



# CMD 26-M5 - CNSC Staff Submission

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>Classification</b>	UNCLASSIFIED
<b>Type of CMD</b>	Original
<b>CMD Number</b>	26-M5
<b>Reference CMD(s)</b>	N/A
<b>Date CMD signed</b>	September 25, 2025
<b>Type of report</b>	Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024
<b>Public meeting date</b>	
<b>Word e-DOC #</b>	7581068 – ENG 7581103 – FR
<b>PDF e-DOC #</b>	7581105 – ENG 7581106 – FR
<b>Summary</b>	Each year, the Canadian Nuclear Safety Commission (CNSC) publishes regulatory oversight reports, which offer information on the safety performance of Canadian licensees who are authorized to use nuclear substances. The reports evaluate licensees based on their safety procedures and adherence to regulatory policy. Key issues and emerging changes in regulation are also highlighted.
<b>Actions required</b>	See Section 1.7, Actions from the Commission

## **CMD 26-M5**

# **Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

**Signed by:**

---

Alexandre Viktorov, Ph. D

**Director General**

Directorate of Power Reactor Regulation

**Directeur général**

Direction de la réglementation des centrales nucléaires

---

Kimberley Campbell

**Acting Director General**

Directorate of Nuclear Cycle and Facilities Regulation

**Directrice générale par intérim**

Direction de la réglementation du cycle et des installations nucléaires

# **Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

Canadian Nuclear Safety Commission

# Table of contents

<b>Land acknowledgement .....</b>	<b>6</b>
<b>Plain language summary.....</b>	<b>7</b>
<b>1 Overview .....</b>	<b>8</b>
1.1 Background .....	8
1.2 Scope of report .....	8
1.3 Nuclear facilities covered by this report.....	9
1.4 NPPs .....	10
1.5 Waste Management Facilities .....	14
1.6 Regulatory oversight.....	14
1.7 Highlights from 2024 regulatory oversight activities.....	17
<b>2 Assessment of Safety and Control Areas .....</b>	<b>21</b>
2.1 Darlington Nuclear Generating Station .....	22
2.2 Darlington Waste Management Facility .....	40
2.3 Pickering Nuclear Generating Station.....	48
2.4 Pickering Waste Management Facility .....	63
2.5 Bruce Nuclear Generating Stations A and B .....	72
2.6 Western Waste Management Facility .....	93
2.7 Point Lepreau Nuclear Generating Station .....	103
2.8 Gentilly-2 Facilities.....	125
<b>3 Consultation, Engagement and Public Disclosure .....</b>	<b>134</b>
3.1 Indigenous Consultation and Engagement.....	134
3.1.1. CNSC Engagement Efforts.....	135
3.1.2. Engagement with Indigenous Nations and Communities on the NPGS ROR .....	138
3.1.3 Issues and Concerns Tracking .....	139
3.1.4 CNSC Terms of Reference for Long-Term Engagement with Indigenous Nations and communities .....	139
3.1.5 Licensee Indigenous Engagement Activities .....	140

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

3.1.6	Licensee Disclosure of Reportable events to Indigenous Nations and Communities	144
3.2	Public Consultation and Engagement	145
3.3	Participant Funding Program	146
3.4	Licensee Public Information and Disclosure	146
<b>4</b>	<b>Other matters of regulatory interest</b>	<b>148</b>
4.1	Financial Guarantees	148
4.2	Independent Environmental Monitoring Program	148
4.3	Forum between the CNSC and Canadian Environmental Non-Governmental Organizations	149
<b>5</b>	<b>Conclusions</b>	<b>152</b>
<b>6</b>	<b>Glossary</b>	<b>153</b>
<b>Appendix A: List of Inspections Reports at each NPP and WMF in 2024</b>		<b>154</b>
A1	Darlington NGS	154
A2	Darlington WMF	155
A3	Pickering NGS	156
A4	Pickering WMF	157
A5	Bruce NGS	157
A6	WWMF & RWOS-1	159
A7	Point Lepreau NGS	160
A8	Gentilly-2 Facilities	161
<b>Appendix B: Significant changes to the Licence Condition(s)</b>		<b>162</b>
B1:	Pickering Waste Management Facility LCH R002	162
B2:	Pickering NGS LCH R006	162
B3:	Pickering NGS LCH R007	166
B4:	Point Lepreau NGS LCH	167
<b>Appendix C: Indigenous Nations, Communities and organizations that have traditional and/or Treaty Territories and/or interests within proximity to the licensed facilities</b>		<b>168</b>
<b>Appendix D: Status of issues, concerns and requests from intervenors</b>		<b>170</b>
D1	Indigenous Nations and Communities Interventions	170

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

D2 Public Interventions.....	172
D3 Conclusions.....	173
<b>Appendix E: Summary of engagement in relation to CNSC's Terms of Reference for Long-term Engagement and Associated Workplans in 2024 .....</b>	<b>174</b>
E1: Curve Lake First Nation - CNSC Long-term Engagement Terms of Reference.....	174
E2: Hiawatha First Nation - CNSC Long-term Engagement Terms of Reference.....	176
E3: Historic Saugeen Métis – CNSC Long-term Engagement Terms of Reference .....	177
E4: Mississaugas of Scugog Island First Nation – CNSC Long-term Engagement Terms of Reference .....	179
E5: Métis Nation of Ontario - CNSC Long-term Engagement Terms of Reference .....	181
E6: Saugeen Ojibway Nation- CNSC Long-term Engagement Terms of Reference .....	183
<b>Appendix F: Data.....</b>	<b>187</b>
F1: Unplanned Transients .....	187
F2: Unplanned reactor trips.....	188
F3: Safety System Test Performance .....	189
F4: Collective Dose.....	191
F5: Effective Dose.....	192
F6: Accident Severity Rate, Accident Frequency and Industrial Safety Accident Rate.....	194
F7: Safeguard activities .....	197
<b>Appendix G: Heq Concentration Estimates.....</b>	<b>199</b>

## Land acknowledgement

At the CNSC, we recognize the importance of consulting and building relationships with Indigenous Nations and communities and are committed to working together to ensure the safe and effective regulation of Nuclear Power Generating Sites.

We acknowledge that the facilities and activities regulated by the CNSC, including those covered in this Regulatory Oversight Report (ROR), are located on the traditional and treaty territories of Indigenous peoples across Canada, as listed in Appendix C. We also recognize that when these sites were originally constructed, Indigenous consultation and engagement did not meet today's standards.

CNSC staff are committed to ongoing engagement and collaboration with Indigenous Nations and communities to better understand and address concerns related to the operation of Canada's Nuclear Power Generating Sites. We will continue to create meaningful opportunities for long-term engagement and encourage open, two-way dialogue to foster mutual understanding, even when perspectives differ.

The CNSC strives to be an open, culturally aware, and respectful organization that engages transparently and collaboratively with Indigenous Nations and communities. Our staff are committed to active listening, understanding our role in advancing reconciliation, and working together to support the safe and effective regulation of nuclear energy and materials.

## Plain language summary

The regulatory oversight report describes the CNSC's oversight activities and the safety performance of nuclear power generating sites in Canada in 2024. These sites include nuclear power plants (NPPs) and their associated waste management facilities (WMFs). For certain topics, the report also discusses updates on developments in 2025.

Each line in the following list identifies facilities governed by a single CNSC licence and that were therefore assessed together:

- [Darlington Nuclear Generating Station](#), which includes the tritium removal facility and retube waste processing building.
- [Darlington Waste Management Facility](#)
- [Pickering Nuclear Generating Station](#)
- [Pickering Waste Management Facility](#)
- [Bruce A and B Nuclear Generating Stations](#)
- [Western Waste Management Facility](#)
- Radioactive Waste Operations Site-1
- [Point Lepreau Nuclear Generating Station](#), which includes the solid radioactive waste management facility.
- [Gentilly-2 nuclear facilities](#), which consist of the former Gentilly-2 nuclear generating station (in decommissioning), and solid radioactive waste management facilities.

CNSC staff verified, and confirmed, the safe operation of the NPPs and WMFs in 2024. This conclusion was based on CNSC staff assessments of findings from compliance verification activities for each facility in the 14 CNSC [safety and control areas](#) (SCAs). Safety performance was rated as “satisfactory” for in each SCA at all NPPs and WMFs.

To highlight:

- No serious process failures occurred at the NPPs. The number of unplanned power reductions, transients and trips in the reactors was low, and acceptable to CNSC staff. All unplanned power reductions and transients in the reactors were controlled per design and safely managed.
- Radiation doses to the public and to workers at the NPPs and WMFs were below regulatory limits.
- The frequency and severity of non-radiological injuries to workers were low.



- Radiological releases to the environment from the NPPs and WMFs were below regulatory limits.
- Licensees met applicable requirements related to Canada's international obligations.

Referenced documents in this CMD are available to the public upon request, subject to confidentiality considerations.

# 1 Overview

## 1.1 Background

Each year, the Canadian Nuclear Safety Commission (CNSC) publishes regulatory oversight reports, which offer information on the safety performance of Canadian licensees. The reports summarize results of the licensees compliance with regulatory requirements. Key issues and emerging changes in regulation are also highlighted.

[Learn more about regulatory oversight reports](#)

## 1.2 Scope of report

The *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024* describes the regulatory oversight and safety performance of the NPPs in Canada, including Gentilly-2 which is currently undergoing decommissioning.

- Reference to “NPPs” are intended to apply to Gentilly-2, while the phrase “operating NPPs” is used for statements that do not apply to Gentilly-2.
- The report also covers the WMFs located at the same sites, whether they are regulated under the same licence as the NPP or licensed separately.
- The Darlington New Nuclear Project (DNNP) and other proposed new NPPs are briefly described throughout the report, including Section 1.4.1, to provide context on their status. However, no oversight activities related to the projects are included in this ROR.
- Other potential new NPP projects are also identified in section 1.4.1.
- The information provided in this regulatory oversight report is pertinent to 2024, and the status is valid as of December 31, 2024.

- The term “UPDATE” is used to highlight topics containing more recent information, from December 31, 2024, to June 30, 2025, such as progress on corrective actions, descriptions of significant events, and updates specifically requested by the Commission.

## 1.3 Nuclear facilities covered by this report

Figure 1 shows the geographic location in Canada for the NPPs and WMFs covered by this report. It also indicates the type of waste stored at each WMF and the status of each reactor on a site. 16 reactors continued to operate in Canada throughout 2024.

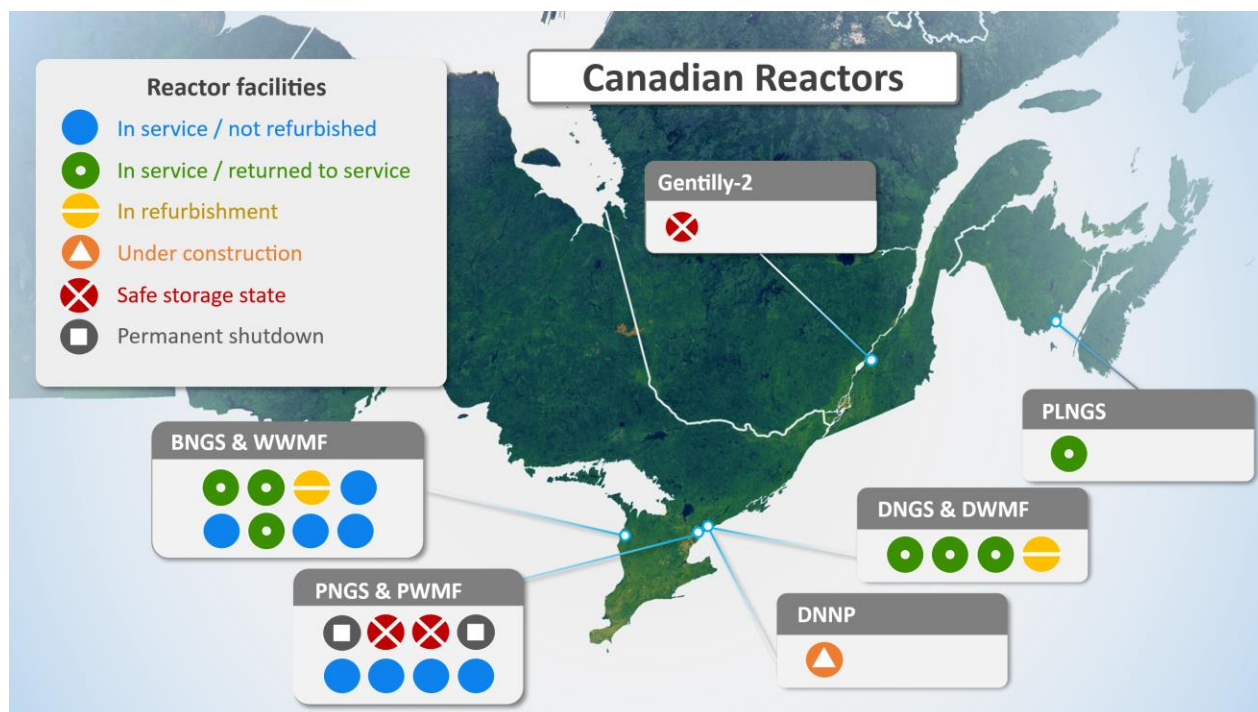


Figure 1: Locations of nuclear power generating sites in Canada (Note: While DNNP is not an operating nuclear power plant, it is included to show its location.).

Table 1 provides the list of the location and licensee for each nuclear power generating site in Canada. For additional information on each facility, please refer to the link provided in the table.

Table 1: Nuclear Power Generating Sites in Canada 2024

Nuclear facility	Location	Licensee
<a href="#">Bruce Nuclear Generating Stations A and B (BNGS)</a>	Kincardine, Ontario	Bruce Power

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Western Waste Management Facility (WWMF)	Kincardine, Ontario	Ontario Power Generation
RWOS-1*	Kincardine, Ontario	Ontario Power Generation
<a href="#">Darlington Nuclear Generating Station</a> (DNGS)	Clarington, Ontario	Ontario Power Generation
Darlington Waste Management Facility (DWMF)	Clarington, Ontario	Ontario Power Generation
<a href="#">Pickering Nuclear Generating Station</a> (PNGS)	Pickering, Ontario	Ontario Power Generation
Pickering Waste Management Facility	Pickering, Ontario	Ontario Power Generation
<a href="#">Point Lepreau Nuclear Generating Station</a> (PLNGS)	Lepreau, New Brunswick	New Brunswick Power Corporation
<a href="#">Gentilly-2</a>	Bécancour, Québec	Hydro-Québec

\*The RWOS-1 site is no longer receiving waste and is in a state of storage with surveillance by OPG

## 1.4 NPPs

Figure 2 provides data for each NPP, including the generating capacity of the reactor units, their initial start-up dates, and reactor status in 2024. Additional information on the NPPs and licences is provided in Section 2.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

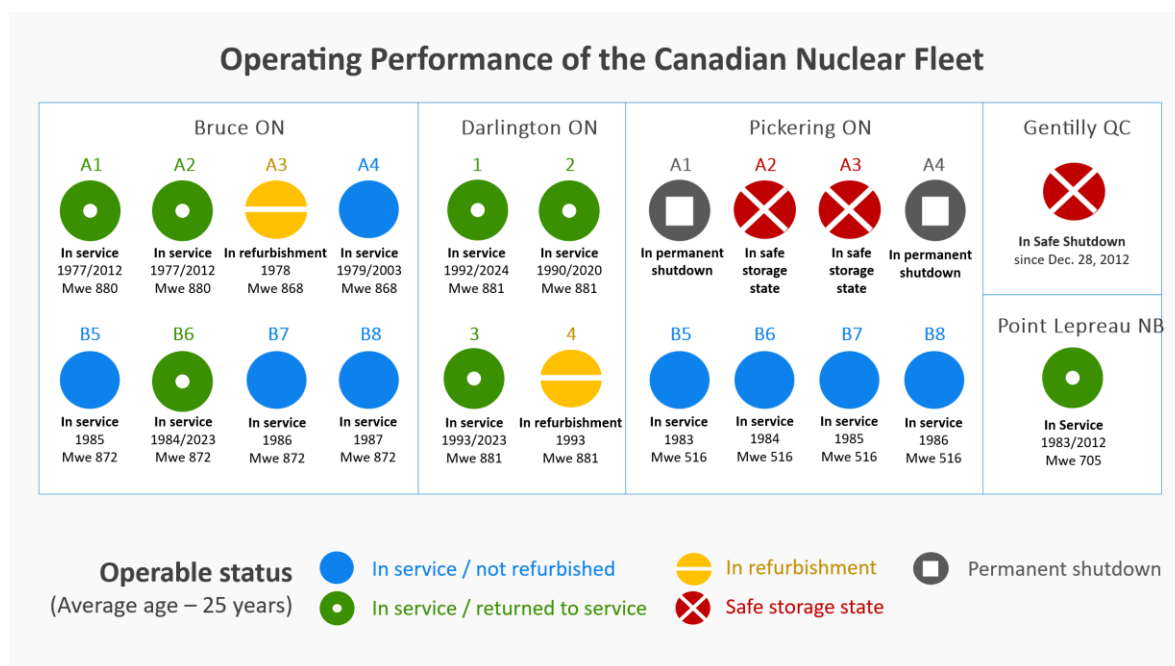


Figure 2: Basic Information for all NPPs, as of December 31, 2024

As indicated in Figure 2:

- DNGS Unit 1 was offline for refurbishment activities for most of the year, having been returned to service in November 2024. Unit 4 was offline for the entirety of the year and is expected to be returned to service in early 2026.
- PNGS Unit 1 was permanently shutdown on October 1, 2024, and PNGS Unit 4 was permanently shutdown on December 31, 2024, and transition to safe storage. PNGS Units 2 and 3, remained in safe storage.
- BNGS Seven units were fully operational in 2024. Unit 3 major component replacement (MCR) outage, which started in March 2023, continued in 2024. Preparatory activities for Unit 4 major component replacement (MCR) outage, (scheduled to start in 2025), were underway in 2024.
- PLNGS unit was operational in 2024 with an outage from April 6, 2024, to December 11, 2024.
- The NPP at Gentilly-2 is in decommissioning and is governed by a power reactor decommissioning licence.

