

Canadian Nuclear Safety Commission

2021–22

Departmental Plan

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Minister of Natural Resources

Departmental Plan
Canadian Nuclear Safety Commission

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From the President

I am pleased to present the 2021–22 Departmental Plan of the Canadian Nuclear Safety Commission (CNSC), which informs parliamentarians and Canadians about our work and the results we aim to achieve during the upcoming fiscal year.

In looking forward and planning for the future, we must first recognize the challenges we faced in 2020–21. The COVID-19 crisis quickly altered our reality and had very real implications for the world, our work and our lives. Despite all of this, the CNSC adapted, demonstrating agility in the face of uncertainty and carried out its mandate without missing a beat. By implementing new ways of working and challenging itself to innovate, the CNSC has successfully maintained Canada’s nuclear safety and supported significant nuclear safety milestones. I am inspired by and proud of how well the organization has adapted in this difficult time. The CNSC will come out of this pandemic stronger, more resilient and closer together, despite the move to remote work. The willingness to modernize, to stay informed and engaged, and to remaining agile will ensure success.



In 2021–22, the CNSC’s efforts to fulfill our mandate and demonstrate results continue to be guided by four organizational priorities:

- to have a modern approach to nuclear regulation
- to be a trusted regulator
- to maintain our global nuclear influence
- to be an agile organization

The CNSC is committed to a modern approach to nuclear regulation using science-based and risk-informed regulatory practices and a regulatory framework that take into account scientific uncertainties, an evolving industry and changing regulatory expectations. In 2021–22, the CNSC will continue to focus on its readiness to regulate small modular reactors (SMRs) to ensure there are no unnecessary impediments to the regulatory process. The CNSC will maintain its regulatory oversight of the refurbishment of the Darlington and Bruce nuclear generating stations, verifying that the projects are carried out safely and that the required safety improvements are implemented. In addition to these efforts, the CNSC will focus on the impending licensing activities and environmental assessments for a number of remediation and decommissioning projects.

The CNSC always strives to be a trusted regulator that is recognized as independent, competent and transparent, and as a credible source of scientific, technical and regulatory information. It will aim to strengthen public trust in nuclear regulatory oversight by being even more transparent in our efforts and with our information. As always, it will actively listen to concerned parties and interact with a variety of different audiences, including the Canadian public, civil society organizations, non-governmental organizations, Indigenous peoples, and our domestic and international counterparts.

In its efforts to be a trusted regulator, the CNSC must continue to engage with stakeholders and build relationships to earn and maintain public confidence. In 2021–22, it will be implementing strategies for trust building and Indigenous reconciliation. These strategies aim to revitalize and focus the CNSC’s approach to outreach and engagement; to better demonstrate that regulatory decisions are made independently from industry stakeholder interests; and to enhance Commission proceedings through greater engagement.

The CNSC will maintain its global nuclear influence by leveraging and influencing global nuclear efforts that are relevant to Canadian interests and activities in order to enhance international nuclear safety, security and non-proliferation. The CNSC will develop and foster partnerships with other nuclear regulators on priority topics, and specifically small modular reactors by leading and supporting efforts on harmonization of regulatory practices and requirements. In addition, the CNSC will support the improvement of safety standards through holding the chairmanship of the Commission on Safety Standards for the next three years.

The CNSC will also take the necessary steps to ensure that it is an agile, flexible and inclusive organization with an empowered and equipped workforce able to quickly adapt to an evolving operating environment. To this end, it will continue to carry out the actions in its Diversity and Inclusion Plan and to leverage employee networks to build on its inclusive, accessible workplace where employees feel respected and safe – physically, psychologically and intellectually.

Further, the CNSC will continue to take on an important leadership role nationally and internationally to support the goal of gender equity in the nuclear sector, to break down gender barriers and make gender equity a working reality. The CNSC has made efforts to promote careers in science, technology, engineering and mathematics – or STEM disciplines – because it knows the best way to adapt to a changing world is to infuse its industry with new energy and new perspectives. This means attracting the best and brightest people, reflecting all of Canadian society.

The COVID-19 pandemic has accelerated the CNSC’s plans to create a more flexible workplace and working experience. Looking ahead to 2021-22 the CNSC will continue to reimagine the way it works by exploring bold, creative and thoughtful ways of executing its vision.

The pandemic has also demonstrated a need for flexibility and agility in everything we do, as it has brought with it much uncertainty. Such uncertainty – particularly in the planning environment – means that while we will strive to carry out our plan, priorities may once again shift and require that we adapt.

Thank you to the CNSC’s highly skilled, professional staff who are dedicated in their efforts to regulate Canada’s nuclear industry and committed to keeping the environment and Canadians safe. Together, we will remain true to our goals and keep enforcing the highest safety standards.

Original signed by (January 22, 2021)

Rumina Velshi
President

Plans at a glance

The commitment to the CNSC’s core responsibility of nuclear regulation, the fulfillment of its mandate, and the achievement of its Departmental Results for 2021–22 and beyond are delivered through five programs (plus Internal Services) that are guided by four strategic priorities.



The CNSC is committed to a **modern** approach to nuclear regulation using science-based and risk-informed regulatory practices and regulatory framework that take into account scientific uncertainties, an evolving industry and changing regulatory expectations. For the last several years, it has been clear that small modular reactors (SMRs) are poised to be the next chapter in the story of Canada’s nuclear industry. The past year has reinforced this impression. Most recently, this is demonstrated by the launch of Canada’s [SMR Action Plan](#)¹ which showcases Canada's plan for the development, demonstration and deployment of SMRs for multiple applications at home and abroad. In preparation for the potential introduction and adoption of emerging technologies such as SMRs, the CNSC will continue to work on establishing agile regulatory practices and clear regulatory requirements that are risk-informed and will ensure that it has the capacity, capability and readiness to regulate such technologies and their use.

Canada is seeing increasing interest by potential proponents planning to deploy SMRs. As such, the CNSC is heavily engaged in the area of SMRs and is currently assessing the first two applications for a licence to prepare site for a SMR in Canada, and continues to conduct vendor design reviews of SMRs. In 2021–22 the CNSC will continue to ensure that its regulatory framework is ready to regulate SMRs and apply objective-based performance criteria in support of regulatory decision-making.

The future evolution of nuclear regulation will be influenced by policy choices by the Government of Canada, such as its approach to SMRs and storage of radioactive waste. Through an inclusive engagement process to modernize Canada’s radioactive waste policy, the Government of Canada will engage interested Canadians – including Indigenous peoples, waste producers and owners, and other levels of government – to elaborate on existing policy. This will enable greater leadership on radioactive waste management and ensure that Canada continues to meet international practices. The CNSC is closely monitoring policy initiatives led by other government departments and is actively participating in discussions to ensure that it is well positioned for any regulatory framework changes that may be needed in the future. In 2021–22, it will continue to prepare to regulate new nuclear technologies and processes (e.g., fuel reprocessing) and to build its technical capacity by identifying emerging competencies, taking inventory of current skills, and conducting a review of existing gaps.

