

# Chapter 1

## Section 1.19

Ministry of Economic Development, Job Creation and Trade  
Ministry of Public and Business Service Delivery  
Ontario Centre of Innovation

Follow-Up on 2021 Value-for-Money Audit:

# 5G Network Technology and Related Pre-commercial 5G Program

### RECOMMENDATION STATUS OVERVIEW

	# of Actions Recommended	Status of Actions Recommended				
		Fully Implemented	In the Process of Being Implemented	Little or No Progress	Will Not Be Implemented	No Longer Applicable
Recommendation 1	4	1	1	2	0	0
Recommendation 2	3	1	0	1	0	1
Recommendation 3	1	0	0	0	0	1
Recommendation 4	5	2	3	0	0	0
Recommendation 5	2	0	0	0	0	2
Recommendation 6	1	0	0	0	0	1
Recommendation 7	1	0	0	0	0	1
Recommendation 8	1	0	0	0	0	1
Recommendation 9	1	0	1	0	0	0
Recommendation 10	4	3	1	0	0	0
<b>Total</b>	<b>23</b>	<b>7</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>7</b>
<b>%</b>	<b>100</b>	<b>30.5</b>	<b>26</b>	<b>13</b>	<b>0</b>	<b>30.5</b>

### Overall Conclusion

The Ontario Centre of Innovation (OCI), the Ministry of Economic Development, Job Creation and Trade (Ministry), and the Ministry of Public and Business Service Delivery, as of September 29, 2023, have fully implemented 30.5% of the actions we recommended

in our *2021 Annual Report*. OCI has made progress in implementing an additional 26% of the recommended actions. Little or no progress has been made on 13%, or three, of the actions we recommended. Seven recommended actions (30.5%) are no longer applicable because, although the ENCQOR 5G Program (explained below in the Background) was extended past the projected March 2022 date, it was concluded

on September 30, 2022, and no new small and medium-sized enterprises (SMEs) were onboarded during that time.

Among the 30.5% of recommended actions that OCI has fully implemented is the recommendation to create a budget-review process to ensure that program budgets are reviewed for reasonableness based on consistent criteria and that all five projects that we sampled had allocated funds to eligible project costs only. It created this review process in March 2023. Other fully implemented recommendations include putting in place a standardized framework for the protection of intellectual property generated by entities receiving public funds, and including project-performance metrics in future transfer payment agreements. OCI also fully implemented our recommendation to enact and enforce a conflict of interest policy for every provincially funded project it undertakes, requiring applicants and reviewers to disclose the nature of any prior engagement with OCI, including perceived conflicts of interest.

We also noted that the Ministry has fully implemented our recommendation relating to establishing project performance metrics and targets. To demonstrate this, the Ministry was able to show that it had developed a Business Success Transformation Manual in September 2021 that includes a Business Success Metric, a common evaluation framework that enables an evaluation of business supports, including their return on investment, value for money and progress toward targets. In addition, the Ministry has defined measurable project performance targets, such as number of new jobs created and retained, total amount of incremental sales, and new intellectual property submitted for consideration within two subsequent transfer payment agreements it signed with OCI in April 2023.

The recommended actions on which OCI has made progress (26%) include effectively allocating program funds, including applying compensation limits and reviewing the allocation of funding. We noted that additional work needs to be performed to ensure these processes are being applied consistently and

allocated between different expense categories. OCI also updated its procurement policy in July 2021 to certify and record evidence that SMEs have followed the Broader Public Sector Procurement Directive; however, additional due diligence is required to ensure that goods and services procured by SMEs are being obtained through a competitive procurement process. OCI has also been able to demonstrate that it has performed an independent assessment of cybersecurity reports or system and organization controls (SOC) reports from its key IT vendors, to provide assurance over IT operations that are performed or managed by OCI's vendors.

Although the ENCQOR 5G Program has concluded, the Ministry would work with OCI and other technology partners to implement continuous testbed usage tracking, should this program be re-established. OCI will ensure that it has clearly defined sector allocations in its future contracts with SMEs. OCI will continue to work with its IT vendors to obtain and review cybersecurity reports, including penetration-testing reports. OCI holds regular meetings with its key IT vendor to highlight and address incident-resolution issues, and has ensured that key performance metrics are included in the draft service-level agreement renewal for ongoing monitoring.

The 13% of the recommended actions on which the Ministry and OCI have made little progress include the recommendation for OCI to implement a due diligence protocol to verify program outcome data. Also, the Ministry of Public and Business Service Delivery has not yet set out clearly defined roles, responsibilities or strategy regarding privacy, and security surrounding the implementation of the 5G network in Ontario. The privacy mandate for telecommunications is a federal responsibility. The Ministry of Public and Business Service Delivery continues to work with its federal counterparts on these issues.

Included in the 30.5% of recommended actions that are no longer applicable is the recommendation to the Ministry concerning updating the Transfer Payment Agreement to include measurable performance targets. Subsequent to our audit in 2021, the ENCQOR 5G

Program was extended from March 2022 to September 2022 via a bridge contract amendment to accommodate the winding down of a few remaining projects, but no new SMEs were onboarded during that time. As a result, the existing Transfer Payment Agreement between OCI and the Ministry was not updated during this wind-down period. In addition, with the end of the program in September 2022, our recommendation to the Ministry to develop an exit strategy that incorporates decommissioning costs and ownership of intellectual property of the ENCQOR 5G test platform is no longer applicable. The Ministry advised us that it would create this strategy, as appropriate, for future programs. The recommendation to establish and quantify test platform usage and usage requirements across all streams, and implement a monitoring process for these, is also no longer applicable since the wind-up of the ENCQOR 5G Program, as are the recommendations relating to cybersecurity and to accept and enrol applicants in the ENCQOR 5G Program from a diverse range of industry sectors.

