



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

CANADIAN NUCLEAR
SAFETY COMMISSION

SAFETY FIRST

ANNUAL REPORT 2016-17



Canada

The Canadian Nuclear Safety Commission regulates all nuclear facilities and activities in Canada from uranium mining to power generation, nuclear research, nuclear facilities and prescribed equipment, transportation of radiological substances, industrial and medical applications of nuclear materials, and waste disposal.

We strive to ensure that Canadian nuclear activities are among the safest and most secure in the world.

As leaders in our field, we are experts with a strong focus on action: We enforce our very strict regulatory requirements and vigilantly monitor licensees to verify they are following the rules.

We regulate the nuclear industry in Canada to keep Canada and Canadians safe.

VISION

To be the best nuclear regulator in the world.

MISSION

The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public.

LETTER TO THE MINISTER

THE HONOURABLE JIM CARR
MINISTER OF NATURAL RESOURCES
OTTAWA, ONTARIO

Sir:

I have the honour of presenting you with the Canadian Nuclear Safety Commission's annual report for the fiscal year ending March 31, 2017. The report has been prepared and tabled in accordance with section 72 of the *Nuclear Safety and Control Act*.



Michael Binder
President and Chief Executive Officer,
Canadian Nuclear Safety Commission

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MESSAGE FROM THE PRESIDENT

It is my honour and pleasure to present the Canadian Nuclear Safety Commission (CNSC) Annual Report for 2016–17. This year's theme – Safety First – is at the heart of so much of the work done by this organization to ensure the safe use of nuclear energy and materials, and the protection of health, safety, security and the environment.

This past year, the Commission held the first part of a public hearing for the renewal of the nuclear power reactor operating licence for the Point Lepreau Nuclear Generating Station, located in New Brunswick. The Commission also issued a nuclear power reactor decommissioning licence for the Gentilly-2 Nuclear Generating Station in Quebec. The operating licence for the Port Hope Conversion Facility in Port Hope, Ontario was renewed for a 10-year period, and the licence for the Chalk River Laboratories site in Chalk River, Ontario was extended for a period of 17 months.

This past year we have done the groundwork that is necessary in preparing for major projects being put forward by proponents, if they are approved. These include Ontario Power Generation's Deep Geologic Repository in Kincardine, Ontario, and Canadian Nuclear Laboratories' proposals for decommissioning and waste management at three sites in Ontario and Manitoba.

A great example of the CNSC building on its past efforts is the leadership shown by the CNSC's Executive Vice-President, Ramzi Jammal. Elected President of the Seventh Review Meeting of the *Convention on Nuclear Safety*, he worked tirelessly to encourage Contracting Parties from the global nuclear community to follow the lessons learned from the Fukushima nuclear accident and to commit to greater openness and transparency in their work.

In the fall of 2016, the Commissioner of the Environment and Sustainable Development released an [audit](#) that examined the CNSC's nuclear power plant site inspections. The audit found that when CNSC inspectors identified issues during site inspections, they followed up with the licensee to ensure compliance 100 percent of the time. However, the report recommended the need for better documentation. The CNSC took action to correct the situation as soon as it was brought to our attention. By the end of this fiscal year, we had addressed all five of the report's recommendations through our [action plan](#).

As I begin my 10th year as President of the CNSC and Canada celebrates its 150th anniversary, I reflect on the pride and admiration I have for CNSC staff, who are fully devoted to ensuring the effective regulatory oversight of Canada's nuclear industry. For them, their commitment truly is about Safety First!



Michael Binder



“... I reflect on the pride and admiration I have for CNSC staff, who are fully devoted to ensuring the effective regulatory oversight of Canada's nuclear industry.”

CNSC AT A GLANCE

Who we are

The Canadian Nuclear Safety Commission (CNSC) regulates all nuclear facilities and activities in Canada including the nuclear fuel cycle.

What is the nuclear fuel cycle?

The nuclear fuel cycle starts with uranium mining, followed by the processing of uranium into fuel for nuclear power plants. After the fuel has been used in reactors, the CNSC also regulates the safe management of the nuclear waste. Beyond the fuel cycle, the CNSC monitors the safe conduct of nuclear materials used in medicine, research and other industries.



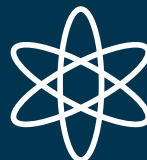
CNSC REGULATES



URANIUM MINES
AND MILLS



NUCLEAR PROCESSING
AND RESEARCH



NUCLEAR POWER
GENERATION



NUCLEAR MEDICINE



NUCLEAR SUBSTANCES
AND TRANSPORTATION



WASTE MANAGEMENT



THE ENVIRONMENT



NATIONAL SECURITY
& INTERNATIONAL
COMMITMENTS

The CNSC's actions are widely communicated to the public, including government, licensees, stakeholders and Indigenous people.

SETTING REQUIREMENTS
Sets expectations, clarifies when needed and seeks feedback

Requirements are established through legislation, regulations, licences and licence conditions, and regulatory documents, with continual consultations with CNSC stakeholders.

REPORTING
Publishes regulatory actions and reports

How we work

The CNSC is Canada's nuclear regulator. It is composed of a Commission that is completely independent and is supported by highly skilled, professional staff who are dedicated and committed to protecting health, safety, security and the environment with respect to all types of authorized nuclear activity.

LICENSING & CERTIFICATION
Reviews and assesses applications to ensure requirements are met

Inspections and reviews monitor licensee activity and appropriate corrective measures are taken to rectify deficiencies.

OVERSEEING COMPLIANCE
Verifies that licensees are in compliance with their licences

Reviews ensure that all those who carry out nuclear-related activities are qualified and capable to undertake these activities safely.

Where we work

The CNSC's headquarters are in Ottawa and we have offices at each of Canada's four power reactor sites, a site office at Chalk River Laboratories and four regional offices across the country.





CNSC – OVERVIEW

A REGULATORY AND OVERSIGHT ROLE

Under the *Nuclear Safety and Control Act* (NSCA), the CNSC regulates all nuclear-related activities in Canada and sets out regulatory expectations for their safe use.

Those wishing to carry out activities regulated under the NSCA must first obtain a licence or certification from the CNSC.

The CNSC provides clarity on regulatory expectations and oversees licensed activities to ensure that regulatory requirements are met. The Commission is the CNSC's decision-making body and makes licensing decisions, including those for all major nuclear facilities in Canada.

CNSC staff participate in many national and international technical projects and meetings to contribute to the safe and secure regulation of nuclear facilities and activities in Canada and around the world. These projects and meetings address areas ranging from the design of new nuclear reactors, aging facilities decommissioning and waste management practices, to the effects of radiation

on people and the environment, and nuclear non-proliferation activities.

To ensure accountability and effective stewardship of resources, the CNSC has an Executive Committee and a Management Committee as well as two oversight committees – the Audit Committee and the Evaluation Committee. The Audit Committee, which serves as an advisory body to the president (with three external and two internal members), reinforces the effectiveness of internal audits, and oversees key areas and processes such as risk management, management control, accountability reporting, and values and ethics. The Evaluation Committee, whose members come from the management cadre, is also an essential component of the organization's governance structure. It serves as an advisory body to the president on the CNSC's evaluation plan and final evaluation reports.

A MANDATE TO ENSURE SAFETY

The CNSC uses risk-informed regulatory approaches to plan and carry out licensing and compliance activities, in order to establish appropriate regulatory control that is commensurate with the activities and risk involved.

All major Canadian nuclear facilities are designed and operated with the “defence-in-depth” principle in mind. The CNSC requires licensees to implement multiple layers of defence in safety systems and programs, in order to keep facilities and workers safe, keep the public safe, protect the environment and minimize consequences in the case of an accident. The CNSC’s rigorous, multi-faceted regulatory oversight, which includes onsite inspections, desktop reviews and annual oversight reports discussed in public, ensures that licensees are operating safely and adhering to their licence conditions.

A FOCUS ON SAFETY AND PREPAREDNESS

The CNSC makes safety its number one priority and requires licensees to do the same. This includes being prepared to respond to events and emergencies, as well as continually evaluating and improving emergency response capabilities.

Canadian regulations require all licensees to demonstrate to the CNSC that their workers are adequately trained to carry out their duties competently, and that they have comprehensive programs to mitigate any events and their potential consequences. The CNSC works with nuclear operators, federal and provincial government agencies, municipalities, first responders and international organizations, to be ready to respond to a nuclear emergency at any time.

A HEALTHY INTERNAL SAFETY CULTURE

The CNSC strives to foster a healthy internal safety culture, as derived from its organizational mission, programs and practices, along with employee and management actions and behaviours, which establish safety as an overriding priority. For the CNSC, this means embedding safety in everything it does.



OUR PEOPLE

With over 800 employees, the CNSC is a unique place to work at. It is the only regulator at the federal or provincial level responsible for the oversight of the Canadian nuclear industry. The CNSC is a multicultural organization that is inclusive to an array of backgrounds, skills and specializations. In turn, this attitude of valuing employee differences enables the CNSC to offer a public service that is well-rounded, fully informed, and agile in responding to the changing needs of Canadians.

This past year, the CNSC launched the *Policy on Science in a Regulatory Environment*, in its continued efforts to maintain integrity in making regulatory decisions and recommendations that are informed by the use of science. The policy is supported by a number of processes that are in place to ensure that a spirit of openness, engagement and continuous improvement thrives at the CNSC.

A recent government-wide survey of federal public servants, with a very strong voluntary participation by its staff, found that 83 percent of CNSC employees like their job! And 73 percent of CNSC employees felt that they are encouraged to be innovative or take initiative in their work.

CNSC employees are encouraged to diversify their work experience and to grow their knowledge, skills and abilities. Over 100 in-house courses are offered each year. From 2014 to 2016, employees in regulatory and technical operations, on average, took part in 16 days or more of training annually.

Staff attrition remains an important issue for the CNSC to manage, with the retirement of its experienced senior regulatory and technical employees. Over the last two years, the CNSC has invested in strategic and operational workforce planning to ensure that it has the right people, in the right jobs, doing the right work at the right time.

CNSC human resources management effort is focused on ensuring that there are growth and development opportunities for the current employees while the organization continues to recruit new talent to build the capabilities that the CNSC will need well into the future.



THE CNSC'S REGULATORY OBJECTIVE

Safe and secure nuclear installations and processes used solely for peaceful purposes and a public that is informed about the effectiveness of Canada's nuclear regulatory regime.

To support this outcome, the CNSC has five regulatory programs:



NUCLEAR FUEL CYCLE PROGRAM



NUCLEAR REACTORS PROGRAM



NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM



NUCLEAR NON-PROLIFERATION PROGRAM



SCIENTIFIC, TECHNICAL, REGULATORY AND PUBLIC INFORMATION PROGRAM

This section describes the CNSC's programs and their respective safety performance indicators and describes this year's regulatory highlights.

Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public

0

Number of radiological releases to the environment above regulatory limits

0

Percentage of uranium mines and mills facilities that received a rating of satisfactory or above in meeting CNSC requirements

100%

Percentage of uranium and nuclear processing facilities that received a rating of satisfactory or above

100%

Percentage of nuclear waste management facilities that received a rating of satisfactory or above

100%

NUCLEAR FUEL CYCLE PROGRAM

This program aims to regulate facilities associated with the nuclear fuel cycle (uranium mines and mills, nuclear processing facilities and nuclear waste management facilities) to protect health, safety, security and the environment in a manner consistent with Canada's international commitments on the peaceful use of nuclear energy.

The program regulates all the lifecycle stages for these facilities – from site preparation through construction and operation, to decommissioning (or long-term management, in the case of some nuclear waste facilities).

The licensing and compliance activities associated with this program are all managed through a risk-informed and performance-based approach. Compliance verification is conducted against established criteria consistent with the licensing basis of the facility. The results of regulatory activities associated with this program are communicated to the public on a regular basis. The program is guided by a management system and is based on fundamental safety principles for continuous improvement.

NUCLEAR FUEL CYCLE PROGRAM HIGHLIGHTS FOR 2016–17

Each year, the CNSC publishes a [report](#) on the performance of Canada’s uranium and nuclear substance processing facilities.

The report focuses on the three safety and control areas (SCAs) of radiation protection, environmental protection, and conventional health and safety, as they are key performance indicators. The report also tracks the ratings of the 11 other SCAs, including waste management, and emergency management and fire protection. The report is presented at a public meeting of the Commission, and the public is invited to make written interventions to the Commission and apply to the Participant Funding Program for assistance with those submissions.

Based on inspections and reviews conducted during the year, CNSC staff are able to conclude that Canada’s uranium and nuclear processing facilities operated safely. This conclusion is based on the following:

- Radiation protection measures were effective and results remained as low as reasonably achievable (ALARA).
- No worker received a radiation dose that exceeded the regulatory limit.
- The frequency and severity of injuries/accidents involving workers were minimal.
- All conventional health and safety programs were effective in protecting workers.
- No member of the public received a radiation dose that exceeded the regulatory limit.
- All environmental protection programs were effective and ALARA.
- Licensees complied with their licence conditions concerning Canada’s international obligations.

NUMBER OF REGULATORY INSPECTIONS OF NUCLEAR FUEL CYCLE PROGRAM LICENSEES IN 2016–17

34

URANIUM MINES
AND MILLS

42

URANIUM AND
NUCLEAR PROCESSING FACILITIES

39

NUCLEAR WASTE
MANAGEMENT FACILITIES

URANIUM MINES AND MILLS

Uranium is a naturally occurring radioactive element used for fuel in nuclear power reactors. Canada is one of the world's largest uranium producers. The majority of Canada's production is exported.

Uranium is mined to provide uranium ore, which is processed at a milling facility to produce uranium concentrate. The uranium concentrate is then processed further to create fuel for nuclear reactors.

The CNSC is responsible for regulating and licensing all existing and future [uranium mining and milling operations](#) in Canada.

At this time, all operating uranium mines and mills in Canada are located in northern Saskatchewan. AREVA Resources Canada and Cameco Corporation are the licensees of the active mining and milling facilities:

- [Cigar Lake Mine](#)
- [Key Lake Mill](#)

- [McArthur River Mine](#)
- [McClellan Lake Mill](#)
- [Rabbit Lake Mine and Mill](#)

To learn more about uranium mines and mills and their safe regulation, refer to the CNSC's [online resources](#), including:

- [Overview of uranium mining](#) – How do mines work and how does the CNSC keep them safe?
- [Lifecycle of a mine](#) – Safe and responsible mining operations
- [Explore a mine](#) – Explore a mine from top to bottom
- [Fact or fiction: mining edition](#) – You don't know what you don't know till you know!



