



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

CNSC
Annual Report
2020–21

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2020–21

2020–21 ANNUAL REPORT **CANADIAN NUCLEAR** **SAFETY COMMISSION**

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MESSAGE FROM THE PRESIDENT

I am pleased to present the 2020–21 Annual Report of the Canadian Nuclear Safety Commission (CNSC), which informs parliamentarians and Canadians about the CNSC's work and results achieved over the past fiscal year. The CNSC celebrated its 20th anniversary in the midst of the COVID-19 pandemic, which was yet another milestone in a storied and eventful history of nuclear safety.

As I reflect on the past year, I am extremely proud of the way we worked and continue to operate during the pandemic to protect the health and safety of Canadians and the environment. At the onset of the pandemic, the CNSC immediately mobilized its 900 staff across the country and established lines of communication with thousands of licensees and with nuclear facility operators.



Our immediate focus was to maintain regulatory oversight of Canada's nuclear facilities, especially related to critical infrastructure and services such as nuclear power plants, hospitals and supply chain providers. We prioritized our work to ensure that services such as equipment sterilization and the supply of radioisotopes for medical treatment could continue while meeting licensing and certification requirements efficiently. Our inspectors continued to have access to licensed facilities as needed to respond to safety issues and maintained constant communication with licensees to ensure that regulatory requirements remained in place. We developed a framework for conducting remote oversight activities, including inspections, which built on existing digital tools and includes elements such as remote access to licensee information systems, virtual meetings with licensees and more efficient documentation sharing. All of this enabled the CNSC to exercise flexibility wherever possible.

Extraordinary measures had to be taken and the CNSC was able to successfully carry out its mandate, maintaining strong oversight while supporting significant nuclear milestones, all without skipping a beat. In fact, early on in the pandemic, the CNSC approved the removal of Darlington Nuclear Generating Station's fourth and final regulatory hold point for Unit 2, which allowed the reactor to operate above 35% full power before it resumed commercial operation shortly thereafter. We found new and innovative ways to carry out our work, remaining agile and flexible during an unpredictable and unprecedented year.

With our day-to-day operations performing successfully in a remote work environment, we transitioned from in-person to virtual Commission proceedings, ensuring they remained accessible to the public via webcast while presenters and Commission members participated remotely. We embraced new and effective means to communicate and engage with Indigenous groups, the public and stakeholders to maximize the opportunities created by our new reality. As a result, we have found ways to make our work even more accessible.

I also wish to acknowledge how our strong partnerships with other international nuclear regulators and organizations have enabled the CNSC to both lead and learn during the pandemic. By immediately enhancing our communication with these organizations, we have been able to share information on the impacts of the pandemic, including lessons learned, while continuing to collaborate on future challenges such as readiness to regulate small modular reactors (SMRs). As the current chair of the International Atomic Energy Agency's (IAEA) Commission on Safety Standards, I have formally called on the IAEA to share lessons learned among Member States and to initiate a review and modification of international safety standards based on the learnings gleaned from the pandemic.

The CNSC’s leadership was also evident at home as we became the first federal regulator in Canada to require pre-placement and random testing of alcohol and drug use for safety-critical positions. Our staff performed extensive research and worked with international and national experts to assemble the best and most recent scientific advice on which to base our latest requirements. Regulatory document, REGDOC-2.2.4 *Fitness for Duty, Volume II: Managing Alcohol and Drug Use*, Version 3 was also updated based on benchmarking and extensive consultation, engagement and outreach with unions, licensees and other Canadians.

While there are many positive outcomes from the last year, the CNSC also faced the same challenges many Canadians dealt with. Like many, our staff had to adapt to remote work, adjust to changes to family dynamics and experienced fears and concerns about their health and that of loved ones. Many also felt an increased sense of isolation and all of this and more had impacts on their mental health and well-being. That is why our efforts to support the collective mental health of CNSC staff are ongoing and a priority for the organization. We recognize that the pandemic continues to have implications for many, and that no two experiences are the same. At the same time, equity, diversity and inclusion (EDI) became a focal point for us as we paid witness to the impacts of systemic racism in our society. With the launch of a number of Employee Networks, increased communications on inclusion and safe spaces for discussion and learning, the CNSC steadfastly ensures staff have the information and support they need during these challenging times. We have learned a great deal in the last year, and the entire organization continues to support each other through it all.

Once again, I wish to recognize our highly skilled, professional staff, who are dedicated to keeping Canada’s people and environment safe through our regulatory work. I invite you to read the CNSC’s 2020–21 Annual Report to gain a better understanding of how we navigated such uncertain times. This report demonstrates that we are well-served by our organizational priorities, which have continued to guide our efforts over the last year. If the last year has shown us anything, it is that our employees will not be deterred from their regulatory duties, that we will continue to be true to our goals and to enforce the highest safety standards.

Rumina Velshi
President

RESULTS AT A GLANCE

THE CNSC'S 4 STRATEGIC PRIORITIES



modern

TO HAVE A **MODERN** APPROACH TO NUCLEAR REGULATION

- 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.



trusted

TO BE A **TRUSTED** REGULATOR

- 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.



global

TO MAINTAIN OUR **GLOBAL** NUCLEAR INFLUENCE

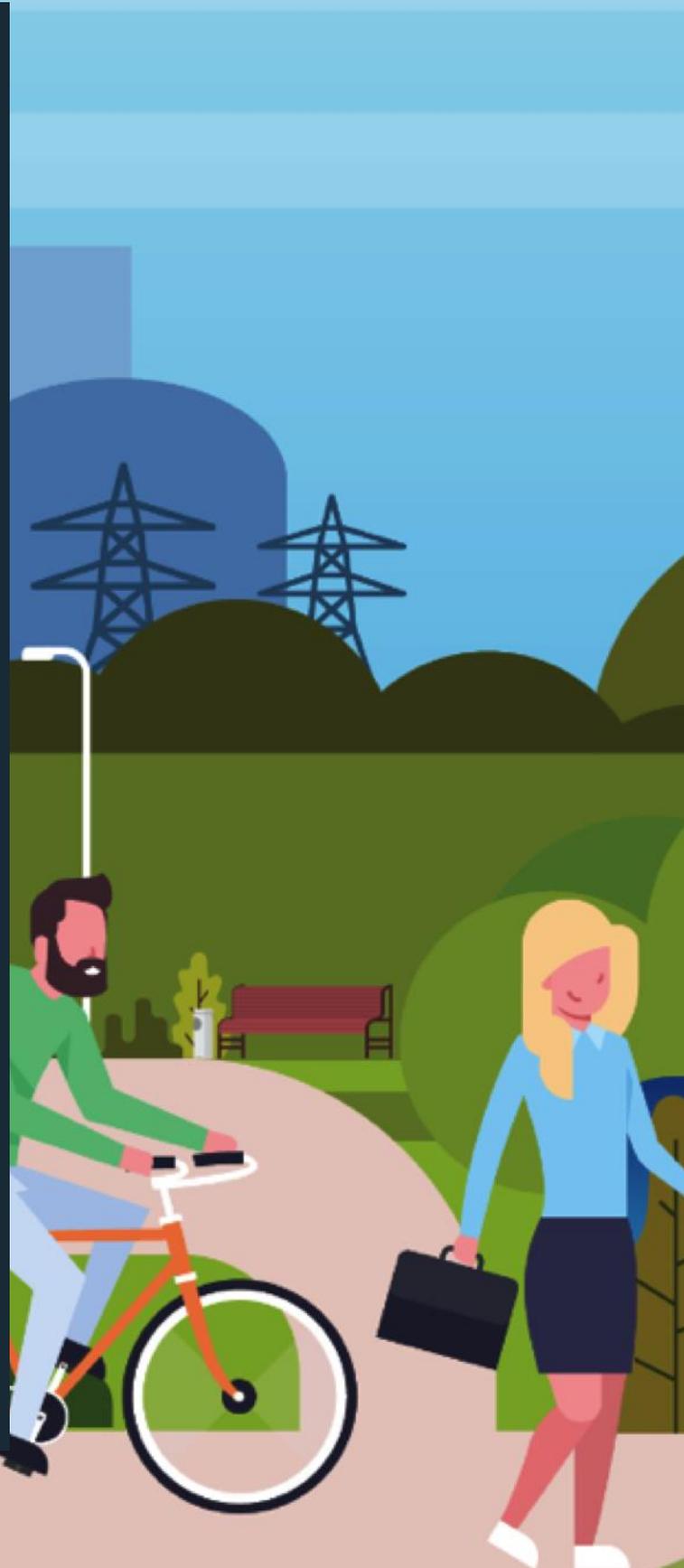
- The CNSC will continue to leverage and influence global nuclear efforts, relevant to Canadian interests and activities, to enhance international nuclear safety, security and non-proliferation.



agile

TO BE AN **AGILE** ORGANIZATION

- 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.