The status of actions taken on each of our recommendations is described in this report.

## Background

In September 2016, the multinational technology companies Ericsson, Ciena and Thales jointly submitted a proposal to Canada's federal government, and the governments of Ontario and Quebec, to build and operate several 5G (fifth-generation) cellular network test platforms. The purpose of the test platforms was to provide entrepreneurs and researchers with access to a small-scale 5G network where they could try out and develop 5G-related concepts, projects and prototypes prior to the commercial availability of a 5G network. The technology vendors that constructed the platforms sought to benefit from collaborating with these small and medium-sized enterprises (SMEs) in order to create innovative and potentially patentable products.

The Ontario government's stated objective in supporting the technology vendors was to generate

long-term economic benefits for the Province of Ontario through investment or job opportunities. In Ontario, the funding proposal was submitted to the Ministry of Economic Development, Job Creation and Trade (Ministry) under its Jobs and Prosperity Fund. The proposal was approved and ultimately became known as the ENCQOR 5G Program (Evolution of Networked Services through a Corridor in Québec and Ontario for Research and Innovation). Ericsson, Ciena and Thales collectively contributed a total of \$200 million to the ENCQOR 5G Program, matched by \$200 million in public money given by the three participating governments. The government of Ontario's share was \$66.7 million.

To manage and deliver the program, the Ministry appointed the Ontario Centre of Innovation (OCI) as program administrator. The ENCQOR 5G Program ran entirely independently of the commercial implementation of 5G in the province. Housed at so-called innovation hubs (office locations dedicated to technological incubation and innovation), the test platforms were built solely for the ENCQOR 5G Program and were accessible to selected program participants for a limited time.

The majority of Ontario's ENCQOR 5G Program funding, \$56.9 million (86% of total Ontario funds), was paid to Ericsson and Ciena to research, design, build and operate the three test platforms. The remainder (\$9.8 million) was earmarked for program participants. At the time of our audit, the ENCQOR 5G Program had been running for 29 months and had hosted 401 projects in total, 282 of which had received funding on top of the opportunity to access a test platform. There were 330 program participants (some participants applied for more than one project).

Our audit found that the Ministry was unable to measure the overall effectiveness of the program because it had not established targets for five of its nine performance metrics, and OCI did not always verify the outcome data that participants reported. We also found that, before its termination, the program was able to enrol only half of the number of expected projects within its two highest-funded program streams. We

further noted that OCI did not formally review the proposed budgets of SMEs before allocating funds to them. Almost 92% of funding that went to the two highest-funded streams was allocated so as to match the amounts that SMEs had requested, without a formal assessment of what the SMEs needed.

Further, we determined that, out of a total of 306 projects that were required to use the test platforms under the iPaaS Access and Demonstration Program Streams, more than one-third (114) had not actually used the test platforms at all as of August 2021. Without monitoring the utilization of the test platforms, the Ministry was unable to assess their effectiveness. Low utilization was attributed to a six-month closure of the test platforms when the COVID-19 pandemic hit Ontario in March 2020, which temporarily restricted SMEs' physical access to the test platforms.

Some of our significant findings were:

- The legislation that was in place in Ontario to protect privacy and ensure data security predated emerging technologies such as 5G. Provincial policies and legislation concerning security and data privacy that specifically contemplated emerging technology such as 5G were not yet in place.
- OCI's fund and budget-allocation process required improvement to ensure that ineligible expenses were not approved. In almost all the cases we reviewed, OCI approved the amount requested by an SME participant. This meant that participants were allocated very different amounts of funding for performing similar roles. We noted that 89% of funding was budgeted as salaries and wages, whereas only 11% was allocated for other project costs. Some SMEs allocated Ontario funds to their daily operational expenses such as Internet service, office rental and medical insurance.
- Cybersecurity on the ENCQOR 5G test platforms should be strengthened. As part of our audit work, we performed a penetration test of the

ENCQOR 5G network and identified cybersecurity concerns that were remediated immediately upon communication to the technology vendors. In addition, we identified improvements needed for recordkeeping, tracking of IT incidents and deletion of program participants' data.

- Weak cybersecurity practices at OCI put SMEs' proprietary data at risk of inappropriate disclosure. Our audit found that OCI's vendors, which managed critical IT systems on behalf of OCI as well as its day-to-day operations, did not regularly perform security tests such as penetration testing to identify network vulnerabilities. Confidential SME data, such as company profiles, employee qualifications and pay stubs with Social Insurance Numbers, were stored within these IT systems and remained vulnerable up until the completion of the program. We noted that OCI did not obtain service-level reports from its IT vendors to assess whether IT incidents were being resolved in line with industry best practices. Further, OCI did not have a penalty clause in its vendor contracts by which to hold vendors accountable for poor performance.
- The test platforms had been significantly underused. We found many instances where participants were allocated funding to develop a project on the 5G test platforms yet spent no time at all on the test platforms. In the two program streams where platform use was being tracked, utilization remained low. In one, 42% of projects (78 out of a total of 187 projects) had yet to use the test platforms at the time of our audit. In the other stream, 30% (36 out of 119) of SMEs had not made use of the test platforms. OCI was not regularly monitoring whether SMEs were using the platforms.