NUCLEAR PROCESSING FACILITIES

Cameco Port Hope

In May 2016, the CNSC published [Independent Environmental Monitoring Program results](#) of tests undertaken in 2014 and 2015. The results confirmed that the public and the environment around the Cameco Fuel Manufacturing facility and Cameco Port Hope Conversion Facility in Port Hope, Ontario are safe and that there are no health impacts resulting from facility operations. The facilities are located in the Municipality of Port Hope, situated on the north shore of Lake Ontario, approximately 100 kilometres east of Toronto, Ontario.

Cameco Fuel Manufacturing

In February 2017, following a public hearing, the Commission issued its [decision](#) to renew the nuclear fuel facility operating licence for Cameco Corporation for a period of 10 years. Cameco operates Cameco Fuel Manufacturing, a nuclear fuel fabrication facility that manufactures nuclear fuel bundles for power reactors in Canada.



Canadian Nuclear Laboratories

In March 2017, the Commission accepted the scope of environmental assessments (EAs) for three projects proposed by Canadian Nuclear Laboratories:

- Nuclear Power Demonstration Closure Project (NPD project)
- Near Surface Disposal Facility Project (NSDF project)
- *in situ* decommissioning of the Whiteshell Reactor #1 (WR-1 Decommissioning project)

For each of the three projects, EAs are required under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The assessment approach will allow for engagement of the public and Indigenous groups.

To learn more about Canada's nuclear processing facilities, consult the [report](#) on the performance of Canada's uranium and nuclear substance processing facilities.

NUCLEAR WASTE MANAGEMENT FACILITIES

Saskatchewan Research Council's Gunnar Remediation Project

Following a public hearing on September 22, 2016, the Commission issued its [decision](#) to remove the regulatory hold point from the Gunnar Remediation Project Phase 2. This will allow the Saskatchewan Research Council (SRC) to proceed with the remediation of the other site aspects, including the waste rock, open pit and mine openings at the Gunnar legacy uranium mine site in northern Saskatchewan, once a detailed remediation plan is reviewed and approved by CNSC staff.



Ontario Power Generation's proposed Deep Geologic Repository project for low- and intermediate-level waste

Ontario Power Generation (OPG) is proposing to construct a deep rock vault in clay-rich limestone more than 600 metres underground and over 400 metres below the bottom of Lake Huron. The vault is designed to be a long-term management facility for OPG's low- and intermediate-level radioactive waste.

In December 2011, an independent joint review panel was appointed under the *Nuclear Safety and Control Act* (NSCA) to examine OPG's environmental impact statement and licence application for the first phase and the EA information for all phases of the project.

On May 6, 2015, the panel submitted an [EA report](#) to the federal Minister of Environment and Climate Change for a decision on its recommendations. The panel concluded that "the project is not likely to cause significant adverse environmental effects, taking into account the implementation of the mitigation measures committed to by OPG together with the mitigation measures recommended by the panel". On February 18, 2016, after considering the panel's report, the minister asked OPG to provide additional information on three aspects of the environmental assessment: alternate locations for

the project, cumulative environmental effects of the project, and an updated list of mitigation commitments for each identified adverse effect under the *Canadian Environmental Assessment Act, 2012*.

In January 2017, OPG provided the additional information to the Canadian Environmental Assessment Agency, which then invited public comment on the additional information. The public comment period closed on March 7, 2017. CNSC staff reviewed the information submitted by OPG and the recommendation to the joint review panel that was based on scientific facts has not changed.

If approved by the minister, the project would proceed to a licensing decision by the panel members, appointed as temporary Commission members, on whether to issue a CNSC licence to prepare a site for and construct the DGR.

Learn more about OPG's proposed [Deep Geologic Repository](#) and its current status, and about the safe regulation and oversight of [radioactive waste facilities in Canada](#), by visiting the CNSC website.

Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public

0

Number of radiological releases to the environment above regulatory limits

0

Percentage of nuclear power plant facilities that received a rating of satisfactory or above

100%

Percentage of research reactor facilities that received a rating of satisfactory or above

100%

NUCLEAR REACTORS PROGRAM

This program aims to regulate facilities associated with nuclear energy (nuclear power plants (NPPs) and research reactors), to protect health, safety, security and the environment in a manner consistent with Canada's international commitments on the peaceful use of nuclear energy.

The program regulates all the lifecycle stages for nuclear power and research reactors, from site preparation, construction, and operation, to decommissioning and abandonment (once commercial operations are ended).

The licensing and compliance activities associated with this program are all managed through a risk-informed and performance-based approach. Compliance verification is conducted against established criteria consistent with the licensing basis of the facility. The results of all the regulatory activities associated with this program are communicated to the public on a regular basis. The program is guided by a management system and is based on fundamental safety principles for continuous improvement.

NUCLEAR REACTORS PROGRAM HIGHLIGHTS FOR 2016–17

Each year, the CNSC publishes and conducts public proceedings on the [safety performance report for Canada's NPPs](#). The public proceedings provide an opportunity for the public to intervene. The Commission provides participant funding for this regulatory oversight report.

The report focuses on the 14 safety and control areas (SCAs). It assesses how well plant operators are meeting regulatory requirements and program expectations in all areas.

Showing comparisons and trends where possible, the report highlights emerging regulatory issues pertaining to the industry at large and to each licensed station.

Through site inspections, reviews and assessments, CNSC staff concluded that Canada's NPPs and research reactors operated safely during 2016. The evaluations of all findings for the SCAs show that, overall, licensees made adequate provisions for the protection of the health, safety and security of persons and the environment from the use of nuclear energy, and took the measures required to implement Canada's international obligations on the peaceful use of nuclear energy.

The following observations support the conclusion of safe operation:

- There were no serious process failures at the NPPs or research reactors.
- No member of the public received a radiation dose that exceeded the regulatory limit.
- No worker at any NPP or research reactor received a radiation dose that exceeded the regulatory limits.
- The frequency and severity of non-radiological injuries to workers were minimal.
- No radiological releases to the environment from the stations exceeded the regulatory limits.
- Licensees complied with licence conditions concerning Canada's international obligations.
- No NPP or research reactor events above Level 0 on the International Nuclear and Radiological Event Scale (INES) were reported to the International Atomic Energy Agency (IAEA).

NUMBER OF REGULATORY INSPECTIONS OF NUCLEAR REACTORS PROGRAM LICENSEES IN 2016–17

103

NUCLEAR
POWER PLANTS

44

RESEARCH
REACTORS

CANADIAN NPP SAFETY PERFORMANCE RATINGS FOR 2016

| Safety and control area | Bruce A | Bruce B | Darlington | Pickering | Point Lepreau | Industry average* |
|------------------------------------------|---------|---------|------------|-----------|---------------|-------------------|
| Management system | SA | SA | SA | SA | SA | SA |
| Human performance management | SA | SA | SA | SA | SA | SA |
| Operating performance | FS | FS | FS | FS | SA | FS |
| Safety analysis | FS | FS | FS | FS | FS | FS |
| Physical design | SA | SA | SA | SA | SA | SA |
| Fitness for service | SA | SA | SA | SA | SA | SA |
| Radiation protection | FS | FS | FS | SA | SA | SA |
| Conventional health and safety | FS | SA | SA | FS | FS | FS |
| Environmental protection | SA | SA | SA | SA | SA | SA |
| Emergency management and fire protection | SA | SA | SA | SA | SA | SA |
| Waste management | FS | FS | FS | FS | SA | FS |
| Security | SA | SA | SA | SA | SA | SA |
| Safeguards and non-proliferation | SA | SA | SA | SA | SA | SA |
| Packaging and transport | SA | SA | SA | SA | SA | SA |
| Integrated plant rating | FS | SA | FS | FS | SA | SA |

FS Fully satisfactory **SA** Satisfactory **BE** Below expectations

* The industry average of all operating NPPs in Canada.

In the table above, all NPPs in Canada received SCA ratings of either “fully satisfactory” or “satisfactory” in 2016. There were 19 “fully satisfactory” SCA ratings across the NPPs, the same number reported in 2015.

None of the NPPs received an integrated plant rating of “below expectations” or “unacceptable”.



NUCLEAR POWER PLANTS

[Darlington Nuclear Generating Station \(Ontario\)](#)

In December 2015, the Commission renewed the operating licence issued to OPG for the Darlington Nuclear Generating Station. This authorized OPG to undertake the refurbishment and life extension of Darlington's four reactors. As part of its decision, the Commission included the completion of an integrated implementation plan and of the plan's actions as a licence condition in the approved nuclear power reactor operating licence. In this past year, the plan was completed and is now being executed as part of the CNSC's normal compliance oversight.

To learn more, watch the video about [NPP refurbishments and life extensions](#) on the CNSC website.



[Pickering Nuclear Generating Station \(Ontario\)](#)

In September 2016, the Commission issued a [decision](#) to amend Ontario Power Generation Inc.'s nuclear power reactor operating licence for the Pickering Nuclear Generating Station, authorizing OPG to temporarily possess, transfer, manage and store heavy water from other nuclear facilities.

[Bruce A and B Nuclear Generating Stations \(Ontario\)](#)

The Commission renewed the operating licence issued to Bruce Power for both Bruce A and B in May 2015. In 2016–17, the licensee developed and submitted a periodic safety review (PSR) for the two stations. A PSR is a systematic and comprehensive evaluation of the design, condition and operational elements of the plant that are considered important to nuclear safety. The objective is to identify practical nuclear safety enhancements of the facility to a level approaching that of modern requirements and practices. Bruce Power's PSR is currently under review.



[Point Lepreau Generating Station \(New Brunswick\)](#)

The Commission held Part 1 of a public hearing in January 2017 on NB Power Corporation's application for a five-year renewal of its nuclear power reactor operating licence for the Point Lepreau Nuclear Generating Station. Part 2 of the public hearing was held in May 2017 and the Commission will make its determination and issue a decision accordingly.

In June 2016, the CNSC released the [2014 and 2015 Independent Environmental Monitoring Program results for the Point Lepreau Nuclear Generating Station](#). The results confirm that the public and the environment around the Point Lepreau facility are protected and that there are no expected health impacts.

[Gentilly-2 Nuclear Facility \(Quebec\)](#)

In June 2016, the Commission issued a [decision](#) to issue to Hydro-Québec a nuclear power reactor decommissioning licence for the Gentilly-2 Nuclear Generating Station in Bécancour, Quebec.

In April 2016, the CNSC released the [2015 Independent Environmental Monitoring Program results for the Gentilly-2 Nuclear Facility](#), confirming that the public and the environment around the Gentilly-2 Nuclear Facility are safe and that there are no health impacts.

[CESD audit of nuclear power plant inspections](#)

In the fall of 2016, the Commissioner of the Environment and Sustainable Development released an [audit](#) that examined the CNSC's nuclear power plant site inspections. The audit found that when CNSC inspectors identified issues during site inspections, they followed up with the licensee to ensure compliance 100 percent of the time. However, the report recommended the need for better documentation. The CNSC took action to correct the situation as soon as it was brought to its attention. By the end of this fiscal year, the CNSC had addressed all five of the report's recommendations through the [CNSC action plan](#).

You can learn more about Canada's [NPPs](#) – their safety systems and how [CANDU inspections](#) are done – by visiting the CNSC website. Also available on the site is the video [Post-Fukushima Improvements to Nuclear Power Plants](#), which covers improvements made to Canada's NPPs in response to the lessons learned from the Fukushima accident.

RESEARCH REACTORS

[Chalk River Laboratories – Chalk River \(Ontario\)](#)

In July 2016, following a public hearing, the Commission issued a [decision](#) to renew and amend Canadian Nuclear Laboratories' nuclear research and test establishment licence for the Chalk River Laboratories site and extend it for a period of 17 months.

In April 2016, the CNSC published the [2013 and 2015 Independent Environmental Monitoring Program results for Chalk River Laboratories](#), confirming that the public and the environment around the Chalk River Laboratories facilities are safe and that there are no health impacts.

[McMaster Nuclear Reactor \(Ontario\)](#)

In April 2016, the Commission issued a [decision](#) in response to the licensee's request for the acceptance of the financial guarantee for the future decommissioning of the McMaster Nuclear Research Reactor, located on McMaster University campus in Hamilton, Ontario.

[École Polytechnique de Montréal's SLOWPOKE-2 Non-Power Reactor \(Quebec\)](#)

In June 2016, the Commission issued a [decision](#) in response to the Corporation de l'École Polytechnique de Montréal's request to revoke its non-power subcritical assembly operating licence and amend its SLOWPOKE-2 non-power reactor operating licence to include activities related to the non-power subcritical assembly.

Learn more about Canada's six [research reactor facilities](#), by visiting the CNSC website.



PRE-LICENSING DESIGN REVIEWS OF SMALL MODULAR REACTORS

A number of small modular reactor (SMR) vendor companies have expressed interest in the CNSC's feedback on how their designs address Canadian regulatory requirements. The CNSC offers optional prelicensing vendor design reviews, which give vendors high-level feedback on the acceptability of an NPP design with respect to Canadian requirements, codes and standards. Pre-licensing vendor design reviews can also identify fundamental barriers to licensing – or any issues for discussion with future licensees – before a licence application is actually submitted. This type of review does not result in the granting of a licence under the *Nuclear Safety and Control Act*, but future licence applicants can use the information to help develop their licence applications.

In 2016, the CNSC agreed to conduct phase 1 of the vendor design reviews for LeadCold Reactors Inc.'s SEALER (Swedish Advanced Lead Reactor) design concept and Ultra Safe Nuclear Corporation's Micro Modular Reactor (high temperature gas reactor design concept). The reviews are estimated to take 15 and 18 months respectively according to the proponents' schedule for submissions. At the end of the reviews, executive summaries of the project reports will be posted on the CNSC website.

There are currently three SMR designs under active review and several more designs are in tentative stages to develop service agreements. Learn more about [pre-licensing vendor design reviews](#), by visiting the CNSC website.