RESULTS AT A GLANCE

The commitment to the CNSC's core responsibility of nuclear regulation, the fulfillment of the organization's mandate, and the achievement of its departmental results for 2020–21 and beyond are delivered through the CNSC's [5 programs](#). The programs include the Nuclear Fuel Cycle Program, Nuclear Reactors Program, Nuclear Substances and Prescribed Equipment Program, Nuclear Non-Proliferation Program, and Scientific, Regulatory and Public Information Program (plus Internal Services), and are guided by 4 strategic priorities.



In 2020–21, Canada's Minister of Natural Resources released [Canada's SMR Action Plan¹](#), Canada's plan for the

development, demonstration and deployment of SMRs for multiple applications. As Canada's independent nuclear regulator, the CNSC has focused on readying itself to regulate emerging technologies with nuclear applications, including potential SMR projects. The CNSC remains on the forefront, with its **modern** regulatory framework, which can be applied to any technology. Stakeholders continue to express interest in how the CNSC would regulate SMRs, and it has conducted extensive pre-licensing engagement with potential applicants and stakeholders. Furthermore, the CNSC continued to engage with technology developers (vendors) under the CNSC's [pre-licensing vendor design review \(VDR\) process²](#), which may take place prior to the licensing process. VDRs provide an early opportunity for vendors of a reactor technology to engage with the CNSC and to seek clarity on the regulatory requirements and the expectations of their design.

Also in 2020–21, the CNSC and the Nuclear Energy Agency co-chaired a virtual workshop on innovative regulation. Moderated by CNSC Executive Vice-President and Chief Regulatory Operations Officer Ramzi Jammal, the workshop brought regulators, policy-makers and industry members from multiple sectors together to explore potential approaches to the regulation of emerging technologies.

Regulatory oversight during the COVID-19 pandemic

In response to the pandemic, the CNSC implemented immediate measures to ensure that it had the capacity to respond to unplanned events. It also reallocated resources to ensure licensing and compliance activities continued to be performed, and conducted outreach to ascertain licensees' operating environments.

The CNSC ensured that it had the capability to perform its regulatory functions, and developed alternative oversight processes for remote inspections and protocols for performing onsite inspections safely when they resumed in May 2020. Inspections were prioritized based on level of risk and adapted to ensure they followed government-mandated COVID-19 protocols.

In a post-COVID-19 reality, the CNSC intends to continue exploring a hybrid model of remote and onsite inspections, and to work with international partners to identify and share lessons learned to make inspections continuously more efficient and resilient.

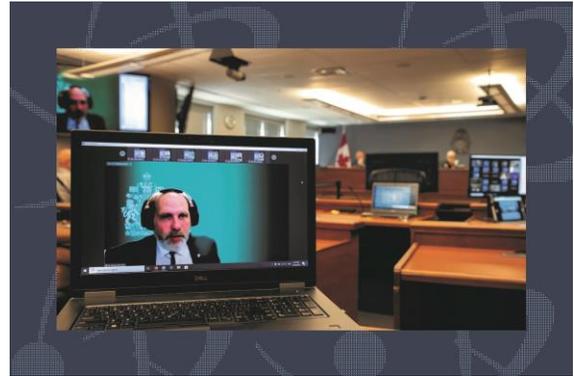


CNSC staff performing onsite inspections with COVID-19 protocols in place

The rapid growth of the gap between technology and government’s pace of policy and regulation adoption was at the forefront of the CNSC’s priorities in 2020–21. The CNSC continues to demonstrate modern nuclear regulation by analyzing innovative and emerging technologies and their potential impact on the CNSC’s regulatory framework. Use of disruptive, innovative, and emerging technologies (DIET) by licensees and proponents of new technologies (such as SMRs and artificial intelligence) is being explored to ensure the CNSC is ready to regulate in response to industry evolution. The CNSC is also proactively engaged in reviewing the regulatory framework to determine its readiness to regulate nuclear fusion technologies. The CNSC will continue to conduct periodic reviews of its framework to respond to fluctuations in the operating environment and technological innovations to address them proactively where possible.



In 2020–21, the CNSC demonstrated its goal of being a **trusted** regulator through pivoting and adopting new platforms and approaches to carryout business virtually. For example, because of the limitations on in-person meetings as a result of the pandemic, in 2020–21 the CNSC, began holding Commission proceedings virtually while ensuring that processes remain fair, safe, transparent, and accessible. Staff, licensees, Commission members and intervenors, including stakeholders, Indigenous groups and the public, were all able to participate remotely through video platforms.



First virtual Commission proceeding held in June 2020

Additionally, the CNSC implemented a new e-consultation platform at letstalknuclearsafety.ca³ that is making it easier, faster and more efficient to comment on the CNSC’s regulatory documents, discussion papers, environmental reviews and draft reports. The platform makes consultations more visible and accessible, and gives the CNSC more flexibility in how it engages additional people in consultation – from host communities, Indigenous groups, civil society organizations and industry. This e-consultation tool demonstrates our commitment to openness and engagement. This makes it easier for our stakeholders to be involved in nuclear-related decisions in their communities, and shows how we are working continuously to build and strengthen trust in our role as Canada’s nuclear regulator. The CNSC is also leveraging its network of regulatory partners, both domestically and internationally, to review best practices for stakeholder engagement during the pandemic.

Indigenous Reconciliation Strategy

In 2020–21, the CNSC developed a reconciliation strategy to support its commitment to build and strengthen trust and advancing reconciliation with Indigenous groups. This strategy consists of 5 strategic 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 into our regulatory practices

5. reducing financial and capacity barriers to enhance participation of Indigenous groups in CNSC regulatory processes, when possible

As part of the reconciliation strategy, the CNSC has developed a policy and approach to rights impact assessments and finalized its Indigenous Knowledge (IK) Policy Framework. In 2020–21, the CNSC continued to implement its long-term Indigenous engagement strategy and signed [terms of reference](#)⁴ for long-term engagement with Curve Lake First Nation (CLFN). Further actions are anticipated in the longer term pending feedback from Indigenous groups, proposals from CNSC staff and management, and from further lessons learned.



CLFN Chief Emily Whetung and Clare Cattrysse, the CNSC’s Director of Policy, Indigenous and International Relations, signed the terms of reference virtually.



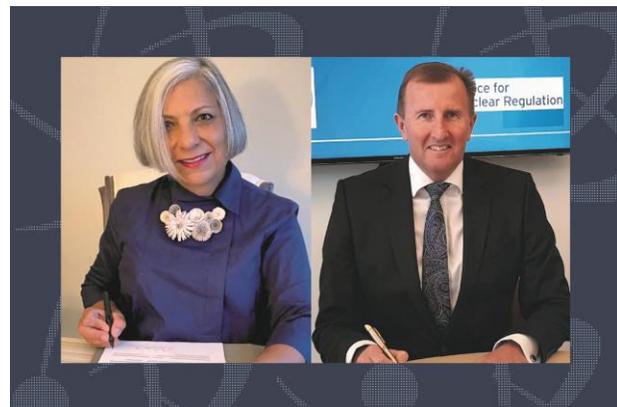
Despite travel restrictions in 2020–21, including the cancellation of various planned international conferences, the CNSC did not waver from maintaining its **global** nuclear influence and continued to promote these principles through virtual attendance and leadership in multilateral forums.