Modernizing the inspection program in response to COVID-19

As a result of the pandemic, the CNSC established a framework for conducting remote oversight activities and inspections, which included working with licensees to ensure remote access to site information systems. In 2021–22, the CNSC will continue to explore a hybrid model of remote and onsite inspections, and look at innovative tools to facilitate remote inspections. With the pandemic restricting the ability to conduct the complete inspection plan for 2020-21, the CNSC will thoroughly review the deferred inspections and ensure any risk significant ones are included in the new plan for this Fiscal Year. It will also continue sharing best practices for conducting remote inspections.

Canada's science vision

The CNSC will continue to partner with Laboratories Canada as part of the [Government of Canada's 25-year strategy](#)² to rebuild and strengthen federal science. This strategy aims to provide all federal scientists with leading-edge facilities, modernized information management and information technology (IM/IT) systems, greater access to shared scientific equipment for expanded research and testing, and reduced policy barriers. These four pillars will allow federal scientists to continue the important work they do on behalf of Canadians.

The CNSC is pleased to be involved in the Phase 1 TerraCanada Science and Innovation Hub. Together with the National Research Council, Natural Resources Canada, Health Canada, and Environment and Climate Change Canada, we will be exploring opportunities to advance scientific initiatives through greater collaboration within a new science campus.





The CNSC continuously strives to be a **trusted** regulator, recognized as independent, open and transparent, and as a credible source of scientific, technical and regulatory information.

In an era of increasing public expectations for citizen engagement, government and industry have made proactive efforts for greater openness and transparency. It is essential that the CNSC provide people who have an interest in nuclear regulation with accurate information in an accessible and usable format. Addressing these challenges is central to the CNSC's core responsibility of nuclear regulation.

In 2021–22, the CNSC will implement its trust-building strategy, centered on the following key activities:

1. transforming stakeholder engagement with plans to engage stakeholders early and in two-way dialogue
2. demonstrating the CNSC's independence by developing a public registry to include application information and exchanges between CNSC employees and regulated entities
3. modernizing Commission proceedings by reviewing how participation in Commission proceedings could be enhanced

Legislation to advance federal implementation of the [United Nations Declaration on the Rights of Indigenous Peoples](#)³ is an important step in moving Canada's relationship with Indigenous peoples forward. Advancing reconciliation, including meaningful ongoing engagement with Indigenous groups is a key component of the CNSC's broader trust building agenda. In 2021–22, the CNSC will also work toward implementing its Indigenous reconciliation strategy, consisting of five strategic pillars and specific actions within each of the following pillars:

1. modernizing the CNSC's approach to consultation, engagement and long-term relationship building
2. strengthening management and CNSC governance for Indigenous consultation and engagement
3. enhancing CNSC cultural competency and leadership
4. integrating Indigenous knowledge
5. reducing financial and capacity barriers (to enhance participation of Indigenous groups in CNSC regulatory processes)

In 2021–22, the CNSC will continue to ensure that its governance structure, policies, tools and practices support the development of more meaningful engagement, consultation and collaboration with Indigenous peoples.



The CNSC will continue to leverage and influence **global** nuclear efforts, relevant to Canadian interests and activities, to enhance international nuclear safety, security and non-proliferation. While nuclear energy is being phased out in some countries, it is expanding in many others, with newly developing regulatory frameworks and infrastructure. As these states adopt nuclear energy, it is more important than ever to encourage international accountability and transparency to strengthen the global nuclear safety, security and non-proliferation regimes. The CNSC fosters international accountability by supporting nascent nuclear countries in developing a regulatory infrastructure.

To this end, the CNSC will support the improvements of safety standards through President Rumina Velshi’s chairmanship of the Commission on Safety Standards by supporting a more strategic approach to developing standards, including a better integration of committees involved in the IAEA’s preparation and review process for safety standards.

At a global level, the CNSC will lead efforts on harmonization of regulatory practices and requirements and continue to be active in various international fora while collaborating with like-minded regulators for efficiency and effectiveness in reviewing technical assessments of SMRs. This will be achieved by working bilaterally with other regulators such the United States Nuclear Regulatory Commission (NRC) and the United Kingdom Office for Nuclear Regulation (ONR).

The signing of a memoranda of cooperation with the NRC in 2019 and later in 2020 with the ONR, represent important milestones toward greater harmonization of regulatory requirements and practices for SMRs. This close collaboration is an important priority and it allows the CNSC to leverage scientific data and review results for use in timely and efficient regulatory decision making, which may lead to international harmonization in the longer term.



The CNSC will take the necessary steps to ensure that it is an **agile** organization – one that is flexible and inclusive, with an empowered and equipped workforce able to quickly adapt to an evolving operating environment.

In anticipation of future changes to the nuclear industry that will likely have an impact on our regulatory work, the CNSC decided to prepare by conducting a comprehensive review of all our work. This project – dubbed Project Athena – began in 2019 and is expected to be complete in 2021. Our goal is to make smart, timely and durable changes to adapt to our new environment.

The CNSC’s Diversity and Inclusion Plan 2019–22 outlines ongoing and new commitments to leverage diversity and to make progress in creating a safe, inclusive workplace. Efforts in 2021–22 will be focused on leadership development aimed at growing inclusive leaders, building

manager and employee skills to prevent harassment and discrimination, and identifying hiring strategies to increase the representation of Indigenous peoples and persons with disabilities.

With greater diversity, the CNSC will be better equipped to achieve regulatory excellence and deliver on its mandate. That is why it has undertaken a Women in Science, Technology, Engineering and Math (WISTEM) initiative to raise awareness of and support women in STEM careers at the CNSC and elsewhere. In 2021–22, the CNSC will launch its WISTEM coaching program and continue to host related network events. The CNSC is also broadening its connections with universities and schools for STEM, including formalizing its outreach program and piloting a WISTEM CNSC-university collaborative model to encourage more women to undertake academic research in STEM. These initiatives also serve to support the Government of Canada’s contribution to the United Nations’ [2030 Agenda for Sustainable Development](#)⁴: Goal 5 – Gender Equality and Goal 10 – Reduced Inequalities.

Gender-Based Analysis Plus (GBA+)

In light of COVID-19 and the resulting new remote work environment, the CNSC undertook a GBA+ assessment of its return to workplace plans and protocols. The aim of this analysis was to identify and learn more about the challenges and barriers that diverse groups of CNSC staff may have been experiencing in working from home and/or returning to the workplace, as well as to generate forward-thinking equitable solutions to mitigate challenges that staff may experience. In 2021–22, the CNSC will implement the recommendations of the analysis and continue to develop its internal GBA+ capacity.

For more information on the Canadian Nuclear Safety Commission’s plans, priorities and planned results, see the “Core responsibilities: planned results and resources” section of this report.

Core responsibilities: Planned results and resources

This section contains detailed information on the department’s planned results and resources for each of its core responsibilities.

Nuclear regulation

Description

The CNSC regulates the development, production and use of nuclear energy and substances to protect health, safety, security of persons and the environment; implements Canada’s international commitments on the peaceful use of nuclear energy; and disseminates objective scientific and regulatory information to members of the public. The CNSC maintains a regulatory framework and conducts licensing (including environmental protection reviews), compliance verification and enforcement. The CNSC is committed to building and maintaining the confidence of the public and Indigenous peoples through transparent, open and inclusive regulatory processes.