CURRENT PRE-LICENSING VENDOR DESIGN REVIEWS

| Vendor | Name of design and cooling type | Approximate electrical capacity (MW electrical) | Applied for | Review start date | Status |
|-----------------------------------------------------|--------------------------------------------------|-------------------------------------------------|----------------------|---------------------|-------------------------------------|
| Terrestrial Energy Inc. | IMSR Integral Molten Salt Reactor | 200 | Phase 1 | April 2016 | Assessment in progress |
| Ultra Safe Nuclear Corporation / Global First Power | MMR-5 and MMR-10 High Temperature Gas | 5–10 | Phase 1 | December 2016 | Assessment in progress |
| LeadCold Nuclear Inc. | SEALER Molten Lead | 3 | Phase 1 | January 2017 | Assessment in progress |
| Advanced Reactor Concepts Ltd. | ARC-100 Liquid Sodium | 100 | Phase 1 | Fall 2017 | Awaiting first submission |
| URENCO | U-Battery High-Temperature Gas | 4 | Phase 1 | Tentative fall 2017 | Service agreement under development |
| Moltex Energy | Moltex Energy Stable Salt Reactor Molten Salt | 300 | Series Phase 1 and 2 | Tentative fall 2017 | Service agreement under development |
| StarCore Nuclear | StarCore Module High-Temperature Gas | 10 | Series Phase 1 and 2 | To be determined | Service agreement under development |

Number of radiation exposures over the allowable dose limits for nuclear energy workers and members of the public

3*

Number of radiological releases to the environment above regulatory limits

0

Percentage of facilities that received a rating of satisfactory or above

98.7%

Number of incidents in transport resulting in an individual receiving a dose above the limit for members of the public or one millisievert per year

1**

Percentage of independent dosimetry tests passed by licensees

100%

NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM

This program aims to provide assurance to the Canadian public that nuclear substances and prescribed equipment are regulated to protect health, safety, security and the environment, in a manner consistent with Canada's international commitments on the peaceful use of nuclear energy.

The CNSC issues certificates for the design of radiation devices and prescribed equipment to ensure their safe use and issues licences for the safe handling and use of nuclear substances, radiation devices and prescribed equipment. In addition, the CNSC certifies radiography device operators – who must be certified to use exposure devices – as well as certain radiation safety officers. The CNSC monitors the regulated activities to ensure the safety of workers and the general public, and to protect the environment. The licences issued are categorized depending on the type of licensed activity, nuclear substances and prescribed equipment being used, as well

as the risk involved. The regulated activities for which these licences are issued are related to four distinct stakeholder groups: medical, industrial, academic and research, and commercial. Each of these groups uses nuclear substances and prescribed equipment in its work. Compliance activities are conducted by the CNSC to monitor safety and compliance with regulatory requirements.

The licensing and compliance activities associated with this program are all managed through a risk-informed and performance-based approach. Compliance verification is conducted against established criteria consistent with the licensing basis of the activity being regulated. The results of regulatory activities associated with this program are communicated to the public and other stakeholders on a regular basis. The program is guided by a management system and is based on fundamental safety principles for continuous improvement.

*Two nuclear energy workers in nuclear medicine received a dose to hands in 2016–17. Both incidents were reported to the CNSC. One member of the public received a dose above the limit in 2016–17 (see note below) and the incident was reported to the CNSC.

**One member of the public received a small dose after accepting a ride in a vehicle that was transporting packages containing nuclear substances. This practice is unacceptable to the CNSC.

NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM HIGHLIGHTS FOR 2016–17

CNSC staff continued their ongoing regulatory oversight of licensees in the medical, industrial, academic and research, and commercial sectors. Staff conducted compliance verification activities consisting of field inspections, desktop reviews and technical assessments of licensee activities, and concluded that the use of nuclear substances in Canada is safe. The evaluations of findings for the safety and control areas (SCAs) show that, overall, licensees made adequate provisions for the protection of the health, safety and security of persons and the environment from the use of nuclear substances, and took the measures required to implement Canada's international obligations.



NUMBER OF LICENCES PER SECTOR IN THE NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM IN 2016–17



MEDICAL



INDUSTRIAL



ACADEMIC AND RESEARCH



COMMERCIAL

REGULATORY INSPECTIONS AND COMPLIANCE REVIEWS OF NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM LICENSEES IN 2016–17



NUMBER OF INSPECTIONS
CONDUCTED



NUMBER OF ANNUAL COMPLIANCE
REPORTS REVIEWED

INSPECTION RATINGS FOR ALL SECTOR LICENSEES OF THE NUCLEAR SUBSTANCES AND PRESCRIBED EQUIPMENT PROGRAM, 2012–17

| Inspection ratings | 2012–13 | 2013–14 | 2014–15 | 2015–16 | 2016–17 |
|--------------------|---------|---------|---------|---------|---------|
| Satisfactory | 944 | 904 | 890 | 773 | 831 |
| Below expectations | 657 | 616 | 502 | 406 | 466 |
| Unacceptable | 12 | 7 | 2 | 5 | 5 |

THE SAFE TRANSPORT OF HIGHLY ENRICHED URANIUM TO THE U.S.

In 2010, Canada and the United States committed to returning used highly enriched uranium (HEU) fuel stored at AECL facilities to the U.S. as part of a broad international effort to consolidate HEU inventories in fewer locations around the world. In 2012, this initiative was expanded to include other HEU materials, including the liquid form known as highly enriched uranyl nitrate liquid, or HEUNL.

Shipments of repatriated HEU have since been underway, and the CNSC has ensured that they are carried out safely to protect health, safety, security and the environment. An application for a transport licence for HEUNL was submitted by Canadian Nuclear Laboratories (CNL) and approved by the CNSC in 2016 following the rigorous process of transport package certification under the *Packaging and Transport of Nuclear Substances Regulations, 2015* and *Transportation of Dangerous Goods Regulations*.

You can learn more about the CNSC’s oversight of the [transport of highly enriched uranyl nitrate liquid](#) on the CNSC website, where you will also find a CNSC Online information module on [The Safe Transport of Highly Enriched Uranium](#).

REGULATORY OVERSIGHT REPORTS ON THE USE OF NUCLEAR SUBSTANCES IN CANADA

Each year, CNSC staff assess the overall safety performance on the use of nuclear substances in Canada. Staff consider industry performance as a whole, as well as the performance of each sector (i.e., medical, industrial, academic and research, and commercial) separately. Safety performance is measured in terms of licensees’ regulatory compliance and occupational doses. The [report](#) also includes a summary of reported events and orders issued by the CNSC.

NATIONAL SEALED SOURCE REGISTRY AND SEALED SOURCE TRACKING SYSTEM ANNUAL REPORTS

The CNSC was the first nuclear regulator among the G7 countries to develop a national registry and to implement a Web-based tracking system, along with enhanced import and export controls for high-risk sealed sources.

The [report](#) describes developments in the CNSC’s National Sealed Source Registry and Sealed Source Tracking System.



REPORTS ON LOST OR STOLEN SEALED SOURCES AND RADIATION DEVICES

The CNSC [*Report on Lost or Stolen Sealed Sources and Radiation Devices*](#) summarizes the information reported to the CNSC about the losses and thefts of licensable sealed sources and radiation devices.

The report provides a description for each event, the date the event occurred, the event location, the risk categorization, a brief summary and the recovery status. The risk categorization of the sealed source at the time of the event (Category 1 to Category 5) is based on the IAEA document titled *Categorization of Radiation Sources*.

In 2016–17, there were six Category 5 sealed sources lost. One source has since been recovered. There was one Category 4 portable gauge stolen, which has not yet been recovered. Up-to-date details of the [lost or stolen sealed sources and radiation devices](#) are always available on the CNSC website.



Canada maintains the IAEA safeguards broader conclusion that there was no diversion of declared nuclear material, and no indication of undeclared nuclear material or nuclear activity

YES

Percentage of annual inventory reports of Canadian obligated nuclear goods and technology that were confirmed as meeting CNSC requirements

100%

Percentage of nuclear material reports submitted that were confirmed as meeting requirements of Canada's international commitments

100%

Percentage of goods exported solely for peaceful purposes

100%

Number of export and import licences issued in 2016–17

1,141



NUCLEAR NON-PROLIFERATION PROGRAM

This program aims to provide assurance to both the Canadian public and the international community that the development, production and use of nuclear energy and nuclear substances, prescribed equipment and prescribed information are safe and secure, and conform with control measures and international obligations and commitments to which Canada has agreed, including

those under the *Treaty on the Non-Proliferation of Nuclear Weapons*. Under its mandate, the CNSC implements measures of control respecting nuclear non-proliferation, including domestic and international arrangements, IAEA safeguards, and assessments and authorizations of exports and imports of nuclear substances, prescribed equipment and prescribed information (technology).

NUCLEAR NON-PROLIFERATION PROGRAM HIGHLIGHTS FOR 2016–17

LEADING INTERNATIONALLY

Canada is a world leader in promoting the peaceful use of nuclear energy. To fulfill Canada's international obligations, the CNSC supports and implements the country's international agreements on nuclear safety, non-proliferation and security.

NON-PROLIFERATION AND IMPORT/EXPORT CONTROLS

The major elements of Canada's nuclear nonproliferation policy involve support to international non-proliferation initiatives and activities, regulatory import and export controls, implementation of international safeguards measures, and security commitments.

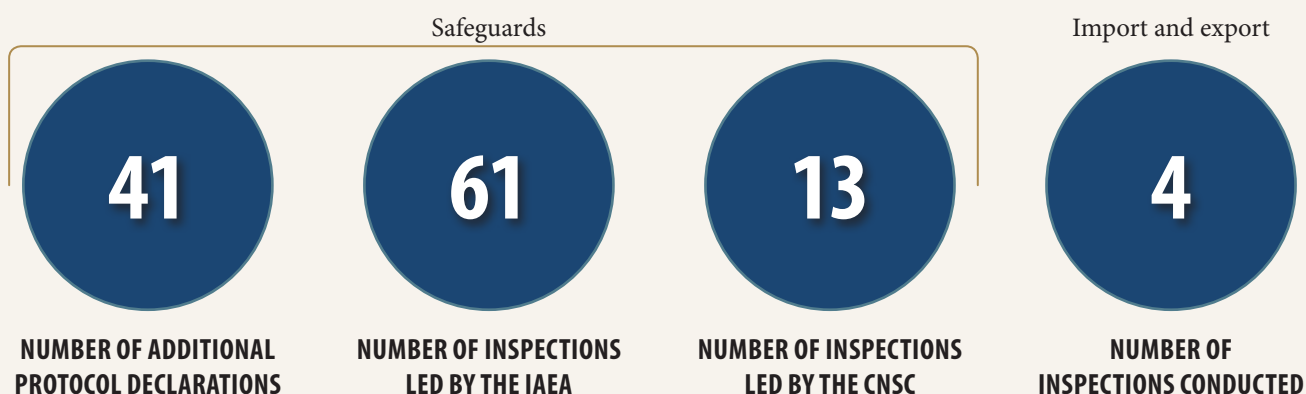
During 2016–17, the CNSC conducted technical licensing assessments and made licensing decisions on applications for the import and export of nuclear substances, prescribed equipment and prescribed information, in accordance with the *Nuclear Non-proliferation Import and Export Control Regulations* and the *General Nuclear Safety and Control Regulations*. A total of 1,141 import and export licences were issued.

INTERNATIONAL AGREEMENTS

The CNSC implements the terms and conditions of Canada's bilateral nuclear cooperation agreements through administrative arrangements concluded with its counterparts in the partner country. In 2016–17, the CNSC signed a new and updated administrative arrangement between the CNSC and the National Commission for Nuclear Activities Control of Romania. The updated administrative arrangement implements the provisions of the nuclear cooperation agreement and the supplemental protocol between Canada and Romania that ensure the peaceful use of nuclear technology.

Visit the CNSC website to learn more about Canada's international commitments on [non-proliferation and import/export controls and safeguards](#), including the CNSC's role and responsibilities, or to get detailed information on Canada's [international agreements](#).

REGULATORY INSPECTIONS OF NUCLEAR NON-PROLIFERATION PROGRAM LICENSEES IN 2016–17



INTERNATIONAL NUCLEAR SAFETY

In September 2016, CNSC Executive Vice-President and Chief Regulatory Operations Officer Ramzi Jammal led a 10-day Integrated Regulatory Review Service (IRRS) mission to China with a team of 14 international members. The team concluded that China's regulatory framework for nuclear and radiation safety is effective but will require further development due to rapid nuclear energy growth. It is the opinion of the experts that most of the recommendations made during an initial mission in 2010 had been implemented, but that further work is needed in areas such as managing the long-term operation of NPPs and managing waste. Read the [IAEA news release on this IRRS mission](#), available on the IAEA website.

STRENGTHENING GLOBAL NUCLEAR SAFETY: CONVENTION ON NUCLEAR SAFETY(CNS) REVIEW MEETING

In 2016, Ramzi Jammal was elected as President of the Seventh Review Meeting of the *Convention on Nuclear Safety*.

Under Mr. Jammal's leadership, this meeting had the highest level of participation by Contracting Parties to date. Seventy-seven of the 80 Contracting Parties participated, with over 900 delegates in attendance. Following intensive discussions and meetings on the national reports of nuclear safety programs, delegates identified and offered ideas for addressing common issues to strengthen nuclear safety around the world.

The Seventh Review Meeting concluded with the closing plenary and approval of the [Summary Report](#), available on the IAEA website. The report details new measures to improve the effectiveness of the CNS and its reporting process, as well as measures to strengthen nuclear safety globally.

In his closing remarks, Mr. Jammal emphasized his primary objectives of increasing participation and transparency of the *Convention on Nuclear Safety*. "Complacency is our enemy; continuously enhancing safety is a must. Although this review process only happens every three years, it is important to keep the focus on the objective of maintaining a high level of nuclear safety at all times."

CANADA'S NATIONAL REPORT TO THE CNS

The *Canadian National Report for the Convention on Nuclear Safety – Seventh Report* outlines the measures that are in place to assure the safe operation of NPPs in Canada and the protection of the health and safety of people and the environment. These include a robust nuclear regulatory framework, a mature and effective regulator, and licensee organizations that are fully committed to nuclear safety. The report also emphasizes Canada's commitment to openness and transparency, research and development, peer review, and continual improvement.

Learn more about Canada's participation in the Seventh Review Meeting of the *Convention on Nuclear Safety*, by visiting the CNSC website.



Number of research projects funded under the CNSC's Research and Support Program

Number of regulatory documents published or completed by the CNSC in 2016–17

Number of separate recipients awarded funding under the Participant Funding Program

Number of Aboriginal groups that had meetings with the CNSC in 2016–17

Number of public inquiries to the CNSC's info account in 2016–17

26
8
44
28
1,700

SCIENTIFIC, TECHNICAL, REGULATORY AND PUBLIC INFORMATION PROGRAM

This program aims to inform the Canadian public – including Canadian nuclear licensees, vendors, academic community, special interest groups, Indigenous groups, other government departments, other jurisdictions and international organizations – that nuclear facilities and activities are being used safely, in adherence to regulatory requirements and the best available scientific

and technical information. This program is realized through the processes of generating scientific and technical information, institutionalizing the information within the regulatory framework, and disseminating the information through a variety of channels and engagement practices.