[Learn more about Nuclear Power Plants in Canada](#)

## 1.4.1 New NPPs

### 1.4.1.1 The Darlington New Nuclear Project (DNNP)

In 2012, the Commission issued a nuclear power reactor site preparation licence (PRSL) to Ontario Power Generation (OPG) for the Darlington New Nuclear Project (DNNP) at the Darlington site for a period of 10 years. This PRSL required OPG to continue to implement the commitments and measures identified during the environmental assessment (EA) process, the Joint Review Panel hearings, as well as measures identified in the EA follow-up program. OPG has been implementing the EA follow-up program and mitigation measures since the issuance of the initial PRSL.

In October 2021, the Commission renewed the site preparation licence for a period of 10 years (PRSL 18.00/2031), and in December of that year, OPG announced the selection of the [GE Hitachi BWRX-300](#) as the new reactor technology for the DNNP. As required by the licence, and as delegated by the Commission, OPG submitted the documentation required to CNSC staff in order to proceed with site preparation licensed activities. In August 2022, the Executive Vice President, and Chief Regulatory Operations Officer (EVP-CROO), as the person authorized by the Commission, authorized the commencement of the limited site preparation work such as vegetation clearing and placement of environmental protective measures. Subsequently, in April 2023, after reviewing the remaining submitted documentation, CNSC staff authorized OPG to proceed with the remaining major site preparation activities, including the installation of stormwater management systems and essential site services such as water, electrical infrastructure, and IT services. In October 2022, OPG submitted an application for a licence to construct a single BWRX-300 reactor. Throughout the 2023 calendar year, CNSC staff reviewed OPG's licence to construct application, issuing numerous requests for supplemental information to OPG for resolution.

In January 2024, a Commission hearing was held to determine the applicability of the DNNP EA to the BWRX 300 reactor. In April of that year, the Commission released its [Record of Decision](#), confirming that the BWRX-300 reactor was bounded by the EA. Additionally, in October 2024, Part 1 of the Commission hearing to consider OPG's application for a licence to construct was held, where CNSC staff presented the technical results of its review and recommendation to the Commission.

**UPDATE:** In January 2025, the Commission held Part 2 of the hearing on OPG's application for a licence to construct, taking into consideration interventions submitted by Indigenous Nations and communities, the public, and stakeholders. Subsequently, in April 2025, the Commission accepted CNSC staff's recommendation and issued OPG a [licence to construct a single BWRX-](#)

[300](#), with 3 defined regulatory hold points delegated to the Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch. The Commission further concluded that it had fulfilled its constitutional responsibility to consult and, where appropriate, accommodate Indigenous rights in respect of its decision on this matter.

#### 1.4.1.2 New Brunswick Power Corporation and the ARC-100 Reactor

New Brunswick Power (NB Power), in partnership with ARC Clean Technology Canada, is proposing to deploy 1 ARC-100 small modular reactor (SMR) at the Point Lepreau Nuclear Generating Station site in New Brunswick. In June 2023, CNSC staff received an application for a licence to prepare site for the proposed SMR, and the application is currently undergoing regulatory review under the [Nuclear Safety and Control Act](#), which will include an environmental protection review.

The proposed project is also undergoing a [comprehensive environmental impact assessment](#) (EIA) by the Government of New Brunswick. CNSC staff are providing technical support throughout the provincial EIA process as members of the Technical Review Committee.

Several citizen groups from New Brunswick, along with NGOs from both New Brunswick and Ontario, submitted a request to the Impact Assessment Agency of Canada (IAAC) to have this project designated under the Impact Assessment Act (IAA). In response, IAAC prepared an [Analysis Report](#) for the Minister of Environment. The IAAC recommended that the Minister deny the request. In December 2022, the federal Minister of Environment and Climate Change [responded to a designation request](#) for the ARC project and concluded that the project did not warrant designation pursuant to subsection 9(1) of the [Impact Assessment Act](#).

#### 1.4.1.3 The Bruce “C” Project

In October 2023, Bruce Power provided to the CNSC a formal notice of their intent to submit an application for a Licence to Prepare Site and commence an Impact Assessment (IA) for new nuclear generation at the Bruce site in the Municipality of Kincardine, Ontario. The proposed 'Bruce C' project would provide up to 4,800 megawatt-electric of new nuclear generating capacity in Ontario and operate for 60 to 100 years.

The Bruce C initial project description (IPD) was formally submitted in August 2024 and in December 2024, it was decided by the Impact Assessment Agency of Canada (IAAC) that the project would be subject to an integrated Impact Assessment in collaboration with the Canadian Nuclear Safety Commission. CNSC staff are working with IAAC to review documentation submitted as part of the Impact Assessment process.

[Learn more about New Reactor Facility Projects in Canada](#)

## 1.5 Waste Management Facilities

The WMFs that are included in this regulatory oversight report are licensed independently from the associated NPP except for the Solid Radioactive Waste Management Facility (SRWMF) at the Point Lepreau site and the Radioactive Waste Management Facility at the Gentilly-2 site.

The WMFs include the Darlington Waste Management Facility (DWMF), Pickering Waste Management Facility (PWMF) and Western Waste Management Facility (WWMF), each of which is owned and operated by OPG under a waste facility operating licence (WFOL).

The Radioactive Waste Operations Site-1 (RWOS-1) facility is licensed under a waste nuclear substance licence (WNSL). More information on the WMFs is discussed in Section 2 of this report.

[Learn more about Radioactive Waste](#)

## 1.6 Regulatory oversight

The CNSC regulates the nuclear sector in Canada through:

- Licensing
- Compliance verification, which includes:
  - Assessment of performance
  - Enforcement
  - Reporting

The CNSC uses a risk-informed regulatory approach to these activities, applying resources and regulatory oversight commensurate with the risk associated with the regulated facility and activity.

Additional information on the CNSC's regulatory framework and oversight is provided in this section and in [General Description of Regulatory Framework for Nuclear Power Generating Sites](#) [2].

### 1.6.1 Licensing

- Each facility has a licence granted by the Commission, which defines the licence period, licensed activities, and licence conditions.

- A licensee may apply for a licence renewal and/or amendment and must submit information demonstrating that they are qualified to conduct activities authorized by the licence.
- All licensees are required to operate in accordance with the licensing basis as set by the Commission.
- When a licence is issued, CNSC staff develop a licence conditions handbook (LCH) to identify the specific requirements that apply to that licensee.

## 1.6.2 Compliance verification

Regular inspections and evaluations verify that licensees are complying with laws, regulations, and licence conditions ensuring safe operations. The CNSC staff conclusions presented in this report were based on the results of risk informed, performance-based activities planned through the CNSC compliance verification program (CVP), including both inspections and compliance assessments.

[Learn more about the CNSC Compliance Verification Program](#)

### 1.6.2.1 Assessment of performance

#### Compliance assessment

As defined in REGDOC – 3.6 *Glossary*, a compliance assessment evaluates whether a licensee or applicant meets CNSC regulatory requirements and standards by reviewing compliance information, conducting technical assessments, and performing verification activities. CNSC-initiated compliance assessments, referred to in this document are planned activities to support the oversight of a licensee's program, gather information, verify compliance, and inform future activities. These assessments are similar to pre-inspection verifications and do not include field verifications. Their results may inform or trigger subsequent compliance verification activities (including field inspections).

### 1.6.2.2 Enforcement

The CNSC applies a graduated enforcement approach to promote compliance, address non-compliance, and prevent future violations.



When a non-compliance is identified, CNSC staff evaluate its significance and determine the appropriate enforcement action in line with this graduated approach. Each enforcement action is a distinct and independent response to the specific non-compliance.

[Learn more about CNSC's approach to compliance verification and enforcement](#)

### 1.6.2.3 Reporting

Licensees are required to provide various reports and notices to the CNSC in accordance with regulations made under the [Nuclear Safety and Control Act](#).

In addition to, and in conjunction with, the reporting requirements in the regulations, a licence condition (LC) requires NPP licensees to report to the CNSC in accordance with CNSC [REGDOC-3.1.1, Reporting Requirements for Nuclear Power Plants](#).

- REGDOC-3.1.1 requires licensees to submit quarterly and annual reports on various subjects, including the safety performance indicators that are discussed in this report, as well as event reports and notifications.
- For the Gentilly-2 Facilities, the requirements in REGDOC-3.1.1 have been adjusted in accordance with its current state and the associated risks as mentioned in [CMD 15-H111](#).

For WMFs, OPG is required to submit annual compliance reports as described in [REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills](#).

CNSC staff reviewed the reports and are satisfied with the reported licensee values and concluded they have provided the required information.

## 1.6.3 Periodic safety reviews

For operating nuclear power plants (NPPs), conduct of a periodic safety review (PSR) is required every 10 years.

The PSR involves an assessment of the current plant design, programs and performance against modern codes, standards and practices, to identify practical safety improvements to be made to the facility as well as to identify any factors that could limit safe operation for the subsequent operating and/or licensing period. The final output of the PSR is to develop a scheduled improvement plan to be implemented during the next 10-year period of facility operation. A PSR may also include a longer-term assessment as a means of informing project plans for life extension of a facility (e.g., refurbishment), however the frequency of PSRs remains every 10 years.

A PSR is not a requirement for the Gentilly-2 Facilities and the WMFs because, relative to operating NPPs, the associated hazards are fewer and lower, and the requirements change on a less frequent basis, such that the regular licensing process and implementation of updated CNSC regulatory documents and CSA Group standards are sufficient to ensure safe operation.

[Learn more about Periodic Safety Reviews \(REGDOC 2.3.3\)](#)

## 1.7 Highlights from 2024 regulatory oversight activities

### 1.7.1 CNSC Staff at NPG Sites in 2024

- Total hours working on activities related to compliance verification in 2024: 154,0446 hours.
- Total hours working on licensing/refurbishment in 2024: 28,162 hours.
- Number of inspection reports produced in 2024: 194.
- Number of inspectors at NPG sites in 2024: 38.
- Number of CNSC staff other than inspectors dedicated to NPG sites in 2024: 57.
  - Not including the many technical specialists that support the regulatory program.

### 1.7.2 Compliance Assessments

Compliance assessments are verification activities that primarily involve reviewing licensees' documents and reports. Examples include quarterly technical reports, annual compliance reports, special reports, and documentation related to design, safety analysis, programs, and procedures. These assessments may be either reactive or planned under the Compliance Verification Program (CVP).

In 2024, CNSC staff closed 16 scheduled CNSC-Initiated compliance assessments for NPPs.

Table 2: List of CNSC-Initiated compliance assessments closed in 2024.

Site	Title of compliance assessment
<b>DNGS</b>	Certified or Non-Certified Training Program for Selected Job Family
<b>DNGS</b>	Verification of Temporary Containment Boundary
<b>PNGS</b>	Action Levels

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>PNGS</b>	Certified or Non-Certified Training Program for Selected Job Family
<b>PNGS</b>	Design, Development and Grading of Simulator Examinations and Requalification Tests
<b>BNGS</b>	Action Levels
<b>BNGS</b>	Chemistry Control
<b>BNGS</b>	Design, Development and Grading of Knowledge-based Certification Examinations and Requalification Tests
<b>BNGS</b>	Design, Development and Grading of Simulator Examinations and Requalification Tests
<b>BNGS</b>	Human Performance Program (HF in Design, Hours of Work/Min Comp, Drugs and Alcohol, Procedures and Human Performance)
<b>BNGS</b>	Maintenance - SSC Monitoring
<b>PLNGS</b>	Results of the PLNGS Certified and Non-Certified Training Program
<b>PLNGS</b>	Knowledge-based Certification Examinations and Requalification Tests
<b>PLNGS</b>	Chemistry Control
<b>PLNGS</b>	Human Performance Program (HF in Design, Hours of Work/Min Comp, Drugs and Alcohol, Procedures and Human Performance)
<b>PLNGS</b>	Maintenance - software

### 1.7.3 Inspections

CNSC uses 4 key inspection types for compliance verification. Type I and Type II inspections both involve document reviews and on-site visits, typically over several days. They include interviews with licensee's staff, attending meetings, and observing plant conditions. The key difference lies in their focus: Type I inspections assess programs or processes as described in the licensing basis, while Type II inspections evaluate the actual outputs of those programs. Type I inspections are infrequent and reactive, often triggered by new or significantly changed programs or systemic issues. They are not part of the baseline inspection plan. In contrast, Type II inspections are regular and included in the baseline plan.

Desktop inspections, involve only document reviews and may assess either licensing basis programs or their outputs. They can be routine or reactive.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Field inspections involve only on-site observations by inspectors, focusing on specific areas or topics (e.g., fire equipment, radiological hazards). They are conducted regularly and can also be reactive. All inspection results are shared promptly with licensees and documented in reports.

The total number of inspections by type is provided in Table 2 below. A list of inspections that were considered in this ROR are listed in Appendix A: List of Inspections Reports at each NPP and WMF.

Table 3: Total Number of Each Type of Inspection and Findings per NPP in 2024

Site	# of Type I inspections	# of Type II Inspections	# of Desktop Inspections	# of Field Inspections	# of Findings
<b>DNGS</b>	2	12	2	65	349
<b>DWMF</b>	0	1	0	1	11
<b>PNGS</b>	2	12	3	51	349
<b>PWMF</b>	0	2	0	0	19
<b>BNGS</b>	1	19	2	58	427
<b>WWMF</b>	0	6	0	0	77
<b>RWOS-1</b>	0	1	0	0	12
<b>PLNGS</b>	1	11	1	44	339
<b>Gentilly-2</b>	0	1	0	0	9
<b>Total</b>	<b>6</b>	<b>65</b>	<b>8</b>	<b>219</b>	<b>1592</b>

## 1.7.4 Event Reporting

- In accordance with CNSC [\*REGDOC-3.1.1, Reporting Requirements for Nuclear Power Plants\*](#), NPP licensees, including Hydro-Québec, reported to CNSC staff on 203 events.
- In accordance with the [\*REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills\*](#), the WMF licensee, OPG, also submitted 10 reportable events to CNSC staff in 2024.
- Table 4 below presents the number of event reports that were reported per site and reviewed by CNSC staff.

Table 4: Total number of events reported to CNSC staff in the last 3 years per site.

Site	# of Events in 2024 <sup>1</sup>	# of Events in 2023	# of Events in 2022
DNGS	61	29	40
DWMF	4	4	1
PNGS	52	44	38
PWMF	1	1	1
BNGS	91	87	67
WWMF	5	3	0
PLNGS	17	22	44
Gentilly-2	5	11	7 <sup>2</sup>
RWOS-1	0	0	0
<b>Total</b>	<b>236</b>	<b>201</b>	<b>198</b>

Note <sup>1</sup> 2024 data includes events reviewed or in progress at the end of 2024.