We made 10 recommendations, consisting of 23 action items, to address our audit findings. We received commitment from the Ministry and OCI that they would take action to address our recommendations.

## Status of Actions Taken on Recommendations

We conducted assurance work between March 2023 and August 2023. We obtained written representation from the Ministry of Public and Business Service Delivery, the Ministry of Economic Development, Job Creation and Trade, and the Ontario Centre of Innovation that effective November 20, 2023, they had provided us with a complete update of the status of the recommendations we made in the original audit two years ago.

### Existing Government Policies and Privacy Legislation Are Outdated and Do Not Contemplate Emerging Technologies Such as 5G

#### Recommendation 1

*To support the future commercial implementation of the 5G network in Ontario, and reduce the risks to privacy, data security and intellectual property that will increase with this implementation, we recommend that the Ministry of Government and Consumer Services and the Ministry of Economic Development, Job Creation and Trade:*

- *update relevant and appropriate provincial policies and legislation regarding the security and privacy of data to be able to address and respond to emerging technologies, including 5G;*
- *work with the federal government and key stakeholders to develop clear roles and responsibilities within an overall provincial strategy that encompasses privacy, security and ownership of data and intellectual property;*

**Status:** Little or no progress.

#### Details

In our 2021 audit, we found that the risk associated with 5G is with the enormous volume of data that can be shared and the large number of devices and users that will be on a 5G network in real time. The much greater size of the network means there are more entry

points that could be exploited to silently obtain sensitive personal, proprietary and/or financial information. Therefore, the development of policies and legislation surrounding data privacy, data security and the ownership of intellectual property is critical to protect Ontarians who participate in the 5G network. A key role the Ontario government plays is in updating the applicable provincial legislation to take into account new and emerging technology such as 5G.

With respect to intellectual property, in April 2019 the Ontario government created a panel with expertise in intellectual law and education, and the commercialization of ideas to provide advice and recommendations on intellectual property policy in Ontario. In July 2020, the Ontario government announced the Intellectual Property Action Plan based on the recommendations made by this panel, known as the Expert Panel on Intellectual Property. However, we found in our audit that the Province had set out no clearly defined roles, responsibilities or strategy for its plan.

The Ministry of Public and Business Service Delivery (formerly the Ministry of Government and Consumer Services) is the lead ministry for providing advice to ministries and other institutions with respect to the collection, use and disclosure of personal information that is obtained by publicly funded bodies in the course of their operations.

In our follow-up, we noted that over the past two years since our audit report was published, the Ministry of Public and Business Service Delivery has worked with the federal government on the implementation of Bill C-27 (*An Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts*, also collectively known as the *Digital Charter Implementation Act, 2022*). Bill C-27 would include changes such as repealing parts of the current legislation regulating the use and disclosure of personal information for commercial activity, imposing new rules on private-sector organizations for the protection of personal information. It would also create a new administrative tribunal to hear appeals of orders

issued by the Privacy Commissioner, and apply a new administrative monetary penalty regime created under the *Consumer Privacy Protection Act*. Other measures contained in Bill C-27 include common requirements for the design, development and use of artificial intelligence systems, including measures to mitigate risks of harm and biased output, and prohibiting specific practices with data and artificial intelligence systems that could result in serious harm to individuals or their interests. The Ministry of Public and Business Service Delivery has also surveyed other jurisdictions and found that none of those surveyed are working at this time toward updating legislation or policies specific to 5G. It also informed us that the Information and Privacy Commissioner of Ontario is not considering providing guidance specific to 5G at this time. Although at the time of our audit the Ministry of Public and Business Service Delivery had made little or no progress in updating provincial policies and legislation in response to emerging technologies, including 5G, it continues to engage with the federal government to review proposed changes to Bill C-27, and is dependent on the federal government's direction to update the relevant privacy regulations, since the privacy mandate for telecommunications is a federal responsibility.

- *update the existing standardized governance framework to explicitly include requirements for the protection of intellectual property generated by entities receiving public funds;*

**Status: Fully implemented.**

### Details

In our 2021 audit, we found that no intellectual property had been generated from the selected projects that we reviewed as part of the ENCQOR 5G Program as of December 2020. However, in the event that entities that receive public funds do develop intellectual property, we recommended that the existing standardized governance framework be updated to explicitly include protections of intellectual property generated by such entities. At the time of the audit, this was not the case.

In our follow-up, we noted that in September 2021 the Ministry had developed a Business Success

Transformation Manual that enables ministries to assess the commercial success of their business support programs and services. We reviewed the manual and noted that it outlines intellectual property-related provisions and protection of intellectual property created from new programs and services such as inventions (products and processes). We also reviewed the Base Funding Agreement, effective April 1, 2023, that details how OCI's Business Development team is responsible for identifying new opportunities for the commercialization of intellectual property of companies participating in its programs, and directing these opportunities to Intellectual Property Ontario (IPON). IPON is a provincial agency established in January 2022 that assists the companies participating in OCI programs with protection and commercialization of their intellectual property.

- *for all future Ontario Centre of Innovation programs, ensure ownership and protection of intellectual property clearly demonstrate how the Province will benefit by partnering with third party vendors.*

**Status: In the process of being implemented.**

### Details

In our 2021 audit, we found that the Ontario government's stated objective in supporting the technology vendors that were providing the hardware and software that make up the ENCQOR 5G test platform infrastructure was to generate long-term economic benefits to the Province of Ontario through investment or job opportunities.