SCIENTIFIC, TECHNICAL, REGULATORY AND PUBLIC INFORMATION PROGRAM HIGHLIGHTS FOR 2016–17

SCIENTIFIC AND TECHNICAL INFORMATION

The CNSC integrates the best available science with its decision making. The CNSC maintains research initiatives and programs to ensure that it keeps abreast of new scientific information, develops its own knowledge base and shares its research findings with stakeholders and scientists in Canada and abroad.

Research is carried out on a wide range of topics, from health studies on nuclear workers and host communities to research on the long-term management of nuclear waste in geological repositories.

Directed by CNSC staff, research initiatives and programs are often completed with the support of independent third parties and/or in collaboration with national and international partners, providing access to valuable expertise, state-of-the-art facilities and the best available data. The outcome of these research activities helps the CNSC understand and address new or emerging safety issues, gain third-party perspectives on nuclear science, and share scientific knowledge with the nuclear industry and the public at large. This research helps support the CNSC's mandate to disseminate objective scientific, technical and regulatory information to the public about the activities of the Commission and the industry it regulates.

The CNSC makes its extensive body of research available to the public

This CNSC offers the public a [comprehensive list of all relevant scientific and technical information](#) currently available on the CNSC website. It offers topics according

to the CNSC safety and control areas (SCAs). SCAs are used to assess, evaluate, review, verify and report on regulatory requirements and performance. The SCAs are presented in a comprehensive framework consisting of 14 SCAs, which are grouped into three primary functional areas (management, facility and equipment, and core control processes).

The Science of Safety research reports share some of the key research activities facilitated and supported by the CNSC on a yearly basis. These reports are part of the CNSC's ongoing effort to ensure that Canadians have access to the science that informs the CNSC's work.

Research and Support Program

The CNSC funds an external research program to obtain knowledge and information needed to support its regulatory mandate. The program provides the CNSC with access to independent advice, expertise, experience, information and other resources via contracts, grants and contributions placed in the private sector, and with other agencies and organizations in Canada and elsewhere. The program is compiled from project proposals submitted from across the CNSC. In 2016–17, \$1.3 million was invested in 26 research projects, 32 contribution agreements totalling \$1.6 million for international or national joint projects were signed, and 13 grants totalling \$69 thousand were made.

To read [research report summaries](#) from the Research and Support Program, visit the CNSC website.

WHAT MAKES UP THE CNSC'S REGULATORY FRAMEWORK?

The CNSC's [regulatory framework](#) consists of [laws](#) passed by the Parliament of Canada that govern the regulation of Canada's nuclear industry, as well as [regulations](#), [licences](#) and [documents](#) that the CNSC uses to regulate the industry.

In November 2016, the CNSC published its [Regulatory Framework Plan 2016–21](#), setting out the regulations and regulatory documents that the CNSC plans to develop or amend in that five-year period. These CNSC documents are reviewed at least every five years. After review, the CNSC decides if they are still appropriate or need to be updated. Aligned with the CNSC's corporate priorities, the plan considers current developments in the nuclear environment.

In 2016–17, the CNSC published or completed a total of eight regulatory documents and five discussion papers, which are listed in annex B.

Consultation

Consultation with the public, licensees and interested organizations is an important part of the process the CNSC uses to develop many of the regulatory tools within its framework. The CNSC welcomes public input on draft documents that are open for consultation.

Each document is made available for public comment for a specified period of time. At the end of the consultation period, CNSC staff review all public input. Public comments are then posted for feedback on the CNSC website. Comments submitted, including names and affiliations, are intended to be made public, in the official language in which they were received. A consultation report is then prepared to summarize the feedback.

The CNSC website offers up-to-date information on current consultations for regulatory initiatives in the [consultation section](#), including the necessary information and guidance on how you can participate. On the website, you can also read a complete [overview of the CNSC's regulatory framework](#).

REACHING OUT TO CANADIANS

Disseminating information is a large part of the CNSC's mandate. CNSC staff travel across the country to explain how the CNSC regulates the nuclear industry. They participate in community meetings, town halls and open houses to build relationships with stakeholders. Staff also attend national fairs and conferences that specifically target youth, municipalities and the medical community. This ongoing dialogue is important for increasing public understanding and trust in the CNSC's role of protecting Canadians, their health and the environment.



KEEPING THE PUBLIC INFORMED

In its ongoing commitment to transparency and openness, CNSC staff continued to respond to questions from the public on nuclear safety. In 2016–17, the CNSC responded to 65 media calls and 1,700 public information inquiries. The CNSC posted 25 [feature articles](#) to its website, and disseminated four new infographics and project posters. In 2016–17, the CNSC also oversaw and enforced licensee compliance with RD/GD 99.3, *Public Information and Disclosure*. This document articulates requirements that put the onus on licensees to proactively inform stakeholders and the public on their safety records and nuclear activities.

Consulting with Aboriginal groups

During the last fiscal year, the CNSC participated in 28 meetings with 28 Aboriginal groups and organizations. Projects included the following: the Point Lepreau Nuclear Generating Station licence renewal, the McClean Lake licence renewal, the Gunnar mine decommissioning project, the Adaptive Phased Management approach for the long-term management of Canada's used nuclear fuel, Canadian Nuclear Laboratories' environmental assessments for its Chalk River facilities in Ontario, the Western Waste Management Facility in Tiverton, Ontario, and the CNSC's Independent Environmental Monitoring Program.

Offering funding to encourage public and Indigenous participation

The CNSC continued to administer its Participant Funding Program (PFP), which was established in 2011 to enhance the participation of the public, Indigenous people and other stakeholders in Commission proceedings and environmental assessments for major nuclear facilities.

This past year, the PFP awarded more than \$848,802 to 44 different recipients. This included funding to 19 Indigenous groups or organizations for their participation in CNSC regulatory processes, such as learning more about the CNSC's regulation of the nuclear sector in Canada and the performance of CNSC-regulated facilities located within their traditional territories.

Learn more about the CNSC's [Participant Funding Program](#) and watch a short [CNSC information video](#) about it, by visiting the CNSC website.



Online engagement

While disseminating information is part of the CNSC's mandate, that information has to be accessible and understood. One of the end goals of the CNSC's social media platforms – YouTube, Facebook, and Twitter – is to provide technical information in plain language that explains the complicated science of nuclear more simply.

The CNSC continues to invest resources in its social media engagement, not only by “liking” and sharing information, but also by answering questions from its followers, often with the assistance of a subject matter expert.

Interacting with and responding to people on social media helps humanize and validate the CNSC's online presence.

Engaging stakeholders at CNSC 101 sessions

The CNSC 101 program strives to build understanding of and public confidence in Canada's nuclear regulatory regime, through information sessions delivered to diverse audiences across Canada. The CNSC is particularly interested in providing information about participating in public hearings, and welcomes requests from Canadians for CNSC 101 sessions in their communities. This past year, seven CNSC information sessions were delivered to a total of 270 participants, as shown in the following table.

| CNSC 101 session location | Number of participants |
|--------------------------------------------------------------------------|------------------------|
| Pickering, ON – Feb 14, 2017 | 45 |
| University of Ontario Institute of Technology, Oshawa, ON – Feb 14, 2017 | 15 |
| Saint John, NB – Feb 2, 2017 | 15 |
| Nuclear Power Worker Council, Toronto, ON – Oct 17, 2016 | 45 |
| Saskatoon, SK – Oct 12, 2016 | 25 |
| Hatchet Lake, SK – Oct 11, 2016 | 100 |
| Port Hope, ON – May 11, 2016 | 25 |

Learn how you can be part of an [upcoming CNSC 101 session](#), by visiting the CNSC website.



Overview of outreach activities in 2016–17

This year, the CNSC completed 141 outreach activities, which included:

- 16 youth-related events
- 17 waste-related events
- 39 events that focused directly on CNSC licensees
- 45 events that focused on communities with nuclear facilities
- 8 events related to environmental issues
- 16 medical-related events



COMMISSION MEMBERS



Dr. Michael Binder

PRESIDENT AND CHIEF EXECUTIVE OFFICER,
CANADIAN NUCLEAR SAFETY COMMISSION
OTTAWA, ONTARIO

Named as a permanent member on
January 15, 2008



Mr. Dan D. Tolgyesi

QUÉBEC CITY, QUEBEC

Named as a permanent member
on May 30, 2008 and ceased
to be a permanent member on
October 20, 2016



Ms. Rumina Velshi

TORONTO, ONTARIO

Named as a permanent member
on December 15, 2011 and ceased
to be a permanent member on
December 14, 2016



Dr. Alexander McEwan

PROFESSOR AND CHAIR, UNIVERSITY OF
ALBERTA CROSS CANCER INSTITUTE
EDMONTON, ALBERTA

Named as a permanent member on
March 7, 2013



Dr. Sandor Demeter

PHYSICIAN, NUCLEAR MEDICINE SECTION HEAD
AT HEALTH SCIENCES CENTRE OF THE WINNIPEG
REGIONAL HEALTH AUTHORITY
WINNIPEG, MANITOBA

Named as a permanent member on
February 17, 2017 as a permanent,
part-time member of the CNSC (on an
interim basis for a term of one year)



Mr. Rob Seeley

PRESIDENT OF E3MERGE CONSULTING
FERNIE, BRITISH COLUMBIA

Named as a permanent, part-time
member on February 17, 2017 (on an
interim basis for a term of one year)



Dr. Soliman A. Soliman

MISSISSAUGA, ONTARIO

Named as a permanent, part-time member on February 17, 2017 (on an interim basis for a term of one year)



Dr. Gunter Muecke

PROFESSIONAL GEOLOGIST

Named as a temporary member on December 1, 2011 to the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)



Dr. James F. Archibald

PROFESSOR OF MINING ENGINEERING,
QUEEN'S UNIVERSITY, ONTARIO

Named as a temporary member on December 1, 2011 to the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)



Dr. Stella Swanson

ENVIRONMENTAL CONSULTANT

Named as a temporary member on December 1, 2011, and currently Chair of the joint review panel for the Deep Geologic Repository for low- and intermediate-level radioactive waste (term has expired, but still seized of the DGR file)

COMMISSION OPERATIONS

MAKING INDEPENDENT AND TRANSPARENT DECISIONS

The Commission makes independent, fair and transparent decisions on the licensing of major nuclear-related activities or facilities, and is central to the functioning of the CNSC. It also establishes legally binding regulations, and sets regulatory policy on matters related to the protection of health, safety, security and the environment and to the implementation of international obligations respecting the peaceful use of nuclear energy.

Before the Commission decides whether to license nuclear-related activities, it considers applicants' proposals, recommendations from CNSC staff, and stakeholder views. Each licensing decision is based on guidance that demonstrates that the activity or the operation of a given facility can be carried out safely, and that the environment and the health and safety of persons are protected. To promote openness and transparency, the Commission conducts its business where possible in public hearings and meetings and, where appropriate, in communities where activities take place. Indigenous people and other members of the public can participate in public hearings via written submissions and oral presentations. Commission hearings and meetings can also be viewed as live webcasts on the CNSC website, and transcripts of public hearings and meetings are also available. Webcasts are archived on the site for at least three months, and the transcripts are available for approximately two years after the session.

COMMISSION MEMBERSHIP

At year end, the Commission had five permanent members and three temporary members appointed by the Governor in Council and chosen according to their credentials. All are independent of political, governmental, special interest group or industry influences. Temporary members can be appointed by the Governor in Council whenever necessary. The CNSC president is the only full-time Commission member.

MANAGEMENT DISCUSSION AND ANALYSIS

FINANCIAL STATEMENTS FOR THE YEAR ENDING MARCH 31, 2017

This management discussion and analysis (MD&A) should be read in conjunction with the audited financial statements that follow.

PURPOSE

The purpose of this MD&A is to provide management with the opportunity to explain, in narrative form, the CNSC's current financial situation and any significant variances. It aims to allow readers to look at the CNSC's operations through the eyes of management.

RESULTS OF OPERATIONS

The CNSC's expenses totalled \$153.0 million in 2016–17. A total of \$108.1 million of expenses were paid for by earned revenues, while the CNSC's net cost of operations of \$44.9 million was funded through government funding.

REVENUES

In Budget 2013, the CNSC received statutory authority, pursuant to subsection 21(3) of the *Nuclear Safety and Control Act*, to spend during a fiscal year any revenues that it receives in the current or previous fiscal year through the conduct of its operations. The CNSC collects regulatory fees in accordance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (the Regulations). In 2016–17, the CNSC funded approximately 71% of its total cost of operations from fees collected from licensees.

Revenues totalled \$108.1 million in 2016–17, an increase of \$1.6 million (1.5%) from \$106.5 million in 2015–16. Revenues continued to remain relatively stable from year to year. Revenues collected through licence fees increased by \$1.0 million, primarily due to an increase in revenues related to nuclear substances used for commercial and industrial purposes as the CNSC continues to phase in increases to fully recover the cost for these activities. Revenues collected through special projects increased by \$0.6 million due to increased revenues from vendor design reviews.

The 2016–17 revenues of \$108.1 million were \$5.5 million (4.8%) lower than the planned revenue of \$113.6 million reported in the CNSC's future-oriented financial statements. The decrease is mainly a result of lower than forecasted costs for salary and employee benefits (EBP) due to higher than forecasted retirements and planned staffing delays, a decrease in the rate used to allocate EBP expenditures as well as increased capital expenditures which are only recovered from licensees once the capital expenditures are amortized.

EXPENSES

The CNSC conducts an annual planning exercise and approves operating budget levels prior to the start of the fiscal year. Budget approval takes into account the expected revenues from planned regulatory activities that are subject to cost recovery and the available parliamentary funding.

Total CNSC expenses decreased to \$153.0 million in 2016–17, from \$155.0 million in 2015–16, for a net decrease of \$2.0 million (1.3%). The net decrease is mainly the result of decreases in professional and special services expenses of \$2.3 million, and salaries and employee benefits expenses of \$0.6 million, offset by increases in amortization expenses of \$0.6 million, grants and contributions expenses of \$0.2 million and other expenditure categories of \$0.1 million.

The decrease in professional and special services expenses is attributed to a reduction in the use of information technology and telecommunications consultants. The decrease in salary and benefits expenses is primarily due to a decrease in the provision for severance benefits. Amortization expenses increased mainly due to an increase in capitalization of work-in-process costs related to leasehold improvements and IT assets. Grants and contributions expenses increased due to increased contributions related to the Research and Support Program.