Note <sup>2</sup> for G-2 in 2022 there were 7 events reported. 2023 ROR incorrectly reported 0 instead of the correct number.

## 1.7.5 Actions from the Commission of the CNSC

This report includes information requested by the Commission from previous regulatory oversight reports and licensing hearings. These requests are tracked through the CNSC Regulatory Information Bank (RIB) system. Table 5 provides the RIB tracking number, a description of the request, and where the request is addressed by CNSC staff in this report.

Table 5: Details on RIB requests from the Commission

RIB #	Action	Report Section
<b>14757</b>	Report on the maximum [Heq] of the pressure tubes as part of the NPP ROR.	Appendix G
<b>14761</b>	Monitor Bruce Power's continuing efforts to bring internal fire risk to below the safety goal target for the BNGS A units, and report on Bruce Power's progress regarding internal fire risk improvements at the BNGS A station in the Annual NPGS ROR. 2024 Fire PSA was under review by CNSC staff at the end of 2024.	Section 2.5.4

## 2 Assessment of Safety and Control Areas

- This report presents safety performance ratings for each SCA at each NPP and WMF, derived from compliance verification activities.
- All findings from compliance verification activities are categorized into appropriate specific areas within the SCAs and are assessed against a set of performance objectives and regulatory requirements.
- Since the CVP consists of a multi-year (typically 5-year) cycle of regulatory activities, not all specific areas are directly evaluated every year.
- The SCAs and their associated specific areas are described in more detail in [General Description of Regulatory Framework for Nuclear Power Generating Sites](#) [2].
- A list of inspections that were considered in this ROR are listed in Appendix A: List of Inspections Reports at each NPP and WMF.
- All sites in this report received a rating of satisfactory for 2024.

[Learn more about the rating definitions and methodology.](#)

## 2.1 Darlington Nuclear Generating Station

### Overview



Figure 3: Darlington Nuclear Generating Station

The Darlington site is located on the north shore of Lake Ontario in Clarington, Ontario, 5 kilometers outside the town of Bowmanville and 10 kilometers southeast of Oshawa. The Darlington site lies within the traditional lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1787-88), the Williams Treaties (1923), and the Williams Treaties Settlement Agreement (2018).

The term PROL below refers to Power Reactor Operating Licence.

**Licence:** PROL 13.05/2025.

**Licence term:** January 1, 2016, to November 30, 2025.

**Licence last amended:** February 7, 2025.

**Licensee:** Ontario Power Generation.

**Location:** Clarington, Ontario.

**Fisheries and Oceans Canada (DFO) Authorization expiration:** December 31, 2031.

[Learn more about Darlington Nuclear Generating Station](#)

Table 6: Summary of the number of inspections performed for Darlington.

(Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
2	12	2	65	Compliant: 265

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

				Non-Compliant: 84 Total: 349
--	--	--	--	---------------------------------

Table 7: Number of Inspections by Primary Focus SCA (provided in parentheses) and Total Inspections with Findings per SCA.

Inspections generally focus on a specific area or program associated with a particular SCA, known as the primary focus SCA (number in parentheses). However, inspections may also assess additional criteria that fall under other SCAs. As a result, findings can occur in SCAs that were not the primary focus of the inspection.

SCA	Rating	Number of Type 1 inspections	Number of Type 2 inspections	Number of Desktop inspections
Management System	Satisfactory	2	12(1)	2
Human Performance	Satisfactory	2(1)	12(2)	2
Operating Performance	Satisfactory	1	10(5)	2(1)
Safety Analysis	Satisfactory			
Physical Design	Satisfactory		4(1)	
Fitness for Service	Satisfactory	1	7(2)	1(1)
Radiation Protection	Satisfactory		6(1)	
Conventional Health and Safety	Satisfactory		5	
Environmental Protection	Satisfactory		2	
Emergency Preparedness and Fire Protection	Satisfactory		5	
Waste Management	Satisfactory		1	
Security	Satisfactory	1(1)		
Safeguards and Non-Proliferation	Satisfactory		1	
Packaging and Transport	Satisfactory		3	

## Periodic Safety Review (PSR)

- In February 2020, OPG notified the CNSC of its intent to commence a Periodic Safety Review (PSR), intended to review the status of the DNGS to support operations beyond 2025.



**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- The PSR Basis Document was submitted in September 2020 and accepted by CNSC staff in January 2021.
- The PSR-IIP (Integrated Implementation Plan) for Darlington NGS to support post-refurbishment operations/activities from 2025-2035 was accepted by CNSC staff on March 25, 2024, in accordance with REGDOC-2.3.3, *Periodic Safety Reviews*.
- As of December 31, 2024, 11 of the 17 IIP tasks have been completed by OPG and submitted under the PSR-IIP Annual Report for CNSC staff review and closure. The PSR-IIP annual report for 2024 is currently under review by CNSC staff.

## Event Initial Reports (EIRs)

One EIR pertaining to Darlington NGS was submitted to the Commission for the reporting period between January 1, 2024, and December 31, 2024:

- CMD 24-M35, “Ontario Power Generation, Bruce Power: Potential neutron exposure of workers”, September 12, 2024 Commission Meeting.

## Refurbishment

### Unit 1 Refurbishment in 2024:

- DNGS Unit 1 began its refurbishment outage in February 2022.
- Regulatory oversight in 2024 shifted focus to return to service activities as OPG prepared to return the unit to commercial operations. For each of the 4 regulatory hold points (RHPs), CNSC staff confirmed that all pre-requisites had been satisfactorily addressed; and the Executive Vice President, and Chief Regulatory Operations Officer (EVP-CROO) of the CNSC removed the RHPs, resulting in the unit’s return to commercial operation in November 2024.

### Unit 4 Refurbishment in 2024:

- OPG began defueling Unit 4 in July 2023, after Unit 3 was returned to service from its refurbishment outage.
- Over the course of 2024, work on this unit transitioned from the component removal phase into the component installation phase. Unit 4 is expected to begin the return to service activities in 2025 and resume commercial operation in early 2026.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

**Overall:**

- Throughout the various refurbishment projects, CNSC staff conducted compliance verification activities as established in the Darlington Refurbishment Project Multi-Unit Compliance Plan and confirmed that OPG was in compliance with regulatory requirements.
- There were no inspection findings with a medium or high safety significance identified during refurbishment in 2024.
- In 2024, OPG continued to operate the Retube Waste Processing Building (RWPB), where removed reactor core components were volume-reduced before being sent to onsite storage facilities.
- Following processing activities associated to the refurbishment of Unit 4, OPG began demobilizing the RWPB's waste processing equipment in 2024.

Currently, Darlington NGS has two concurrent Integrated Implementation Plans (IIPs) underway. The ISR-IIP, developed in accordance with RD 360, Life Extension of Nuclear Power Plants, covers the period between 2015-2028 and includes refurbishment-related activities, as well as other modifications and safety improvements identified to ensure safe, long-term operation of the plant.

Table 8 summarizes the DNGS Integrated Safety Review (ISR)-IIP tasks, or commitments, which were planned to be completed, those completed, and those closed following the CNSC review, in 2024 and previous years. The scope of OPG's integrated implementation plan includes:

- Mitigating measures and follow up program activities from the environmental assessment.
- Actions from the integrated Safety Review. Many actions arose from the review of updates to modern codes and standards since the construction of the facility.

Table 8: DNGS ISR-IIP Item Status (based on planned dates as of December 2024)

Total Commitments	Overall	2024	2023	2022
<b>Planned</b>	622	71	60	31
<b>Completed by OPG</b>	571	71	60	43
<b>Closed by the CNSC</b>	530	24	31	28

## Production of Medical Radionuclides at DNGS

### Target Delivery System (TDS)

- In fall of 2021 the Commission amended OPG's PROL to include the production of Molybdenum-99 (Mo-99) through the use of a new Isotope Irradiation System (IIS) (also known as the target delivery system (TDS); the Mo-99 IIS / TDS) that would deliver natural molybdenum-98 into the core, and harvest Mo-99 after irradiation.
- In late 2023, OPG reported to CNSC staff a configuration management issue that resulted in minor components of the target elevator (TEL) of the TDS not being installed consistently across the 4 TELs on Unit 2. The issue required physical modifications to be corrected, which were completed during the planned outage of Unit 2 in early 2024. CNSC staff conducted a reactive inspection in 2024 – further details are presented in the management system SCA in section 2.1.1. The system was declared available for service in late 2024.
- UPDATE: In 2024, OPG initiated a project to obtain a licence amendment to produce 2 additional medical isotopes at Darlington NGS, using the TDS on Unit 2; specifically, Lu-177 and Y-90.
  - The Commission considered OPG's proposal in spring of 2025.
  - On 23 May 2025, the Commission amended the Darlington PROL authorizing the production of Lu-177 and Y-90 contingent on the successful removal of a RHP supporting confirmation of a bounded [licensing basis](#) and completion of commissioning activities.
  - The Commission delegated the authority to remove the RHP to the Director General of DPRR and the CNSC Executive Vice President and Chief Regulatory Operations Officer.

### Production of Co-60 at DNGS

- In June of 2024 the Commission amended OPG's PROL to authorize the production of cobalt-60 (Co-60) in each unit (1-4) at Darlington NGS.
- The changes approved included approving the replacement of stainless-steel adjuster absorber rods and the introduction of additional support equipment in / on each unit.

- There were no regulatory hold points established, however OPG has committed to providing CNSC staff with confirmatory commissioning information following the inaugural irradiation cycle and harvest of Co-60 from each unit.

## 2.1.1 Management System

**Performance rating: Satisfactory**

Number of findings by rating:



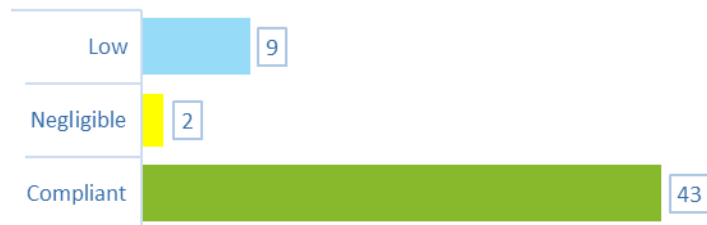
CNSC staff inspections in the Management System SCA in 2024 identified non-compliances of low and negligible safety significance, as well as 1 finding of medium safety significance discussed below.

- In 2024, a reactive inspection related to the Molybdenum-99 Target Delivery System (TDS) at Darlington NGS was carried out in response to a configuration management issue identified in late 2023.
  - This inspection identified 1 finding of negligible safety significance, 4 findings of low safety significance and 1 finding of medium safety significance, all related to OPG's oversight and management of contractors during the project.
  - The finding of medium safety significance was related to procurement activities not following OPG's established processes. In response, CNSC staff issued a warning letter to formally notify OPG of these non-compliances and to emphasize that further deficiencies in this area may lead to escalated enforcement actions.
  - Since issuing the warning letter, OPG has taken corrective actions to ensure that the oversight and management of contractors is conducted in compliance with regulatory requirements, which remains under review by CNSC staff. CNSC staff have increased regulatory oversight of OPG's TDS projects and have initiated 2 additional inspections in this area.

## 2.1.2 Human Performance Management

### Performance rating: Satisfactory

Number of findings by rating:



OPG continued to make progress on the resolution of corrective actions with respect to findings highlighted in the 2023 ROR on administration of certification examinations. As of the end of 2024, these actions have been completed by OPG and were under review by CNSC staff.

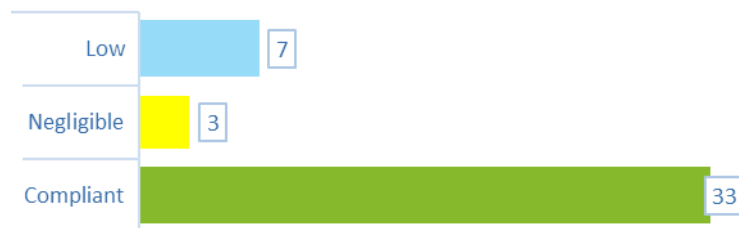
- Compliance oversight activities conducted in 2024 indicate that the issues remained confined to the evaluation of a specific group of candidates and did not jeopardize the overall certification examination program.
  - CNSC staff confirmed that OPG has maintained sufficient personnel at DNGS for all certified positions, and that certified workers have demonstrated the necessary knowledge and skills to perform their duties safely and competently.
- CNSC staff performed several compliance oversight activities, both at DNGS and PNGS, on OPG's programs and their implementation. This included a Type 1 Inspection on OPG's implementation of REGDOC-2.2.4, Fitness for Duty, Volume II: Managing Alcohol and Drug Use. This inspection resulted in a total of 7 findings (3 of which were of low safety significance) for which OPG is implementing corrective actions. CNSC staff are satisfied with OPG's progress to date.
- CNSC staff conducted an inspection of OPG's Fitness-for-Duty: Managing Worker Fatigue Program.
  - Two non-compliant findings of low safety significance were identified; 1 related to not ensuring that workers are trained with respect to managing worker fatigue and another to OPG not effectively managing worker fatigue.
  - OPG has implemented corrective actions to address the findings, and CNSC staff continue to monitor implementation of those actions.
- There were 2 hours of work violations for certified staff at Darlington. Both violations were caused by workers working more than 60 hours a week due to longer turnovers to

incoming personnel. In order to prevent future violations caused by this particular scenario, OPG has modified the requirement for a 30-minute shift turnover, to align with guidance in REGDOC 2.2.4, *Fitness for Duty: Managing Worker Fatigue*, which advises that turnover "should typically be completed within 30 minutes per shift".

### 2.1.3 Operating Performance

#### Performance rating: Satisfactory

Number of findings by rating:



In 2024, CNSC staff conducted 6 inspections related to the area of Operating Performance, with several other compliance verification activities in other SCAs that considered aspects of Operating Performance.

- DNGS experienced 1 trip, 1 setback and 1 step back, as shown in Table 31.
  - On Unit 1, the shutdown system 1 (SDS-1) and shutdown system 2 (SDS-2) actuated as a result of a manual valve being incorrectly positioned and not reflected in the plant status software.
  - CNSC staff are conducting a reactive inspection as a result of the actuation of SDS-1 and SDS-2 event. This inspection includes a review of the root cause investigation performed by OPG and long-term corrective actions taken by OPG.
    - **UPDATE:** The inspection was completed on June 27, 2025. CNSC staff will continue to review and monitor the corrective actions.

## 2.1.4 Safety Analysis

**Performance rating: Satisfactory**

### **Deterministic Safety Analysis**

- OPG has maintained the Darlington Safety Report in accordance with Regulatory requirements.
- Parts 1 and 2 of the Darlington Safety Report were submitted by OPG in November 2023. The submissions were reviewed by staff and found to be acceptable. Parts 1 and 2 of the Safety Report describe the site where the facility is located (Part 1) as well as the facility, systems and equipment (Part 2) that make up the design basis of the station.
- In late 2024, OPG submitted implementation plan for the period beyond 2024, for the updated REGDOC 2.4.1, *Deterministic Safety Analysis*, which includes plans to update additional sections of the Safety Report as well as related operating documentation.
- Along with the updated plan, OPG submitted several analysis and supporting documentation, which include the following:
  - REGDOC 2.4.1-updated Loss of Flow Analysis.
  - REGDOC 2.4.1-updated Loss of Reactor Power Regulations Analysis.
  - REGDOC 2.4.1-updated Common Cause Events.
- The 2024 Implementation Plan and the Safety Analyses submitted in 2024 are currently being reviewed by CNSC staff.

### **Probabilistic Safety Assessment**

- OPG has met and continues to meet CNSC staff's expectations and regulatory requirements based on Probabilistic Safety Assessment (PSA) submissions that have been reviewed in the past.
- Following CNSC staff's review of the updated PSA reports submitted in 2020, staff confirmed compliance with REGDOC-2.4.2, as reported in previous ROR reports.
- In 2024, OPG submitted revisions to all PSA guides, which have been reviewed and accepted in accordance with Revision 2 of REGDOC-2.4.2.
- OPG is expected to submit the updated Darlington PSA reports in 2025, per the 5-year review cycle and in accordance with Revision 2 of REGDOC-2.4.2.

## Hazard Analysis

- In 2019, OPG submitted the Hazard Screening Analysis as a part of the 2020 Darlington Probabilistic Safety Assessment Update.
  - The update included consideration of non-reactor sources of hazards.