In our follow-up, we noted that the Business Success Transformation Manual that the Ministry had developed in September 2021 provides guidance relating to the ownership and protection of intellectual property. We further noted that the Ministry had not funded OCI on any net new programs that generated intellectual property. The Ministry indicated that it would continue to work with OCI to update agreements as required. The Ministry has not entered into any new transfer payment agreements with OCI that contemplate or reference third-party vendors. For all future

OCI programs that do reference third-party vendors, the Ministry will ensure the benefits of the partnership are demonstrated in regard to ownership and protection of intellectual property.

## Ineffective Monitoring of the Program by OCI and the Ministry

### Recommendation 2

*To improve the oversight of future funded programs that could bring economic benefits to Ontario, we recommend that the Ministry of Economic Development, Job Creation and Trade (Ministry):*

- *establish measurable project performance metrics and targets in Transfer Agreements to use to conduct monitoring for economic benefits to Ontario throughout a project lifecycle;*

**Status: Fully implemented.**

### Details

In our 2021 audit, we found that OCI had a payment schedule subject to the terms and conditions of the Transfer Payment Agreement between the Ministry and OCI through which the Ministry oversaw OCI's delivery of the ENCQOR 5G Program. For the Ministry to continue disbursing funds to OCI, OCI was required to reach program milestones and complete program deliverables. These included reporting on interim program outcomes and targets. The Ministry was accountable for ensuring that the terms and conditions of the Agreement were met, and relied on OCI to provide regular performance reports. We noted, however, that the Ministry did not establish performance targets for five of the nine metrics included in the Agreement.

In our follow-up, we found that the Business Success Transformation Manual that the Ministry had developed in September 2021 includes a Business Success Metric, a common evaluation framework that enables an evaluation of business supports, including their return on investment, value for money and progress toward targets. The manual presents a standardized set of metrics, and groups business supports by common themes and objectives, including research and commercialization, talent, entrepreneurship and

growth, and investment attraction. The manual also lists questions to be asked regarding matters such as the economic priority the business support aligns with and the potential economic benefits in identified areas of focus.

Another document that the Ministry uses to collect recipient data is the Business Supports Transformation Initiative Transparency and Performance Evaluation Checklist. This checklist collects information about the company working on the project, and performance measures including number of jobs created, new products and patents filed, and capital raised, among other things. In March 2023, the Ministry created a Business Success Framework to help ministries design, develop and/or transform business support programs and services, by aligning these business supports with the intended objectives and incorporating relevant economic priorities.

We also noted that the Ministry has defined measurable project performance targets, such as number of new jobs created and retained, total amount of incremental sales, and new intellectual property submitted for consideration, within two subsequent transfer payment agreements it signed with OCI in April 2023, the Collaborate to Commercialize and the Ready for Market Fund projects.

- *ensure the Ontario Centre of Innovation performs a comprehensive due-diligence on outcome data before it reports the information to the Ministry;*

**Status: Little or no progress.**

### Details

In our 2021 audit, we found that four out of nine performance metrics that OCI was responsible for in its Transfer Payment Agreement with the Ministry had defined targets and that OCI reported these four to the Ministry on an annual basis. As part of this annual reporting process, OCI prepared and consolidated the performance reports using the data it collected from technology vendors, innovation hubs and SMEs. In addition, OCI reported on detailed project costs and status to the Ministry on a semi-annual basis. However, we noted that OCI did not always verify the project outcome data reported by the program participants.

As a result, the Ministry may not have received complete and accurate data as required for effective monitoring of the overall progress of the ENCQOR 5G Program.

In our follow-up, we noted that the Ministry is in the process of implementing a due-diligence protocol to verify program outcome data reported by OCI in its ongoing and future projects. The Ministry entered into a new Base Funding Agreement with OCI in April 2023. According to the new funding agreement, the Ministry requires OCI to improve its reporting of program delivery processes by performing due diligence in accordance with the recipient's process of verifying outcome data. We will continue to follow up with this recommendation, since the agreement was signed recently and OCI has not yet had an opportunity to perform a comprehensive due diligence on outcome data before it reports to the Ministry.

- *develop and implement an exit strategy that includes decommissioning of the test platforms, along with the associated cost and ownership of the intellectual property.*

**Status: No longer applicable.**

### Details

In our 2021 audit, we found that the Ministry did not have a strategy or plan for decommissioning the test platforms that its vendors had built and operated for the ENCQOR 5G Program, or for determining who is accountable for any decommissioning costs and ownership of the intellectual property. The cost of decommissioning had not been assessed at the time of our 2021 audit. We noted that the Transfer Payment Agreement was silent on this matter and did not clearly stipulate a decommissioning/sunset process for the program.

In our follow-up, we found that the Ministry did not develop an exit strategy that incorporates decommissioning costs and ownership of intellectual property of the ENCQOR 5G test platform. Instead, the Ministry advised us that the project agreements between OCI and its technology partners included plans for the decommissioning of project-related infrastructure.

However, we found that the agreements between OCI and its technology partners did not include these provisions, as noted in the 2021 audit.

Although the ENCQOR 5G Program was not extended past September 2022, the Ministry informed us that, for future programming, it plans to incorporate into the Transfer Payment Agreement for project technology partners details pertaining to the decommissioning of test platforms, along with the associated cost and ownership of the intellectual property, as appropriate.