Planning highlights

Departmental Result 1:

The environment is protected from releases from nuclear facilities and activities.

Departmental Result 2:

Canadians are protected from radiation resulting from nuclear facilities and activities.

For the CNSC to achieve its planned results, risks must be identified, monitored and controlled across all nuclear facilities and activities by CNSC inspectors who conduct compliance verification activities for nearly 1,700 licensees across various sectors. In 2021–22, given that travel restrictions due to COVID-19 are expected to remain in effect, at least in the first part of the fiscal year, the CNSC will continue to modernize compliance oversight, including using new tools to innovate the conduction of remote verification activities. In addition, it will maintain focus on regulatory oversight of the refurbishment of the Darlington and Bruce nuclear generating stations, verifying that the projects are carried out safely and that the required safety improvements are implemented. In 2021-22 the CNSC will also continue regulatory oversight of plans for the end of commercial operations for the Pickering Nuclear Generating Station to ensure preparation for any licensing actions.

The CNSC will also continue performing a number of environmental assessments (EAs) under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and licensing reviews under the *Nuclear Safety and Control Act*. These include the environmental assessments and licensing reviews of Canadian Nuclear Laboratories’ proposed environmental remediation projects: the

siting and construction of a near surface disposal facility at Chalk River Laboratories (CRL), Ontario, and the decommissioning of the Nuclear Power Demonstration reactor in Rolphton, Ontario, as well as the decommissioning of the WR-I reactor at the Whiteshell Laboratories in Pinawa, Manitoba. In 2021–22, the CNSC will continue to perform an EA under CEAA 2012 for Global First Power’s Micro Modular Reactor project at the CRL site. Any new designated projects started after August 28, 2019, fall under the new *Impact Assessment Act*. The CNSC also plans to undertake technical reviews of environmental impact statements and licensing documents for two newly proposed uranium mines in northern Saskatchewan, NexGen Energy Limited’s Rook I project and Denison Mines Corporation’s Wheeler River project. The CNSC works to protect the health of Canadians through regulating the nuclear industry and ensuring the use of nuclear substances are used safely in ways which only promote good health such as its use in the medical industry. This also serves to support the Government of Canada’s contribution to the United Nations’ [2030 Agenda for Sustainable Development](#)⁴, particularly Goal Three, which focuses on good health and well-being.

Isotope production initiatives in Canada

The CNSC will be focusing efforts on evaluation of recent medical isotope-producing initiatives that are progressing at both the Darlington and Bruce sites. Ontario Power Generation (OPG) has notified the CNSC of its intention to modify the plant to allow for the production of the molybdenum-99 (Mo-99) isotope at Darlington in 2021-22. Mo-99 – and more precisely, its decay product, Technetium-99 (TC-99m) – is widely used by the medical industry for diagnostic imaging. The Mo-99 project is now in the detailed design phase, and is expected to be brought before the Commission for a licence amendment in 2021.

Similar to other isotope production initiatives in Canada, OPG intends to produce Cobalt-60 (Co-60) at Darlington. Co-60 is currently produced in other Ontario reactors and is primarily used to sterilize medical equipment. OPG will be required to submit a licence application to include the intended Co-60 initiative as a licensed activity at the Darlington Nuclear Generating Station. In 2021–22, the CNSC will be reviewing planned submissions from OPG in preparation for the licence amendment process.

Bruce Power has submitted a request to modify the plant to produce radioisotopes for treatment of cancer. The use of Lutetium-177 (Lu-177) for radiation therapy has produced high response rates for the treatment of prostate cancer. There are also potential uses for Lu-177 in the treatment of other types of cancers (e.g. neuroendocrine tumours). This request is expected to be brought before the Commission in June 2021.

In 2020 the CNSC received \$250 000 from the Treasury Board Secretariat to fund a third-party research project to determine the CNSC’s regulatory framework’s readiness for fusion technologies. The final report is expected in the fall of 2021 and it will complement the work being done by the CNSC’s DIET team on ensuring the CNSC’s regulatory readiness for disruptive, innovative and emerging technologies.

To ensure that there is consistency in licensing and compliance verification, the CNSC’s regulatory framework and environmental assessment terminology must be clear and understood by licensees in support of nuclear safety. The regulatory framework consists of [laws](#)⁵ passed by Parliament, regulations, licences and documents that are used to regulate Canada’s nuclear industry.

To support the assurance that the public and environment are safe around licensed nuclear facilities, the CNSC has implemented an Independent Environmental Monitoring Program (IEMP). The IEMP complements the ongoing compliance verification program and involves taking samples from public areas around nuclear facilities. These samples are measured and analyzed to determine the amount of radiological and hazardous substances and compared to guidelines. The CNSC will continue to post IEMP sample data and resulting conclusions on its [website](#)⁶.

Departmental Result 3:

Nuclear material and substances, facilities and activities are secure and used for peaceful purposes.

Through the *Nuclear Safety and Control Act* (NSCA), the CNSC implements Canada’s international commitments on the peaceful use of nuclear energy. The CNSC implements regulatory programs to ensure that CNSC licensees and Canada at large meet the obligations arising from Canada’s international safeguards agreements with the IAEA. Safeguards conclusions drawn by the IAEA assure Canadians and the international community that all nuclear materials in Canada are used for peaceful purposes. In 2021–22, the CNSC will focus on continuing to work with the IAEA and licensees to develop safeguard approaches for new nuclear activities such as SMRs, decommissioning projects and isotope production, while updating safeguards measures for existing facilities under the IAEA’s revised State-Level Approach.

The exports of major nuclear items are subject to [nuclear cooperation agreements \(NCAs\)](#)⁷. These are treaty-level agreements designed to minimize the proliferation risk associated with international transfers of proliferation-significant nuclear items. The CNSC implements the terms and conditions of NCAs through [administrative arrangements](#)⁷ that it concludes with its counterparts in partner countries. The CNSC also implements a licensing and compliance

program to ensure that imports and exports of nuclear substances, prescribed equipment and prescribed information (technology) meet regulatory requirements, as well as Canada’s [nuclear non-proliferation](#)⁸ policy and international obligations and commitments. In 2021–22, the CNSC will have the opportunity to support these broader Canadian non-proliferation efforts at the [Review Conference](#) for the *Treaty on the Non-Proliferation of Nuclear Weapons*⁹, and at the Review Conference for the Convention on the Physical Protection of Nuclear Material in summer 2021.

Nuclear security is a major consideration in all CNSC activities. The CNSC is responsible for enforcing Canada’s [Nuclear Security Regulations](#)¹⁰ and works closely with nuclear operators, law enforcement and intelligence agencies, international organizations and other government departments to ensure that nuclear materials and facilities are adequately protected. In 2021–22, CNSC will be updating the *Nuclear Security Regulations*. This will include modernizing regulations to account for advanced reactors and other new emerging technologies within the nuclear industry.