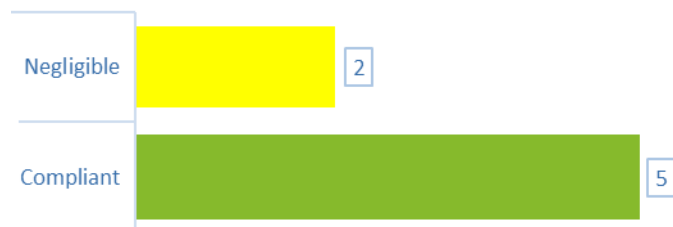
CNSC staff completed their review of the updated Hazard Screening Analysis and determined that OPG's submission complied with REGDOC-2.4.2.

- In late 2024, OPG submitted the updated PSA Hazard Screening Analysis, the first module to be submitted as part of the 5-year PSA update schedule.
  - CNSC are currently reviewing the Hazard Screening Analysis to ensure it was completed in accordance with the accepted PSA guide and that regulatory requirements were met.

## 2.1.5 Physical Design

### Performance rating: Satisfactory

Number of findings by rating:



### Environmental Qualification (EQ) program

In 2024, CNSC staff continued to follow up on the Notice of Non-Compliance (NNC) related to online temperature monitoring identified in a type II EQ inspection conducted in 2021 (DRPD-2021-10193). OPG has a corrective action plan (CAP) in place to address the issue, with a target completion date of June 2025. CNSC staff find that there is no undue risk to safety of the plant systems, structures, or components due to this issue.

### Pressure boundary (PB) program

- In 2024, OPG maintained a formal agreement with an Authorized Inspection Agency (AIA) in accordance with its Licence Condition 5.2.
- In late 2024, OPG identified issues with demonstration of overpressure protection in the Mo-99 Target Delivery System and reported the issues to CNSC staff.



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- **UPDATE:** In 2025, CNSC undertook a reactive inspection to verify OPG's corrective actions and measure compliance in this area. CNSC staff will continue to review and monitor the corrective actions.

## System Design

Electrical Power systems:

- Based on the CNSC compliance activities in 2024, CNSC staff determined that electrical power systems including cables met CNSC staff performance expectations at DNGS.

## 2.1.6 Fitness for Service

**Performance rating: Satisfactory**

Number of findings by rating:



In July 2023, Darlington Unit 4 was shutdown for refurbishment and remained in refurbishment outage through 2024.

- With the refurbishment of Darlington Unit 4, all units at Darlington NGS have either undergone refurbishment or are currently shutdown undergoing refurbishment.
- As a result, there are no longer any pressure tubes with elevated hydrogen equivalent concentration ([Heq]) in operation. Therefore, fitness-for-service (FFS) concerns related to [Heq] have been resolved.

### Equipment Fitness for Service/Equipment Performance

- CNSC staff confirmed that all systems important to safety (including special safety systems) for DNGS met their unavailability targets in 2024.

### Reliability of systems important to safety

- CNSC staff reviewed OPG's 2023 reliability report and determined that the report met REGDOC-3.1.1 requirements and CNSC staff expectations.

## Maintenance

- The performance of Darlington’s maintenance program met CNSC staff’s expectations in 2024.
  - The critical corrective maintenance backlog, deficient maintenance backlog and the number of critical preventive maintenance deferrals were maintained at a low level in 2024.
  - The average preventive maintenance completion ratio was 95%, which was acceptable.
  - There were no safety significant findings related to maintenance based on the review of the events reported by the licensee.

## Periodic Inspection and Testing

- On-line and outage inspections were completed in accordance with established periodic inspection programs and met applicable reporting requirements.

## 2.1.7 Radiation Protection

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff conducted 8 Radiation Protection (RP) field inspections, 1 Type II RP inspection and 1 RP compliance assessment.

- CNSC staff determined that at the DNGS:
  - Radiation doses to workers were below the regulatory dose limits.
  - There was 1 action level exceedance for an unplanned internal intake of tritium oxide resulting in a total effective dose of 3.16 mSv to a Nuclear Energy Worker, which is below the regulatory dose limit of 50 mSv/year for Nuclear Energy Workers.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- CNSC staff confirmed that OPG implemented corrective actions to prevent a recurrence.
- Appropriate measures were used to control occupational exposures and to keep doses ALARA.
- Actions were taken to control radiological hazards to protect workers.
- CNSC staff's compliance assessment review of OPG's RP action levels implemented at DNGS concluded that OPG was compliant with the regulatory requirements specified in subsection 6(2) of the *Radiation Protection Regulations* and with the requirements associated with the DNGS PROL.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in [CMD 24-M35](#).

## 2.1.8 Conventional Health and Safety

### Performance rating: Satisfactory

Number of findings by rating:



In 2024, the compliance verification activities resulted in 1 non-compliant finding of low safety significance, related to temporary safety warning signs, and 5 non-compliant findings of negligible safety significance, related to scaffold construction, housekeeping, barrier/signage requirements, and heat-producing appliances.

- There were no lost-time injuries in 2024. Darlington operational units (Units 1, 2, and 3) reported 3 medically treated injuries, while the refurbishment unit had 6 medically treated injuries in total.
- The accident severity rate continued to be 0.00, with no lost-time injuries. Due to the medically treated injuries, the Accident Frequency (AF) for DNGS was 0.08, which is lower than 2023 value of 0.16 and similar to the 2022 and 2021 values.

## 2.1.9 Environmental protection

### Performance rating: Satisfactory

Number of findings by rating: Two compliant findings

- Results from CNSC staff's assessments of OPG reports determined that OPG met regulatory requirements in REGDOC-3.1.1 and REGDOC-2.9.1, *Environmental Principles, Assessments and Protection Measures*, at Darlington site.
- Dose to the public from the Darlington site (0.85  $\mu\text{Sv/yr}$ ) remained below the regulatory limit of 1 mSv/yr.
- Releases of radiological nuclear substances were well below the Derived Release Limits (DRL) for DNGS in 2024.
- There was 1 action level exceedance for elemental tritium in January 2024.
  - The Environmental Action Level (AL) for elemental tritium is 1,030 Ci/week.
  - This AL was exceeded for the emission reporting week ending January 29, 2024, due to a 1,246 Ci contribution from the Tritium Removal Facility (TRF) stack. The AL exceedance represents 0.38% of the DNGS weekly operational DRL.
  - The AL exceedance was a result of maintenance work on the TRF, where high emission work was not adequately planned for. As part of this event's actions, OPG has formalized a process for Temporary AL regulatory exemptions, which involves notifying the CNSC. Temporary ALs are used to support planned maintenance work activities at the Tritium Removal Facility, which is necessary to maintain the effectiveness of the Environmental Protection Program.
  - Temporary AL notifications for this work are in accordance with CSA N288.8-17 *Establishing and Implementing Action Levels for Releases to the Environment from Nuclear Facilities*. These planned maintenance events do not represent a loss of control event and temporary action levels are set well below the weekly operational DRLs which are protective of health and the environment.
- In 2024, OPG reported 2 Environmental Compliance Approval (ECA) non-compliances. ECAs are issued by the Ontario Ministry of the Environment, Conservation and Parks for hazardous (non-radiological) substance releases, but non-compliances are also reported to the CNSC.
  - There was 1 non-compliance on June 9, 2024, for elapsing the allowable storage time for a Total Residual Chlorine (TRC) sample and one on July 15, 2024, for an

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

exceedance of the TRC ECA limit of 0.01 mg/L at the Condenser Cooling Water (CCW) discharge structure with TRC results of 0.016 mg/L and 0.029 mg/L.

- Effluent streams at Darlington Nuclear were discharged to the environment via the approved provincial ECA Control Points.

## 2.1.10 Emergency Management and Fire Protection

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff conducted 9 field inspections in emergency management and fire protection at Darlington NGS. OPG initiated corrective actions to address the findings that resulted from these field inspections, which CNSC staff determined to be acceptable.

- CNSC staff continue to monitor OPGs progress towards completion of the project to upgrade the public address system at the DNGS, as previously detailed in [CMD 25-M9](#), Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2023. To date, OPG has completed the detailed design and issued a purchase order for the required materials.

## 2.1.11 Waste Management

**Performance rating: Satisfactory**

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Number of findings by rating:



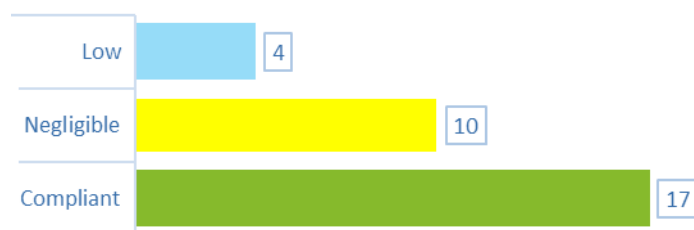
CNSC staff confirmed that OPG continued to maintain an effective waste management program, preliminary decommissioning plan, and Financial Guarantee at the DNGS in 2024.

- CNSC staff were satisfied with OPG's reporting of the 2024 DNGS safety performance indicator for Low and Intermediate-Level Radioactive Solid Waste Generated.
- In February 2025, OPG submitted the 2024 Annual Report update for its 2023-2027 Consolidated Financial Guarantee (FG). CNSC staff confirmed that the FG cost estimates were still valid and that OPG had sufficient funds to meet decommissioning liabilities in 2024.
- As previously stated in the RP section, there was 1 event related to waste management and RP that resulted in the potential release of neutron radiation to workers. More details can be found in CMD 24-M35.

## 2.1.12 Security

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff conducted a Type I inspection on OPG's security program in January 2024, and 3 field inspections of the DNGS Nuclear Security Program.

- The Type I inspection resulted in 11 notices of non-compliance and 3 recommendations. OPG has initiated corrective actions for all non-compliances and CNSC staff are satisfied with the progress to date. The details of the inspection findings and corrective actions contain prescribed information and are classified as confidential. There was no immediate risk to safety or security.

- OPG initiated corrective actions to address the non-compliances raised through the field inspections, which CNSC staff found acceptable.
- There were 13 reportable events related to security.
  - CNSC staff reviewed the event reports and concluded that there was no immediate risk to safety and security, and that OPG took appropriate actions to address these events.
- In 2024, CNSC staff reviewed OPG's 2023 threat and risk assessment and determined that the threat and risk assessment report was completed in accordance with regulatory requirements.
- OPG submitted to CNSC staff a prior written notification for DNGS's Revised Nuclear Security Tactical Plan pursuant to Licence Condition 12.1 of PROL 13.05/2025. CNSC staff were assessing OPG's Tactical Plan at the end of 2024.
- OPG continues to provide yearly status updates on the implementation of CSA N290.7-21, *Cyber Security for Nuclear Facilities*.

### 2.1.13 Safeguards and Non-Proliferation

#### Performance rating: Satisfactory

Number of findings by rating: One compliant finding

- During an IAEA short notice random inspection (SNRI) on April 29, 2024, the IAEA could not access all fresh fuel designated for Darlington Nuclear Refurbishment Unit 1.
  - Even though OPG provided alternative arrangements onsite, the entirety of the temporary storage location for the new fuel load was inaccessible for the IAEA's planned verification activities due to its storage configuration in a foreign material exclusion zone.
  - The results of the inspection were not satisfactory to the IAEA.
  - The CNSC is working with OPG and the IAEA to ensure plans for the next and final refurbishment (Darlington Nuclear Refurbishment Unit 4) new fuel load do not impact IAEA inspections and the necessary follow-up actions are taken to resolve this issue.
- In 2024, CNSC staff conducted a field inspection during the above-mentioned SNRI for fresh fuel verification.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- CNSC staff confirmed that OPG provided access and assistance to the IAEA inspectors to facilitate the IAEA's inspection.
- However, the IAEA was not able to meet their objectives for the inspection due to the presence of inaccessible fresh fuel inventory for the refurbished unit.
- OPG reported the loss of power to IAEA surveillance equipment on July 24, 2024, to the CNSC. The IAEA reviewed their data and confirmed that there was no impact on safeguards implementation. The CNSC is satisfied with the licensee's reporting and response.
- Notwithstanding the issues noted above, during the reporting period of 2024, OPG,
  - Provided the required nuclear material accountancy and control reports to the CNSC and the IAEA for their safeguards verification activities.
  - Granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA.
  - Submitted the required annual operational program with quarterly updates and the annual update to the Additional Protocol to the CNSC in a timely manner. The CNSC reviewed these documents and determined that they met requirements and expectations.
  - Provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.

## **2.1.14 Packaging and Transport**

**Performance rating: Satisfactory**

Number of findings by rating: Five compliant findings

- In 2024, CNSC staff conducted 3 field inspections on OPG's Packaging and Transport program. All the findings were compliant.
  - The findings were related to the transport of refurbishment waste in Type A and Type B(U) packages.



## 2.2 Darlington Waste Management Facility

### Overview



Figure 4: Darlington Waste Management Facility

The DWMF is located within the traditional lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1787-88), the Williams Treaties (1923), and the Williams Treaties Settlement Agreement (2018).

**Licence:** WFOL -W4-355.00/2033

**Licence term:** May 2023 – April 2033

**Licensee:** Ontario Power Generation

**Location:** Clarington, Ontario

- The DWMF consists of an Amenities Building, 1 Dry Storage Container (DSC) processing building, 2 DSC storage buildings (Storage Buildings #1 and #2), and the Radioactive Waste Storage Building (RWSB).
- Storage Capacity: 983 DSCs containing used nuclear fuel waste, and 490 Darlington Storage Overpacks (DSOs) containing refurbishment wastes.
- In 2024, 57 DSCs and 89 DSOs transferred from DNGS to DWMF.
- The licence for the DWMF authorizes OPG to construct 2 additional DSC storage structures (Storage Structures #3 and #4), which would allow for an additional storage capacity of 1,200 DSCs. In 2024, OPG constructed Storage Structure #3. OPG is commissioning Storage Structure #3 with a target completion date of August 2025.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

Table 9: Summary of the number of inspections performed for DWMF (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
0	1	0	1	Compliant: 10 Non-Compliant: 1 Total: 11

## Event Initial Reports (EIRs)

One EIR pertaining to DWMF was submitted to the Commission for the reporting period between January 1, 2024, and December 31, 2024:

- CMD 24-M35, “Ontario Power Generation, Bruce Power: Potential neutron exposure of workers”, September 12, 2024 Commission Meeting

### 2.2.1 Management System

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Management System SCA at the DWMF in 2024.
- Changes to licensing basis documents were reviewed by CNSC staff to ensure that OPG maintains its management system at the DMWF and that changes do not impact safety.
- OPG has adequate contingency plans in place to maintain or restore critical safety and business functions in the event of disabling circumstances.

### 2.2.2 Human Performance Management

**Performance rating: Satisfactory**

Number of findings by rating: One compliant finding

- CNSC staff concluded that OPG met the requirements, and its performance met CNSC staff expectations for the Human Performance Management SCA at the DWMF in 2024.
- CNSC staff reviewed OPG’s 2024 annual compliance report for the DWMF and there were no issues identified for the specific areas under this SCA.

## 2.2.3 Operating Performance

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Operating Performance SCA at the DWMF in 2024.
- OPG transferred 57 DSCs and 89 DSOs at the DWMF in 2024, which met their targets.
- In 2024, OPG discontinued quarterly reporting. CNSC staff determined that there was no regulatory requirement, licence requirement or request from the Commission for OPG to report quarterly to the CNSC.
- In 2024, OPG submitted their annual compliance report as required and within the appropriate timelines. CNSC staff's review of OPG's annual compliance report determined that OPG has implemented and maintained an effective operating program in order to ensure licensed activities are conducted safely at the DWMF. The reviews also confirmed that OPG's reporting and trending, and its responses to comments and requests for follow-up information and clarification, met CNSC staff's expectations.

## 2.2.4 Safety Analysis

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff's expectations for the Safety Analysis SCA at the DWMF in 2024.

## 2.2.5 Physical Design

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Physical Design SCA at the DWMF in 2024.
- CNSC staff confirmed that OPG maintains an effective design program and pressure boundary program and implements modifications to the facilities in accordance with established engineering control process to maintain the design basis.

- OPG continued to implement its fire protection program in accordance with CSA N393 *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances, Requirements*.

## 2.2.6 Fitness for Service

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Fitness for Service SCA at the DWMF in 2024.
- As part of the aging management activities for DSCs, OPG submitted the aging management report for the DWMF. CNSC staff reviewed the submission and determined that it complied with OPG's aging management program.