Total CNSC expenses of \$153.0 million in 2016–17 were \$11.0 million (6.7%) less than the planned expenses of \$164.0 million. The lower than planned expenses are a result of lower spending on salaries and employee benefits expenses of \$10.1 million, professional and special services expenses of \$1.4 million, and travel and relocation expenses of \$0.7 million, offset by an increase of \$0.9 million on furniture, repairs and rentals expenses and \$0.3 million on miscellaneous expenses. The lower than planned expenses for salaries and employee benefits are due to higher than forecasted retirements and staffing delays as well as lower than planned contributions to employee benefits.

PARLIAMENTARY APPROPRIATIONS

NET COST OF OPERATIONS

Parliamentary appropriations are used to fund some activities and certain types of licensees who are, under the Regulations, not subject to cost recovery. The Regulations state that some licensees, such as hospitals and universities, are exempt from paying fees as they are entities that exist for the public good. In addition, fees are not charged for activities that result from CNSC obligations that do not provide a direct benefit to identifiable licensees. These include activities with respect to Canada's international obligations (including non-proliferation activities), public responsibilities such as emergency management and public information programs, and updating of the *Nuclear Safety and Control Act* and associated regulations as appropriate.

In 2016–17, the CNSC's net cost of operations funded by government funding and transfers, including voted appropriations (Vote 1 – Program expenditures), was \$44.9 million, a \$3.6 million (7.3%) decrease from the previous year. The decrease is attributable to an increase in capital expenditures which meant less funds were available for spending on operating expenses. It is also due to an increase in revenues related to formula fees as the CNSC continues to implement a review of the charging formulas, as well as a review of certain expenditures previously charged to voted appropriations.

OUTLOOK

The total projected revenues for 2017–18 are \$115.3 million, up from \$108.1 million in 2016–17, for a net increase of \$7.2 million (6.7%), which represents increases in regulatory activity plans, formula fees and special projects revenues. The total projected expenses for 2017–18 are \$160.8 million, up \$7.8 million (5.1%) from \$153.0 million spent in 2016–17. The projected increase in expenses will mainly be driven by an increased pace of investment in the CNSC workforce renewal and in information technology projects. The outlook for CNSC regulatory oversight requirements is stable.

CNSC MANAGEMENT TEAM



Michael Binder
PRESIDENT AND
CHIEF EXECUTIVE OFFICER



Ramzi Jammal
EXECUTIVE VICE-PRESIDENT,
REGULATORY OPERATIONS BRANCH, AND
CHIEF REGULATORY OPERATIONS OFFICER



Terry Jamieson
VICE-PRESIDENT, TECHNICAL
SUPPORT BRANCH



Stéphane Cyr
VICE-PRESIDENT, CORPORATE SERVICES
BRANCH, AND CHIEF FINANCIAL OFFICER



Jason Cameron
VICE-PRESIDENT, REGULATORY
AFFAIRS BRANCH, AND CHIEF
COMMUNICATIONS OFFICER



Marc Leblanc
COMMISSION SECRETARY



Lisa Thiele
SENIOR GENERAL COUNSEL AND DIRECTOR,
LEGAL SERVICES

FINANCIAL STATEMENTS

STATEMENT OF MANAGEMENT RESPONSIBILITY INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING

Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2017, and all information contained in these statements rests with the management of the Canadian Nuclear Safety Commission (CNSC). These financial statements have been prepared by management using the Government's accounting policies, which are based on Canadian public sector accounting standards.

Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgment, and gives due consideration to materiality. To fulfill its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of the CNSC's financial transactions. Financial information submitted in the preparation of the Public Accounts of Canada, and included in the CNSC's *Departmental Results Report* (previously the *Departmental Performance Report*), is consistent with these financial statements.

Management is also responsible for maintaining an effective system of internal control over financial reporting (ICFR) designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are properly authorized and recorded in accordance with the *Financial Administration Act* as well as all relevant CNSC policies, authorities and statutory requirements, including the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*.

Management seeks to ensure the objectivity and integrity of data in its financial statements through careful selection, training and development of qualified staff; through organizational arrangements that provide appropriate divisions of responsibility; through communication programs aimed at ensuring that regulations, policies, standards, and managerial authorities are understood throughout the CNSC; and through conducting an annual risk-based assessment of the effectiveness of the system of ICFR.

The system of ICFR is designed to mitigate risks to a reasonable level based on an ongoing process to identify key risks, to assess effectiveness of associated key controls, and to make any necessary adjustments. A risk-based assessment of the system of ICFR for the year ended March 31, 2017 was completed in accordance with the Treasury Board *Policy on Internal Control*, and the results and action plans are summarized in the annex.

The effectiveness and adequacy of the CNSC's system of ICFR is reviewed by the internal control staff, who conduct periodic monitoring assessments, and by the Departmental Audit Committee, which oversees management's responsibilities for maintaining adequate control systems and the quality of financial reporting, and recommends the financial statements to the president.

The Office of the Auditor General, the independent auditor for the Government of Canada, has expressed an opinion on the fair presentation of the financial statements of the CNSC, which does not include an audit opinion on the annual assessment of the effectiveness of the CNSC's internal controls over financial reporting. At the CNSC's request, the Office of the Auditor General also audited and expressed an opinion on its compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*.



Michael Binder
President and
Chief Executive Officer



Stéphane Cyr
Vice-President, Corporate
Services Branch and
Chief Financial Officer

Ottawa, Canada
July 19, 2017



INDEPENDENT AUDITOR'S REPORT

To the Canadian Nuclear Safety Commission and the Minister of Natural Resources

Report on the Financial Statements

I have audited the accompanying financial statements of the Canadian Nuclear Safety Commission, which comprise the statement of financial position as at 31 March 2017, and the statement of operations and net financial position, statement of change in net debt and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal

control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Canadian Nuclear Safety Commission as at 31 March 2017, and the results of its operations, changes in its net debt, and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Report on Other Legal and Regulatory Requirements

In my opinion, the Canadian Nuclear Safety Commission has complied, in all significant respects, with the *Canadian Nuclear Safety Commission Cost Recovery Fee Regulations* pursuant to the *Nuclear Safety and Control Act*.

Vicki Clement, CPA, CA
Principal
for the Auditor General of Canada

19 July 2017
Ottawa, Canada

STATEMENT OF FINANCIAL POSITION AS AT MARCH 31

| (in thousands of dollars) | 2017 | 2016 |
|---------------------------------------------------|---------------|----------------|
| Liabilities | | |
| Accounts payable and accrued liabilities (note 4) | 33,945 | 28,246 |
| Vacation pay and compensatory leave | 7,491 | 6,801 |
| Deferred revenue (note 5) | 3,298 | 2,782 |
| Employee future benefits (note 6b) | 4,501 | 6,129 |
| Asset retirement obligation (note 7) | 266 | 267 |
| Total liabilities | 49,501 | 44,225 |
| Financial assets | | |
| Due from the Consolidated Revenue Fund | 33,984 | 28,437 |
| Accounts receivable (note 8) | 1,612 | 1,307 |
| Total net financial assets | 35,596 | 29,744 |
| Net debt | 13,905 | 14,481 |
| Non-financial assets | | |
| Prepaid expenses | 741 | 607 |
| Tangible capital assets (note 9) | 12,975 | 10,874 |
| Total non-financial assets | 13,716 | 11,481 |
| Net financial position | (189) | (3,000) |

Contractual obligations (note 13) and contingent liabilities (note 14)

The accompanying notes form an integral part of these financial statements.



Michael Binder
President and
Chief Executive Officer



Stéphane Cyr
Vice-President, Corporate Services Branch and
Chief Financial Officer

Ottawa, Canada
July 19, 2017

STATEMENT OF OPERATIONS AND NET FINANCIAL POSITION FOR THE YEAR ENDED MARCH 31

| (in thousands of dollars) | *Planned results | | |
|-------------------------------------------------------------------------------------------|------------------|----------------|----------------|
| | 2017 | 2017 | 2016 |
| Expenses | | | |
| Salaries and employee benefits | 119,321 | 109,203 | 109,840 |
| Professional and special services | 20,357 | 18,937 | 21,198 |
| Accommodation | 10,447 | 10,439 | 10,288 |
| Travel and relocation | 5,300 | 4,645 | 4,877 |
| Furniture, repairs and rentals | 2,460 | 3,356 | 3,087 |
| Amortization | 2,300 | 2,528 | 1,927 |
| Grants and contributions | 1,770 | 1,830 | 1,637 |
| Communication and information | 1,400 | 1,195 | 1,113 |
| Utilities, materials and supplies | 600 | 692 | 694 |
| Other | 15 | 176 | 386 |
| Total expenses (note 10) | 163,970 | 153,001 | 155,047 |
| Revenues | | | |
| Licence fees | 112,315 | 106,138 | 105,197 |
| Special projects | 1,300 | 1,864 | 1,240 |
| Other | - | 63 | 111 |
| Total revenues (note 10) | 113,615 | 108,065 | 106,548 |
| Net cost of operations before government funding and transfers | 50,355 | 44,936 | 48,499 |
| Government funding and transfers | | | |
| Net cash provided by Government of Canada | 34,125 | 26,244 | 31,651 |
| Change in due from Consolidated Revenue Fund | (166) | 5,547 | 2,572 |
| Services provided without charge by other government departments (note 11a) | 15,952 | 15,961 | 15,673 |
| Transfer of the transition payments for implementing salary payments in arrears (note 12) | - | (5) | (15) |
| Net (revenue) cost of operations after government funding and transfers | 444 | (2,811) | (1,382) |
| Net financial position – Beginning of year | (2,834) | (3,000) | (4,382) |
| Net financial position – End of year | (3,278) | (189) | (3,000) |

Segmented information (note 10)

*Planned results amounts in the “Expenses” and “Revenues” sections as reported in the Future-Oriented Statement of Operations included in the 2016–17 *Report on Plans and Priorities*. The planned results amounts in the “Government funding and transfers” section have not been previously published.

The accompanying notes form an integral part of these financial statements.

STATEMENT OF CHANGE IN NET DEBT FOR THE YEAR ENDED MARCH 31

| (in thousands of dollars) | *Planned results | | |
|------------------------------------------------------------------------------------|------------------|----------------|---------|
| | 2017 | 2017 | 2016 |
| Net (revenue) cost of operations after government funding and transfers | 444 | (2,811) | (1,382) |
| Change due to tangible capital assets | | | |
| Acquisition of tangible capital assets (note 9) | 2,563 | 4,634 | 3,476 |
| Amortization of tangible capital assets (note 9) | (2,300) | (2,528) | (1,927) |
| Proceeds from disposal of tangible capital assets | - | (24) | (28) |
| Gain (loss) on disposal of tangible capital assets including adjustments | - | 19 | (347) |
| Total change due to tangible capital assets | 263 | 2,101 | 1,174 |
| Change due to prepaid expenses | 35 | 134 | 252 |
| Net (decrease) increase in net debt | 742 | (576) | 44 |
| Net debt – Beginning of year | 13,893 | 14,481 | 14,437 |
| Net debt – End of year | 14,635 | 13,905 | 14,481 |

*Planned results amounts have not been previously published.

The accompanying notes form an integral part of these financial statements.

STATEMENT OF CASH FLOWS FOR THE YEAR ENDED MARCH 31

| (in thousands of dollars) | 2017 | 2016 |
|----------------------------------------------------------------------------------|---------------|----------|
| Operating activities | | |
| Net cost of operations before government funding and transfers | 44,936 | 48,499 |
| Non-cash items: | | |
| Amortization of tangible capital assets (note 9) | (2,528) | (1,927) |
| Gain (loss) on disposal of tangible capital assets including adjustments | 19 | (347) |
| Services provided without charge by other government departments (note 11a) | (15,961) | (15,673) |
| Transition payments for implementing salary payments in arrears (note 12) | 5 | 15 |
| Variations in Statement of Financial Position: | | |
| Increase in accounts receivable | 305 | 77 |
| Increase in prepaid expenses | 134 | 252 |
| Increase in accounts payable and accrued liabilities | (5,311) | (2,646) |
| (Increase) decrease in vacation pay and compensatory leave | (690) | 401 |
| Increase in deferred revenue | (516) | (234) |
| Decrease (increase) in employee future benefits | 1,628 | (218) |
| Decrease in asset retirement obligation | 1 | 4 |
| Cash used in operating activities | 22,022 | 28,203 |
| Capital investing activities | | |
| Acquisitions of tangible capital assets (note 9) | 4,246 | 3,476 |
| Proceeds from disposal of tangible capital assets | (24) | (28) |
| Cash used in capital investing activities | 4,222 | 3,448 |
| Net cash provided by Government of Canada | 26,244 | 31,651 |

The accompanying notes form an integral part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS

1. Authority and objectives

The Canadian Nuclear Safety Commission (CNSC) was established in 1946 by the *Atomic Energy Control Act*. It was known as the Atomic Energy Control Board until May 31, 2000, when the *Nuclear Safety and Control Act* (NSCA) came into effect. The CNSC is a departmental corporation listed in Schedule II of the *Financial Administration Act* and reports to Parliament through the Minister of Natural Resources.

To protect the health, safety and security of people and the environment, the NSCA provides comprehensive powers to the CNSC to establish and enforce national standards on the use of nuclear energy and materials. As part of this mandate, the CNSC is responsible for disseminating objective scientific, technical and regulatory information to the public. The NSCA establishes a basis for implementing Canadian nuclear policy and fulfilling Canada's international commitments on the peaceful use of nuclear energy. It also empowers the CNSC to require financial guarantees, order remedial action in hazardous situations, and require responsible parties to bear the costs of decontamination and other remedial measures.

Under the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (2003), the CNSC recovers costs related to its regulatory activities from users licensed under the NSCA. These activities include conducting technical assessments of licence applications, performing compliance inspections and developing licensing standards.

2. Summary of significant accounting policies

These financial statements have been prepared using the Government's accounting policies stated below, which are based on Canadian public sector accounting standards. The presentation and results using the stated accounting policies do not result in any significant differences from Canadian public sector accounting standards.

Significant accounting policies are as follows:

(a) Parliamentary authorities and revenue spending authority

The CNSC is financed by the Government of Canada through Parliamentary and statutory authorities. Included in the statutory appropriation is a revenue-spending authority, which allows the CNSC to spend licence fee revenue. Financial reporting of authorities provided to the CNSC do not parallel financial reporting according to generally accepted accounting principles since authorities are primarily based on cash flow requirements. Consequently, items recognized in the CNSC Statement of Operations and Net Financial Position and in the Statement of Financial Position are not necessarily the same as those provided through authorities from Parliament. Note 3 provides a reconciliation between the bases of reporting. The planned results amounts in the "Expenses" and "Revenues" sections of the CNSC Statement of Operations and Net Financial Position are the amounts reported in the Future-Oriented Statement of Operations included in the 2016-17 *Report on Plans and Priorities*. The planned results amounts in the "Government funding and transfers" section of the CNSC Statement of

Operations and Net Financial Position and in the CNSC Statement of Change in Net Debt were prepared for internal management purposes and have not been previously published.