Maintaining bilateral relationships with regulatory partners continued to be a key priority for the CNSC. The CNSC participated virtually in a significant number of bilateral meetings, events and workshops. It was also able to continue bilateral peer-review activities under the *Convention on Nuclear Safety* and *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*.

Further to the signing of the memorandum of cooperation with the U.S. Nuclear Regulatory Commission in 2019–20, both regulators continued work under the Regulatory Cooperation Council, a forum to share scientific information about technical matters that aim to support more efficient reviews of SMRs and advanced reactor technologies. Activities included developing guidance for the content/review of new build licence applications for advanced reactors projects and sharing regulatory insights from the technical review of the NuScale SMR design certification review.

In 2020–21, the CNSC signed a [memorandum of understanding](#)⁵ for cooperation and exchange of information in nuclear regulatory matters and a [memorandum of cooperation](#)⁶ on advanced reactor and small modular reactor technologies with the UK’s Office of Nuclear Regulation. These collaborative arrangements are frameworks for the sharing of information, experience and good practices to ensure the safe development and deployment of innovative technologies.

Additionally, President Velshi’s role as Chair of the International Atomic Energy Agency (IAEA) Commission on Safety Standards provides the opportunity for countries to work together with the shared goal of nuclear safety, particularly when



CNSC President Rumina Velshi and the United Kingdom’s Office for Nuclear Regulation’s Chief Nuclear Inspector Mark Foy sign 2 collaborative agreements

dealing with innovative technologies. On March 25, 2021 President Velshi discussed the CNSC’s priorities and role in regulating advanced reactor technologies at the U.S. Nuclear Industry Council Advanced Reactors Summit VIII. Her [remarks](#)⁷ focused on the CNSC’s response to the pandemic and its regulatory readiness for innovation, as well as leadership in the areas of international harmonization of regulatory requirements.



In anticipation of future changes to the nuclear industry, such as SMRs, waste and decommissioning, new mines, etc., that will likely have an impact on its regulatory work, the CNSC, as an **agile** organization, began conducting a comprehensive review of its work. This project – named Project Athena – began in 2019 and is expected to be completed in 2021–22. The goal is to make smart, timely and durable changes to adapt to our new environment.

Through the implementation of its digital strategy, the CNSC has enabled a transformation to an agile and connected workforce. This also supports the delivery of regulatory oversight through remote work capabilities and lays the groundwork for a foundational shift in how the CNSC leverages technology to deliver on its regulatory mandate.

Diversity and inclusion are fundamental to the CNSC’s regulatory safety culture and critical to spurring innovation and team collaboration. Over the years, the CNSC has taken deliberate actions to build a healthy, collaborative workplace and a supportive culture for employees. The CNSC’s Diversity and Inclusion Plan 2019–2022 outlines ongoing and new commitments to leverage diversity and to make progress in creating a safe, inclusive workplace.

In 2020–21, the CNSC joined the [Equal by 30 Campaign](#)⁹ to advance the participation of women in the clean energy transition and close the gender gap. Developed as a part of the [Clean Energy, Education and Empowerment Initiative](#)¹⁰ this campaign also serves to support the Government of Canada’s contribution to the United Nations’ 2030 Agenda for Sustainable Development: Goal 5 – Gender Equality and Goal 10 – Reduced Inequalities.

BLACKNORTH CEO PLEDGE:

In February 2021, the CNSC became the first federal agency to sign the [BlackNorth CEO Pledge](#)⁸. BlackNorth’s goal is to help Canada move towards an equitable future, where Black Canadians and other underrepresented groups will achieve their full potential, free from systemic racial barriers.

Women in science, technology, engineering and mathematics

With greater diversity in its workforce, the CNSC will be better equipped to achieve regulatory excellence and deliver on its mandate. That is why a Women in Science, Technology, Engineering and Mathematics (WISTEM) initiative was implemented in 2019–2020 to empower women in their STEM careers and make women in STEM more visible both within and outside of the CNSC. Under the WISTEM initiative, 4 CNSC employee-led task forces were established in 2020–21: research, outreach, network, and coaching and mentoring.

In September 2021, President Velshi hosted the inaugural meeting of the International Gender Champions Impact Group on Gender Equality in Nuclear Regulatory Agencies, working with international partners to improve gender equality in the nuclear sector. Being part of a community of heads of regulatory agencies committed to working on gender issues is an important pursuit for the CNSC.

In February 2021, President Velshi called for action on gender equity at the Nuclear Energy Agency’s second meeting on improving gender balance in the nuclear sector and continues to speak to various groups to advocate for gender equity in nuclear and to mentor young women considering a STEM career.

Additionally in 2020–21, President Velshi along with other executive leaders in the nuclear community have convened the DAWN (Driving Advancement of Women in Nuclear) group which strives to empower women to establish and grow their careers in the nuclear industry. The group is undertaking three actions to support this objective:

- address the confidence gap to allow for women to thrive
- increase the number of women in licensed positions at nuclear power plants
- gain male allies to promote gender equity



President Velshi attending the second Working Meeting on Improving the Gender Balance in Nuclear Energy organized by the Nuclear Energy Agency’s OECD

For more information on the CNSC’s plans, priorities and results achieved, see the “Results: what we achieved” section of this report.

RESULTS: WHAT WE ACHIEVED

CORE RESPONSIBILITY: NUCLEAR REGULATION

THE CNSC'S DEPARTMENTAL RESULTS

1

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

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2

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

PAGE 10

3

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

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4

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

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RESULTS: WHAT WE ACHIEVED

Nuclear regulation

The CNSC regulates the development, production and use of nuclear energy and substances to protect the 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.

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.

Environmental assessments

In 2020–21, the CNSC continued environmental assessments commenced under the *Canadian Environmental Assessment Act, 2012*. These include the environmental assessments of Canadian Nuclear Laboratories’ proposed environmental remediation projects: the siting and construction of a near surface disposal facility in Chalk River, Ontario, and the decommissioning of the Nuclear Power Demonstration reactor in Rolphton, Ontario, as well as the decommissioning of the Whiteshell Reactor #1 (WR-1) in Pinawa, Manitoba. In 2020–21, the CNSC continued to work on technical reviews of revised environmental impact statements and licensing documentation for these 3 environmental remediation and decommissioning projects. In addition, in 2020–21 the CNSC worked on environmental assessments for 2 proposed uranium mines in northern Saskatchewan (Denison Mines’ Wheeler River Project and NexGen Energy Ltd.’s Rook I Project) as well as Global First Power’s proposed micro modular reactor project at the Chalk River Laboratories site.

Refurbishments and major component replacement

Of note in 2020–21, the CNSC continued to provide regulatory oversight of the Darlington Nuclear Generating Station refurbishment and the major component replacement at Bruce Nuclear Generating Station. Early into the 2020–21 fiscal year, the CNSC approved the removal of Darlington Nuclear Generating Station’s regulatory hold point 4 for Unit 2, which allowed the reactor to operate above 35% full power before it resumed commercial operation shortly thereafter. The defuelling and isolation from containment of Unit 3 marked the beginning of its refurbishment, shifting the CNSC’s regulatory focus from Unit 2 to Unit 3.

Bruce Nuclear Generating Station’s major component replacement of Unit 6 is being overseen for its safe conduct, with pressure tube removal underway as well as planning work for Unit 3 major component replacement.

Please visit the [Darlington Nuclear Generating Station page](#)¹¹ and [Bruce A and B Nuclear Generating Stations page](#)¹² on the CNSC website for more information on the progress of these projects.

Regulatory framework

To ensure consistency in licensing and compliance verification, the CNSC’s regulatory framework and environmental assessment requirements must be clear and understood by licensees. The regulatory framework consists of [laws](#)¹³ passed by Parliament, regulations, and licences and regulatory documents that are used to regulate Canada’s nuclear industry. In 2020–21, the CNSC published 12 [regulatory documents](#)¹⁴. Regulatory documents clarify the CNSC’s requirements and may contain practical guidance to licensees and applicants on how to meet the CNSC’s regulatory requirements. Such guidance can include information on possible approaches to the design of nuclear facilities, the design and implementation of required management and operational programs, and forms for applying for licences or reporting information to the Commission.