## 2.2.7 Radiation Protection

### Performance rating: Satisfactory

Number of findings by rating: Four compliant findings

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Radiation Protection SCA at the DWMF in 2024.
- CNSC staff review of the annual compliance report submitted by OPG confirmed that:
  - The DWMF achieved its year-end collective dose target.
  - OPG did not exceed any action levels for dose to workers and the annual effective doses for all DWMF Nuclear Energy Workers were well below the regulatory dose limit.
  - OPG did not exceed any action levels for contamination control.
  - The perimeter dose rates at the DWMF were within OPG's targets and consistent with the results of previous years.
  - Measures were implemented to ensure that the DWMF was compliant with regulatory requirements related to Radiation Protection.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants and their

associated waste management facilities to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.2.8 Conventional Health and Safety

### Performance rating: Satisfactory

Number of findings by rating: One compliant finding

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Conventional Health and Safety SCA at the DWMF in 2024.
- There were zero lost time injuries, zero restricted work injuries, and zero medically treated incidents at the DWMF in 2024.

## 2.2.9 Environmental Protection

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Environmental Protection SCA at the DWMF in 2024. OPG made adequate provision for the protection of the public and the environment.
- CNSC staff review of the annual compliance report did not result in findings for the Effluent and Emission Control Specific Area, and releases remained well below the Derived Release Limits and Action Levels.
- CNSC technical assessment did not result in findings related to the Assessment and Monitoring Specific Area. Dose to the public remained low (0.85  $\mu$ Sv), and in a similar range to the previous years, which shows that radionuclide concentrations measured in the environment remain low.

## 2.2.10 Emergency Management and Fire protection

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Emergency Management and Fire Protection SCA at the DWMF in 2024.

- OPG has a formal agreement in place with Clarington Emergency and Fire Services (CEFS) to provide primary fire response to the DWMF.
- Overall, OPG has an adequate Fire Protection Program (FPP) to minimize both the probability of occurrence and the consequences of fire at the DWMF. The FPP complies with the requirements of CSA N393-22, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*.

## 2.2.11 Waste Management

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations for the Waste Management SCA at the DWMF in 2024.
- CNSC staff confirmed that OPG continued to maintain an effective waste management program and preliminary decommissioning plan (PDP). CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the DWMF in 2024.
- OPG's next submission of the set of PDPs with the associated consolidated FG is expected in 2027.

## 2.2.12 Security

**Performance rating: Satisfactory**

Number of findings by rating:



- CNSC staff oversight of the OPG security program for the DWMF is conducted through periodic meetings, desktop reviews and on-site security inspections which are conducted every 18 months.
- CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the DWMF in 2024.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- CNSC staff issued OPG a warning letter in December 2024 for failure to comply with Licence Condition G.2 with respect to the Security SCA. The details of the warning letter are confidential and contain prescribed information. CNSC staff were satisfied with the corrective actions and are monitoring their implementation.
- One security inspection took place at the DWMF in December 2023; however, the inspection report was issued outside the reporting period of the 2023 NPGS ROR. The inspection resulted in 1 non-compliant finding of low safety significance. CNSC staff were satisfied with OPG's corrective action.
- In 2024, OPG reported 4 events of low safety significance impacting the Security SCA. One of these events is related to the non-compliant finding from the December 2023 inspection. A second one of these events is related to the event identified in the December 2024 warning letter. The details of all 4 events are confidential and contain prescribed information. CNSC staff were satisfied with the corrective actions for the events and are monitoring their implementation.
- In 2024, CNSC staff reviewed and were satisfied with OPG's 2023 Threat and Risk Assessment.

## **2.2.13 Safeguards and Non-Proliferation**

### **Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable CNSC regulatory requirements, and performance met CNSC staff's expectations for the Safeguards and Non-Proliferation SCA at the DWMF in 2024.
- In January 2024, the results from an IAEA unannounced inspection were found to be unsatisfactory because the IAEA was not able to verify the declared shipment of a DSC during the transfer from DNGS to DWMF. The transfer of the DSC occurred ahead of the scheduled time declared by OPG, leading to a loss of continuity of knowledge for the IAEA. The IAEA requested the opportunity to perform follow up verification activities to address the issue. In June 2024, the IAEA performed neutron and gamma measurements on the DSC. No additional follow up actions are required from OPG.
- CNSC staff determined that OPG's safeguards program complied with the applicable regulatory requirements at the DWMF. OPG granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment at the DWMF.

- CNSC staff determined that OPG met the applicable regulatory requirements for operational and design information in 2024 at the DWMF. OPG provided the required operational and design information to facilitate IAEA safeguards activities. OPG also provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.

## 2.2.14 Packaging and Transport

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Packaging and Transport SCA at the DWMF in 2024.
- OPG maintains a packaging and transport program for the DWMF that ensures compliance with the *Packaging and Transport of Nuclear Substances Regulations*, 2015 and the *Transportation of Dangerous Goods Regulations*.



## 2.3 Pickering Nuclear Generating Station

### Overview



Figure 5: Pickering Nuclear Generating Station

The Pickering site is located on the north shore of Lake Ontario in Pickering, Ontario, 32 kilometres northeast of Toronto and 21 kilometres southwest of Oshawa. The Pickering site lies within the traditional lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1787-88), the Williams Treaties (1923), and the Williams Treaties Settlement Agreement (2018).

**Licence:** PROL 48.03/2028.

**Licence term:** September 1, 2018 to August 31, 2028.

**Licence last amended:** February 7, 2025.

**Licensee:** Ontario Power Generation.

**Location:** Pickering, Ontario.

**Fisheries and Oceans Canada (DFO) Authorization expiration:** December 31, 2028.

[Learn more about Pickering Nuclear Generating Station](#)

Table 10: Summary of the number of inspections performed for PNGS (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
2	12	3	51	Compliant: 243 Non-Compliant: 106

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

				Total: 349
--	--	--	--	------------

Table 11: Number of Inspections by Primary Focus SCA (provided in parentheses) and Total Inspections with Findings per SCA.

Inspections generally focus on a specific area or program associated with a particular SCA, known as the primary focus SCA (number in parentheses). However, inspections may also assess additional criteria that fall under other SCAs. As a result, findings can occur in SCAs that were not the primary focus of the inspection.

SCA	Rating	Number of Type 1 inspections	Number of Type 2 inspections	Number of Desktop inspections
Management System	Satisfactory	2	12(2)	3
Human Performance	Satisfactory	2(1)	11(1)	2
Operating Performance	Satisfactory	1	10(5)	2(1)
Safety Analysis	Satisfactory			
Physical Design	Satisfactory		3	1(1)
Fitness for Service	Satisfactory	1	10(2)	1(1)
Radiation Protection	Satisfactory		5	
Conventional Health and Safety	Satisfactory		7	
Environmental Protection	Satisfactory		3(1)	
Emergency Preparedness and Fire Protection	Satisfactory		4(1)	
Waste Management	Satisfactory		2	
Security	Satisfactory	1(1)		
Safeguards and Non-Proliferation	Satisfactory		1	
Packaging and Transport	Satisfactory		1	

## Refurbishment of Units 5-8

- On January 30, 2024, the Ontario government announced its support for OPG to proceed with a project to refurbish Pickering NGS Units 5 to 8.
- In October 2024, OPG informed the CNSC of its intent to submit an early licence renewal application in Q3 of 2025. OPG plans to request a 10-year licence term during which, OPG

plans to refurbish Pickering NGS Units 5 to 8. OPG also plans to request consolidation of the licensed activities authorized under the current PWMF WFOL with the PNGS PROL.

- To support the refurbishment, OPG is conducting a periodic safety review (PSR) in accordance with REGDOC-2.3.3, *Periodic Safety Reviews*, to determine safety improvements to enhance the level of safety. A PSR protocol between CNSC/OPG was developed to establish the major deliverables and timelines for the production and review of the PSR.

### Unit 5-8 Operations extension to 2026

- In June 2023, OPG submitted a licence amendment application requesting Commission authorization to operate Pickering NGS Units 5–8 to December 31, 2026.
- A public hearing was held in June 2024, and the Commission approved the licence amendment application.
- All IIP commitments from the extension to 2026 are now closed.

As of December 31, 2024, all of the 32 IIP tasks, or commitments, have been completed and closed following the CNSC staff review.

### Event Initial Reports (EIRs)

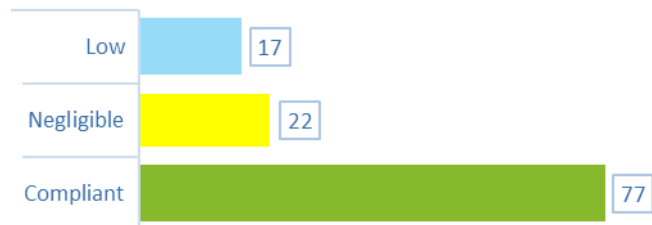
One EIR pertaining to PNGS was submitted to the Commission for the reporting period between January 1, 2024, to December 31, 2024:

1. CMD 24-M33, Ontario Power Generation: Pickering Nuclear Generating Station Unit 4 Loss of Class IV Electrical Power
  - On May 18, 2024, while Pickering Nuclear Generating Station Unit 4 was operating at 84 % Full Power, the Hydro One switchyard connecting PNGS to the electrical grid experienced a protection circuit fault on a Hydro One 230 kilovolt (kV) breaker. As per design, Standby Generators for Unit 4 automatically provided power as the Unit was safely shut down and placed into Guaranteed Shutdown State (GSS).
    - CNSC staff are satisfied with the corrective actions taken by the licensee.

## 2.3.1 Management System

**Performance rating: Satisfactory**

Number of findings by rating:



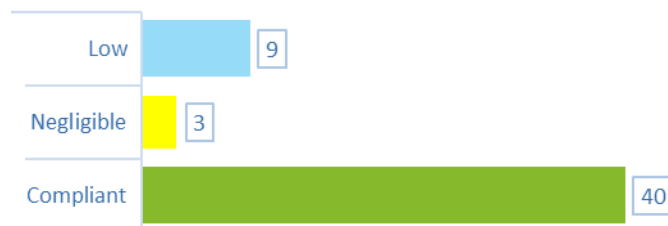
CNSC staff field inspections identified non-compliances related to completeness and adequacy of records and labelling.

- OPG has implemented corrective actions to address all non-compliant findings, and overall, CNSC staff are satisfied with OPG's progress to date in resolving the issues.
- In 2024, CNSC staff completed a review of OPG's corrective actions to a Type II Engineering Change Control inspection that took place in 2023.
  - This inspection identified non-compliances regarding approvals, documenting justification, and incomplete records. CNSC staff are satisfied with OPG's corrective actions.

## 2.3.2 Human Performance Management

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff inspections in Human Performance in 2024 identified non-compliances of low and negligible safety significance related to personnel training, human performance program, fitness for duty and work organization and job design.

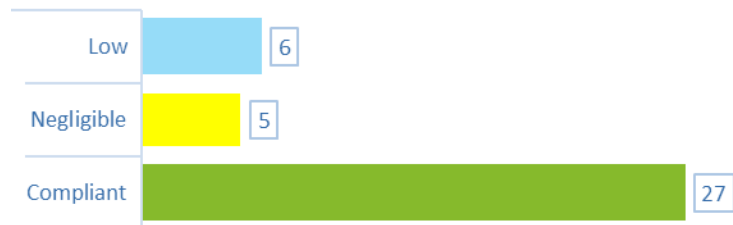
**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- CNSC staff conducted an inspection of OPG's Fitness-for-Duty (FFD): Managing Alcohol and Drug Use Program.
  - Three non-compliant findings of low safety significance were identified, related to Continuous Behavior Observations Program (CBOP); the training did not include elements of monitoring for drug and alcohol use, the program did not ensure post-incident testing was conducted, and measures were not in place to prevent subversion of urine samples collection.
  - As of December 31, 2024, OPG has implemented corrective actions to address the findings, and CNSC staff are satisfied with the progress made so far.
- CNSC staff conducted an inspection of OPG's Fitness-for-Duty: Managing Worker Fatigue Program.
  - Two non-compliant findings of low safety significance were identified related to not ensuring that workers are trained with respect to managing worker fatigue and not managing worker fatigue.
  - OPG has implemented corrective actions to address the findings, and CNSC staff will verify implementation of those actions.
  - OPG reported hours of work non-compliances in a timely manner and maintained adequate programs and processes to ensure worker fitness for duty.
- CNSC staff confirmed that OPG has maintained sufficient personnel at PNGS for all certified positions, and that all certified workers possessed the necessary knowledge and skills to perform their duties safely and competently.
- In 2024, OPG reported 3 Minimum Shift Complement (MSC) violations in their security organization at the PNGS. These violations were all short duration and OPG reported these events in accordance with REGDOC 3.1.1.

## 2.3.3 Operating Performance

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff conducted 13 inspections related to the area of Operating Performance, with several other compliance verification activities in other SCAs that considered aspects of Operating Performance.

- PNGS Unit 4 experienced 1 trip and 1 setback and Units 5 and 8 both experienced 1 reactor trip
  - All transients were properly controlled.
  - The number of trips and setbacks at the PNGS, have decreased in 2024 compared to 2023.

## 2.3.4 Safety Analysis

**Performance rating: Satisfactory**

### Deterministic Safety Analysis

- OPGs has maintained its Safety Report as required by the LCH. OPG continues provide regular updates on their implementation plan of REGDOC-2.4.1 and CNSC staff are satisfied with OPGs progress.

### Large Break Loss of Coolant Accident (LBLOCA) Composite Analytical Approach (CAA) analysis

- OPG has submitted a LBLOCA deterministic safety analysis for Pickering Units 1-4 and 5-8. OPG has fulfilled its commitment by providing a complete LBLOCA analysis before April 1, 2024, in accordance with their LCH. CNSC staff have provided comments to OPG and continues monitoring resolution through an open Action Item.

### Small Break Loss of Coolant Accident (SBLOCA), Loss of Flow (LOF) Aging Analysis, Loss of Reactor Power (NOP) Analysis

- To support the continued operation of PNGS Units 5-8 to end of 2026, SBLOCA, LOF and NOP analyses, which are impacted by core aging, were submitted in late 2024. CNSC staff have provided their preliminary review comments and further discussions are in progress regarding these analyses.

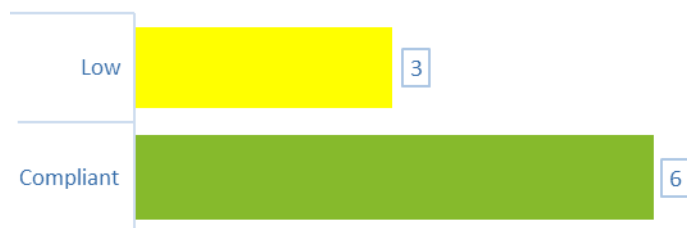
### **Probabilistic Safety Assessment**

- In 2024, CNSC staff completed the review of Ontario Power Generation's Pickering NGS Units 1-4 and Units 5-8 PSA five-year update.
  - OPG submitted ten reports for Pickering A and thirteen reports for Pickering B as part of the update.
  - CNSC staff found that the OPG's update meets the reporting requirements of REGDOC-3.1.1, and that the updates were conducted with CNSC accepted methodologies in accordance with the requirements of REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*.

## **2.3.5 Physical Design**

### **Performance rating: Satisfactory**

Number of findings by rating:



### **Pressure boundary program:**

The licensee maintained a formal agreement with an Authorized Inspection Agency in accordance with its Licence Condition 5.2.

- The quarterly pressure boundary reports submitted by OPG in 2024 were provided in a timely manner, and CNSC staff found them to be compliant with reporting requirements.
- In 2024 CNSC staff held a reactive desktop inspection on the pressure boundary systems and found 3 non-compliances of low safety significance. OPG has responded to these non-compliances and CNSC staff were reviewing the corrective actions for their effectiveness at the end of 2024.

### Environmental qualification (EQ) program:

- In 2024, CNSC staff conducted an EQ field inspection in 2024 with all findings being compliant. The licensee continues to implement and maintain its EQ program in accordance with CSA N290.13-05, *Environmental Qualification of Equipment for CANDU Nuclear Power Plants*.

### System Design

#### Electrical Power systems

- Based on the CNSC compliance activities in 2024, CNSC staff determined that electrical power systems including cables met CNSC staff performance expectations at PNGS.