### Recommendation 3

*In the event that the existing ENCQOR 5G program is extended after March 2022, we recommend that the Ministry of Economic Development, Job Creation and Trade (Ministry) update the existing Transfer Payment Agreement between the Ministry and the Ontario Centre of Innovation to include clear and concise measurable targets for all performance metrics.*

**Status: No longer applicable.**

### Details

In our 2021 audit, we found that the ENCQOR 5G Program was set to end in March 2022. In October 2021, we inquired about the future of the program and received no definitive information regarding a possible extension of the program or how the program would wind down in the event that it was not extended or renewed. The Ministry informed us that it had not yet reached a decision.

In our follow-up, we noted that, although the ENCQOR 5G Program was extended past the projected March 2022 conclusion date until September 30, 2022, via a bridge contract amendment to accommodate the winding down of a few remaining projects, no new SMEs were onboarded during that time. As a result, the existing Transfer Payment Agreement between the Ministry and OCI was not updated to include measurable targets or performance metrics. The Ministry advised us that it plans to incorporate clear and concise targets for measurable performance metrics in future Transfer Payment Agreements.



## OCI's Budgeting and Fund Allocation Process Requires Improvement to Efficiently Allocate Program Funds and Ensure Only Eligible Expenses Are Approved

### Recommendation 4

*In order for the Ontario Centre of Innovation (OCI) to effectively ensure the proper management of funds allocations to small and medium-sized enterprises (SMEs) for existing and future Ontario government-funded programs, we recommend that OCI:*

- *update the existing process for the allocation of funds that includes consistent salary allocation and compensation limits for all employees at SMEs that receive government funds;*

**Status:** In the process of being implemented.

### Details

In our 2021 audit, we found that the ENCQOR 5G Program was unable to enrol more SMEs and meet its intended target for participants because OCI had already allocated all available funds. At the time of our audit, any new program participants were instead enrolled in the unfunded program stream.

Funding under the program was allocated per the Agreement between the Ministry and OCI. We noted that the majority of the funding from the government of Ontario, 86% of the total grant (\$56.9 million), went to two technology vendors to research, design, build and implement the test platforms. Only 14% (\$9.8 million) was allocated to support program streams for SMEs and applicants in academia to use the test platforms, with technical and business supports. However, OCI did not allocate the funds to participants according to a comprehensive rationale, and it funded the initial applicants heavily. We calculated that program participants in the SME Technology Development program stream were approved for an average of \$133,000 per project, near the maximum per project funding of \$167,000. Of a total of 16 projects within this program stream, 13 were allocated funds approaching the maximum possible amount. If the budget had been allocated more evenly, more SMEs could have been enrolled.

The funding agreement between OCI and SME participants allowed SME executives to claim a maximum salary of \$5,000 per month, for roles such as a founder or Chief Executive Officer. Our audit found that 14 SME executives applied to the program as regular employees instead of identifying themselves as executives and requested more money than the maximum allowed for executives.

In our follow-up, we found that OCI now performs a review and evaluation of its budget and claims processes. It updated these processes in March 2023 to reflect a review of project budgets in consideration of factors that include consistent allocation of salary and compensation limits. We sampled five projects subsequent to March 2023 to assess whether OCI performs a review of funding allocation to program applicants and noted that OCI did not perform a review for these samples. For example, OCI did not consistently document justification for monthly salaries greater than the \$5,000 project threshold or review supporting documents for equipment expenses. In one specific example, we noted that a project had not itemized items in its budget even though OCI had made a note requesting more detail be provided for expenses. We will continue to follow up with this recommendation to test the effectiveness of the review in future programs run by OCI.

- *establish consistent criteria for the allocation of program funds between different expense categories;*

**Status:** In the process of being implemented.

### Details

In our 2021 audit, we found that OCI had established an expense policy that outlined project costs such as salaries, IT equipment and other project-related costs. However, OCI did not establish a budget threshold for each of the project expense categories. We obtained a list of all approved projects along with their associated project costs across all program streams funded by both Ontario and the federal government. We noted that SMEs had requested a large majority of their project costs to cover salaries and wages. In 226 projects, 89% of reimbursed project costs were for salaries and

wages, 6% were for the purchase of 5G-related hardware equipment, and 5% were for other costs, such as travel and utility expenses.

In our follow-up, we noted that OCI had created a budget process in March 2023 that includes consistent criteria that it uses to perform a review of the different expense categories budgeted by SMEs prior to approving their applications. This is done to ensure that SMEs are allocating program funds to various expense categories and not allocating the majority of the funds to salaries and wages. We reviewed five projects subsequent to March 2023 and noted that the SMEs had allocated the majority of the project costs to salaries and wages. OCI was unable to demonstrate that its review challenged the allocation of the program funds.

As noted in our discussion of **Recommendation 3**, the ENCQOR 5G Program has ended and no net new projects were onboarded during the extension period. We strongly recommend that OCI extend the existing recommendation to any new programs funded by the Province.