Waste and decommissioning highlights

In 2020–21, the following 5 regulatory documents were published after being approved by the Commission, completing the CNSC’s regulatory framework for waste and decommissioning.

These documents were developed with extensive consultation. They consolidate requirements, clarify terminology, modernize the existing framework and align with best practices, including International Atomic Energy Agency standards.

1. REGDOC-2.11.1, *Waste Management, Volume I: Management of Radioactive Waste*
2. REGDOC-2.11.1, *Waste Management, Volume III: Safety Case for Long-Term Radioactive Waste Management, Version 2*
3. REGDOC-2.11.2, *Decommissioning*
4. REGDOC-1.2.1, *Guidance on Deep Geological Repository Site Characterization*
5. REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*

The CNSC published a revision to REGDOC-2.2.4, *Fitness for Duty, Volume II: Managing Alcohol and Drug Use* in 2020–21. The update, which was made based on rigorous research, benchmarking and extensive consultation, includes revised drug testing thresholds and approved methods for oral fluid testing and point-of-collection testing. The changes complement other existing requirements, such as random and pre-placement testing, that ensure facility staff in key roles perform optimally and provide the highest level of safety for all Canadians. The CNSC is the first federal regulator in Canada to require pre-placement and random testing of alcohol and drug use for safety-critical positions.

CNSC Laboratory

The CNSC Laboratory supports the organization by providing sample analysis and radiation instrument services and training. In 2020–21, the lab also continued to assist North, South and Central American countries in improving and maintaining environmental testing laboratories through the IAEA’s Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) program.

The CNSC is proud to partner with [Laboratories Canada](#)¹⁵, as part of the Government of Canada’s 25-year strategy to rebuild federal laboratories and strengthen federal science with an initial investment of \$2.8 billion. This strategy aims to provide all federal scientists with leading-edge facilities, modernized information management and information technology 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.



Under Laboratories Canada, the CNSC is part of the 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 Laboratory also plays an important role in the CNSC’s [Independent Environmental Monitoring Program](#)¹⁶, which helps verify that the public and the environment around CNSC-regulated nuclear facilities are not adversely affected by releases to the environment.

Environmental Testing During COVID-19

When staff in the National Capital Region could not travel to conduct routine environmental testing around the Point Lepreau Nuclear Generating Station due to COVID-19 restrictions, specialists in Ottawa offered remote training for CNSC site staff on the sample collection process. These adaptations eliminated the need for interprovincial travel, while ensuring that the testing done to help confirm the safety of Canadians and the environment could still occur.



CNSC staff conducting virtual training for IEMP sample collections

DEPARTMENTAL RESULT 3

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

Nuclear security

The CNSC regulates nuclear security by way of the [Nuclear Security Regulations](#)¹⁷, the *General Nuclear Safety and Control Regulations*, and associated regulatory documents. Under these regulations, licensees must adhere to stringent nuclear security requirements and demonstrate they have programs in place to prevent the theft and sabotage of nuclear substances. Furthermore, the CNSC works closely with nuclear operators, law enforcement, security and intelligence agencies, and other government departments to ensure that nuclear materials and facilities are adequately protected. In addition, the CNSC cooperates with international partners and supports international organizations to promote nuclear security best practices and adherence to international instruments for nuclear security.

The CNSC is in the process of modernizing its nuclear security regulatory framework. The objective is to develop a modern regulatory framework that is prepared to address technological and operational changes in the nuclear industry while addressing the expectations of impacted Indigenous peoples and communities. The CNSC published discussion papers to support consultation under this modernization project. The CNSC has also begun revising its regulatory approach to respond to proposed amendments to the *Nuclear Safety and Control Act* (NSCA) as a part of Bill C-21. The bill includes provisions to amend the NSCA to strengthen the security framework at high-security nuclear facilities. This includes a permanent legal framework to address the possession and use of firearms, and expands protections for nuclear security officers by granting them peace officer status for the purposes of safeguarding high-security nuclear facilities.

Non-proliferation and import/export controls

The exports of significant nuclear items are made subject to [nuclear cooperation agreements \(NCAs\)](#)¹⁸. These are treaty-level agreements designed to minimize the proliferation risk associated with international transfers of nuclear items. The CNSC implements the terms and conditions of NCAs through [administrative arrangements](#)¹⁸ with its regulatory 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. This allows CNSC to meet [Canada's nuclear non-proliferation](#)¹⁹ policy and international obligations and commitments. During 2020–21, 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](#)²⁰ and the [General Nuclear Safety and Control Regulations](#)²¹. A total of 1,044 import and export licensing decisions were made by the CNSC under these regulations.

DEPARTMENTAL RESULT 4

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

Scientific and regulatory information

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.

The CNSC offers the public a [comprehensive list of relevant scientific and technical information](#)²² on its website. Topics can be searched according to the CNSC's [14 safety and control areas \(SCAs\)](#)²³, which are used to assess, evaluate, review, verify and report on regulatory requirements and performance. The SCAs are presented in a comprehensive framework and grouped into 3 primary functional areas: management; facility and equipment; and core control processes.

In 2020–21, the CNSC further increased the release of information that explains regulatory activities and decisions, and made scientific reports, documents and data more accessible and easier to use through facility registries on the [CNSC website](#)²⁴, as well as on Government of Canada [Open Science and Data Portal](#)²⁵. This included the first stand-alone environmental protection review report for the Blind River Refinery, which was published on the CNSC's website [in full](#)²⁶, along with a [plain-language summary](#)²⁷, as well as on the [Open Government Information Portal](#)²⁵.

Research and Support Program

The CNSC funds an external research program to obtain knowledge and information needed to support its regulatory mission. 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. For more information on the outcomes of this program, visit the [CNSC's website](#)²⁸.



As outlined in the CNSC's 2020–21 Departmental Plan, fitness for service with respect to the management of aging structures, systems and components, is a priority research consideration at the CNSC. The organization is currently conducting **12** research projects related to fitness for service; for example, material degradation of pressure boundary components, and aging and degradation of non-refurbished components, of which **4** were completed in 2020–21. In addition to these projects, the CNSC focused research on areas of waste management, physical design, safeguards and non-proliferation, human performance, safety analysis, and environmental protection.

Consultation and engagement

The CNSC welcomes input from the public and Indigenous groups on draft regulatory documents that are open for consultation on [Let's Talk Nuclear Safety](#)³. Each regulatory document open for public comment is made available for a specified period of time (at least 30 days). At the end of the consultation period, CNSC staff review all input and comments are posted for feedback on the CNSC website. The [consultation section](#)²⁹ of the CNSC website provides up-to-date information on current consultations for regulatory initiatives, and the necessary information and guidance on how to participate. In 2020–21, the CNSC posted **9** regulatory documents for public consultation and to date, **53** people have provided comments.

Indigenous and public engagement and consultation

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. The CNSC's 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](#)³⁰.



Funding to enhance the participation of Indigenous groups, the public and stakeholders

The CNSC's Participant Funding Program (PFP) was established in 2011 to enhance the participation of Indigenous peoples, members of the public, and stakeholders in Commission proceedings, including environmental assessments for major nuclear facilities.



The CNSC offered participant funding for a variety of processes and activities in relation to Commission proceedings, including licence renewals and amendments, regulatory oversight reports, indigenous knowledge studies, participation in the CNSC's Independent Environmental Monitoring Program, as well as meetings and collaborative activities with Indigenous groups.

Learn more about the [PFP](#)³¹ and watch a short [CNSC video](#)³² about it by visiting the CNSC website.

Engaging stakeholders through “Meet the Nuclear Regulator” and other informational webinar sessions

From uranium mines to facilities for research and final waste disposal, Canada’s nuclear facilities remain among the safest and most secure in the world. Through “Meet the Nuclear Regulator” sessions, CNSC experts offer the public an opportunity to learn about how to participate in the licensing process, in an effort to build understanding of and public confidence in Canada’s nuclear regulation.

