFECTIVENESS**

### **Program Planning**

An organization's mandate identifies its overall purpose, provides general direction, and helps in developing specific plans for implementation. The Ministry's mandate is to foster an Ontario with competitive businesses and a prosperous economy by promoting innovation, economic growth, and job creation. The Science and Technology Division endeavours to contribute to this mandate by building a culture of innovation, investing in people and infrastructure to create knowledge, and creating a supportive climate that fosters commercialization of research and brings knowledge to the marketplace. But the Division does not have a strategic plan with clearly stated goals that will help it accomplish its mandate.

Since the Ministry does not directly manage many of the programs funded by the Science and Technology Division, it is essential to have not only appropriate accountability mechanisms and clearly stated goals but also inter-organizational collaboration. But as noted previously, the Ministry is not provided with enough information on the activities of some of its programs to properly co-ordinate funding activities. For example, the Division receives virtually no information from the Ontario Innovation Trust regarding its spending of \$750 million of public funds, and the Division is not apprised of the Trust's key objectives, funding priorities, or future plans. The Ministry is accountable for co-ordinating science and technology research throughout the province. Such co-ordination would include setting program parameters and developing detailed policies that provide a level of consistency and guidance for the Trust, the programs' advisory committees, and other decision-makers.

Strategic directions encompassing clear goals, priorities, and expected results should guide research decisions, program development, and ultimately the selection of specific research projects. Since the 1997 inception of the Ontario Research and Development Challenge

Fund, the Ministry has announced more than a dozen new science and technology transfer-payment programs, some of which target highly specific areas of research. These program commitments range from \$10 million to more than \$1 billion. But the announcement of new programs did not result from executing a comprehensive plan or from systematically assessing long-term provincial needs.

The Ministry has reported a strategic framework for Ontario's science and technology programs. This strategy outlines a number of concepts that build towards high-value-added jobs in the province. However, the Ministry does not have a detailed plan outlining how it intends to reach this objective. The Ministry's science and technology activities need an overall strategic plan to set parameters and consistent policies for existing programs and to guide the development of new programs.

### **Recommendation**

**To formalize its co-ordination responsibilities and provide clear direction for program development and delivery, the Ministry should:**

- review all research programs and prepare a detailed strategic plan that sets specific goals and objectives for research in the province; and
- outline policies—such as conflict-of-interest rules, project selection criteria, and monitoring guidelines—that all programs must follow regardless of the delivery mechanism.

### **Ministry Response**

*The Ministry agrees there should be clear direction for its research programs and will continue to refine and update the strategic framework to ensure its relevance for supporting research in Ontario.*

*The Ministry supports clarifying its goals and objectives for supporting research and development activity in Ontario.*

*In light of the audit findings, the Ministry will review the program delivery policies with internal and external experts for all research programs and establish a consistent approach to conflict of interest, selection criteria, contract agreements, and monitoring guidelines. Any subsequent policies will need to take into consideration the differences in objectives for the various programs.*

## **Effectiveness Reporting**

Through the government's business planning process, the Ministry is required to report to the Management Board of Cabinet and ultimately publish a combined business plan and annual report that outlines plans for the coming year and reports on performance from the



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previous year. The business planning process is meant to improve decision-making, support the development and delivery of high-quality programs, ensure that program outcomes are aligned with overall government priorities, and improve the Ministry's accountability for measuring and achieving results. Published business plans and annual reports are also intended to support openness and accountability to the public and the Legislature.

We reviewed the Ministry's business planning process. The Ministry outlined a number of performance measures for its core businesses, each of which had targets and commitments. Although some actual results were reported internally, the Ministry did not measure and report publicly on the achievement of its overall goals of promoting innovation, economic growth, and job creation. Only one performance measure was reported in the Ministry's published Business Plan for the 2002/03 fiscal year. This performance measure, the anticipated growth in the value of non-government-sponsored research over the next five years, is future oriented and does not reflect the impact of the Ministry's efforts on achieving its goals.

In previous years, the Ministry's goals included growth in Ontario's health and biotechnology industry, increased participation in the digital economy, and job growth in Ontario's knowledge-based economy as compared to selected jurisdictions. However, we were informed that these goals and their related performance measures were dropped because the Ministry's impact was largely indirect and because the Ministry depended on the private and academic sectors to successfully partner with the government.

To determine whether the Ministry had developed clearly stated performance measures for individual programs, we reviewed all science and technology programs with transfer-payment commitments of \$10 million or more. The major science and technology programs published their results annually, although those reports were often out of date. Many programs reported only a list of grants, research success stories, or activity-based measures, such as the number of projects funded or the money contributed by the private sector. Such reporting does not reflect what impact the Ministry's funding initiatives have had on promoting innovation, economic growth, and job creation. In addition, the lack of timely reporting precludes the Ministry from taking any necessary corrective action in a timely manner.

Of all the Ministry's funding initiatives, the Ontario Centres of Excellence had developed the most comprehensive performance measurement and reporting system. The centres reported that from 1998/99 to 2001/02, as a result of their sponsored research, 98 spin-off companies started up, 536 people were employed, 406 patents and registered copyrights were issued, and an additional \$30 million investment was generated from the private sector. Although these are measures of a degree of success, the Ministry has not established targets or benchmarks against which to measure such performance results so that success and failure can be readily determined.

In December 2002, the Ministry published the Ontario Innovation Index. This report is intended to measure the province's transition to a knowledge-based economy, showing how

well Ontario is performing in comparison with other jurisdictions and identifying areas needing improvement. The index reports on 30 indicators of community awareness, infrastructure, knowledge transfer and use, and economic and societal outcomes. The index should be a useful tool for assessing provincial performance. But the indicators were not designed to isolate the impact of the Ministry's science and technology programs. The Ministry has no direct impact on some indicators—such as student enrolment in secondary school science courses. The Ministry's activities do impact indicators relating to innovation performance, such as the number of patents, the number of business startups, and technology adoption rates. But the Ministry would still have to assess the degree to which its activities had impacted on these province-wide measures.

### **Recommendation**

**To provide better accountability to the public and the Legislature for its use of public funds, the Ministry should:**

- **develop performance measures, targets, and benchmarks that reflect its accomplishments and contributions to the overall goals of promoting innovation, economic growth, and job creation;**
- **perform the necessary assessments to measure whether its initiatives are effective in achieving overall ministry goals; and**
- **report on the actual achievement of these measures, explaining any significant deviations from established targets and benchmarks.**

### ***Ministry Response***

***The Ministry is committed to measuring the contribution of its programs in promoting innovation, economic growth, and job creation in Ontario and will identify and adopt a funding focus to science and technology research and development programs that is consistent with current global trends and best-in-class approaches to supporting innovation.***

***The Ministry will establish feasible performance measures to demonstrate how the science and technology programs contribute to ministry objectives. It will assess and report on achievements and will refine and improve these measures as required.***