Cyber security remains an important and evolving issue for key stakeholders of nuclear facilities, including design authorities, operating utilities and regulatory bodies to ensure the continued safe and secure design and operation of nuclear power plants and other nuclear facilities. In 2021–22 the CNSC will further strengthen its oversight in this area through the implementation of its cyber security regulatory oversight road map.

As the use and transport of nuclear substances increases, so may the risk of their loss or appropriation, and the likelihood of transport events resulting in an incident or risks to public safety. To ensure safety, the CNSC requires licensees to have established procedures for the proper handling of such materials, and all shipments of risk-significant material are required to have a transport security plan as well as an emergency response assistance plan.

As the pandemic continues to affect many sectors of Canadian industry, the CNSC will monitor and continue communications with licensees to ensure that any impact on their operations is reported. Furthermore, it will monitor the implementation of necessary appropriate actions taken to ensure that the safety of nuclear materials is maintained.

Departmental Result 4:

Canadians, including Indigenous peoples, have meaningful information about, and the opportunity to participate in, the nuclear regulatory process.

The CNSC is a proactive regulator that supports participation by members of the public and Indigenous peoples in the CNSC’s regulatory processes. Public hearings and meetings are open to the public, are sometimes held in the community and are always webcast live on the CNSC’s website. In addition, the CNSC offers funding through its Participant Funding Program (PFP) to

help support the participation of Indigenous peoples, members of the public, and stakeholders in bringing valuable information to the Commission. This is recognized internationally as a best practice to emulate.

The public and Indigenous peoples are also consulted on discussion papers and draft regulatory framework documents prior to publication. Furthermore, the CNSC frequently participates in community outreach and engagement activities, and responds to media calls and public information inquiries. As an agent of the Crown, the CNSC has an important responsibility to engage and consult with interested Indigenous groups and is committed to developing long-term positive relationships with these communities. The CNSC is always striving to implement ideas to improve its outreach and engagement strategies with all stakeholders and Indigenous groups. In 2021–22, CNSC will launch a Web Modernization project to update content, language and refining usability for its website as per international standards and best practices. This project will allow for better public communication and stronger alignment with modern accessibility and user needs. In addition, the CNSC will continue to modernize its approach to consultations, with the aim of improving transparency and facilitating more robust discussions for stakeholders through participation in its [e-consultation platform](#)¹¹. The CNSC initially implemented this e-consultation platform for consultation on its regulatory framework projects including regulations, regulatory documents and discussion papers and plans to expand its use over the planning period.

In just the past few years, immense progress has been made by both the CNSC and licensees to make documents and reports readily available online to members of the public. Beginning in 2018, documents submitted for Commission proceedings became downloadable from the [CNSC website](#)¹². In 2021–22, the CNSC will further increase the release of information that supports regulatory activities and decisions, and will make scientific reports, documents and data more accessible and easier to use through facility registries on the CNSC website, as well as on Government of Canada open science platforms.

The CNSC strives to provide many outlets for public engagement, including its social media platforms. Facebook, Twitter, LinkedIn and YouTube accounts allow for a more informal and effective way to communicate with the public on specific concerns and inquiries. In 2021–22, the CNSC will continue to manage its social media accounts according to best practices, and aim to expand its reach and digital engagement. As the pandemic continues, updating online engagement platforms will be a priority as Canada develops its virtual communication.

Also available via the [CNSC's website](#)¹³ are some of the technical papers and presentations delivered by CNSC experts at conferences, seminars, technical meetings and workshops in Canada and around the world. CNSC staff also contribute to research projects under the [CNSC Research and Support Program](#)¹⁴, which includes research that continues to strengthen the CNSC's regulatory framework in preparation for post-refurbishment operation of nuclear power plants and research in radioactive waste safety.

Experimentation

The CNSC is leveraging advanced technologies to digitize the regulatory framework. In 2021-22, it will be exploring new methods of disseminating requirements and guidance to stakeholders through a pilot initiative “Digital REGDOCs”. The CNSC will attempt to establish modular documents that will enable new capabilities to access information that is dispersed throughout the regulatory framework and consolidate requirements and guidance according to specific topic areas or licensee interests. This is intended to improve clarity and understanding of the Commission’s expectations of licensees.

Planned results

Departmental result	Departmental result indicator	Target	Date to achieve target	2017–18 actual result	2018–19 actual result	2019–20 actual result
The environment is protected from releases from nuclear facilities and activities.	Number of instances of radiological releases that exceeded regulatory limits	0	March 31, 2022	1 ¹⁵	0	1 ¹⁶
	Number of instances of hazardous releases that exceeded regulatory limits	≤5	March 31, 2022	2	9 ¹⁷	2
	Percentage of Independent Environmental Monitoring (IEMP) samples (food, water, air, soil, sediment, sand and vegetation) that met guidelines	≥95%	March 31, 2022	90% ¹⁸	97%	98.9%
Canadians are protected from radiation resulting from nuclear facilities and activities.	Number of radiation doses to members of the public that exceeded regulatory limits	0	March 31, 2022	0	1 ¹⁹	0
	Number of radiation doses to workers that exceeded regulatory limits	0	March 31, 2022	1 ²⁰	1 ²¹	2 ²²
Nuclear material and substances, facilities and activities are secure and used for peaceful purposes.	Number of instances of non-peaceful or malicious use of Canadian exports of nuclear substances, equipment and information	0	March 31, 2022	0	0	0
	Number of lost or stolen radioactive sealed sources	≤2	March 31, 2022	0	0	0
	Canada's international commitments to the International Atomic Energy Agency (IAEA) with respect to nuclear safeguards and verification are met	IAEA broader conclusion	December 31, 2022	Met	Met	Met
Canadian's including Indigenous peoples, have meaningful information about, and the opportunity to participate in, the nuclear regulatory process.	Percentage of Commission proceedings that were accessible to members of the public and Indigenous peoples	>90%	March 31, 2022	100%	100%	100%
	Percentage of Commission proceedings for which the Participant Funding Program (PFP) was made available to members of the public and Indigenous peoples	>90%	March 31, 2022	100%	100%	100%
	Percentage of Commission proceedings documents that were available in a timely manner on the CNSC external website upon request by members of the public and Indigenous peoples	>90%	March 31, 2022	100%	100%	100%
	Number of self-identified Indigenous groups and organizations who participated in CNSC proceedings	Increasing trend	March 31, 2022	20	18 ²³	22

Financial, human resources and performance information for the Canadian Nuclear Safety Commission's program inventory is available in the [GC InfoBase](#).²⁴

Planned budgetary financial resources for Nuclear Regulation

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
97,749,225	105,302,857	107,901,680	109,740,268

Financial, human resources and performance information for the Canadian Nuclear Safety Commission’s program inventory is available in the [GC InfoBase](#).²⁴

Planned human resources for Nuclear Regulation

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
629	623	618

Financial, human resources and performance information for the Canadian Nuclear Safety Commission’s program inventory is available in the [GC InfoBase](#).²⁴