To participate in an upcoming [“Meet the Nuclear Regulator” or webinar session](#)³³, visit the CNSC website.



Keeping the public informed

Disseminating information is a large part of the CNSC’s mandate. Previously, CNSC staff traveled across the country to visit Canadians and answer questions on nuclear regulation. This year, due to the pandemic, CNSC staff participated virtually in community meetings, town halls and webinars to build relationships with stakeholders. This ongoing dialogue is important for increasing public understanding and trust in the CNSC’s role of protecting Canadians, their health and the environment.

In their ongoing commitment to transparency and openness, CNSC staff continued to respond to public questions about nuclear safety.



Online engagement

Disseminating information is part of the CNSC’s mandate, but that information also has to be accessible and understood. One goal of the CNSC’s social media platforms – [YouTube](#)³⁴, [Facebook](#)³⁵, [LinkedIn](#)³⁶ and [Twitter](#)³⁷ – is to provide technical information in plain language that explains complicated nuclear science in simple terms.

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

Both the CNSC and licensees continue to advance in making documents and reports readily available online to members of the public. Beginning in 2018, documents submitted for Commission proceedings



became available on the [CNSC website](#)³⁸. In 2020–21, the CNSC further increased the release of information that supports regulatory activities and decisions, and made scientific reports, documents and data more accessible and easier to use through facility webpages on the [CNSC website](#)²⁴, as well as on Government of Canada [Open Science and Data Portal](#)²⁵.

Joint CNSC and Environment and Climate Change Canada / National Pollution Release Inventory
Task Team

Under the joint CNSC and Environment and Climate Change Canada (ECCC) / National Pollution Release Inventory (NPRI) Task Team, efforts are ongoing to increase accessibility to core environmental protection documentation, with an emphasis on radionuclide releases to the environment. In 2020–21, the CNSC engaged with licensees to expand the information posted on the [Open Science and Data Portal](#)²⁵ such as producing new types of data measurements and increasing the sampling rate of indicators. The CNSC has continued to collaborate with ECCC in linking the NPRI Web pages to support the CNSC’s commitment to transparency and openness. The CNSC is working with NRCAN to determine the necessary steps to incorporate the posted radionuclide release databases into the [Open Science and Data Portal](#)²⁵, which have been recently developed and are being managed by NRCAN on behalf of the Impact Assessment Agency.

Results Achieved

Departmental results	Departmental Result Indicators	Target	Date to achieve target	2018–19 Actual results	2019–20 Actual results	2020–21 Actual results
The environment is protected from releases from nuclear facilities and activities.	Number of instances of radiological releases that exceeded regulatory limits	0	March 31, 2021	0	1 ³⁹	0
	Number of instances of hazardous releases that exceeded regulatory limits	0	March 31, 2021	9 ⁴⁰	2 ⁴¹	2 ⁴²
	Percentage of Independent Environmental Monitoring Program (IEMP) samples (food, water, air and vegetation) that met guidelines	100%	March 31, 2021	97% ⁴³	98.9% ⁴⁴	94.9% ⁴⁵
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, 2021	1 ⁴⁶	0	0
	Number of radiation doses to workers that exceeded regulatory limits	0	March 31, 2021	1 ⁴⁷	2 ⁴⁸	3 ⁴⁹
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, 2021	0	0	0
	Number of lost or stolen radioactive sealed sources	≤ 2	March 31, 2021	0	0	0
	Canada's international commitments to the International Atomic Energy Agency (IAEA) with respect to nuclear safeguards and verification are met	Receipt of broader conclusion	December 31, 2020	Met	Met	Met
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	> 90%	March 31, 2021	100%	100%	100%
	Percentage of CNSC proceedings for which the Participant Funding Program (PFP) was made available to members of the public and Indigenous peoples	> 90%	March 31, 2021	100%	100%	100%
	Percentage of public proceedings documents that were available in a timely manner upon request by members of the public and Indigenous peoples	> 90%	March 31, 2021	100%	100%	100%
	Number of Indigenous peoples who participated in CNSC proceedings	Increasing trend	March 31, 2021	18 ⁵⁰	22	18 ⁵¹

Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
99,256,451	106,939,338	105,174,197	92,862,646	(14,076,692)

Human resources (full-time equivalents)

2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
618	581	(37)

Financial, human resources and performance information for the Canadian Nuclear Safety Commission's Program Inventory is available in the [GC InfoBase](#)⁵².

Internal services

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

Results highlights

In accordance with the *Employment Equity Act*, CNSC conducted an Employment Systems Review in 2020–21, outlining areas of strength as well as potential barriers to equity group representation and participation. An action plan is in

development to address recommendations to strengthen inclusive

workplace practices, build trust and enhance equity-seeking group representation, particularly for Indigenous peoples, persons with disabilities and visible minorities.

The Clerk of the Privy Council has challenged all public service employers to be bold, audacious and to consider the labour market availability as the floor and not the ceiling for representation in the federal public service. The CNSC deliberately engaged its leadership in this challenge, embedding inclusive leadership behaviours into the key leadership competencies and applying these to executive selection and development activities. In 2021–22, CNSC leaders will be accountable for progress on equity-seeking group representation and inclusive leadership practices through commitments in the performance management contracts.

The CNSC built understanding and awareness of equity, diversity and inclusion issues through training sessions and formal partnerships with the Canada School of the Public Service, the Canadian Centre for

Employee network highlights

CNSC employee networks 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. The establishment of these networks allows for diverse conversations to take place and build awareness amongst the employee community.

In 2020–21, the CNSC developed 2 new networks: the Black Employees Network and the Indigenous Network.

The Black Employees Network continues to host Safe Space Speaker Series to increase awareness of each other's experiences and perspectives. In 2020–21, it hosted **13** speakers and **11** events to engage CNSC staff and foster this open dialogue environment. Additionally, the Indigenous Network has developed a work plan to increase Indigenous awareness among staff and support CNSC Indigenous Reconciliation Strategy initiatives. The CNSC currently has 5 employee networks:

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

Diversity and Inclusion, LinkedIn Learning, Gartner Research and as the first Government of Canada signatory to the Black North Initiative. Numerous events were held to promote mental health awareness and provide tools and support to employees in addition to 15 “safe space” speaking events, and multiple events during Black History month and “le Mois de la Francophonie”.

Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
44,578,522	48,029,097	48,010,200	46,664,375	(1,364,722)

Human resources (full-time equivalents)

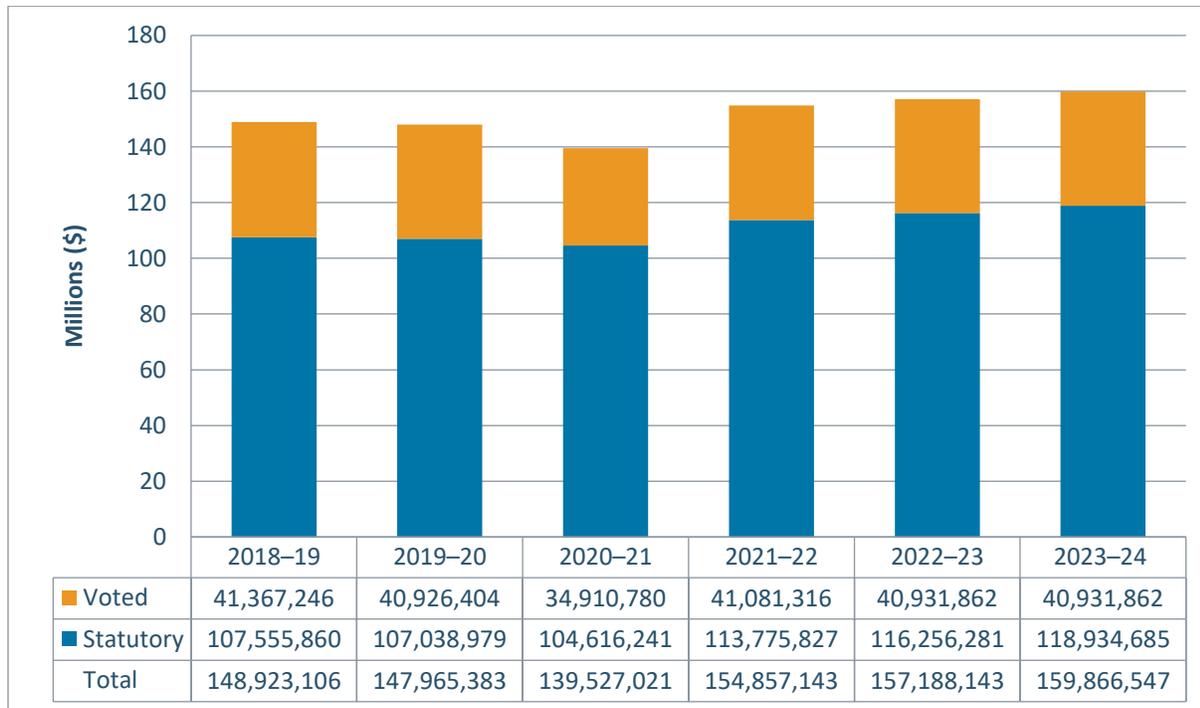
2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
287	269	(18)