(b) Net cash provided by Government of Canada

The CNSC operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by the CNSC is deposited to the CRF, and all cash disbursements made by the CNSC are paid from the CRF. The net cash provided by Government of Canada is the difference between all cash receipts and all cash disbursements, including transactions between departments and agencies of the Government.

(c) Due from the Consolidated Revenue Fund

Amounts due from or to the CRF are the result of timing differences at year-end between when a transaction affects authorities and when it is processed through the CRF. Amounts due from the CRF represent the net amount of cash that the CNSC is entitled to draw from the CRF without further authorities to discharge its liabilities.

(d) Revenue

Revenue is recognized in the period in which the underlying transaction or event that gave rise to the revenue takes place. Licence fee revenue is recognized on a straight-line basis over the period to which the fee payment pertains (normally three months or one year). Licence fees received for future year licence periods are recorded as deferred revenue.

Certain educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded healthcare institutions, not-for-profit emergency response organizations and federal government departments and agencies are not subject to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. The CNSC provides licences to these organizations free of charge. The value of licences provided free of charge is calculated on the same basis as licence fees for organizations subject to the Regulations. The CNSC does not include the foregone revenue associated with these licences in the Statement of Operations and Net Financial Position.

(e) Accounts payable and accrued liabilities

- ✓ Accounts payable and accrued liabilities are measured at cost and represent obligations of the CNSC for salary and wages, for material and supply purchases and for the cost of services rendered to the CNSC.
- ✓ Salary-related accrued liabilities are determined using the employees' salary levels at year-end.

(f) Expenses

Expenses are recorded on an accrual basis. The cost of goods and services are expensed as they are incurred.

(g) Vacation pay and compensatory leave

Vacation pay and compensatory leave are accrued as the benefits are earned by employees under their respective terms of employment.

(h) Grants and contributions

The CNSC provides grants and contributions to enable the development and management of activities of its Research and Support Program and the Canadian Safeguards Support Program. Grants are recognized in the year in which the conditions for payment are met. Contributions are recognized in the year in which the recipient has met the eligibility criteria or fulfilled the terms of a contractual transfer agreement, provided that the transfer is authorized and a reasonable estimate can be made.

(i) Services provided without charge by other government departments

Services provided without charge by other government departments are recorded as operating expenses at their estimated cost. These include accommodation provided by Public Services and Procurement Canada (previously known as Public Works and Government Services Canada), contributions covering the employer's share of employees' insurance premiums and other costs paid by the Treasury Board Secretariat, services provided by Shared Services Canada, audit services provided by the Office of the Auditor General, workers' compensation benefits provided by Employment and Social Development Canada, and the costs of legal services provided by Justice Canada.

(j) Employee future benefits

- ✓ **Pension benefits:** Eligible employees participate in the Public Service Pension Plan (PSPP), a multi-employer pension plan administered by the Government. The CNSC's contributions to the PSPP are charged to expenses in the year incurred and represent the total CNSC obligation to the PSPP. The CNSC's responsibility with regard to the PSPP is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the PSPP's sponsor.
- ✓ **Severance benefits:** Employees entitled to severance benefits under labour contracts or conditions of employment earn these benefits as services necessary to earn them are rendered. As of 2013–14 the benefits accumulated under the employee severance pay program ceased for all employees. Previously, the obligation relating to the benefits earned by employees was calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole. As of 2016–17, the CNSC has refined its estimate of the obligation using employee-specific data to improve the accuracy of the amount that will be due to employees upon departure from the public service.

- ✓ **Maternity/parental leave:** Employees are entitled to maternity/parental leave benefits as provided for under labour contracts and conditions of employment. The benefits earned are event driven, meaning the CNSC's obligation for the cost of the entire benefit arises upon occurrence of a specific event being the commencement of the maternity/parental leave. Management has determined the accrued benefit obligation and benefit expenses based on its best estimates. The unpaid portions of maternity/parental leave at year-end are expected to be paid from future parliamentary authorities.

(k) Accounts receivable

Accounts receivable are stated at the lower of cost and net recoverable value. A valuation allowance is recorded for receivables where recovery is considered uncertain.

Credit risk refers to the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. The CNSC is not exposed to significant credit risk as all debtors require CNSC licences for their continued operation. The maximum exposure the CNSC has to credit risk is equal to the carrying value of its accounts receivable.

(l) Contingent liabilities

Contingent liabilities are potential liabilities that may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense recorded. If the likelihood is not determinable or if an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

(m) Tangible capital assets

All tangible capital assets and leasehold improvements having an initial cost of \$10,000 or more are recorded at their acquisition cost. The development of software and leasehold improvements are recorded in work-in-progress until they become available for use and are not amortized. The costs are then transferred to the applicable capital asset class and are amortized accordingly.

Amortization of tangible capital assets is calculated on a straight-line basis over the estimated useful life of the asset as follows:

| Asset class | Amortization period |
|------------------------------------|-------------------------------------------------------------------------|
| Leasehold improvements | Lesser of the remaining term of lease or useful life of the improvement |
| Motor vehicles | 7 years |
| Other vehicles | 10 to 20 years |
| Furniture and equipment | 5 to 20 years |
| Informatics equipment and software | 2 to 5 years |

(n) Asset retirement obligation

The CNSC provides for its legal obligation, under a lease agreement, to return the premises to their original state. The asset retirement obligation is recognized in the year in which the associated leasehold improvement capital asset is put into use. The obligation is recorded at the net present value of the estimated future cost of retiring the capital asset at the expiry of the lease period. The estimated cost of retirement is added to the carrying amount and amortized over the related assets' useful life. The cost estimate is subject to periodic review, and any material changes in the estimated amount or timing of the underlying future cash flow are recorded as an adjustment to the provision. Upon settlement of the liability, a gain or loss will be recorded. As the provision is recorded based on the discounted value of the projected future cash flows, it is increased annually to reflect the passage of time by removing one year's discount. The accretion is charged to the expense in the Statement of Operations and Net Financial Position. Details of the liability are provided in note 7 of these financial statements.

(o) Nuclear liability reinsurance account

Prior to January 1, 2017, the CNSC administered the nuclear liability reinsurance account on behalf of the Government of Canada. The CNSC was receiving the premiums, paid by the operators of nuclear installations for the supplementary insurance coverage, and credited these to the nuclear liability

reinsurance account in the Consolidated Revenue Fund. Since the CNSC did not have the risks and rewards of ownership, nor accountability for this account, it did not include any of the associated financial activity or potential liability in its financial statements. Financial activity and liability is, however, reported in note 15 of these financial statements. On January 1, 2017 the *Nuclear Liability and Compensation Act* (NLCA) came into effect and replaced the *Nuclear Liability Act* (NLA). The NLCA is now administered by Natural Resources Canada (NRCan); therefore, the liability accumulated under the NLA has been transferred from the CNSC to NRCan.

(p) Measurement uncertainty

The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are the anticipated increase in salaries under the next collective agreement, contingent liabilities, the liability for employee future benefits and the useful life of tangible capital assets. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary authorities

The CNSC receives most of its funding through annual parliamentary authorities. Items recognized in the Statement of Operations and Net Financial Position and the Statement of Financial Position in one year may be funded through parliamentary authorities in prior, current or future years. Accordingly, the CNSC has different net results of operations for the year on a government funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) Reconciliation of net cost of operations to current year authorities used

| (in thousands of dollars) | 2017 | 2016 |
|-------------------------------------------------------------------------------------------------|----------------|----------------|
| Net cost of operations before government funding and transfers | 44,936 | 48,499 |
| Adjustments for items affecting net cost of operations but not affecting authorities: | | |
| Amortization of tangible capital assets | (2,528) | (1,927) |
| Increase in vacation pay, compensatory leave and accrued liabilities not charged to authorities | (4,255) | (2,896) |
| Services provided without charge by other government departments | (15,961) | (15,673) |
| Revenues pursuant to paragraph 21(3) of the <i>Nuclear Safety and Control Act</i> | 108,002 | 106,437 |
| Decrease (increase) in employee future benefits | 1,628 | (218) |
| Refund of prior years' expenditures | 417 | 243 |
| Gain (loss) on disposal of tangible capital assets including adjustments | 19 | (376) |
| Other | (12) | 137 |
| | 87,310 | 85,727 |
| Adjustments for items not affecting net cost of operations but affecting authorities: | | |
| Acquisitions of tangible capital assets | 4,634 | 3,476 |
| Transition payments for implementing salary payments in arrears | 5 | 15 |
| Salary overpayment | 107 | - |
| Increase in prepaid expenses | 134 | 252 |
| | 4,880 | 3,743 |
| Current year authorities used | 137,126 | 137,969 |

(b) Authorities provided and used

| (in thousands of dollars) | 2017 | 2016 |
|---------------------------------------------------------------------------------------------|----------------|----------------|
| AUTHORITIES PROVIDED: | | |
| Vote 1 – Program expenditures | 40,671 | 41,651 |
| STATUTORY: | | |
| Spending of revenues pursuant to section 21(3) of the <i>Nuclear Safety and Control Act</i> | 89,294 | 87,488 |
| Spending of proceeds from the disposal of surplus assets | 56 | 30 |
| Contributions to employee benefit plans | 13,104 | 13,364 |
| | 143,125 | 142,533 |
| LESS: | | |
| Authorities available for use in the subsequent year | 3,267 | 2,748 |
| Lapsed Vote 1 – Program expenditures | 2,732 | 1,816 |
| Current year authorities used | 137,126 | 137,969 |

4. Accounts payable and accrued liabilities

The following table presents details of the CNSC's accounts payable and accrued liabilities:

| (in thousands of dollars) | 2017 | 2016 |
|-------------------------------------------------------|---------------|---------------|
| Other government departments and agencies | 8,740 | 9,716 |
| External parties | 18,937 | 15,143 |
| Licenses* | 6,268 | 3,387 |
| Total accounts payable and accrued liabilities | 33,945 | 28,246 |

*Payable to licensees represents the calculation of the excess of collection of fees charged over the actual fees earned as at year-end.

5. Deferred revenue

Deferred revenue represents the balance at year-end of unearned revenues from amounts received from licensees for fees charged prior to services being performed. Revenue is recognized in the period in which these expenditures are incurred or in which service is performed. Details of the transactions related to this account are as follows:

| (in thousands of dollars) | 2017 | 2016 |
|------------------------------------------------|--------------|--------------|
| Balance, beginning of year | 2,782 | 2,548 |
| Licence fee revenue recognized during the year | (2,751) | (2,514) |
| Licence fee received for future years | 3,267 | 2,748 |
| Balance, end of year | 3,298 | 2,782 |

6. Employee future benefits

(a) Pension benefits

CNSC employees participate in the Public Service Pension Plan (the Plan), which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2 percent per year of pensionable service, times the average of the best five consecutive years of earnings. The benefits are integrated with Canada/Quebec Pension Plan benefits and they are indexed to inflation.

Both the employees and the CNSC contribute to the cost of the Plan. Due to the amendment of the *Public Service Superannuation Act* following the implementation of provisions related to Economic Action Plan 2012, employee contributors have been divided into two groups: Group 1 consists of existing plan members as of December 31, 2012; and Group 2 consists of members joining the Plan as of January 1, 2013. Each group has a distinct contribution rate.

The 2016–17 expense amounts to \$9,129,454 (\$9,211,659 in 2015–16). For Group 1 members, the expenses represent approximately 1.12 times (1.25 times in 2015–16) the contributions by employees. For Group 2 members, the expenses represent approximately 1.08 times (1.24 times in 2015–16) the contributions by employees.

The CNSC's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the Plan's sponsor.

(b) Severance benefits and parental leave benefits

The CNSC previously provided severance benefits to its employees based on eligibility, years of service and salary at termination of employment.

The accumulation of severance benefits for voluntary departures ceased for all employees in 2013–14. Employees were given the option to be immediately paid the full or partial value of benefits earned to date, or collect the full or remaining value of benefits upon departure from the public service. The remaining balance represents the estimated obligation due to employees as at the reporting date. These severance benefits are not pre-funded, and consequently the outstanding obligation will be paid from future authorities.

The CNSC provides maternity/parental leave benefits as provided for under labour contracts and conditions of employment. Management determined the accrued benefit obligation and benefit expenses based on the difference between 93 percent of the employee's weekly rate of pay and the maternity/parental leave benefit they are entitled to receive under the Employment Insurance or the Québec Parental Insurance Plan.