- *extend the procurement guidelines to SMEs that are using Ontario funds to procure equipment;*

**Status:** In the process of being implemented.

### Details

In our 2021 audit, we found that OCI is subject to the Broader Public Sector Procurement Directive, which recommends that entities competitively procure contracts by publicly advertising for required services and by obtaining at least three quotes from independent vendors. We noted that OCI did not ensure that the ENCQOR 5G SMEs that were recipients of Ontario funds procured IT-related equipment, such as software and hardware, using a competitive procurement process. We reviewed the funding agreement between the SMEs and OCI meant to outline project costs and an itemized list of IT equipment that an SME intends to purchase as part of its project. We noted seven projects that had budgeted for a total of \$261,000 to procure hardware and software. In one case, an SME submitted a claim of \$30,000 to purchase hardware relating

to a battery-energy storage system without obtaining multiple quotes to purchase the equipment at a competitive price.

In our follow-up, we found that OCI had updated its procurement policy in July 2021, requiring SMEs to self-certify that they have followed the Broader Public Sector Procurement Directive. This self-certification is logged online in AccessOCI within the project profile. OCI also stated that due to its limited resources, it cannot audit the internal processes of SMEs. We selected five samples and noted that all SMEs acknowledged that they are subject to the Broader Public Sector Procurement Directive. However, for these selected five samples, we noted that OCI had not performed sufficient due diligence to ensure that goods and services procured by SMEs had been obtained through a competitive procurement process.

As noted in our discussion of **Recommendation 3**, the ENCQOR 5G Program has ended and no net new projects were onboarded during the extension period. We strongly recommend that OCI extend the existing recommendation to any new programs funded by the Province.

- *establish a comprehensive verification process to ensure SMEs enrolled in the program are allocating funds toward eligible project costs only;*

**Status:** Fully implemented.

### Details

In our 2021 audit, we found that OCI did not review the budgets submitted by SMEs as part of their applications to assess whether they included ineligible expenses. We noted that OCI had allowed ineligible expenses that SMEs had budgeted, such as medical insurance, Employment Insurance and contributions to the Canada Pension Plan. OCI also approved SMEs incorporating their office operational costs, such as office rent, Internet connection, and software licences (not related to 5G projects) within their budgets, which is disallowed for the Ontario portion of the program funds.

In our follow-up, we found that OCI had created a budget-review process in March 2023 to ensure that all its programs review budgets for reasonableness based on consistent criteria and in accordance with guidelines for eligible expenditures. For the five samples that we reviewed, we noted that SMEs had allocated funds to eligible project costs.

- *implement and enforce a conflict of interest policy so that OCI is able to effectively oversee and monitor compliance and perceived conflicts and obtain declarations of independence where applicable.*

**Status: Fully implemented.**

### Details

In our 2021 audit, we found that OCI did not have a formal policy or process to identify potential conflicts of interest among the individuals who review applications and the SME applicants to the ENCQOR 5G Program. One individual, who had been working as a reviewer for the program, subsequently also applied for funding from two ENCQOR 5G Program streams and was approved for a total of \$80,000. The individual's application was reviewed by someone other than themselves. However, as the program has no conflict of interest policy, this individual was able to apply with the advantage of insider knowledge of how applicants are scored.

In our follow-up, we found that OCI updates its conflict of interest policy for each project, so that it now requires applicants, co-applicants and reviewers to disclose to OCI the nature of any prior engagement with OCI in addition to any other circumstance that would constitute a perceived conflict of interest. The program manager may check the applicant list against the database containing the names of reviewers on a case-by-case basis to ensure that SME applicants are not active reviewers. For the five projects that we sampled, we compared the project members against the reviewer list to identify any conflict of interest and noted that there were none working as reviewers.

## Low Usage of the ENCQOR 5G Test Platforms

### Recommendation 5

*In order for the Ontario Centre of Innovation (OCI) to ensure the test platforms are being effectively utilized by small- and medium-sized enterprises (SMEs) for innovation and meet the intended economic outcome of the 5G ENCQOR Program, we recommend that OCI:*

- *establish and quantify the requirement to utilize the test platform by SMEs; and*
- *implement a periodic monitoring process to identify SMEs with low usage and encourage them to utilize the ENCQOR 5G test platform.*

**Status: No longer applicable.**

### Details

In our 2021 audit, we reviewed utilization reports for April 2019 to August 2021 for the program streams where utilization was tracked, and found that the time spent by SMEs on the test platforms was significantly low. We noted that OCI did not regularly monitor the platform utilization reports to assess the extent to which SMEs were or were not using the test platforms.

In our follow-up, we found that OCI used an informal assessment to set a minimum two-hour threshold for using the experimental, pre-commercial 5G testbed, and had communicated it to SMEs with low usage. We also noted that OCI had sent emails reminding SMEs that they needed to use the testbed. To avoid encouraging SMEs to work only to the minimum, the emails did not specifically mention the minimum two-hour threshold. However, OCI mentioned this threshold individually to non-compliant SMEs. Some SMEs exceeded the minimum required threshold of two hours of use, but we also identified SMEs with low utilization. We reviewed the test platform usage for five projects and noted that four out of the five projects had used the test platform for a minimum of two hours. The remaining project was completed before OCI had introduced the test platform usage threshold.

As noted in our discussion of **Recommendation 3**, the ENCQOR 5G Program has ended and no net new projects were onboarded during the extension period. We strongly recommend that OCI extend the existing recommendation to any new programs funded by the Province.