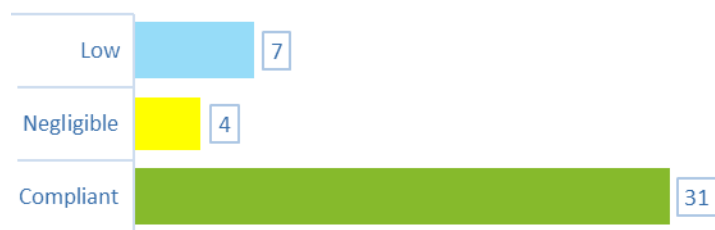
#### Fire protection

- CNSC staff performed a fire protection compliance inspection in 2024.
  - CNSC staff issued 1 NNC of low safety significance to OPG related to the effectiveness of worker rounds.
  - OPG has responded to the action and CNSC staff are reviewing the corrective actions for effectiveness.

## 2.3.6 Fitness for Service

### Performance rating: Satisfactory

Number of findings by rating:



### Maintenance

- PNGS maintained the critical corrective maintenance backlog at a very low level.
- The average preventive maintenance completion ratio was 98%, which was acceptable.



### **Equipment Fitness for Service/Equipment Performance**

- In 2024, CNSC staff reviewed OPG's 2023 Annual Report on Risk and Reliability. OPG PNGS showed satisfactory performance for the Systems Important to Safety.
- CNSC staff confirmed that all special safety systems for PNGS met their Actual Past Unavailability (APU) targets in 2024.

### **Aging Management**

- For pressure tubes potentially affected by regions of elevated hydrogen equivalent concentration near the inlet and outlet rolled joints, alternate fitness for service criteria were satisfied during the reporting period.
- CNSC staff reviewed both the March and September 2024 elevated Heq Research and Development (R&D) updates for Pickering Units 5-8 pressure tubes in extended operation and conclude that they continue to adequately target the key issues raised by CNSC staff regarding pressure tube fitness for service evaluations.
  - In both updates, OPG has not reported any substantive delays in the R&D work that may adversely impact the overall project schedule.
  - OPG will continue to provide semi-annual updates, as per OPG's commitment.

### **Periodic Inspection and Testing**

- OPG conducted on-line and outage inspections per established periodic inspection programs and met applicable reporting requirements.

### **Chemistry Control**

- PNGS maintained acceptable system chemistry performance in 2024. A review of the chemistry data in REGDOC-3.1.1 reports, and safety performance indicators (SPIs) demonstrated that the PNGS performance was acceptable.

## **2.3.7 Radiation Protection**

### **Performance rating: Satisfactory**

Number of findings by rating:

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024



CNSC staff conducted 2 RP field inspections and 1 RP compliance assessment.

- The non-compliant finding of low safety significance was associated with routine radiation surveys not completed at the required frequency.
- The non-compliant finding of negligible safety significance was associated with radiation monitoring equipment not being calibrated at the required frequency.
- No enforcement items were raised for these non-compliant findings.
- CNSC staff are satisfied with OPG's corrective actions to resolve these non-compliances.
- CNSC staff determined that at the PNGS:
  - Radiation doses to workers were below regulatory dose limits.
  - There were no exceedances of an action level listed in the licensee's RP program.
  - Appropriate measures were used to control occupational exposures and to keep doses ALARA.
  - Actions were taken to control radiological hazards to protect workers.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.3.8 Conventional Health and Safety

**Performance rating: Satisfactory**

Number of findings by rating:



During inspections, CNSC staff observed non-compliances related to the specific areas of practices and awareness, which were resolved by the licensee to the satisfaction of CNSC staff. No enforcement actions were raised.

- CNSC staff concluded that OPG adequately identified workplace hazards in 2024 and had appropriate procedures in place to ensure the protection of the environment and the health of persons against hazardous materials.
- The accident severity rate continued to be 0.00, with no lost-time injuries. Due to medically treated injuries, the Accident Frequency (AF) for PNGS was 0.18, which is comparable to the 2023 value of 0.14 and lower than the 2022 value of 0.22.

## 2.3.9 Environmental Protection

**Performance rating: Satisfactory**

Number of findings by rating:



Results from CNSC staff's assessments of OPG reports determined that OPG met regulatory requirements in REGDOC-3.1.1 and REGDOC-2.9.1.

- Dose to the public (1.4  $\mu\text{Sv}/\text{yr}$ ) from the Pickering site remained below the regulatory limit of 1 mSv/yr.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- Releases of radiological nuclear substances were well below the DRLs for PNGS in 2024.
- There were no environmental action level exceedances for PNGS in 2024.
- In 2024, CNSC staff and Fisheries and Oceans Canada each independently reviewed OPG's PNGS 2023 Fish Impingement Monitoring report and concluded that the report met the conditions of the Fisheries Act Authorization (FAA).
- CNSC staff concluded that OPG has implemented and continues to maintain a corporate environmental management system in accordance with CNSC requirements. CNSC staff concluded that OPG has made adequate provision for the protection of the environment and health of persons, and OPG has demonstrated that people and the environment living near the PNGS remain protected.

### 2.3.10 Emergency Management and Fire Protection

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff conducted 1 Type II inspection and 10 field inspections on Fire Protection at Pickering NGS.

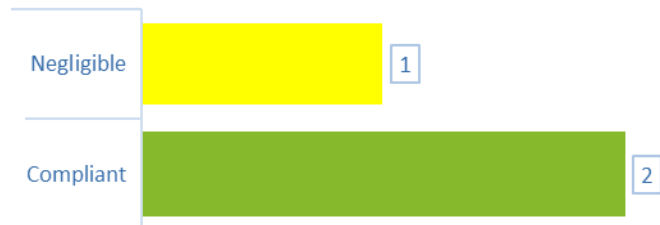
- The non-compliances discovered pertained to updates of pre-fire plans and inspection, testing, and maintenance of fire protection equipment. OPG has implemented corrective actions to address the non-compliance. CNSC staff are reviewing OPG's corrective actions.
- In 2024, CNSC staff completed the review of the 2023 Annual Third Party Plant Condition Inspection Report for Pickering, the 2023 Fire Protection Program Audit Report and the 2024 Annual Industrial Fire Brigade Audit report for Pickering and Darlington.

- CNSC staff review concludes that these reports met the applicable requirements of CSA N293-12, *Fire Protection for Nuclear Power Plants*, National Fire Code of Canada (NFCC), and National Building Code of Canada (NBCC).

## 2.3.11 Waste Management

**Performance rating: Satisfactory**

Number of findings by rating:



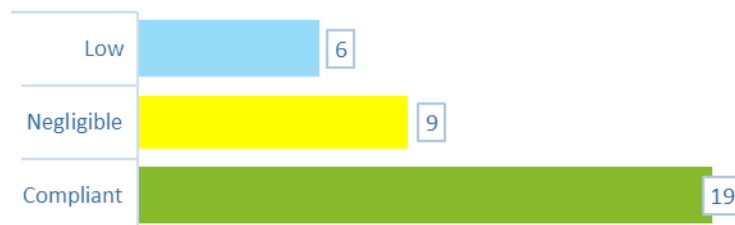
In December 2024, OPG submitted a Detailed Decommissioning Plan (DDP) and Storage with Surveillance Plan for Pickering NGS Units 1 to 4.

- The DDP submissions identified removal activities for end stated and abandoned non-nuclear Systems, Structures, and Components (SSCs) that are outside of the reactor area. CNSC staff were reviewing this OPG submission at the end of 2024. The Storage with Surveillance Plan (SWS) Plan describes the requirements for care and maintenance of the facility equipment and substances until decontamination and dismantling actions are performed.
- CNSC staff were satisfied with OPG's reporting of the safety performance indicator for Low and Intermediate-Level Radioactive Solid Waste generated.

## 2.3.12 Security

### Performance rating: Satisfactory

Number of findings by rating:



In 2024, CNSC staff conducted a Type I and 2 field inspections of the PNGS Nuclear Security Program.

- The details of the inspections' findings and corrective actions contain prescribed information and are classified confidential.
- In response to the inspection findings, OPG took actions to address the non-compliances and submitted corrective action plans to the CNSC.
- CNSC staff continue to monitor the implementation of corrective actions.
- There was no immediate risk to safety and security.
- In 2024, CNSC staff reviewed OPG's 2023 threat and risk assessment and determined that the threat and risk assessment report was completed in accordance with regulatory requirements.
- In 2024, OPG submitted to CNSC staff a prior written notification for PNGS's Nuclear Security Tactical Plan pursuant to Licence Condition 12.1 of PROL 48.03/2028. CNSC staff were assessing OPG's Tactical Plans at the end of 2024.
- On March 7, 2024, OPG conducted a force-on-force security exercise at the PNGS and PWMF to meet subsection 36(2) of the Nuclear Security Regulations (NSR). As of the end of 2024, CNSC staff are reviewing OPG's report of the results of the force-on-force exercise.
- There were 15 reportable events related to Security which is comparable to previous years. CNSC staff reviewed the event reports and concluded that there was no immediate risk to safety and security.

### 2.3.13 Safeguards and Non-Proliferation

**Performance rating: Satisfactory**

Number of findings by rating: One compliant finding

- In 2024, CNSC staff conducted a field inspection during the IAEA's physical inventory verification.
  - CNSC staff confirmed that OPG provided access and assistance to the IAEA inspectors to facilitate the IAEA's inspection.
  - No actions were placed on OPG as a result of the inspection.
- During the 2024 reporting period, OPG:
  - Provided the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment.
  - Provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.
- In 2024, the IAEA had identified concerns related to advance information on spent fuel loadings not being provided to the IAEA correctly or in a timely manner and delays due to the implementation and late communication of new entry requirements.
  - The CNSC continues to engage with the IAEA and OPG to resolve these issues.
- OPG reported the export of 2 Primary Heat Transport (PHT) pump motors to the United States without a licence to the CNSC in March 2024. OPG has implemented corrective actions to prevent recurrence. CNSC staff considered OPG's corrective actions acceptable.

### 2.3.14 Packaging and Transport

**Performance rating: Satisfactory**

Number of findings by rating: One compliant finding

- In 2024, CNSC staff conducted 1 field inspection on OPG's Packaging and Transport program, and all findings were compliant.
- There was 1 reportable event related to Packaging and Transport. No immediate health and safety concerns were noted and CNSC staff determined OPG took appropriate immediate action.

## 2.4 Pickering Waste Management Facility

### Overview



Figure 6: Pickering Waste Management Facility

The PWMF is located within the traditional lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1787-88), the Williams Treaties (1923), and the Williams Treaties Settlement Agreement (2018).

**Licence:** WFOL -W4-350.00/2028.

**Licence term:** April 2018 – August 2028.

**Licensee:** Ontario Power Generation.

**Location:** Pickering, Ontario.

- The PWMF spans 2 separate areas - Phase I (DSC Processing Building, Storage Buildings #1 and #2, and the Retube Component Storage Area) and Phase II (Storage Building #3 and #4) - within the overall boundary of the Pickering site.
- The licence for the PWMF authorizes OPG to construct 2 additional DSC storage buildings in Phase II and one DSC processing building to replace the current DSC Processing Building.
- Storage Capacity: 1,758 DSCs containing used nuclear fuel.
- In 2024, 80 DSCs were transferred from PNGS to PWMF.



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- In May 2024, OPG submitted an application to the CNSC requesting an amendment to the PWMF licence to authorize the construction and operation of the Pickering Component Storage Structure – a structure proposed to support storage of future decommissioning and refurbishment wastes. CNSC staff’s CMD and OPG’s hearing documents are available on the [CNSC website](#).
- In August 2024, following the conclusion of a public hearing in writing process, the Commission amended the PWMF licensing basis to authorize OPG to process and store a maximum of 100 DSCs containing a minimum of 6-year cooled fuel at a time at the PWMF. The hearing documents are available on the [CNSC website](#).

Table 13: Summary of the number of inspections performed for PWMF (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
0	2	0	0	Compliant: 14 Non-Compliant: 5 Total: 19

## Event Initial Reports (EIRs)

No event initial reports pertaining to the PWMF were submitted to the Commission in the year 2024.

### 2.4.1 Management system

#### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Management System SCA at the PWMF in 2024.
- Changes to licensing basis documents were reviewed by CNSC staff to ensure that OPG maintained its management system at the PWMF and that changes do not impact safety.
- OPG has adequate contingency plans in place to maintain or restore critical safety and business functions in the event of disabling circumstances.

## 2.4.2 Human Performance Management

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the requirements, and its performance met CNSC staff expectations for the Human Performance Management SCA at the PWMF in 2024.
- CNSC staff reviewed OPG's 2024 annual compliance report for the PWMF and there were no issues identified for the specific areas under this SCA.

## 2.4.3 Operating Performance

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Operating Performance SCA at the PWMF in 2024.
- In 2024, OPG met their target of transferring 80 DSCs from PNGS to PWMF.
- In 2024, OPG discontinued quarterly reporting. CNSC staff determined that there is no regulatory, licence requirement or request from the Commission for OPG to report quarterly to the CNSC.
- In 2024, OPG submitted their annual compliance report as required and within the appropriate timelines. CNSC staff's review of OPG's annual compliance report determined that OPG has implemented and maintained an effective operating program in order to ensure licensed activities are conducted safely at the PWMF. The reviews also confirmed that OPG's reporting and trending, and its responses to comments and requests for follow-up information and clarification, met CNSC staff's expectations.

## 2.4.4 Safety Analysis

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff's expectations for the Safety Analysis SCA at the PWMF in 2024.
- In late 2023, OPG also submitted the required 5-year update to the safety analysis report. CNSC staff reviewed and provided comments on revision 7 of the safety analysis report. All comments have been satisfactorily dispositioned by OPG and have been accepted by CNSC staff in August 2024.

- In 2023, OPG applied for an amendment to its licensing basis, to process and store a maximum of 100 DSCs at any one time containing a minimum of 6-year cooled fuel at the PWMF. As part of OPG's application, CNSC staff reviewed the safety analysis documentation provided in support of the amendment and found it acceptable. In August 2024, the Commission amended OPG's licensing basis for the remaining licence term.

## 2.4.5 Physical Design

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Physical Design SCA at the PWMF in 2024.
- CNSC staff confirmed that OPG maintains an effective design program and pressure boundary program and implements modifications to the facilities in accordance with established engineering control process to maintain the design basis.
- OPG continued to implement its fire protection program in accordance with the requirements of CSA N393, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*.

## 2.4.6 Fitness for Service

### Performance rating: Satisfactory

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Fitness for Service SCA at the PWMF in 2024.

- In October 2024, CNSC staff conducted a fitness for service inspection at the PWMF. The inspection identified 3 non-compliant findings of low safety significance relating to

misalignment between OPG's aging management procedures and execution of field inspections for DSCs and DSMs. CNSC staff were satisfied with OPG's corrective actions.

- As part of the aging management activities for DSCs, OPG submitted the aging management report for the PWMF. CNSC staff reviewed the submission and determined that it complied with OPG's aging management program.

## 2.4.7 Radiation Protection

### Performance rating: Satisfactory

Number of findings by rating: No findings

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Radiation Protection SCA at the PWMF in 2024.
- CNSC staff review of the annual compliance report submitted by OPG confirmed that:
  - The PWMF achieved its year-end collective dose target.
  - OPG did not exceed any action levels for dose to workers and the annual effective doses for all PWMF Nuclear Energy Workers were well below the regulatory dose limit.
  - OPG did not exceed any action levels for contamination control.
  - The perimeter dose rates at the PWMF were within OPG's targets and consistent with the results of previous years.
  - Measures were implemented to ensure that the PWMF was compliant with regulatory requirements related to Radiation Protection.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants and their associated waste management facilities to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.4.8 Conventional Health and Safety

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Conventional Health and Safety SCA at the PWMF in 2024.
- There were zero lost time injuries, zero restricted work injuries, and zero medically treated incidents at the PWMF in 2024.
- In 2024, CNSC staff compliance verification activities did not identify any non-compliant findings relevant to conventional health and safety.

## 2.4.9 Environmental Protection

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Environmental Protection SCA at the PWMF in 2024. OPG made adequate provision for the protection of the public and the environment.
- CNSC staff review of the annual compliance report did not result in findings for the Effluent and Emission Control Specific Area, and releases remained well below the Derived Release Limits and Action Levels.
- CNSC staff technical assessment did not result in findings related to the Assessment and Monitoring Specific Area. Dose to the public remained low (1.4  $\mu\text{Sv}$ ), and in a similar range to the previous years, which shows that radionuclide concentrations measured in the environment remain low.