Information about the future benefits, measured as at March 31, is as follows:

| (in thousands of dollars) | 2017 | 2016 |
|---------------------------------------------------------|--------------|--------------|
| Accrued severance benefit obligation, beginning of year | 6,129 | 5,911 |
| (Decrease) increase for the year | (1,385) | 365 |
| Severance benefits paid during the year | (571) | (749) |
| Accrued severance benefit obligation, end of year | 4,173 | 5,527 |
| Maternity/Parental leave benefits | 328 | 602 |
| Accrued benefit obligation, end of year | 4,501 | 6,129 |

7. Asset retirement obligation

The asset retirement obligation is based on the current cost estimate of \$261,250 (\$261,250 in 2015–16) of the site restoration plan. A revision in the estimate has been recognized using the current cost estimate, which was indexed using the Bank of Canada's target inflation rate of 2 percent to reflect the estimated future cost of the site restoration plan. The CNSC recognizes the net present value, using the Government of Canada's 10-year benchmark bond yield rate of 1.50 percent (1.54 percent in 2015–16), of the estimated future cost of \$281,389 (\$287,017 in 2015–16), of restoring the leased premises at the expiry of the lease on March 31, 2020. As of March 31, 2017, the CNSC has an asset retirement obligation that can be reasonably estimated as follows:

| (in thousands of dollars) | 2017 | 2016 |
|---------------------------------------------------------------------------|------------|------------|
| Balance, beginning of year | 267 | 271 |
| Revision in the estimate, timing and accretion of retirement expenditures | (1) | (4) |
| Balance, end of year | 266 | 267 |

8. Accounts receivable

The following table presents details of the CNSC's accounts receivable:

| (in thousands of dollars) | 2017 | 2016 |
|---------------------------------------------------------|--------------|--------------|
| Receivables – Licence fees | 1,081 | 1,025 |
| Receivables – Others | 485 | 200 |
| Receivables – Other government departments and agencies | 237 | 119 |
| | 1,803 | 1,344 |
| Allowance for doubtful accounts on receivables | (191) | (37) |
| Net accounts receivable | 1,612 | 1,307 |

9. Tangible capital assets

| Cost (in thousands of dollars) | Opening balance | Acquisitions | Disposals / Write-offs | Work-in-progress transfers | Closing balance |
|---------------------------------------|-----------------|--------------|------------------------|----------------------------|------------------------|
| Furniture and equipment | 6,062 | 310 | (11) | 67 | 6,428 |
| Informatics equipment and software | 5,200 | 349 | (19) | 1,747 | 7,277 |
| Leasehold improvements | 14,461 | - | - | 1,472 | 15,933 |
| Motor vehicles | 651 | 151 | (87) | - | 715 |
| Other vehicles | 77 | - | - | - | 77 |
| Work-in-progress – software | 3,368 | 2,773 | - | (1,814) | 4,327 |
| Work-in-progress – construction | 440 | 1,051 | - | (1,472) | 19 |
| Total | 30,259 | 4,634 | (117) | - | 34,776 |

| Accumulated amortization (in thousands of dollars) | Opening balance | Amortization | Disposals / Write-offs | Closing balance |
|-----------------------------------------------------------|-----------------|--------------|------------------------|------------------------|
| Furniture and equipment | 3,779 | 556 | (11) | 4,324 |
| Informatics equipment and software | 4,836 | 900 | (18) | 5,718 |
| Leasehold improvements | 10,418 | 986 | - | 11,404 |
| Motor vehicles | 332 | 82 | (83) | 331 |
| Other vehicles | 20 | 4 | - | 24 |
| Total | 19,385 | 2,528 | (112) | 21,801 |

| Net book value (in thousands of dollars) | 2016 | 2017 |
|-------------------------------------------------|---------------|---------------|
| Furniture and equipment | 2,283 | 2,104 |
| Informatics equipment and software | 364 | 1,559 |
| Leasehold improvements | 4,043 | 4,529 |
| Motor vehicles | 319 | 384 |
| Other vehicles | 57 | 53 |
| Work-in-progress – software | 3,368 | 4,327 |
| Work-in-progress – construction | 440 | 19 |
| Total | 10,874 | 12,975 |

The capital costs associated with the in-house development of software and improvements to leased accommodations are recorded as work-in-progress until they are completed and put into use. During the year ended March 31, 2017, \$3,286,747 work-in-progress was completed and put into use.

The acquisition of tangible capital assets and the increase in accounts payables and accrued liabilities presented in the Statement of Cash Flows excludes an amount of \$387,569 (\$0 in 2015–16) in relation to the acquisition of tangible capital assets, as the amount relates to capital investing activities in 2016–17 that remain to be paid as at March 31, 2017.

10. Summary of segmented expenditures and revenues by cost recovery fee category

The following table presents the expenses incurred and revenues generated for the CNSC's main business lines. It follows the same accounting policies described in note 2. The segment results for the period are as follows:

| (in thousands of dollars) | Revenue | Licences provided free of charge (note 16) | 2017 total value of licences and other revenue | 2016 total value of licences and other revenue | 2017 cost of operations | 2016 cost of operations |
|--------------------------------------------------------|----------------|--------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------|-------------------------|
| LICENCE FEES | | | | | | |
| Power reactors | 68,118 | - | 68,118 | 68,608 | 68,118 | 68,608 |
| Non-power reactors | - | 1,764 | 1,764 | 2,174 | 1,764 | 2,174 |
| Nuclear research and test establishments | 13,340 | - | 13,340 | 11,591 | 13,340 | 11,591 |
| Particle accelerators | - | 535 | 535 | 646 | 535 | 646 |
| Uranium processing facilities | 3,833 | - | 3,833 | 4,634 | 3,833 | 4,634 |
| Nuclear substance processing facilities | 1,126 | - | 1,126 | 1,447 | 1,126 | 1,447 |
| Heavy water plants | - | - | - | - | - | - |
| Radioactive waste facilities | 4,602 | - | 4,602 | 3,871 | 4,602 | 3,871 |
| Uranium mines and mills | 6,974 | 180 | 7,154 | 8,164 | 7,154 | 8,164 |
| Waste nuclear substance | 671 | 2,589 | 3,260 | 3,211 | 3,260 | 3,211 |
| Total regulatory activity plan fees | 98,664 | 5,068 | 103,732 | 104,346 | 103,732 | 104,346 |
| Nuclear substances and Class II nuclear facilities | | | | | | |
| Academic and research | 224 | 2,282 | 2,506 | 2,637 | 1,893 | 2,906 |
| Commercial | 1,126 | 656 | 1,782 | 1,547 | 2,947 | 2,699 |
| Industrial radiography | 4,917 | 164 | 5,081 | 4,255 | 9,728 | 9,284 |
| Medical | 489 | 4,423 | 4,912 | 4,937 | 5,565 | 5,210 |
| Dosimetry services | 247 | 15 | 262 | 252 | 567 | 932 |
| Total formula fees | 7,003 | 7,540 | 14,543 | 13,628 | 20,700 | 21,031 |
| Transport licences and transport package certificates | 127 | 4 | 131 | 126 | 500 | 434 |
| Radiation device and prescribed equipment certificates | 256 | - | 256 | 186 | 980 | 524 |
| Exposure device operator certificates | 88 | 10 | 98 | 136 | 1,349 | 796 |
| Total fixed fees | 471 | 14 | 485 | 448 | 2,829 | 1,754 |
| TOTAL LICENCE FEES | 106,138 | 12,622 | 118,760 | 118,422 | 127,261 | 127,131 |
| NON-LICENCE FEES | | | | | | |
| Other non-licence fees | 63 | - | 63 | 111 | 24,097 | 26,823 |
| Special projects and related expenses | 1,864 | - | 1,864 | 1,240 | 1,643 | 1,093 |
| TOTAL NON-LICENCE FEES | 1,927 | - | 1,927 | 1,351 | 25,740 | 27,916 |
| TOTAL | 108,065 | 12,622 | 120,687 | 119,773 | 153,001 | 155,047 |

11. Related party transactions

The CNSC is related as a result of common ownership to all government departments, agencies and Crown corporations. The CNSC enters into transactions with these entities in the normal course of business and on normal trade terms.

(a) Common services provided without charge by other government departments

During the year, the CNSC received services without charge from certain common service organizations, related to accommodation, legal services, the employer's contribution to the health and dental insurance plans and workers' compensation coverage. These services provided without charge have been recorded in the CNSC's Statement of Operations and Net Financial Position as follows:

| (in thousands of dollars) | 2017 | 2016 |
|------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|
| Accommodation provided by Public Services and Procurement Canada (previously known as Public Works and Government Services Canada) | 6,011 | 6,266 |
| Contributions for employer's share of employee benefits provided by the Treasury Board Secretariat | 8,018 | 7,486 |
| Salary and associated costs of services provided by Shared Services Canada | 1,568 | 1,568 |
| Audit services provided by the Office of the Auditor General of Canada | 171 | 170 |
| Other | 193 | 183 |
| Total | 15,961 | 15,673 |

The Government of Canada has centralized some of its administrative activities for efficiency, cost-effectiveness purposes and the economic delivery of programs to the public. As a result, the Government uses central agencies and common service organizations so that one department performs services for all other departments and agencies without charge.

(b) Other transactions with related parties

| (in thousands of dollars) | 2017 | 2016 |
|----------------------------------------------------------------------------------|---------------|--------|
| Accounts receivable – Other government departments and agencies | 237 | 119 |
| Accounts payable – Other government departments, agencies and Crown corporations | 9,625 | 10,953 |
| Expenses – Other government departments and agencies | 24,680 | 24,932 |
| Revenues – Other government departments and agencies | 14,147 | 11,919 |

Expenses and revenues disclosed in (b) exclude common services provided without charge, which are already disclosed in (a).

12. Transfer of the transition payments for implementing salary payments in arrears

The Government of Canada implemented salary payments in arrears in 2014–15. As a result, a one-time payment was issued to employees and will be recovered from them in the future. Employees who were on leave without pay when the initial one-time payments were issued will receive the transition payment shortly after their return to work from their leave without pay. The transition to salary payments in arrears forms part of the transformation initiative that replaces the pay system and also

streamlines and modernizes the pay processes. This change had no impact on the expenses of the CNSC. However, it did result in the use of additional spending authorities by the CNSC. Prior to year-end, the transition payments for salary payments in arrears were transferred to a central account administered by Public Services and Procurement Canada (previously known as Public Works and Government Services Canada), which is responsible for the administration of the Government pay system.

13. Contractual obligations

The nature of the CNSC's activities can result in some large multi-year contracts and obligations whereby the CNSC will be obligated to make future payments in order to carry out its transfer payment programs or when services and goods are received. Significant contractual obligations that can be reasonably estimated are summarized as follows:

| (in thousands of dollars) | 2018 | 2019 | 2020 | 2021 and thereafter | Total |
|------------------------------------|--------------|--------------|-----------|---------------------------|--------------|
| Acquisitions of goods and services | 5,628 | 243 | 38 | - | 5,909 |
| Transfer payments | 656 | 605 | 20 | - | 1,281 |
| Operating leases | 877 | 813 | - | - | 1,690 |
| Total | 7,161 | 1,661 | 58 | - | 8,880 |

The CNSC has multi-year contracts with related parties in the amount of \$2,348,921.

14. Contingent liabilities

Claims have been made against the CNSC in the normal course of operations. While the total amount claimed in these actions is significant, management has determined that unfavourable outcomes are unlikely. Therefore, the CNSC has not recorded a liability for these claims at this time. If it becomes likely that there will be a future payment and a reasonable estimate of the loss can be made, the CNSC will record a liability for claims and litigations.

15. Nuclear liability reinsurance account

Under the *Nuclear Liability Act* (NLA), operators of designated nuclear installations were required to possess basic and supplementary insurance of \$75 million per installation for specified liabilities. The Government of Canada had designated the Nuclear Insurance Association of Canada (NIAC) as the sole provider of third-party liability insurance and property insurance for Canada's nuclear industry. NIAC provided insurance to nuclear operators under a standard policy that consisted of two types of coverage: Coverage A, which covered only those risks that are accepted by the insurer (i.e., bodily injury and property damage); and Coverage B, which covered personal injury that is not bodily (e.g., psychological injury), damage arising from normal emissions and damage due to acts of terrorism.

NIAC received premiums from operators for both coverage types. However, premiums for Coverage B risks were remitted to the Government of Canada, which reinsured these risks under its reinsurance agreement with NIAC. Through this agreement, the Government of Canada assumed the liability associated with the difference between the basic insurance coverage provided by NIAC and the NLA, as well as for events listed under Coverage B.

All premiums paid by the operators of nuclear installations for the supplementary insurance coverage were credited to a nuclear liability reinsurance account (account) in the Consolidated Revenue Fund (CRF). The annual premiums received in respect of Coverage B amount to \$206,195 (\$197,489 in 2015–16). Claims against the supplementary insurance coverage were payable out of the CRF and charged to the account. There have been no claims against – or payments out of – the account since its creation.

On January 1, 2017, the *Nuclear Liability and Compensation Act* (NLCA) came into effect and replaced the NLA. The NLCA is administered by Natural Resources Canada (NRCan); therefore, the liability accumulated under the NLA (\$4,025,440) has been transferred from the CNSC to NRCan.

16. Licences provided free of charge by the CNSC

The CNSC provides licences free of charge to educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded healthcare institutions, not-for-profit emergency response organizations, and federal government departments and agencies. The total value of these licences amounted to \$12,622,474 (\$13,225,316 in 2015–16). The foregone revenue is not included in the Statement of Operations and Net Financial Position.

ANNEX TO THE STATEMENT OF MANAGEMENT RESPONSIBILITY INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING 2016–17

1. INTRODUCTION

This document provides summary information on the measures taken by the Canadian Nuclear Safety Commission (CNSC) to maintain an effective system of internal control over financial reporting including information on internal control management, assessment results and related action plans.

Detailed information on the CNSC's authority, mandate and program activities can be found in the most recent [Departmental Performance Report](#)¹ and [Departmental Plans](#).² The [CNSC 2016–17 audited financial statements](#)³ are available on the CNSC website.

2. SYSTEM OF INTERNAL CONTROL OVER FINANCIAL REPORTING

2.1 INTERNAL CONTROL MANAGEMENT

The CNSC has a well-established governance and accountability structure to support efforts to evaluate and monitor its internal control system. An internal control management framework, approved by the president, is in place, and includes:

- organizational accountability structures as they relate to internal control management to support sound financial management, including roles and responsibilities of senior managers in their areas of responsibility
- an Office of Audit and Ethics that manages values and ethics programs, internal disclosure, the *Public Servants Disclosure Protection Act*, and conflict of interest and post-employment policies

- ongoing communication and training on statutory requirements, and policies and procedures for sound financial management and control
- monitoring of and regular updates on internal control management, as well as the provision of related assessment results and action plans to the president, and, as applicable, the Audit Committee

The Audit Committee provides advice to the president on the adequacy and functioning of the CNSC's risk management, control and governance frameworks and processes.

2.2 SERVICE ARRANGEMENTS RELEVANT TO FINANCIAL STATEMENTS

The CNSC relies on other organizations for the processing of certain transactions that are recorded in its financial statements, as follows:

Common arrangements

- Public Services and Procurement Canada (previously known as Public Works and Government Services Canada) centrally administers the payments of salaries and the procurement of goods and services in accordance with the CNSC's delegation of authority, and provides accommodation services
- The Treasury Board of Canada Secretariat provides the CNSC with information used in the preparation of the financial statements, such as health insurance expense
- Shared Services Canada is responsible for managing and maintaining the CNSC's information technology infrastructure

1 [Departmental Performance Report](#)

2 [Departmental Plans](#)

3 [The CNSC 2016-17 audited financial statements](#)

3. DEPARTMENTAL ACTION PLAN

3.1 PROGRESS DURING FISCAL YEAR 2016–17

The CNSC continued to conduct its ongoing monitoring according to the established rotational plan, as shown in the following table.