### Recommendation 6

*In the event that the existing ENCQOR 5G Program is extended after the end date of March 2022, we recommend that the Ontario Centre of Innovation and the Ministry update the existing Transfer Payment Agreement to clearly establish requirements to utilize the test platform across all program streams.*

**Status: No longer applicable.**

#### Details

In our 2021 audit, we found that while the Transfer Payment Agreement between the Ministry and OCI stated that SMEs were to develop and test 5G-related technology at a test platform, it was silent on explicit requirements for SMEs' use of the platforms. OCI did not set a benchmark for the number of hours an SME could or should use the 5G test platform, or even specify that SMEs had to use it at all. The design of the five ENCQOR 5G Program streams required technology vendors to track test platform utilization for only two of the streams, iPaaS Access and the Demonstration program stream. We noted that the technology vendors did not track utilization for the Academia and SME Technology Development program streams, and that the Agreement was unclear about whether this was required.

In our follow-up, we found that, while the ENCQOR 5G Program concluded on September 30, 2022, the Ministry informed us that, if the program is re-established, it would work with OCI and other technology partners to implement continuous testbed-usage tracking, and would ensure a rigorous cross-reference system to assess and validate usage against SME claims. The minimums set would be based on the needs and expectations of the platform's users. The bridge contract amendment, which extended the ENCQOR 5G Program for six months to September 30, 2022,

did not include requirements for use of the platforms by SMEs because there was no allocation for SME projects, and no new SMEs were onboarded during that bridge period.

## The ENCQOR 5G Program Did Not Include Participation from All Industry Sectors

### Recommendation 7

*In order to promote innovation and support technological advancement related to 5G across all industry sectors, we recommend that, should the program be extended, the Ontario Centre of Innovation accept and enrol ENCQOR 5G Program applicants from a diverse range of industry sectors especially from those sectors not well represented in the current pool of participants.*

**Status: No longer applicable.**

#### Details

In our 2021 audit, we found that there were 10 main categories under which ENCQOR 5G Program applicants could identify their projects. These 10 categories were developed based on categories used by the Canadian Foundation for Innovation and were adapted for use by OCI.

We obtained a list of all applications across the four funded ENCQOR 5G Program streams and noted that not all industry sectors were represented. Furthermore, we noted that OCI did not have a review process in place to ensure that there was equal, or at least reasonable, representation from different industry sectors.

In our follow-up, we noted that the ENCQOR 5G Program was extended via a bridge contract amendment to accommodate the winding down of a few remaining projects past the projected March 2022 date until September 30, 2022. Because no new SMEs were onboarded during that time, OCI did not implement this recommendation prior to the completion of the program. OCI advised us that, where applicable, in the future it would clearly define the sector allocations in its contracts.

As noted in our discussion of **Recommendation 3**, the ENCQOR 5G Program has ended and no net new projects were onboarded during the extension period. We strongly recommend that OCI extend the existing recommendation to any new programs funded by the Province.

## Cybersecurity of the 5G Test Platforms Needs to Be Strengthened

### Recommendation 8

*We have provided relevant details of our cybersecurity findings on the 5G test platform to the technology vendors, who have agreed with our observations and recommendations.*

**Status: No longer applicable.**

#### Details

In our 2021 audit, to ensure that the 5G test platforms' cybersecurity vulnerabilities were being identified on an ongoing basis and remediated, we reviewed cybersecurity controls, such as vulnerability scans and penetration tests, the protection of data using encryption, access controls and the disposal of program participants' intellectual proprietary data. As well, we performed our own penetration test of the ENCQOR 5G network and identified cybersecurity weaknesses that were remediated immediately upon communication of our findings to the technology vendors. In addition, we identified opportunities for improvement relating to better recordkeeping and tracking of IT incidents and the deletion of program participants' data.

To minimize the risk of exposure for ENCQOR 5G Program participants, we provided relevant details of our findings and recommendations directly to the technology vendors for immediate remediation. The technology vendors agreed with the recommendations and acted on them. The other recommendations relating to better recordkeeping and tracking of IT incidents and the deletion of program participants' data are no longer applicable, as the test platforms have been decommissioned and are no longer in use.

## OCI Management of IT Vendors Requires Improvement

### Recommendation 9

*To better protect confidential data and minimize the risks from cyberattacks, we recommend that the agreements with the Ontario Centre of Innovation's (OCI's) IT vendors be amended to incorporate the requirement to perform penetration testing of OCI's IT systems according to industry best practices.*

**Status: In the process of being implemented by December 2023.**

#### Details

In our 2021 audit, we found that OCI outsourced the management of its own IT environment—including hardware and software support services, helpdesk support and cybersecurity defence—to the vendor Nuvollo. Likewise, OCI relied on another vendor, SmartSimple, for management of a critical IT system for SMEs to submit their ENCQOR 5G Program applications. This system stored confidential SME data, such as company profile, employee qualifications and pay stubs with Social Insurance Numbers. Our audit found that OCI's oversight of its critical IT providers needed improvement in areas relating to cybersecurity and operations of IT.

In our follow-up, we noted that OCI had amended its contract with one of its key IT vendors, SmartSimple, on February 15, 2022, to include requirements for a right-to-audit clause, and to obtain penetration-testing reports annually. For its other key IT vendor, Nuvollo, we noted that OCI had amended its contract, effective July 1, 2023, that includes requirements for the vendor to provide an assurance report such as a system and organization controls (SOC) report to OCI, to provide assurance over security controls in place to protect OCI's data. However, the amended contract with Nuvollo does not include requirements to obtain cybersecurity reports, such as a penetration-testing report, to minimize risks from cyberattacks. In addition, we noted that OCI had contracted a consulting firm to perform a cybersecurity assessment for its IT environment in January 2022. The assessment

indicated a need for improvement in cybersecurity areas relating to governance and risk management processes, among others. OCI informed us that it intended to commence discussions with Nuvollo in order to amend its contract to include the requirement to provide cybersecurity and penetration-testing reports, and that the target for full implementation of this recommendation is December 2023.