ANALYSIS OF TRENDS IN SPENDING AND HUMAN RESOURCES

Actual expenditures

Departmental spending trend graph

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



The CNSC is financed by the Government of Canada through voted Parliamentary and statutory authorities. Included in the statutory appropriation is a revenue-spending authority, which allows the CNSC to spend most licence fee revenue, as well as the funding for contributions to employee benefit plans. The voted authority provides funding for activities exempt from paying fees (i.e., hospitals and universities) and activities with respect to Canada's international obligations (including non-proliferation activities), public responsibilities such as emergency management and public information programs, and the updating of the Nuclear Safety Control Act and its associated regulations.

The budgetary planning summary section provides variance explanations on year to year fluctuations in spending.

Budgetary performance summary for Core Responsibility and Internal Services (dollars)

Core responsibilities and Internal Services	2020–21 Main Estimates	2020–21 Planned spending	2021–22 Planned spending	2022–23 Planned spending	2020–21 Total authorities available for use	2018–19 Actual spending (authorities used)	2019–20 Actual spending (authorities used)	2020–21 Actual spending (authorities used)
Nuclear Regulation	99,256,451	106,939,338	105,302,857	107,901,680	105,174,197	100,067,374	101,570,723	92,862,646
Subtotal	99,256,451	106,939,338	105,302,857	107,901,680	105,174,197	100,067,374	101,570,723	92,862,646
Internal Services	44,578,522	48,029,097	49,554,286	49,286,463	48,010,200	48,855,732	46,394,660	46,664,375
Total	143,834,973	154,968,435	154,857,143	157,188,143	153,184,397	148,923,106	147,965,383	139,527,021

The CNSC's Main Estimates for fiscal year 2020–21 totalled \$143.8 million, compared to total authorities of \$153.2 million. The \$9.4 million increase is primarily attributable to:

- contributions to employee benefit plans for personnel expenditures related to subsection 21(3) of the *Nuclear Safety and Control Act* that are not included in the 2020–21 Main Estimates: \$9.3 million
- an operating budget carry-forward from 2019–20 to 2020–21: \$1.5 million
- funding received from the Department of National Defence to support the Canadian Safety and Security Program: \$0.4 million
- funds received from the Treasury Board of Canada Secretariat for negotiated salary adjustments and from the Regulators' Capacity Fund: \$0.3 million
- a decrease in revenue spending authority based on final costs: \$2.1 million

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

The \$8.5 million decrease in actual spending from \$148.0 million in 2019–20 to \$139.5 million in 2020–21 is mainly due to:

- a decrease in travel expenses, with management implementing extensive restrictions as a consequence of the COVID-19 pandemic: \$4.5 million
- lower personnel costs resulting from a decrease in temporary personnel FTEs, partially offset by economic increases: \$1.5 million
- a decrease in costs for professional and special services, primarily IT services, research contracts and translation: \$1.0 million
- a decrease in rental costs, largely resulting from a reduction in leased accommodation space: \$0.8 million

- reduced capital expenditures offset by acquisitions to support the remote work environment: \$0.7 million

Planned results for 2020–21 were established prior to the COVID-19 pandemic. As a result, actual spending was \$139.5 million in 2020–21, significantly lower than the planned spending of \$155.0 million. To comply with the guidance of public health authorities and prioritize the health and safety concerns of staff and licensees, CNSC management implemented extensive restrictions on authorized travel. Spending on personnel and professional services also decreased as a consequence of remote work and pandemic limitations.

As published in the 2021–22 Departmental Plan, planned spending is forecasted to increase to \$154.9 million in 2021–22 and \$157.2 million in 2022–23, primarily as a result of anticipated salary increases and a projected higher level of staffed positions. Spending in 2021–22 could continue to remain lower than initially planned as a result of the ongoing impact of COVID-19, particularly in the areas of travel, staffing and some professional services.

Actual human resources

Human resources summary for core responsibilities and Internal Services (full-time equivalents)

Core responsibilities and Internal Services	2018–19 Actual full-time equivalents	2019–20 Actual full-time equivalents	2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2021–22 Planned full-time equivalents	2022–23 Planned full-time equivalents
Nuclear regulation	625	605	618	581	629	623
Subtotal	625	605	618	581	629	623
Internal Services	293	281	287	269	284	284
Total	918	886	905	850	913	907

The decrease in FTEs from 918 in 2018–19 to 886 in 2019–20 was mainly due to cost containment initiatives and the timing of positions vacated and subsequently staffed during the year. The decrease in FTEs from 886 in 2019–20 to 850 in 2020–21 is primarily a result of reduced term staffing due to COVID-19. Planned FTE use is forecasted to increase to 913 in 2021–22, from 850 in 2020–21, primarily due to the anticipated staffing of vacant positions.

The FTE forecast anticipates a marginal change from 913 FTEs in 2021–22 to 907 FTEs in 2022–23.

Expenditures by vote

For information on the Canadian Nuclear Safety Commission's organizational voted and statutory expenditures, consult the [Public Accounts of Canada 2020–2021](#)⁵³.

Government of Canada spending and activities

Information on the alignment of the Canadian Nuclear Safety Commission's spending with the Government of Canada's spending and activities is available in [GC InfoBase](#)⁵².

Financial statements and financial statements highlights

Financial statements

The Canadian Nuclear Safety Commission's financial statements (audited) for the year ended March 31, 2021 are available on the [departmental website](#)⁵⁴.

Financial statement highlights

Condensed Statement of Operations (unaudited) for the year ending March 31, 2021 (dollars)

Financial information	2020–21 Planned results	2020–21 Actual results	2019–20 Actual results	Difference (2020–21 Actual results minus 2020–21 Planned results)	Difference (2020–21 Actual results minus 2019–20 Actual results)
Total expenses	173,997,000	157,861,636	167,523,084	(16,135,364)	(9,661,448)
Total revenues	125,267,000	114,037,050	118,507,107	(11,229,950)	(4,470,057)
Net cost of operations before government funding and transfers	48,730,000	43,824,586	49,015,977	(4,905,414)	(5,191,391)

The total actual expenses of \$157.9 million were 9.3% or \$16.1 million less than the planned expenses of \$174.0 million as a result of lower than planned salaries and associated employee benefit costs, professional and special services, and travel expenses. The actual total revenues of \$114.0 million were 9.0% or \$11.2 million lower than planned revenues of \$125.2 million due to the reduced levels of spending and resulting cost recovery.

The CNSC's total expenses decreased by 5.8% or \$9.7 million and revenues decreased by 3.8% or \$4.5 million from 2019–20 to 2020–21. The decrease in expenses is primarily due to:

- reduced travel and relocation as a result of extensive restrictions on authorized travel
- lower professional services costs due to a decrease in the cost of information technology services provided by Shared Services Canada
- a decrease in amortization expenses due to an increase in fully amortized assets
- a decrease in accommodation costs due a reduction in leased office space

The decrease in revenues is due to the reduction in spending, partially offset by increases in revenues from special projects and fees from nuclear substances used for commercial and industrial activities.