Internal Services: Planned results

Description

Internal Services are those groups of related activities and resources that the federal government considers to be services in support of Programs and/or required to meet corporate obligations of an organization. Internal Services refers to the activities and resources of the 10 distinct services that support Program delivery in the organization, regardless of the Internal Services delivery model in a department. These are:

- ▶ Management and Oversight Services
- ▶ Communications Services
- ▶ Legal Services
- ▶ Human Resources Management Services
- ▶ Financial Management Services
- ▶ Information Management Services
- ▶ Information Technology Services
- ▶ Real Property Management Services
- ▶ Materiel Management Services
- ▶ Acquisition Management Services

Planning highlights

Diversity and inclusion are fundamental to the CNSC’s regulatory safety culture and critical to spurring innovation and team collaboration. The CNSC has taken deliberate actions to build a healthy, collaborative workplace and a supportive culture for employees. The results of the last Public Service Employee Survey indicated that, for example, 84% of employees felt the CNSC was doing a good job of promoting and raising awareness of mental health and eliminating the associated stigma. More effort is required to create an even safer and more open work environment – one that is inclusive, and free from harassment and discrimination – where all employees are comfortable proposing new ideas and raising issues without fear of reprisal.

To sustain the momentum gained by enhancing awareness of the importance of mental and physical health, the CNSC will continue to leverage learning activities, resources and tools available in the broader public service, including participating in the [Not Myself Today](#)²⁵ campaign. Specific needs of CNSC staff will be targeted through the development of organization-wide learning activities to promote mental and physical well being. In 2021–22, the CNSC will complete a review of its Hazard Prevention Program to identify all workplace risks

Employee Networks

Employee networks at CNSC are voluntary, employee-led groups that provide an opportunity for employees to connect, while providing strategic direction and leadership to foster health, safety and inclusion for everyone. The CNSC has five employee networks:

1. Administrative Professionals Network
2. Young Professionals Network
3. Women in STEM Network
4. Black Employees Network
5. Indigenous Employees Network

In 2021–22, employee networks, like the Black Employees Network has done, will continue to host events to encourage ongoing dialogue on important issues and reinforce the CNSC’s commitment to a culture of inclusivity.

including psychological safety as well as implement the new workplace harassment and violence prevention regulations (Bill C-65).

Planned budgetary financial resources for Internal Services

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
45,999,636	49,554,286	49,286,463	50,126,279

Planned human resources for Internal Services

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
284	284	282

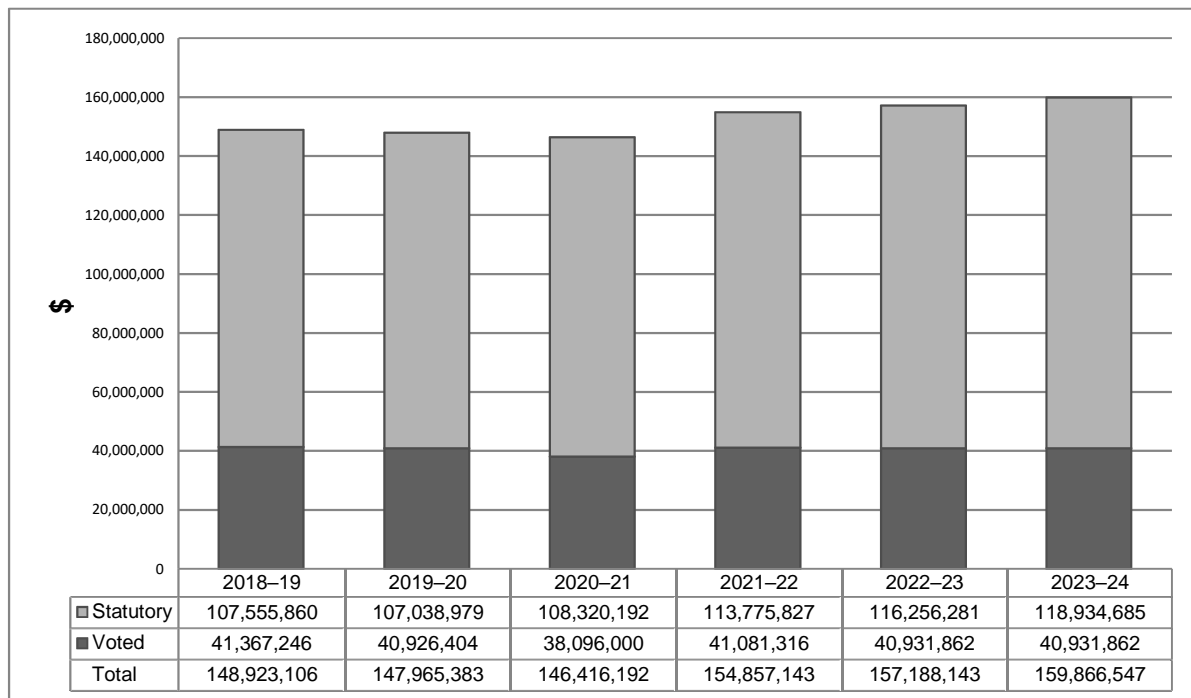
Spending and human resources

This section provides an overview of the department’s planned spending and human resources for the next three consecutive fiscal years and compares planned spending for the upcoming year with the current and previous years’ actual spending.

Planned spending

Departmental spending 2018–19 to 2023–24

The following graph presents planned (voted and statutory) spending over time.



Budgetary planning summary for core responsibilities and Internal Services (dollars)

The following table shows actual, forecast and planned spending for the Canadian Nuclear Safety Commission’s core responsibility and to Internal Services for the years relevant to the current planning year.

Core responsibilities and Internal Services	2018–19 expenditures	2019–20 expenditures	2020–21 forecast spending	2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
Nuclear Regulation	100,067,374	101,570,723	98,431,531	97,749,225	105,302,857	107,901,680	109,740,268
Subtotal	100,067,374	101,570,723	98,431,531	97,749,225	105,302,857	107,901,680	109,740,268
Internal Services	48,855,732	46,394,660	47,984,661	45,999,636	49,554,286	49,286,463	50,126,279
Total	148,923,106	147,965,383	146,416,192	143,748,861	154,857,143	157,188,143	159,866,547

The marginal decrease in actual spending from \$148.9 million in 2018–19 to \$148.0 million in 2019–20 is due to the non-recurring implementation costs incurred in 2018–19 for the CNSC’s new financial and material management system, a decrease in full-time equivalent (FTE) utilization, partially offset by retroactive salary payments made in 2019–20.

Planned spending is forecasted to decrease from \$148.0 million in 2019–20 to \$146.4 million in 2020–21 because of decreased travel expenditures, as a result of COVID-19 restrictions, partially offset by negotiated salary adjustments and the purchase of computer equipment to enable staff to work remotely.

The CNSC’s planned spending is forecasted to increase to \$154.9 million in 2021–22, from \$146.4 million in 2020–21, due to negotiated salary adjustments, a forecasted increase in FTE utilization from the staffing of vacant positions, as well as a potential increase in travel expenditures, contingent upon the result of changes to COVID-19 restrictions.