Progress during fiscal year 2016–17

| Key control areas | Status |
|--------------------------|---------------------------------------------------------------------------------------------|
| Entity-level controls | Completed as planned; remedial actions started (see section 3.2 for additional information) |
| IT general controls | Completed as planned; remedial actions started (see section 3.2 for additional information) |
| Capital assets | Completed as planned; remedial actions started (see section 3.2 for additional information) |
| Grants and contributions | Completed as planned; remedial actions started (see section 3.2 for additional information) |
| Payroll | Completed as planned; remedial actions started (see section 3.2 for additional information) |

3.2 ASSESSMENT RESULTS FOR FISCAL YEAR 2016–17

New or significantly amended key controls:

The implementation of the government pay system, Phoenix, required some changes to internal pay processes and controls and, as a result, a full assessment of the payroll process was completed during 2016–17.

Ongoing monitoring program: As part of its rotational ongoing monitoring plan, the department completed its reassessment of entity-level controls, IT general controls, capital assets, and grants and contributions. For the most part, the key controls that were tested performed as intended, with follow-up actions required for the following items:

Entity-level controls

- Increase awareness of a directive for the external communication of financial information (low risk)
- Enhance reporting and communication of exit interview results (low risk)

IT general controls

- Completion of user reviews on a more regular basis (medium risk)
- Enhance segregation of duties for one application (an in-house developed time reporting system) (high risk)
- Improve documentation within the change management process (low risk)

Capital assets

- Improve information sharing related to IT software project costs that require capitalization (high risk)
- Support a more consistent application of key requirements related to month-end processes and approval of disposed assets (medium risk)

Grants and contributions

- Better align approvals of grants and contributions with the CNSC’s delegation matrix (medium risk)

Payroll

- Enhance the post-payment verification process (medium risk)
- Complete the quarterly payroll variance analysis on a more consistent basis (high risk)
- Enhance the review of overtime (medium risk)

3.3 PROGRESS AGAINST FISCAL YEAR 2015–16 ITEMS

In addition to the progress made in ongoing monitoring, the department conducted a follow-up of the outstanding 2016–17 action items:

Purchase to payment

- Enhance the documentation of account verification procedures (medium risk)
- Enhance evidence to support the performance of monitoring acquisition card transactions (medium risk)
- Enhance evidence to support secondary review of changes to the vendor master database (medium risk)
- Formalize process to periodically review and modify, as required, the vendor master database (medium risk)

Payroll

- Perform, on a more consistent basis, the forecast analysis of salary costs, in support of account verification (high risk)
- Formalize process for section 33 post-payment verification procedures (medium risk)

All purchase to payment items were remediated, as planned. Due to changes in process and continuing challenges with the Phoenix pay system, actions related to payroll are ongoing, with planned completion in 2017–18.

3.4 MONITORING PLAN FOR FISCAL YEAR 2017–18 AND SUBSEQUENT YEARS

The CNSC’s rotational ongoing monitoring plan over the next three years, based on an annual validation of the high-risk processes and controls, and related adjustments to the ongoing monitoring plan as required, is shown in the following table.

Rotational ongoing monitoring plan

| Key control areas | Fiscal year 2017–18 | Fiscal year 2018–19 | Fiscal year 2019–20 |
|----------------------------------------------------|---------------------|---------------------|---------------------|
| Entity-level controls | No | No | Yes |
| IT general controls (under management of the CNSC) | No | Yes | No |
| Capital assets | No | No | Yes |
| Purchase to payment ⁴ | No | Yes | No |
| Payroll | Yes ⁵ | No | No |
| Revenue | Yes | No | No |
| Year-end financial close and statement preparation | Yes | No | No |

4 Grants and contributions will be assessed as part of the purchase to payment process starting in 2018–19.

5 Based on the results of the annual ICFR risk assessment, it is recommended that an assessment on payroll be performed in 2017–18.

ANNEX A:

COMMISSION HEARINGS AND OPPORTUNITIES TO BE HEARD IN 2016–17

PUBLIC HEARINGS

NUCLEAR RESEARCH AND TEST ESTABLISHMENTS

Canadian Nuclear Laboratories (CNL): [Decision](#)

- Decision to amend CNL's nuclear research and test establishment operating licence for the Chalk River Laboratories site and extend it for a period of 17 months – Public hearing (April 6, 2016)

NUCLEAR POWER PLANTS

Hydro-Québec: [Decision](#)

- Decision to issue the nuclear power reactor decommissioning licence for Gentilly-2 Nuclear Generating Station – Public hearing (May 5, 2016)

NB Power Corporation (NB Power): [Decision](#)

- Application for a five-year renewal of the nuclear power reactor operating licence for the Point Lepreau Nuclear Generating Station – Public hearing, Part 1 and Part 2 (January 26 and May 10–11, 2017)

NUCLEAR SUBSTANCE PROCESSING FACILITIES

Cameco Corporation: [Decision](#)

- Decision to renew the nuclear fuel facility operating licence for the Port Hope Conversion Facility – Public hearing (November 8–9, 2016)

WASTE SUBSTANCES

Saskatchewan Research Council: [Decision](#)

- Decision to remove the Phase 2 regulatory hold point for the Gunnar Remediation Project (September 22, 2016)

HEARINGS IN WRITING (BASED SOLELY ON WRITTEN SUBMISSIONS)

NB Power Corporation (NB Power): [Decision](#)

- Request from NB Power to modify the used fuel and waste management funds investment strategy for the Point Lepreau Nuclear Generating Station (April 11, 2016)

Corporation de l'École Polytechnique de Montréal: [Decision](#)

- Request to revoke its non-power subcritical assembly operating licence and amend its SLOWPOKE-2 non-power reactor operating licence to include activities related to the non-power subcritical assembly (June 30, 2016)
- Consider Polytechnique Montréal's revised financial guarantee and updated preliminary decommissioning plan

Ontario Power Generation Inc. (OPG): [Decision](#)

- Request to amend OPG's nuclear power reactor operating licence for the Pickering Nuclear Generating Station (September 29, 2016)

GE-Hitachi Nuclear Energy Canada Inc.: [Decision](#)

- Request to transfer its fuel facility operating licence to BWXT Nuclear Energy Canada Inc. (December 9, 2016)
- Request to consider the proposed new financial guarantee from GEH-C and its request to change the description of its Peterborough facility

McMaster University: [Decision](#)

- Request for the acceptance of the financial guarantee for the future decommissioning of the McMaster Nuclear Reactor, located in Hamilton, Ontario (January 19, 2017)

Canadian Nuclear Laboratories (CNL): [Decision](#)

- Decision on the scope of environmental assessments for three proposed projects at existing CNL facilities (March 8, 2017)

ANNEX B:

REGULATORY FRAMEWORK PROJECTS PUBLISHED OR COMPLETED IN 2016–17

REGDOC-2.2.2, **PERSONNEL TRAINING, VERSION 2**

REGDOC-2.2.2, *Personnel Training*, version 2, was published in December 2016. The update provides additional guidance for the creation of radiation safety training programs. It sets out the requirements and guidance for the analysis, design, development, implementation, evaluation, documentation and management of training at nuclear facilities within Canada, including the principles and elements essential to an effective training system. Consistent with the CNSC regulatory philosophy and with international practice, licensees are responsible for the safe operation of their respective nuclear facilities. Consequently, licensees are responsible for training and assessing their workers to ensure that they are fully qualified to perform the duties of their positions, in accordance with regulatory requirements.

REGDOC-2.2.2, *Personnel Training*, version 2, supersedes REGDOC-2.2.2, *Personnel Training* (published in August 2014).

REGDOC-2.2.3, **PERSONNEL CERTIFICATION: EXPOSURE DEVICE OPERATORS**

REGDOC-2.2.3, *Personnel Certification: Exposure Device Operators*, was published in March 2017. It provides, through a reference, the CNSC's requirements and guidance for certification as an exposure device operator (EDO) and for renewal of an EDO certification.

REGDOC-2.2.3 supersedes G-229, *Certification of Exposure Device Operators* (published in March 2004).

REGDOC-2.2.4, **FITNESS FOR DUTY: MANAGING WORKER FATIGUE**

REGDOC-2.2.4, *Fitness for Duty: Managing Worker Fatigue*, was published in March 2017. This document sets out requirements and guidance of the CNSC with respect to managing worker fatigue at high-security sites. This document is intended to form part of the licensing basis for a regulated facility or for a regulated activity, either as part of the conditions and safety and control measures in a licence, or as part of the safety and control measures to be described in a licence application and the documents needed to support that application.

REGDOC-2.2.4 is part of the Human Performance Management series of the CNSC's regulatory framework. In addition to human performance, the series covers personnel training and personnel certification.

REGDOC-2.9.1, ENVIRONMENTAL PROTECTION: ENVIRONMENTAL PRINCIPLES, ASSESSMENTS AND PROTECTION MEASURES

REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, was published in December 2016. It provides information to applicants and licensees on protecting the environment and the health of persons, including:

- the CNSC's principles for environmental protection
- for all nuclear facilities or activities, the scope of an environmental assessment (EA) and the roles and responsibilities associated with an EA
- the CNSC's requirements and guidance to applicants and licensees for developing environmental protection measures, including an environmental risk assessment where required, for both new and existing facilities or activities

This document supersedes P-223, *Protection of the Environment*, and REGDOC-2.9.1, *Environmental Protections: Policies, Programs and Procedures* (published in September 2013).

REGDOC-2.13.2, IMPORT AND EXPORT

REGDOC-2.13.2, *Import and Export*, was published in September 2016. It sets out the guidance of the CNSC for current and prospective licensees who intend to import or export nuclear and nuclear-related dual-use items (also known as controlled nuclear substances, equipment and information). This document also provides information about the CNSC's import and export control program with respect to licence applications, the licence evaluation process and compliance with regulatory requirements.

REGDOC-2.13.2 also identifies a change to the implementation of Canada's nuclear non-proliferation policy with respect to evaluating export applications of foreign origin uranium.

REGDOC-3.1.1, REPORTING REQUIREMENTS FOR NUCLEAR POWER PLANTS, VERSION 2

REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants*, version 2, was published in April 2016. This document sets out the information that nuclear power plant licensees are required to report to the CNSC to support the conditions of applicable nuclear power reactor operating licences. This document presents the types of reports, their frequency and the applicable timeframe for reporting.

Version 2 does not introduce any new requirements. It includes the following revisions:

- removal of the performance indicator data sheets from appendix B
- references to the *Packaging and Transport of Nuclear Substances Regulations, 2015*

This document supersedes REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants* (published in May 2014).

REGDOC-3.4.1, GUIDE FOR APPLICANTS AND INTERVENORS WRITING CNSC COMMISSION MEMBER DOCUMENTS

REGDOC-3.4.1, *Guide for Applicants and Intervenors Writing CNSC Commission Member Documents*, was published in March 2017. This document provides guidance for writing Commission member documents (CMDs) for submission to the CNSC. This document focuses on preparing a CMD that presents a case about a licensing application that has been made to the Commission.

REGDOC-3.4.1 supersedes GD-379, *Guide for Applicants and Intervenors: Writing CNSC Commission Member Documents* (published in March 2012).

REGDOC-3.6,
GLOSSARY OF CNSC TERMINOLOGY

REGDOC-3.6, *Glossary of CNSC Terminology*, was published in January 2017. This document provides a list of terms and definitions used in the *Nuclear Safety and Control Act* and the regulations made under it, and CNSC regulatory documents and other publications, such as annual reports and guidance documents.

This glossary is provided for reference and information, and serves as the standard for future CNSC regulatory documents and other publications.

DIS-16-01,
HOW THE CNSC CONSIDERS INFORMATION ON COSTS AND BENEFITS: OPPORTUNITIES TO IMPROVE GUIDANCE AND CLARITY

The consultation period for DIS-16-01, *How the CNSC Considers Information on Costs and Benefits: Opportunities to Improve Guidance and Clarity*, closed in August 2016. The discussion paper provides an overview of the CNSC's current policy on cost-benefit information and describes several examples of how the CNSC has previously considered cost-benefit information. The paper also proposes new guidance for stakeholders on how they can ensure that the cost-benefit information submitted to the CNSC is high quality and fit for purpose.

DIS-16-02,
RADIATION PROTECTION AND DOSIMETRY

In April 2016, the CNSC published discussion paper DIS-16-02, *Radiation Protection and Dosimetry*. The paper, for which the consultation period closed in November 2016, sought feedback on the proposal to create two new regulatory documents that will provide CNSC guidance for radiation protection and dosimetry. The new documents would supersede existing CNSC regulatory documentation, ensure that guidance is aligned with the *Radiation Protection Regulations*, and provide consolidated guidance on dosimetry and radiation protection.

DIS-16-03,
RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

In May 2016, the CNSC published discussion paper DIS-16-03, *Radioactive Waste Management and Decommissioning*. The paper, for which the consultation period closed in November 2016, sought stakeholder feedback on proposals to update and clarify the CNSC's waste regulatory framework. Comments were sought on opportunities to incorporate Canadian and international best practices and to update CNSC documents with more modern terminology. In addition, the CNSC sought to improve clarity and predictability for applicants and other stakeholders by clearly indicating the information that licence applicants are expected to submit.

DIS-16-04, **SMALL MODULAR REACTORS: REGULATORY** **STRATEGY, APPROACHES AND CHALLENGES**

In May 2016, the CNSC published discussion paper DIS-16-04, *Small Modular Reactors: Regulatory Strategy, Approaches and Challenges*. The paper, for which the consultation period closed in December 2016, provides an overview of potential regulatory issues associated with SMRs and how they could be addressed. In summary, the paper explains:

- issues at a high level, along with a short description of specific items to be addressed in future work
- how the CNSC plans to address these issues using existing regulatory tools and processes
- the implications of the innovative approaches being considered by SMR proponents that need to be examined to a greater degree to confirm if additional supporting regulatory requirements or guidance is needed

DIS 16-05, HUMAN PERFORMANCE

In October 2016, the CNSC published discussion paper DIS-16-05, *Human Performance*. This discussion paper explains why human performance matters in the context of nuclear safety and the CNSC's regulatory framework. The paper, for which an invitation for feedback on comments was published in March 2017, sought feedback from stakeholders on the opportunities presented to improve the CNSC's regulatory framework for human performance. As the CNSC proceeds with any changes to regulatory documents, stakeholders will have additional opportunities for consultation on specific proposals. By consulting early, the CNSC is seeking to establish a common understanding of certain concepts, to validate the need for improvements in various areas of the framework, and to understand stakeholder views on preliminary proposals or issues.



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- more about the CNSC and its role in nuclear safety
- links to laws and regulations governing Canada's nuclear sector
- information about nuclear facilities in Canadian communities
- news releases and updates on important issues affecting the nuclear sector
- fact sheets on nuclear-related topics
- how to get involved in public hearings or environmental assessments
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