Condensed Statement of Financial Position (unaudited) as of March 31, 2021 (dollars)

Financial information	2020–21	2019–20	Difference (2020–21 minus 2019–20)
Total net liabilities	52,015,686	51,282,603	733,083
Total net financial assets	35,829,557	34,208,634	1,620,923
Departmental net debt	16,186,129	17,073,969	(887,840)
Total non-financial assets	11,610,242	13,467,852	(1,857,610)
Departmental net financial position	(4,575,887)	(3,606,117)	(969,770)

The increase of \$0.7 million in the CNSC's net liabilities is mainly due to an increase in the amount of year-end refunds payable to licensees resulting from the excess collection of fees charged over actual fees earned at year-end, partially offset by decreases in vacation pay and compensatory leave and employee future benefits.

The increase of \$1.6 million in the CNSC's net financial assets is primarily a result of an increase in the amount due from the Consolidated Revenue Fund, which is an amount due from the federal government that may be disbursed without further charges to the CNSC's authorities.

The increase of \$0.9 million in departmental net debt is a result of the increase of net liabilities, offset by an increase in total net financial assets.

The decrease of \$1.9 million in non-financial assets is a result of a decrease in the net book value of tangible capital assets as amortization expenses exceeded the cost of new capital acquisitions.

The decrease of \$1.0 million in the CNSC's departmental net financial position, which is the difference between total non-financial assets and the departmental net debt, is attributable to the decrease in tangible capital assets.

CORPORATE INFORMATION

Organizational profile

Appropriate minister: Seamus O'Regan

Institutional head: [Rumina Velshi](#)⁵⁵

Ministerial portfolio: [Natural Resources Canada](#)⁵⁶

Enabling instrument: [Nuclear Safety and Control Act](#)⁵⁷

Year of incorporation / commencement: 2000

Other: The CNSC's headquarters is 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](#)⁵⁸.

Operating context

Information on the operating context is available on the [Canadian Nuclear Safety Commission's website](#)⁵⁸.

Reporting framework

The Canadian Nuclear Safety Commission's Departmental Results Framework and Program Inventory of record for 2020–21 are shown below.

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](#)⁵²[Error! Bookmark not defined.](#).

SUPPLEMENTARY INFORMATION TABLES

The following supplementary information tables are available on the [Canadian Nuclear Safety Commission's website](#)⁵⁸:

- ▶ Reporting on Green Procurement
- ▶ Details on transfer payment programs
- ▶ Gender-based analysis plus

FEDERAL TAX EXPENDITURES

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures each year in the [Report on Federal Tax Expenditures](#)⁵⁹. This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs as well as evaluations and GBA+ of tax expenditures.

ORGANIZATIONAL CONTACT INFORMATION

Mailing address

Head office
280 Slater Street
P.O. Box 1046, Station B
Ottawa, Ontario K1P 5S9
Canada

Telephone: 613-995-5894

Toll free: 1-800-668-5284

Fax: 613-995-5086

Email: cncs.info.ccsn@cncs-ccsn.gc.ca

Website: www.nuclearsafety.gc.ca⁶⁰

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 an appropriated department over a three-year period. Departmental Plans are tabled in Parliament each spring.

DEPARTMENTAL PRIORITY (PRIORITÉ)

A plan or project that a department has chosen to focus and report on during the planning period. 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 Departmental Result represents the change or changes that the department seeks to influence. 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 quantitative measure of progress on a departmental result.

DEPARTMENTAL RESULTS FRAMEWORK (CADRE MINISTÉRIEL DES RÉSULTATS)

Consists of the department's Core Responsibilities, Departmental Results and Departmental Result Indicators.

DEPARTMENTAL RESULTS REPORT (RAPPORT SUR LES RÉSULTATS MINISTÉRIELS)

A report on an appropriated 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, for whom and in what circumstances. 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 help identify the potential impacts of policies, Programs and services on diverse groups of women, men and gender differences. We all have multiple identity factors that intersect to make us who we are; GBA+ considers many other identity factors, such as race, ethnicity, religion, age, and mental or physical disability.

GOVERNMENT-WIDE PRIORITIES (PRIORITÉS PANGOUVERNEMENTALES)

For the purpose of the 2020–21 Departmental Results Report, those high-level themes outlining the government’s agenda in the 2019 Speech from the Throne, namely: Fighting climate change; Strengthening the Middle Class; Walking the road of reconciliation; Keeping Canadians safe and healthy; and Positioning Canada for success in an uncertain world.

HORIZONTAL INITIATIVE (INITIATIVE HORIZONTALE)

An initiative where two or more departments 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 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 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.

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 Canada’s Small Modular Reactor, SMR Action Plan, <https://smractionplan.ca/>
- 2 Canadian Nuclear Safety Commission, Pre-Licensing Vendor Design Review, <https://nuclearsafety.gc.ca/eng/reactors/power-plants/pre-licensing-vendor-design-review/index.cfm?pedisable=true>
- 3 Government of Canada, Let’s Talk Nuclear Safety, <https://www.letstalknuclearsafety.ca/>
- 4 Canadian Nuclear Safety Commission, Indigenous consultation, engagement and reconciliation <http://www.nuclearsafety.gc.ca/eng/resources/aboriginal-consultation/index.cfm>
- 5 Office for Nuclear Regulation, Memorandum of Understanding for Cooperation and Exchange of Information in Nuclear Regulatory Matters Between the Canadian Nuclear Safety Commission and the United Kingdom Office for Nuclear Regulation, <https://www.onr.org.uk/documents/2020/mou-onr-cnsc.pdf>
- 6 Office for Nuclear Regulation, Memorandum of Cooperation on Advanced Reactor and Small Modular Reactor Technologies Between the Canadian Nuclear Safety Commission and the United Kingdom Office for Nuclear Regulation, <https://www.onr.org.uk/documents/2020/moc-onr-cnsc.pdf>
- 7 Canadian Nuclear Safety Commission, Opening Remarks by President Velshi at the U.S. Nuclear Industry Council Advanced Reactor Summit VIII, <https://www.canada.ca/en/nuclear-safety-commission/news/2021/04/opening-remarks-by-president-velshi-at-the-us-nuclear-industry-council-advanced-reactor-summit-viii.html>
- 8 The Canadian Council of Business Leaders Against Anti-Black Systemic Racism, BlackNorth, <https://blacknorth.ca/wp-content/uploads/2020/09/CEO-Pledge.pdf>
- 9 Equal by 30, Canadian Nuclear Safety Commission (CNSC), <https://www.equalby30.org/en/content/canadian-nuclear-safety-commission-cnsc>
- 10 C3E International Initiative, Advancing gender equality together in clean energy, <https://www.c3e-international.org/>
- 11 Canadian Nuclear Safety Commission, Darlington Nuclear Generating Station, <https://nuclearsafety.gc.ca/eng/reactors/power-plants/nuclear-facilities/darlington-nuclear-generating-station/index.cfm>
- 12 Canadian Nuclear Safety Commission, Bruce A and B Nuclear Generating Station, <http://nuclearsafety.gc.ca/eng/reactors/power-plants/nuclear-facilities/bruce-nuclear-generating-station/index.cfm>
- 13 Canadian Nuclear Safety Commission, Acts and Regulations, www.nuclearsafety.gc.ca/eng/acts-and-regulations/acts/index.cfm
- 14 Canadian Nuclear Safety Commission, Regulatory Documents, www.nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/index.cfm
- 15 Government of Canada, Laboratories Canada, https://www.ic.gc.ca/eic/site/063.nsf/eng/h_97809.html
- 16 Canadian Nuclear Safety Commission, Independent Environmental Monitoring Program (IEMP), www.nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm
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- 21 Justice Laws Website, General Nuclear Safety and Control Regulations, <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2000-202/index.html>
- 22 Canadian Nuclear Safety Commission, Science and Technical Information, <http://www.nuclearsafety.gc.ca/eng/resources/research/index.cfm>
- 23 Canadian Nuclear Safety Commission, Safety and control areas, <http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/safety-and-control-areas.cfm>
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- 25 Government of Canada, Open Science and Data Portal, <https://open.canada.ca/en/open-data>
- 26 Canadian Nuclear Safety Commission, Environmental Protection Review Report: Blind River Refinery <https://nuclearsafety.gc.ca/eng/resources/publications/reports/brr/index.cfm>
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- 28 Canadian Nuclear Safety Commission, Research and Support Program, <http://www.nuclearsafety.gc.ca/eng/resources/research/research-and-support-program/index.cfm>
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- 30 Canadian Nuclear Safety Commission, Watch a public Commission proceeding online, <http://www.nuclearsafety.gc.ca/eng/the-commission/webcasts/index.cfm>
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- 38 Canadian Nuclear Safety Commission, Public Commission hearings, www.nuclearsafety.gc.ca/eng/the-commission/hearings/documents_browse/index.cfm
- 39 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.