The CNSC’s overall spending plans indicate no significant changes over the 2021–22 to 2023–24 planning periods. The increases in planned spending from \$154.9 million in 2021–22 to \$157.2 million in 2022–23 and \$159.9 million in 2023–24 are primarily attributable to cost of living increases, including salary and wages.

The difference between the 2021–22 Main Estimates of \$143.7 million and the 2021–22 planned spending of \$154.9 million is due to the practice of including only the employee benefits costs associated with the voted appropriation funds in the Main Estimates, while including the additional employee benefits associated with the revenue spending authority in the planned spending. Fees collected by the CNSC represent approximately 70% of planned spending.

Planned human resources

The following table shows actual, forecast and planned full-time equivalents (FTEs) for each core responsibility in the Canadian Nuclear Safety Commission’s departmental results framework and to Internal Services for the years relevant to the current planning year.

Human resources planning summary for core responsibilities and Internal Services

Core responsibilities and Internal Services	2018–19 actual full-time equivalents	2019–20 actual full-time equivalents	2020–21 forecast full-time equivalents	2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
Nuclear Regulation	625	605	595	629	623	618
Subtotal	625	605	595	629	623	618
Internal Services	293	281	271	284	284	282
Total	918	886	866	913	907	900

The decrease in FTEs from 918 in 2018–19 to 886 in 2019–20 was mainly due to the cost containment initiatives and the timing of positions vacated and subsequently staffed during the year. The forecasted decrease in FTEs from 886 in 2019–20 to 866 in 2020–21 is primarily a result of staffing delays due to COVID-19. FTE utilization is forecasted to increase to 913 in 2021–22 from 866 in 2020–21, primarily due to the anticipated staffing of vacant positions.

The FTE forecast anticipates marginal changes from 913 FTEs in 2021–22 to 907 FTEs in 2022–23, and 900 FTEs in 2023–24.

Estimates by vote

Information on the Canadian Nuclear Safety Commission’s organizational appropriations is available in the [2021–22 Main Estimates](#).²⁶

Future-oriented condensed statement of operations

The future-oriented condensed statement of operations provides an overview of the Canadian Nuclear Safety Commission’s operations for 2020–21 to 2021–22.

The amounts for forecast and planned results in this statement of operations were prepared on an accrual basis. The amounts for forecast and planned spending presented in other sections of the Departmental Plan were prepared on an expenditure basis. Amounts may therefore differ.

A more detailed future-oriented statement of operations and associated notes, including a reconciliation of the net cost of operations to the requested authorities, are available on the [Canadian Nuclear Safety Commission’s website](#)²⁷.

Future-oriented condensed statement of operations for the year ending
March 31, 2022 (dollars)

Financial information	2020–21 forecast results	2021–22 planned results	Difference (2021–22 planned results minus 2020–21 forecast results)
Total expenses	164,006,000	174,595,000	10,589,000
Total revenues	116,992,000	124,506,000	7,514,000
Net cost of operations before government funding and transfers	47,014,000	50,089,000	3,057,000

The CNSC’s 2021-22 net cost of operations of \$50.1 million reflects an increase of \$3.1 million (or 6.5%) when compared to the 2020-21 forecasted results, due to a projected decrease in appropriation lapse. This change is a result of an increase in total expenses of \$10.6 million (or 6.5%). This is primarily due to an increase in salaries and employee benefit costs because of a forecasted increase in FTE utilization due to the anticipated staffing of vacant positions in addition to negotiated salary adjustments and a potential increase in travel expenditures, contingent upon the result of a change in COVID-19 travel restrictions. Total revenues are forecasted to increase by \$7.5 million (or 6.4%). Regulatory fee revenues fund most of the CNSC expenses and the increase in total revenues is mainly a result of the forecasted increases in expenses for salaries and employee benefits and travel.

Corporate information

Organizational profile

Appropriate minister: Seamus O'Regan

Institutional head: Rumina Velshi

Ministerial portfolio: [Natural Resources Canada](#)²⁸

Enabling instrument(s): *Nuclear Safety and Control Act*²⁹

Year of incorporation / commencement: 2000

Other: The CNSC's headquarters are located in Ottawa, Ontario. The CNSC maintains 11 regional offices, both at major facilities and elsewhere, in order to conduct inspections of licensees across the country on a regular basis.

Raison d'être, mandate and role: Who we are and what we do

"Raison d'être, mandate and role: who we are and what we do" is available on the [Canadian Nuclear Safety Commission's website](#)³⁰.

Operating context

Information on the operating context is available on the [Canadian Nuclear Safety Commission's website](#)³⁰.

Reporting framework

The Canadian Nuclear Safety Commission's approved departmental results framework and program inventory for 2021–22 are as follows.

CNSC Departmental Results Framework

Core Responsibility: Nuclear Regulation	
<p>Description: The CNSC regulates the development, production and use of nuclear energy and substances to protect health, safety, security of persons and the environment; implements Canada's international commitments on the peaceful use of nuclear energy; and disseminates objective scientific and regulatory information to members of the public. The CNSC maintains a regulatory framework and conducts licensing (including environmental protection reviews), compliance verification and enforcement. The CNSC is committed to building and maintaining the confidence of the public and Indigenous peoples through transparent, open and inclusive regulatory processes.</p>	
Departmental Results	Indicators
R 1: The environment is protected from releases from nuclear facilities and activities.	Number of instances of radiological releases that exceeded regulatory limits
	Number of instances of hazardous releases that exceeded regulatory limits
	Percentage of Independent Environmental Monitoring Program (IEMP) samples (food, water, air, soil, sediment, sand and vegetation) that met guidelines
R 2: Canadians are protected from radiation resulting from nuclear facilities and activities.	Number of radiation doses to members of the public that exceeded regulatory limits
	Number of radiation doses to workers that exceeded regulatory limits

R 3: Nuclear material and substances, facilities and activities are secure and used for peaceful purposes.	Number of instances of non-peaceful or malicious use of Canadian exports of nuclear substances, equipment and information
	Number of lost or stolen radioactive sealed sources
	Canada’s international commitments to the International Atomic Energy Agency (IAEA) with respect to nuclear safeguards and verification are met
R 4: Canadians, including Indigenous peoples, have meaningful information about, and the opportunity to participate in, the nuclear regulatory process.	Percentage of CNSC proceedings that were accessible to members of the public and Indigenous peoples
	Percentage of CNSC proceedings for which the Participant Funding Program (PFP) was made available to members of the public and Indigenous peoples
	Percentage of public proceedings documents that were available in a timely manner upon request by members of the public and Indigenous peoples
	Number of self-identified Indigenous groups and organizations who participated in CNSC proceedings

Program Inventory				
Nuclear Fuel Cycle	Nuclear Reactors	Nuclear Substances and Prescribed Equipment	Nuclear Non-Proliferation	Scientific, Regulatory and Public Information
Internal Services				

Supporting information on the program inventory

Supporting information on planned expenditures, human resources, and results related to the Canadian Nuclear Safety Commission's program inventory is available in the [GC InfoBase](#).²⁴

Supplementary information tables

The following supplementary information tables are available on the [Canadian Nuclear Safety Commission's website](#)³⁰:

- ▶ Details on transfer payment programs
- ▶ Departmental Sustainable Development Strategy
- ▶ Gender-based analysis plus
- ▶ Corporate information

Federal tax expenditures

The Canadian Nuclear Safety Commission's Departmental Plan does not include information on tax expenditures that relate to its planned results for 2021–22.