## 2.4.10 Emergency Management and Fire Protection

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Emergency Management and Fire Protection SCA at the PWMF in 2024.
- The OPG-Pickering Emergency Response Team is responsible for acting as the primary responder to PWMF phase I which is within the Pickering NGS protected area, and OPG

has a formal agreement in place with Pickering Fire Services to provide primary fire response to PWMF Phase II.

- Overall, OPG has an adequate Fire Protection Program (FPP) to minimize both the probability of occurrence and the consequences of fire at the PWMF. The FPP complies with the requirements of CSA N393-22, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*.

## 2.4.11 Waste Management

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations for the Waste Management SCA at the PWMF in 2024.
- CNSC staff confirmed that OPG continued to maintain an effective waste management program and preliminary decommissioning plan. CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the PWMF in 2024.
- OPG's next submission of the set of PDPs with the associated consolidated FG is expected in 2027.

## 2.4.12 Security

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Security SCA at the PWMF in 2024.

- CNSC staff oversight of the OPG security program for the PWMF is conducted through periodic meetings, desktop reviews and on-site security inspections which are conducted every 18 months.

- CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the PWMF in 2024.
- One security inspection took place at the PWMF in December 2023 however the inspection report was issued outside the period covered in the 2023 NPGS ROR. The inspection resulted in 2 non-compliant findings of low safety significance. CNSC staff were satisfied with OPG's corrective actions.
- In 2024, CNSC staff reviewed and were satisfied with OPG's 2023 Threat and Risk Assessment.

## 2.4.13 Safeguards and Non-Proliferation

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable CNSC regulatory requirements, and performance met CNSC staff's expectations for the Safeguards and Non-Proliferation SCA at the PWMF in 2024.
- OPG reported the accidental breakage of an IAEA safeguards seal on IAEA-owned equipment in December 2024. The IAEA was notified and CNSC staff were satisfied with OPG's corrective actions.
- CNSC staff determined that OPG's accountancy and control of nuclear material complied with the applicable regulatory requirements at the PWMF. OPG granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment at the PWMF.
- CNSC staff determined that OPG met the applicable regulatory requirements for operational and design information in 2024 at the PWMF. OPG provided the required operational and design information to facilitate IAEA safeguards activities; however, there were non-satisfactory results of unannounced inspections for PNGS due to operational information not being provided correctly or in a timely manner by PWMF. OPG provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.

## 2.4.14 Packaging and Transport

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Packaging and Transport SCA at the PWMF in 2024.
- OPG maintains a packaging and transport program for the PWMF that ensures compliance with the *Packaging and Transport of Nuclear Substances Regulations, 2015* and the *Transportation of Dangerous Goods Regulations*.



## 2.5 Bruce Nuclear Generating Stations A and B

### Overview



Figure 7: Bruce Nuclear Generating Stations A and B

Bruce Nuclear Generating Stations A and B (hereinafter “BNGS A and B”) are located on the shores of Lake Huron, in the Municipality of Kincardine, Ontario. The facilities are operated by Bruce Power under a lease agreement with the owner, Ontario Power Generation (OPG). The Bruce site lies within the Traditional Territory of the Saugeen Ojibway Nation (SON), and the harvesting areas of the Georgian Bay Métis Nation of Ontario (MNO) and the Historic Saugeen Métis (HSM) peoples.

**Licence:** PROL 18.03/2028.

**Licence term:** October 1, 2018, to September 30, 2028.

**Licence last amended:** 2023.

**Licensee:** Bruce Power.

**Location:** Tiverton, Ontario.

**Fisheries and Oceans Canada (DFO) Authorization expiration:** December 31, 2028

[Learn more about BNGS A and B](#)

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Table 15: Summary of the number of inspections performed for BNGS A and B in 2024 (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of Findings
1	19	2	58	Compliant:326 Non-Compliant:101 Total:427

Table 16: Number of Inspections by Primary Focus SCA (provided in parentheses) and Total Inspections with Findings per SCA.

Inspections generally focus on a specific area or program associated with a particular SCA, known as the primary focus SCA (number in parentheses). However, inspections may also assess additional criteria that fall under other SCAs. As a result, findings can occur in SCAs that were not the primary focus of the inspection.

SCA	Rating	Number of Type 1 inspections	Number of Type 2 inspections	Number of Desktop inspections
Management System	Satisfactory	1(1)	19(2)	2
Human Performance	Satisfactory	1	17(2)	2(2)
Operating Performance	Satisfactory		17(7)	
Safety Analysis	Satisfactory		3	
Physical Design	Satisfactory		4	
Fitness for Service	Satisfactory		13(4)	
Radiation Protection	Satisfactory		9(2)	
Conventional Health and Safety	Satisfactory		7	
Environmental Protection	Satisfactory		5(1)	
Emergency Preparedness and Fire Protection	Satisfactory		7	
Waste Management	Satisfactory		4	
Security	Satisfactory		2(1)	
Safeguards and Non-Proliferation	Satisfactory		3	

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Packaging and Transport	Satisfactory		1	
-------------------------	--------------	--	---	--

## Periodic Safety Review (PSR)

- In 2024, Bruce Power continued to implement its integrated implementation plan (IIP) resulting from the 2016 PSR.
- Bruce Power has continued to progress through their IIP actions according to their plan. Some of the planned IIP actions are related to future MCR activities and thus cannot be completed until the unit undergoes the MCR.
- CNSC staff are satisfied with Bruce Power's progress.

**UPDATE:** Bruce Power submitted the 2024 IIP annual report in March 2025 and identified that 10 IIP actions were completed.

Table 17 summarizes the IIP tasks, or commitments, which were planned to be completed, those completed, and those closed following the CNSC review in 2024.

Table 17: BNGS A and B IIP Item Status (based on planned dates as of December 2024)

Total Commitments	Overall	2024	2023	2022
Planned	191	5	12	7
Completed by Bruce Power	84	10	13	8
Closed by the CNSC	74	5	16	9

## Major Component Replacement (MCR) Project

The MCR project includes Units 3 to 8

Unit 3 MCR in 2024:

- MCR outage started on March 1<sup>st</sup>, 2023.
- The project completed the removal and inspection series in 2024, where all old components were removed from the reactor and components not being replaced were inspected to ensure they would remain fit for service following MCR.
- Old steam generators were removed, and new steam generators have been installed.
- Upper feeder installation began in 2024.

**UPDATE:** The installation of new components began in January 2025 and new fuel channels are expected to be installed by July 2025.

- CNSC staff conducted inspections on MCR activities, as well as pressure boundary, foreign material exclusion, radiation protection, conventional safety and fire protection.
- Findings were either compliant or had negligible safety significance.
- Due to observations at the beginning of Unit 3 MCR, CNSC staff raised Action Item 2023-07-30964 to address a trend of events in the area of contractor safety performance. In 2024, Bruce Power demonstrated that corrective actions had been taken, they were shown to be effective and had been implemented in governance to sustain the improved performance during future MCRs. This Action Item has been closed and CNSC staff continue to monitor this area.
- Upon the discovery of neutron radiation fields at the Retube Component Storage Building (RCSB) of the Western Waste Management Facility (WMMF), Unit 3 MCR work temporarily stopped until neutron hazard controls were established. More details can be found in CMD 24-M35. CNSC staff continue to monitor this area.

Unit 4 MCR in 2024:

- CNSC staff oversight of Unit 4 MCR began in 2024 with the review of plans for the execution of the outage, including human factors and radiation protection programs.

**UPDATE:** Unit 4 was shutdown on February 1, 2025, and the reactor has been defueled. A chemical decontamination of the PHT system has been completed to reduce doses to the MCR personnel by 76%.

## Event Initial Reports (EIRs)

One EIR pertaining to BNGS A and B was submitted to the Commission for the reporting period between January 1, 2024, and December 31, 2024:

1. CMD 24-M35, "Ontario Power Generation, Bruce Power: Potential neutron exposure of workers", September 12, 2024 Commission Meeting.

## Lutetium-177 Project

Through a partnership with Isogen, Bruce Power installed and commissioned the Isotope Production System (IPS) in 2022 at BNGS B Unit 7 to begin commercial production of Lu-177, an isotope which is used in medical treatments.

In 2024, CNSC staff completed the review of BNGS Notifications of: Equipment Installation for Lu-177 IPS, Commissioning and Integrated Safety Analysis Report, Increase in Maximum Capacity of Lutetium-177 Isotope Production, and Program and Procedure Revision. Bruce Power placed Target Finger Tube 2 (TFT2) in service and began production of Lu-177 from 2 TFT systems.

## 2.5.1 Management System

**Performance rating: Satisfactory**

Number of findings by rating:



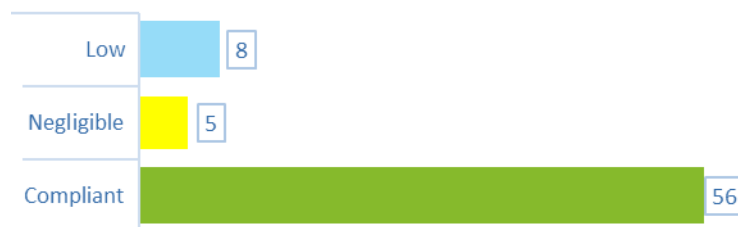
In 2024, CNSC staff concluded that, in general, Bruce Power met the applicable regulatory requirements under the Management System SCA

- CNSC staff conducted inspections and identified some procedural non-compliances of low and negligible safety significance. The non-compliant findings were primarily associated with record completeness and document control.
- CNSC staff are satisfied with Bruce Power's progress to date in addressing the non-compliant findings identified in 2024.

## 2.5.2 Human Performance Management

**Performance rating: Satisfactory**

Number of findings by rating:



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

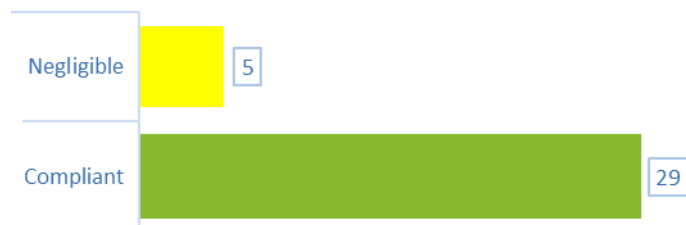
In 2024, CNSC staff identified non-compliances of low and negligible safety significance related to personnel training, personnel certification and the human performance program.

- CNSC staff confirmed that Bruce Power has maintained sufficient personnel at BNGS A and B for all certified positions, and that all certified workers possessed the necessary knowledge and skills to perform their duties safely and competently.
- Bruce Power reported all hours of work non-compliances in a timely manner and maintained adequate programs and processes to ensure worker fitness for duty. There were 3 MSC violations reported. CNSC staff reviewed the event reports and found that Bruce Power took appropriate corrective actions to resolve these issues and prevent their recurrence.
- In 2024, CNSC staff completed 5 compliance assessments under the Human Performance Management SCA:
  - Certified or Non-Certified Training Program for Selected Job Family (compliant)
  - Design, Development and Grading of Simulator Examinations and Requalification Tests (resulted in 1 non-compliant finding which was addressed satisfactorily in a timely manner)
  - Design, Development and Marking of Knowledge-based Certification Examinations and Requalification Tests (compliant)
  - Human Performance Program (Hours of Work) (compliant)
  - MCR specific Human Factor in Design (compliant)

### 2.5.3 Operating Performance

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff concluded that Bruce Power appropriately managed and controlled all planned and forced outages, transients and power reductions.

CNSC staff conducted 13 inspections of BNGS A and B in the Operating Performance SCA, with several other compliance verification activities in other SCAs that considered aspects of Operating Performance.

- The findings were mostly compliant with some negligible non-compliant findings which were promptly and effectively addressed by Bruce Power.
- Bruce Power staff followed approved procedures and took appropriate corrective actions for all transients, power reductions and forced outages. CNSC staff conclude that all transients were properly controlled.
- CNSC staff confirmed that all planned outage-related undertakings (such as reactor shutdown guarantees, and heat sink strategy management) were conducted safely.
- The reported REGDOC-3.1.1 events related to this SCA were non-safety significant and were adequately evaluated by Bruce Power. CNSC staff followed up on all reportable events and confirmed that Bruce Power took appropriate corrective actions to prevent their reoccurrence.

In 2024:

- BNGS A:
  - Experienced 1 automatic trip, 2 stepbacks and 0 setbacks.
    - Unit 1 - April 2024 due to irrational signal while performing troubleshooting activities on Boiler Level Control PLC. Unit was first stepbacked, then was followed by an automatic SDS1 trip.
    - Unit 1 – August 2024 due to a turbine trip caused by component failure. Unit was stepbacked.
  - Had 5 forced outages (see also Appendix F1), all forced outages were manual shutdowns:
    - Unit 4 – February 2024 due to degraded seal on primary heat transport pump.
    - Unit 1 – April 2024 due to irrational signal while performing troubleshooting activities on Boiler Level Control PLC. (see also stepback and automatic trip above)
    - Unit 1 – June 2024 due to vibration on low pressure turbine.
    - Unit 1 – July 2024 due to SDS2 trip while executing SST.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- Unit 1 – August 2024 due to a turbine trip caused by component failure (instrument air filter) [see also stepback above].
- BNGS B:
  - Experienced 0 trips, 3 stepbacks and 1 setback.
    - Unit 5 – March 2024 due to an unexpected turbine transient experienced during a planned SST. This resulted in a stepback.
    - Unit 8 – April 2024 due to an unexpected manual turbine trip during execution of SST. This resulted in a reactor stepback.
    - Unit 5 – July 2024 due to a turbine trip caused by a generator exciter ground fault. This resulted in a reactor stepback.
    - Unit 7 – November 2024 due to turbine governor valves closing unexpectedly. This resulted in a reactor setback.
  - Had 1 Vacuum Building/Station Containment Outage from April 17, 2024, to May 12, 2024. CNSC staff conducted a Type II inspection and concluded that Bruce Power was compliant with regulatory requirements with the exception of 3 areas where CNSC staff found non-compliances of low safety significance, with Bruce Power's governance (on contamination control, housekeeping and minimization of combustibles). Bruce Power has taken appropriate corrective actions to address the non-compliances.
  - Had 6 forced outages (see also Appendix F1):
    - Unit 5 – March 2024 due to an unexpected turbine transient experienced during a planned Safety System Test (see also stepback above)
    - Unit 8 – April 2024 due to an unexpected manual turbine trip during execution of SST. (see also stepback above)
    - Unit 6 – June 2024 due to elevated bushing temperatures at the main output transformer
    - Unit 5 – July 2024 due to a turbine trip caused by a generator exciter ground fault. (see also stepback above)
    - Unit 5 – October 2024 due to a transformer issue.
    - Unit 7 – November 2024 due to turbine governor valves closing unexpectedly. (see also setback above)



## 2.5.4 Safety Analysis

### Performance rating: Satisfactory

Number of findings by rating: 3 compliant findings

### Deterministic Safety Analysis

#### MCR Unit 6 Analysis

- CNSC staff concluded that the submitted safety analyses supported the safe return of Unit 6 to service, following its MCR. All residual comments related to Unit 6 MCR LBLOCA Safety Analyses were addressed by Bruce Power in December 2024. Bruce Power will be applying lessons learned from the Unit 6 MCR to future MCR projects.

#### MCR Unit 3/4 Analysis

- In April 2022, Bruce Power submitted its Regulatory Communication Plan (RCP) for Units 3 and 4 MCR safety analysis. CNSC staff reviewed Bruce Power's Safety Analysis Impact Report for Units 3 and 4 MCR and concluded that it met the requirements of REGDOC-2.4.1.
- CNSC staff's review of the Units 3 and 4 MCR safety analysis is currently on-going.

### Large Break Loss of Coolant Accident (LBLOCA) Composite Analytical Approach (CAA) analysis

- The industry has developed a composite analytical approach (CAA) to address the LBLOCA safety margin issues. A key aspect of the CAA is to reclassify a portion of LBLOCA scenarios from the design basis accident (DBA) category to the beyond design basis accident (BDBA) category, based on the results of the threshold break size assessment performed by Bruce Power which justified that breaks of a large diameter pipe above a certain break size have a low probability of occurrence. CNSC staff concluded that the results of the threshold break size assessments are acceptable for use to support CAA.
- The first major activity was to determine the threshold break size (TBS) – a delineation between the DBA and BDBA-breaks, based on a pipe break frequency assessment.
  - CNSC staff accepted Bruce Power's request to reclassify breaks above the TBS from DBA to BDBA in August 2020 for Bruce B reactors and in March 2023 for BNGS A reactors, given the estimated low likelihood of breaks above the TBS.
  - Bruce Power will need to address CNSC staff's regulatory position and expectations on LBLOCA reclassification and LBLOCA CAA methodology before its implementation.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- To ensure alignment with CNSC staff's expectations, a protocol was signed between Bruce Power and CNSC staff in June 2023 to formally document the necessary steps to address the LBLOCA CAA methodology issues. The protocol identified 4 technical objectives:
  1. Re-classification impact on relevant specific safety areas (completed in 2024 with final impact reports accepted by both Bruce Power and CNSC).
  2. LBLOCA BDBA analysis (on-going).
  3. Safe Operating Envelope (completed in 2024 with final impact reports accepted by both Bruce Power and CNSC).
  4. Risk Integration from the LBLOCA CAA specific areas using Risk Informed Decision Making (on-going).