- 40 In 2018–19, there were 9 total exceedances of provincial hazardous substances limits, all at nuclear power plants. At Pickering Nuclear Generating Station (NGS), there were 4 exceedances of provincial hazardous substances limits. One exceedance was for morpholine concentration, 2 were for oil and grease, and 1 was an effluent temperature exceedance. At Darlington NGS, one morpholine result was slightly above provincial hazardous substances limits. At Bruce NGS, there were 2 toxicity exceedances and 2 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.
- 41 First instance: environmental release control: A refrigerant leak on refrigeration Unit 0-73910-RFU2 (Halocarbon release over 100 kg) at Darlington Nuclear Generating Stations was reported on December 9, 2019. On September 25, 2019 while performing a routine monthly leak check, mechanical maintenance found a refrigerant leak on Unit 0 refrigeration unit 0-7391 0-RFU2, which resulted in an unacceptable amount (833 lbs or 378 kg) of refrigerant (R-134a) being released in a spill to the environment. Second instance: environmental release: Potential discharge directly from inactive drainage to circulating cooling water duct (toxicity test failure (rainbow trout) at Darlington Nuclear Generating Station, reported on December 11, 2019. On November 23, 2019, a sump isolation valve was found to be in the open position instead of the normally closed position. This could have led to a discharge of inactive drainage to the lake. Samples were collected and the toxicity test of rainbow trout failed. This means that the water could be acutely lethal to fish. The investigation could not conclusively determine if water was discharged. For due diligence, the conservative decision was made to report this potential discharge as a lethality limit exceedance.
- 42 First instance: Environmental release: On February 20, 2020, at Bruce A Nuclear Power Generating Station, the quarterly acute lethality sample collected from the turbine building area sump water treatment system during discharge failed the [acute lethality test for rainbow trout](#). This was classified as a lethality limit exceedance. An investigation determined that the likely cause was high levels of nitrite and total ammonia in the water. These compounds are formed when biological organisms present in the water consume nitrogenous feedwater chemicals (such as hydrazine and morpholine). It is unlikely that nitrite and total ammonia would remain at toxic levels when discharged to the environment because the water is mixed within the Cooling Water Discharge Duct prior to release to Lake Huron. As such, it is unlikely that the fish in the environment were harmed. In response, Bruce Power implemented corrective actions such as conducting follow-up lethality testing right after the incident was discovered, implementing monitoring for parameters that would indicate increased biological growth and adding internal limits for nitrite and total ammonia. Second instance: Environmental release: On June 25, 2020, at Pickering Nuclear Generating Station, the 24-hour average Pickering 058 intake and outfall temperature difference for June 24, 2020 exceeded the environmental compliance approval limit. In all instances, the licensees took appropriate mitigation measures and corrective actions to ensure that the environment is protected.
- 43 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 4 exceedances at Elliott Lake historical sites for 2 sediment results and 2 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](#).

- 44 In the fiscal year 2019–20, the percentage of the IEMP results that met the guidelines was 98.9%. Exceedances for the 2019–20 fiscal year were expected, and similar to the values reported by CNSC licensees' environmental monitoring programs. No unexpected exceedances were noted. There were two exceedances of uranium in the surface water near the Bancroft mine sites. The exceedances are a result from historical activities and consistent with the results submitted by the licensee. There was also exceedance of iron in one water sample taken near Chalk River Laboratories. The exceedance is not reflective of activities at Chalk River, and is deemed associated with either natural concentrations or other local construction activities. No health or environmental impacts are expected at these levels. At the Port Hope Area Initiative, there were 4 samples where some parameters were above the applicable guidelines i.e. arsenic exceedance in one sediment sample and total dissolved solid (TDS) exceedance in 3 water samples. The arsenic exceedance in the sediment sample was expected given the historical releases. Although this value is above the Canadian Council of Ministers of the Environment (CCME) interim sediment quality guideline, it is significantly below CCME probable effect level for aquatic organisms. In addition, the TDS exceedance for the water samples does not pose any risk for public health and the environment, given that the guidelines for TDS in water are an aesthetic objective (AO) rather than a health based benchmark. 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](#).
- 45 In fiscal year 2020–21, 94.9% of IEMP results met the guidelines. Exceedances for the 2020–21 fiscal year were expected, and similar to the values reported by CNSC licensees' environmental monitoring programs. No unexpected exceedances were noted. There were 3 exceedances at Port Hope Conversion Facility. Three fluoride concentrations measured in lake water samples were slightly above the CCME freshwater quality guideline for the protection of aquatic life but were below Health Canada's guidelines for drinking water quality and well below the CCME toxicity benchmark for sensitive aquatic biota. Thus, adverse effects are not expected. There were 26 exceedances at Cigar Lake out of 468 samples. The exceedances were selenium and polonium-210 in fish tissue samples collected at both the exposure station, which could potentially be impacted by the operation of the facility, and the reference station, which is not impacted by the operation of the facility. Thus, the exceedances are not attributed to the facility. These results were also within the natural background range for the region. 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 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](#).
- 46 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.
- 47 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.
- 48 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.

- 49 In 2020–21, there were 3 occurrences of a worker exceeding a regulatory dose limit. The first instance involved a non-NEW who received an effective dose of 1.28 mSv, which exceeded the annual dose limit of 1 mSv/year. The second instance involved a non-NEW who received an effective dose of 1.3 mSv, which exceeded the annual dose limit of 1 mSv/year. This event was reported to the Commission in January 2021 in CMD 21-M10. The third instance involved a non-NEW who received an effective dose of 1.05 mSv, which exceeded the annual dose limit of 1 mSv/year. Note that there was a fourth event reported to the Commission in 2020/21, although the event occurred in 2019/20. This case involved a non-Nuclear Energy Worker (NEW) who recorded a non-occupational effective dose of 3.54 mSv on their dosimeter. This exceeded the annual dose limit for non-NEWs of 1 mSv/year. This event was reported to the Commission in September 2020 in CMD 20-M27. In all cases, there was no health effect to the worker from the exposures.
- 50 The decrease in Indigenous participation in 2018–19 relative to 2017–18 is due to fewer total public proceedings.
- 51 The decrease in Indigenous participation in 2020–21 relative to 2019–20 is due to less overall total number of proceedings, including public proceedings because of the COVID-19 pandemic.
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- 55 Canadian Nuclear Safety Commission, President, <https://nuclearsafety.gc.ca/eng/about-us/organization/president.cfm>
- 56 Natural Resources Canada, www.nrcan.gc.ca/home
- 57 Justice Laws Website, *Nuclear Safety and Control Act*, www.laws-lois.justice.gc.ca/eng/acts/N-28.3/
- 58 Canadian Nuclear Safety Commission, Departmental Results Reports, <http://nuclearsafety.gc.ca/eng/resources/publications/reports/quarterly-financial-reports/index.cfm>
- 59 Report on Federal Tax Expenditures, <https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures.html>
- 60 Canadian Nuclear Safety Commission, www.nuclearsafety.gc.ca/