Tax expenditures are the responsibility of the Minister of Finance, and the Department of Finance Canada publishes cost estimates and projections for government-wide tax expenditures each year in the [Report on Federal Tax Expenditures](#).³¹ This report provides detailed information on tax expenditures, including objectives, historical background and references to related federal spending programs, as well as evaluations, research papers and gender-based analysis. The tax measures presented in this report are solely the responsibility of the Minister of Finance.

Organizational contact information

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Toll free: 1-800-668-5284

Fax: 613-995-5086

Email: cnsccs@canada.ca

Website: www.nuclearsafety.gc.ca

Appendix: Definitions

appropriation (crédit)

Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

budgetary expenditures (dépenses budgétaires)

Operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

core responsibility (responsabilité essentielle)

An enduring function or role performed by a department. The intentions of the department with respect to a core responsibility are reflected in one or more related departmental results that the department seeks to contribute to or influence.

Departmental Plan (plan ministériel)

A report on the plans and expected performance of a department over a 3-year period. Departmental Plans are tabled in Parliament each spring.

departmental priority (priorité ministérielle)

A plan or project that a department has chosen to focus and report on during the planning period. Departmental priorities represent the things that are most important or what must be done first to support the achievement of the desired departmental results.

departmental result (résultat ministériel)

A consequence or outcome that a department seeks to achieve. A departmental result is often outside departments' immediate control, but it should be influenced by program-level outcomes.

departmental result indicator (indicateur de résultat ministériel)

A factor or variable that provides a valid and reliable means to measure or describe progress on a departmental result.

departmental results framework (cadre ministériel des résultats)

A framework that consists of the department's core responsibilities, departmental results and departmental result indicators.

Departmental Results Report (rapport sur les résultats ministériels)

A report on a department's actual accomplishments against the plans, priorities and expected results set out in the corresponding Departmental Plan.

experimentation (expérimentation)

The conducting of activities that seek to first explore, then test and compare, the effects and impacts of policies and interventions in order to inform evidence-based decision-making, and improve outcomes for Canadians, by learning what works and what doesn't. Experimentation is related to, but distinct from innovation (the trying of new things), because it involves a rigorous comparison of results. For example, using a new website to communicate with Canadians can be an innovation; systematically testing the new website against existing outreach tools or an old website to see which one leads to more engagement, is experimentation.

full-time equivalent (équivalent temps plein)

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. Full-time equivalents are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Gender-Based Analysis Plus (GBA+) (analyse comparative entre les sexes plus [ACS+])

An analytical process used to assess how diverse groups of women, men and gender-diverse people experience policies, programs and services based on multiple factors including race, ethnicity, religion, age, and mental or physical disability.

government-wide priorities (priorités pangouvernementales)

For the purpose of the 2021–22 Departmental Plan, government-wide priorities refers to those high-level themes outlining the government's agenda in the 2020 Speech from the Throne, namely: Protecting Canadians from COVID-19; Helping Canadians through the pandemic; Building back better – a resiliency agenda for the middle class; The Canada we're fighting for.

horizontal initiative (initiative horizontale)

An initiative in which two or more federal organizations are given funding to pursue a shared outcome, often linked to a government priority.

non-budgetary expenditures (dépenses non budgétaires)

Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

performance (rendement)

What an organization did with its resources to achieve its results, how well those results compare to what the organization intended to achieve, and how well lessons learned have been identified.

performance indicator (indicateur de rendement)

A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an organization, program, policy or initiative respecting expected results.

performance reporting (production de rapports sur le rendement)

The process of communicating evidence-based performance information. Performance reporting supports decision-making, accountability and transparency.

plan (plan)

The articulation of strategic choices, which provides information on how an organization intends to achieve its priorities and associated results. Generally a plan will explain the logic behind the strategies chosen and tend to focus on actions that lead up to the expected result.

planned spending (dépenses prévues)

For Departmental Plans and Departmental Results Reports, planned spending refers to those amounts presented in the Main Estimates.

A department is expected to be aware of the authorities that it has sought and received. The determination of planned spending is a departmental responsibility, and departments must be able to defend the expenditure and accrual numbers presented in their Departmental Plans and Departmental Results Reports.

program (programme)

Individual or groups of services, activities or combinations thereof that are managed together within the department and focus on a specific set of outputs, outcomes or service levels.

program inventory (répertoire des programmes)

Identifies all of the department's programs and describes how resources are organized to contribute to the department's core responsibilities and results.

result (résultat)

An external consequence attributed, in part, to an organization, policy, program or initiative. Results are not within the control of a single organization, policy, program or initiative; instead they are within the area of the organization's influence.

statutory expenditures (dépenses législatives)

Expenditures that Parliament has approved through legislation other than appropriation acts. The legislation sets out the purpose of the expenditures and the terms and conditions under which they may be made.

strategic outcome (résultat stratégique)

A long-term and enduring benefit to Canadians that is linked to the organization’s mandate, vision and core functions.

target (cible)

A measurable performance or success level that an organization, program or initiative plans to achieve within a specified time period. Targets can be either quantitative or qualitative.

voted expenditures (dépenses votées)

Expenditures that Parliament approves annually through an Appropriation Act. The vote wording becomes the governing conditions under which these expenditures may be made.