### Recommendation 10

*To improve the effectiveness of IT contracts and the oversight of IT operations at the Ontario Centre of Innovation (OCI), we recommend that OCI:*

- *review performance metrics such as incident resolution time within the service level agreements for OCI's IT vendors;*

**Status: Fully implemented.**

#### Details

In our 2021 audit, we found that OCI had established service-level agreements with its vendors Nuvollo and SmartSimple, outlining the expected level of service for day-to-day operations. However, it did not obtain the service-level agreement reports to assess whether these vendors were providing IT services as per the established agreements.

In our follow-up, we noted that OCI holds regular weekly or bi-weekly meetings with its IT vendor Nuvollo to review reports, including current issues and issues relating to new security items and/or services, IT tickets, its firewall, infrastructure and anti-virus protection. We reviewed meeting minutes between OCI and Nuvollo for the months of January 2022, July 2022, September 2022 and March 2023, and found that service-level issues and other performance metrics were discussed and reviewed. OCI also holds meetings with its other IT vendor SmartSimple as required and obtains assurance over service-level agreements via a SOC report, as the report includes controls pertaining to availability, capacity and incidents relating to the IT system managed by SmartSimple.

- *have adequate oversight over the procurement process that impacts critical business operations such as outsourcing of the IT function by obtaining approvals from the relevant stakeholders such as OCI's Board of Directors;*

**Status: Fully implemented.**

#### Details

In our 2021 audit, we found that, for OCI's key IT vendors, the procurement process lacked adequate oversight, since the decisions and related approvals were not obtained from OCI's senior management and its Board of Directors or any other subcommittee.

In our follow-up, we found that OCI had updated its procurement policy in September 2021 to replace the previous version dating from April 2008. This updated policy outlines the different procedures to be taken for the purchasing of goods, with increasing approval requirements for larger dollar-value purchases. For the purchase of goods up to \$5,000, staff are to use preferred OCI suppliers, and any new vendors must be approved by the Controller. Purchases of goods valued between \$5,001 and \$25,000 require staff to prepare a document giving the reason for the purchase and the process for selecting a supplier. A minimum of three written quotes are required to ensure an adequate degree of competition. Purchases of goods valued greater than \$25,000 also require a minimum of three written quotes and an open competitive process that includes posting on an electronic tendering system such as the OCI website. Goods valued at \$25,000 or more require approval from the vice president of finance and operations and the president, as per the updated procurement policy. We noted that OCI had not procured any IT goods and services since the time of our audit. However, OCI informed us that for any future procurements it will obtain relevant approvals from stakeholders as outlined in its procurement policy.

- *amend existing contracts with OCI's IT vendors to include a "right to audit" and penalty clauses, and periodically review the performance metrics established in the Service Level Agreement;*

**Status: Fully implemented.**

### Details

In our 2021 audit, we found that, upon review of OCI's service-level agreements with its vendors, Nuvollo and SmartSimple, OCI had not incorporated a right-to-audit clause or penalty clause. This limited OCI's oversight of the services being provided and limited its ability to hold these vendors accountable for missed performance targets.

In our follow-up, we found that OCI had renewed its contract with SmartSimple in February 2022, in which it included stipulations relating to a right to audit, and to obtain cybersecurity reports, such as penetration tests, annually.

For its other IT vendor, Nuvollo, we noted that OCI renewed its contract on July 1, 2023. Although the amended contract does not include a right-to-audit clause, we noted that the contract does include a penalty clause that allows OCI to penalize Nuvollo and hold it accountable for poor service. Nuvollo is also required to provide an assurance report to OCI, in the form of an SOC report providing assurance for security of operations of OCI's IT system and data. We reviewed the SOC report and noted that there were no exceptions identified that impacted OCI. We also noted that OCI periodically met with Nuvollo to review service-level agreements to assess any operational impact resulting from IT outages.

- *establish a process to obtain and review external audit reports to identify IT security risks, and to confirm that corrective action has been taken.*

**Status: In the process of being implemented by December 2023.**

### Details

In our 2021 audit, we found that OCI had not reviewed the vendor audit reports that are issued by its vendors' external auditors and that identify system weaknesses or risks to IT operations. We obtained these reports and discovered that they identify weaknesses such as vulnerability scans not being performed, inappropriate access to privileged accounts, inadequate review of user access and firewalls, as well as weak password controls and data encryption for key IT systems.

In our follow-up, we found that OCI had renewed its contract with SmartSimple in February 2022, in which it included stipulations to obtain cybersecurity reports, such as annual penetration tests. However, OCI was unable to demonstrate that it had performed its independent assessment of the cybersecurity report to assess the impact of exceptions. Similarly, although OCI obtained an SOC report for Nuvollo, it was unable to demonstrate that it had reviewed the SOC report to ensure that adequate corrective measures are in place to mitigate any IT security risks. We reviewed SOC reports for both Nuvollo and SmartSimple, and noted that there were no exceptions identified. The SmartSimple SOC report included testing of capacity and availability, which OCI will review annually going forward. OCI informed us that it is working on creating a process to obtain and review external audit reports, and OCI anticipates fully implementing this recommended action by December 2023.