Endnotes

- 1 SMR Action Plan, <https://smractionplan.ca/>
- 2 Government of Canada, Laboratories Canada, http://www.science.gc.ca/eic/site/063.nsf/eng/h_97809.html
- 3 Government of Canada, Implementing the United Nations Declaration on the Rights of Indigenous Peoples in Canada, <https://www.justice.gc.ca/eng/declaration/index.html>
- 4 United Nations 2030 Agenda for Sustainable Development
<https://sustainabledevelopment.un.org/post2015/transformingourworld>
- 5 Canadian Nuclear Safety Commission, Acts and Regulations,
www.nuclearsafety.gc.ca/eng/acts-andregulations/acts/index.cfm
- 6 Canadian Nuclear Safety Commission, Independent Environmental Monitoring Program (IEMP),
<https://www.nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index.cfm>
- 7 Canadian Nuclear Safety Commission, International agreements,
www.nuclearsafety.gc.ca/eng/resources/international-cooperation/international-agreements.cfm
- 8 Canadian Nuclear Safety Commission, Non-proliferation: import/export controls and safeguards,
www.nuclearsafety.gc.ca/eng/resources/non-proliferation/index.cfm
- 9 United Nations Office for Disarmament Affairs, 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, <https://www.un.org/disarmament/wmd/nuclear/npt-review-conferences/>
- 10 Justice Laws Website, *Nuclear Security Regulations*,
www.laws-lois.justice.gc.ca/eng/regulations/sor-2000-209/
- 11 Canadian Nuclear Safety Commission, Let's Talk Nuclear Safety, <https://www.letstalknuclearsafety.ca/>
- 12 Canadian Nuclear Safety Commission, Public Commission hearings,
www.nuclearsafety.gc.ca/eng/thecommission/hearings/documents_browse/index.cfm
- 13 Canadian Nuclear Safety Commission, Technical papers, presentations and articles – 2020,
<http://nuclearsafety.gc.ca/eng/resources/research/technical-papers-and-articles/index.cfm>
- 14 Canadian Nuclear Safety Commission, Research and Support Program,
<http://nuclearsafety.gc.ca/eng/resources/research/research-and-support-program/index.cfm>
- 15 The reported exceedance was in relation to the monthly average discharge limit for radium-226 at the Elliot Lake decommissioned uranium mine site for the month of January 2018. Follow-up monitoring in the environment confirmed that there were no radiological impacts to the public or the environment.
- 16 Draximage event, reported to the Commission in December 2019. Jubilant Draximage Inc. reported that its weekly sampling monitoring results were above the weekly release limit for I-131 as specified in its licence. On November 20, 2019, the average weekly release concentration was calculated as 322 Bq/m³ for I-131 and the weekly release limit for I-131 is 175 Bq/m³. CNSC staff analyzed the impact of the event and determined that the estimated dose to public is less than 0.01 mSv, which is lower than the public dose limit of 1 mSv/yr. CNSC staff have concluded that the public and environment are protected from ongoing releases from nuclear facilities and activities.
- 17 In 2018–19, there were nine total exceedances of provincial hazardous substances limits, all at nuclear power plants. At Pickering Nuclear Generating Station (NGS), there were four exceedances of provincial hazardous substances limits. One exceedance was for morpholine concentration, two were for oil and grease, and one was an effluent temperature exceedance. At Darlington NGS, one morpholine result was slightly above provincial hazardous substances limits. At Bruce NGS, there were two toxicity exceedances and two ammonia exceedances of the provincial hazardous substances limits. The number of exceedances are related to minor sporadic issues at the nuclear power plants and vary from year to year. For all instances, CNSC staff reviewed the event and concluded that the licensee took appropriate corrective actions. The exceedances were discussed in CMD 19-M30, scheduled for November 6–7, 2019. The provincial hazardous substances regulatory limit exceedances have always been reported in the CNSC's [regulatory oversight reports](#). However, in previous years, the CNSC had not reported this information at the departmental level, as it was considered duplicative to any provincial reporting. In 2018–19, the CNSC started to report these exceedances at the departmental level as well to improve transparency and dissemination of information. CNSC staff confirmed that the public in the vicinity of these nuclear power plants were protected and that there were no expected

- health impacts resulting from exceedances of provincial hazardous substances limits at these nuclear power plants.
- 18 Some sites are known to be contaminated; therefore, if sampling occurs near a contaminated site during a fiscal year, the percentage of samples that meet guidelines will trend downwards that year. Noted exceedances for all three fiscal years were expected, as they are similar to values reported by CNSC licensees' environmental monitoring programs. No additional unexpected exceedances were noted. In 2018–19, there were four exceedances at Elliott Lake historical sites for two sediment results and two water results. These exceedances are related to iron, lead and zinc in sediment and water. These heavy metals are contaminants from historical industrial activities at the Elliott Lake site. There were also 27 exceedances at the Deloro Mine site for 15 sediment results and 12 water results. Exceeding a guideline does not mean that there is an expected health impact; rather, it triggers a more in-depth assessment by CNSC staff to ensure that the health and safety of people and the environment are protected. In all noted cases, CNSC staff have concluded that the public and environment are protected from ongoing releases from nuclear facilities and activities. More information in IEMP results for each site is available on the [CNSC website](#).
- 19 During the period of March 1, 2017 to February 28, 2018, a member of the public received a cumulative dose of approximately 1.06 mSv. This dose is above the annual regulatory effective dose limit of 1 mSv for members of the public, but would not result in any effect on the health and safety of the person. This person was a non-nuclear energy worker responsible for transporting packages, the majority of which contain nuclear substances. CNSC staff reviewed an investigation report submitted by the licensee and are satisfied with the actions taken to prevent a recurrence. The incident was reported to the Commission in Commission member document (CMD) 18-M43 on August 22, 2018.
- 20 On October 28, 2016, a nuclear energy worker received a dose of approximately 1,100 mSv to the left hand when the worker experienced contamination during routine administration (injections) of a nuclear substance to patients. The dose was in excess of the annual regulatory equivalent dose limit of 500 mSv. No health effects have been observed since the incident and no physical effects due to the exposure are expected. The incident was reported to the Commission in CMD16-M72 on December 14, 2016. On March 1, 2017, a nuclear energy worker received a dose of approximately 2,300 mSv to the right hand when the worker experienced contamination during the administration of therapeutic doses of a nuclear substance to patients. The dose was in excess of the annual regulatory equivalent dose limit of 500 mSv. No health effects have been observed since the incident and no physical effects due to the exposure are expected. The incident was reported to the Commission in CMD 17-M22 on April 12, 2017.
- 21 In November 2018, a nuclear energy worker received an equivalent dose of approximately 1,680 mSv to the left hand, in excess of the annual regulatory equivalent dose limit of 500 mSv. No health effects have been observed since the incident and no physical effects due to the exposure are expected. The incident was reported to the Commission in CMD 18-M65 on December 13, 2018.
- 22 Unexplained dose of 1.85 mSv on quarterly badge reading of a non-nuclear energy worker, which exceeded the annual dose limit of 1 mSv/year. No health effects were observed or expected as a consequence of this event. This event was reported to the Commission in November 2019 in CMD 19-M41. Unexplained dose on quarterly badge reading of a nuclear medicine technologist. NEW worker exceeded both the one-year effective dose limit (recorded dose of 56.91 mSv) and equivalent dose limit for the lens (recorded dose of 174.9 mSv). Investigation concludes that the recorded dose is likely non-personal but rather due to contamination on the dosimeter although this cannot be demonstrated conclusively. No health effects were observed or expected. This event will be reported to the Commission in 2020
- 23 The decrease in Indigenous participation in 2018–19 relative to 2017–18 is due to fewer total public Proceedings.
- 24 GC InfoBase, <https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start>
- 25 Not myself today, <https://www.notmyselftoday.ca/>
- 26 2019–20 Main Estimates, <https://www.canada.ca/en/treasury-board-secretariat/services/planned-government-spending/government-expenditure-plan-main-estimates.html>
- 27 Canadian Nuclear Safety Commission, Future-Oriented Statement of Operations, <http://nuclearsafety.gc.ca/eng/resources/publications/reports/future-oriented-financial-statements/index.cfm>

- 28 Natural Resources Canada, <https://www.nrcan.gc.ca/home>
- 29 Nuclear Safety and Control Act, <https://laws-lois.justice.gc.ca/eng/acts/N-28.3/>
- 30 Canadian Nuclear Safety Commission, Departmental Plans,
www.nuclearsafety.gc.ca/eng/resources/publications/reports/rpp/index.cfm
- 31 Report on Federal Tax Expenditures, <https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures.html>