**Project 2030**

- In August 2022, Bruce Power informed CNSC staff of its plans to operate the BNGS A and B units at an Intermediate Power Level (IPL) of 95-96% full power (FP), with the potential to operate at 100% FP to be considered in the future (note: the units are currently operating at 92-93% FP).
  - Bruce Power has identified improvements that can be made to the plant, as well as to safety analysis to demonstrate the units' safe operation.
  - CNSC staff are currently reviewing the submissions associated with Project 2030, which includes technical basis documents, analysis reports and assessments reports to ensure that they meet REGDOC-2.4.1 requirements. No major issues have been identified.

**Probabilistic Safety Assessment**

- In November 2023, Bruce Power submitted the Level 1 At-Power Internal Events PSA. This was followed by the Internal and External Hazard Screening Assessment, the Level 2 At-Power Internal Events PSA and Internal Flood PSA in March 2024. In June 2024, Bruce Power submitted the Outage PSA, Internal Fire PSA, Seismic PSA, High Wind PSA, and other related supporting documents.
- **UPDATE:** In March 2025, CNSC staff completed the review of the Level 1 at-power internal events PSA and concluded that it was adequate. Bruce Power has committed to address several recommendations (for example, updating Human Reliability Analysis Worksheets for added clarity and traceability) in the next PSA update.

## 2.5.5 Physical Design

**Performance rating: Satisfactory**

Number of findings by rating:



### Pressure boundary program

CNSC staff found that based on the technical assessments conducted of Bruce Power's submissions, as well as the reviews of REGDOC-3.1.1 quarterly reports, Bruce Power continued to implement and maintain its pressure boundary program in accordance with CSA N285.0, *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants*. Bruce Power also maintained a formal agreement with an Authorized Inspection Agency in accordance with Licence Condition 5.2.

### Environmental qualification

- CNSC staff concluded that Bruce Power continued to meet the applicable EQ requirements of CSA N290.13, *Environmental Qualification of Equipment for CANDU Nuclear Power Plants* for BNGS A and B.
- CNSC staff field inspections in 2024 identified a total of 4 findings in the area of environmental qualification (EQ) of equipment observed; 3 of the findings were compliant, and 1 was non-compliant of negligible safety significance.
- The non-compliant finding was for an observation made during a field inspection of the BNGS A East Service Area; an environmentally qualified door did not close or latch automatically. CNSC staff found Bruce Power's corrective actions for this to be acceptable.

### Seismic Qualification

- CNSC staff found that based on compliance activities conducted in 2024, Bruce Power was compliant with the requirements of CSA N289.1, *General Requirements for Seismic Design and Qualification of CANDU Nuclear Power Plants*, and Licence Condition 5.3 for seismic control areas observed during compliance activities.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- In 2024, 2 non-compliant findings of low safety significance were identified in the area of maintaining seismic qualification, during a field inspection of the BNGS A Main Control Room and Control Equipment Room, as well as a seismic field inspection of the BNGS A operator pathway:
  - The 2 findings were based on observations of unsecured equipment/materials in seismically qualified areas, scaffolding not being seismically qualified, and impediments found on the designated seismic route/safe operator pathway from the main control room to the secondary control room.
  - CNSC staff found Bruce Power's corrective actions to be acceptable.

**Fire protection design**

- CNSC staff concluded that Bruce Power continued to implement its fire protection program at BNGS A and B in accordance with the requirements of CSA N293-12, *Fire Protection for CANDU Nuclear Power Plants*.

**Electrical Power and Instrumentation and Control systems**

- Based on CNSC compliance activities in 2024, CNSC staff determined that instrumentation and control systems met performance expectations at BNGS A and B.

## 2.5.6 Fitness for Service

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff determined that Bruce Power's Fitness for Service program at BNGS A and B continued to meet applicable regulatory requirements, with the exception of its application to regions of potentially elevated hydrogen equivalent concentration near the inlet rolled joints of pressure tubes in extended operation.

- A risk-informed decision-making evaluation (2022) concluded that continued operation of affected pressure tubes is acceptable for a period of at least 3 years.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- For pressure tubes potentially affected by regions of elevated hydrogen equivalent concentration near the outlet rolled joints, alternate fitness for service criteria were satisfied during the reporting period.
- Regular updates on the status of industry's research and development program on elevated hydrogen equivalent concentration are provided to the Commission through the Status Reports on Power Reactors.

**Maintenance**

- The critical corrective maintenance backlog, critical deficient maintenance backlog and the number of critical preventive maintenance deferrals at BNGS A and B were maintained very low.
- The average preventative maintenance completion ratio was around 95% and 89% for BNGS A and BNGS B, respectively, which was acceptable.
- CNSC staff conducted a compliance assessment of Bruce Power's Systems, Structures and Components Monitoring at BNGS A and B that confirmed compliance with regulatory requirements; however, CNSC staff identified non-compliances with the application of Bruce Power's governance, such as lack of required system walkdowns, which are tracked by action item 2024-07-32368.
  - Bruce Power provides semi-annual updates on the implementation of corrective actions to address the action item.

**Equipment Fitness for Service/Equipment Performance**

- In 2024, CNSC staff reviewed Bruce Power's 2023 Annual Report on Risk and Reliability. In general, BNGS A and B showed good performance for Systems Important to Safety (SIS) in 2023.
- CNSC staff confirmed that all systems important to safety for BNGS A and B met their Actual Past Unavailability (APU) targets in 2023, except for the Negative Pressure Containment, the Qualified Power System and the Inter-Unit Feed Water Tie in BNGS A. CNSC staff are satisfied with Bruce Power's corrective actions to address the APU exceedances.
- CNSC staff conducted 3 system inspections in BNGS A and B in 2024 that confirmed compliance with regulatory requirements; however, procedural non-compliances were observed.
- Bruce Power has satisfactorily addressed the non-compliances noted during the BNGS B Maintenance Cooling System inspection. At the end of 2024, Bruce Power was still

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

addressing the non-compliances noted during the BNGS A Maintenance Cooling System and BNGS A Electrical Systems inspections.

**Structural Integrity**

In 2024, Bruce Power continued work to confirm the fitness for service of the field welds in Units 1 and 2 feeders.

- CNSC staff continue monitoring Bruce Power's progress in remediation of deficiencies of weld inspection data for a limited subset of legacy feeder welds flaws in Units 1 and 2. CNSC staff continue to receive feeder inspection reports from outage inspections to ensure results continue to be acceptable and fitness for service continues to be demonstrated.

**Aging Management**

- In 2024, Bruce Power continued progress on Research and Development (R&D) program activities to update hydrogen equivalent concentration (Heq) predictive model capabilities and analytical tools for the rolled joint regions of pressure tubes.
- CNSC staff has assessed progress in 2024 to be satisfactory.
- Following a maintenance outage in 2024, continued operation of Unit 7 pressure tubes with flaws in the inlet region of interest was accepted by CNSC staff based on risk-informed considerations.

**Chemistry Control**

- Based on the review of chemistry safety performance indicators reported by the licensee, Bruce Power maintained acceptable chemistry control performance.
- CNSC staff conducted a Compliance Assessment of the BNGS A and B Chemistry Control Program and found that Bruce Power met applicable regulatory requirements.

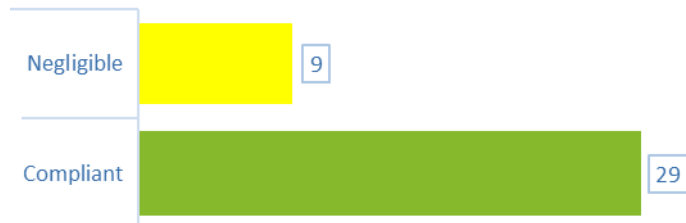
**Periodic Inspection and testing**

- On-line and outage inspections were completed in accordance with established periodic inspection programs and met applicable reporting requirements.

## 2.5.7 Radiation Protection

**Performance rating: Satisfactory**

Number of findings by rating:



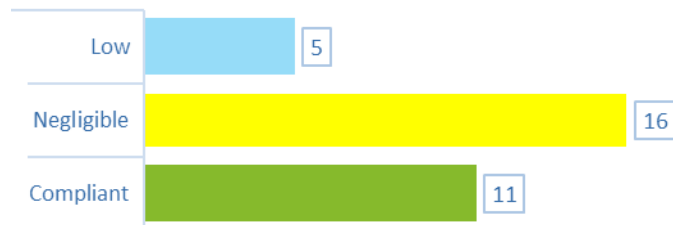
In 2024, CNSC staff concluded that Bruce Power met the applicable regulatory requirements in radiation protection.

- CNSC staff conducted 6 field inspections, 2 Type II inspections, and 1 compliance assessment in the Radiation Protection SCA.
- The negligible non-compliant findings were related to procedural non-compliances with signage, contamination control areas, and internal governance.
  - CNSC staff concluded that Bruce Power’s corrective actions were acceptable. Eight of the 9 findings are closed and 1 remains open in order to track Bruce Power’s implementation of the corrective actions.
- CNSC staff determined that at the BNGS A and B:
  - Radiation doses to workers were below the regulatory dose limits.
  - There were no exceedances of an action level listed in the licensee’s RP program.
  - Appropriate measures were used to control occupational exposures and to keep doses ALARA.
  - Actions were taken to control radiological hazards to protect workers.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.5.8 Conventional Health and Safety

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff concluded that Bruce Power met the applicable regulatory requirements, and performance expectations for this SCA.

- In 2024, all procedural non-compliances related to Conventional Health and Safety practices and awareness were promptly and adequately corrected by Bruce Power. CNSC staff continued to follow up on a NNC related to a decreasing trend in housekeeping identified during the quarterly field inspections.
- There was 1 lost-time injury and 7 medically treated injuries in 2024.
  - CNSC staff followed up on the lost-time injury reportable event, which involved a worker slipping on black ice, and confirmed that Bruce Power implemented appropriate corrective actions.
  - The accident severity rate was at 0.79, which was higher than the accident severity rate of 0.56 in 2023 due to the lost time injury mentioned above. The Accident Frequency (AF), which accounts for the medically treated injuries, for BNGS was 0.19, which is lower than 2023 and 2022.

## 2.5.9 Environmental Protection

**Performance rating: Satisfactory**

Number of findings by rating: 8 compliant findings

- Results from CNSC staff's assessments of the quarterly and annual reports determined that Bruce Power met regulatory requirements in REGDOC-3.1.1 and REGDOC-2.9.1.



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- Dose to the public from the Bruce site ( $1.1 \mu\text{Sv/yr}$ ) remained below the regulatory limit of  $1 \text{ mSv/yr}$ . Releases of radiological nuclear substances were well below the derived release limits (DRL) for BNGS A and B in 2024.
- No action levels were triggered for airborne and waterborne releases, except for 1 occurrence.
  - For the period of October 23, 2024 to October 30, 2024, The Bruce B Ancillary Services Building (ASB) airborne tritium emissions were above the weekly Environmental Action Level (AL).
  - Tritium emissions from the Bruce B Ancillary Services Building totaled 336 Curies over the course of the week, which is 124% above the AL. This release represented 0.1% of the regulatory limit (DRL) for airborne tritium at Bruce B.
  - Bruce Power submitted a REGDOC-3.1.1 preliminary event report to CNSC staff for this occurrence.
  - **UPDATE:** The detailed event report was submitted to the CNSC on April 3, 2025. CNSC staff's review of the detailed report is in-progress.
- There were 2 occurrences in which releases of hazardous (non-radiological) substances exceeded provincial regulatory limits:
  - On August 15, 2024, a quarterly acute lethality sample for Active Liquid Waste (ALW) was collected at Bruce B as part of their Radioactive Liquid Waste Management System. The pre-release criteria for ALW was met; however, the acute lethality testing performed for the sample returned with an 80% mortality for daphnia magna, exceeding the 50% provincial regulatory limit.
  - A written event report was submitted to the Ministry of Environment, Conservation and Parks (MECP).
  - CNSC staff reviewed the REGDOC-3.1.1 event reports and found that Bruce Power's response to this event was acceptable.
- On January 14, January 16, and January 18, 2024, daily composite samples of Total Suspended Solids (TSS) in the Bruce B Water Demineralization Plant effluent exceeded the provincial daily concentration limit for TSS ( $70 \text{ mg/L}$ ) outlined in the Bruce B Environmental Compliance Approval; with TSS measured at  $75.2 \text{ mg/L}$ ,  $70.8 \text{ mg/L}$ , and  $72.9 \text{ mg/L}$  respectively.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- These elevated levels of TSS in the WDP effluent were a result of a winter storm event that impacted lake conditions and caused the turbidity of the raw water influent to the WDP to be elevated.
- A written event report was submitted to the Ministry of Environment, Conservation and Parks (MECP).
- CNSC staff reviewed the REGDOC-3.1.1 event report and found that Bruce Power's response to this event was acceptable.
- Bruce Power has implemented and continues to maintain a corporate environmental management system in accordance with CNSC requirements.

## 2.5.10 Emergency Management and Fire Protection

**Performance rating: Satisfactory**

Number of findings by rating:



In April 2024, CNSC staff conducted emergency drill field inspections and noted deficiencies related to Bruce Power's ability to perform effective and sustained intervention within 15 minutes of being notified of a fire incident. This resulted in 1 non-compliant finding of low safety significance. Bruce Power captured all identified issues in their drill report and raised a Station Condition Record (SCR) to initiate corrective actions. CNSC staff reviewed Bruce Power's corrective actions and found them to be acceptable.

- In August 2024, CNSC staff became aware of possible fire protection non-compliances with National Building Code of Canada (NBCC) and National Fire Code of Canada (NFCC) at Bruce Power-controlled Centre of Site (CoS) buildings and determined that it was necessary to increase regulatory oversight in this area.
  - CNSC staff conducted inspections of the Centre of Site buildings and engaged in discussions with Bruce Power staff, which resulted in 2 non-compliant findings of low safety significance. Although identified during CoS fire protection inspections, the 2

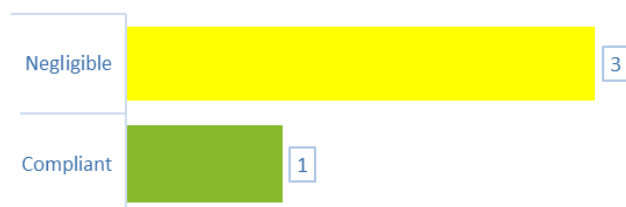
findings were reported under the Fitness for Service and Conventional Health and Safety SCAs.

- Bruce Power acknowledged the Centre of Site fire protection deficiencies and promptly addressed the non-compliant findings. CNSC staff found Bruce Power's corrective actions to be acceptable.

## 2.5.11 Waste Management

**Performance rating: Satisfactory**

Number of findings by rating:



In 2024, CNSC staff conducted field inspections and found minor waste management procedural issues, which Bruce Power promptly resolved.

- CNSC staff were satisfied with Bruce Power's reporting of the safety performance indicator for Low and Intermediate-Level Radioactive Solid Waste generated at BNGS in 2024.

## 2.5.12 Security

**Performance rating: Satisfactory**

Number of findings by rating:



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Bruce Power submitted the annual threat and risk assessment at the end of 2024. CNSC staff review was ongoing at the end of 2024.

- CNSC Staff conducted a Security Type II inspection in 2024.
  - The inspection identified non-compliant findings of low and negligible safety significance within this SCA, as well as within the Management System and Human Performance SCAs. Additionally, 4 areas for improvement were noted. Three notices of non-compliance were issued to address these findings.

**UPDATE:** Bruce Power provided a corrective action plan to address these non-compliances in April 2025.

- Two field inspections were performed in 2024. One non-compliance of negligible safety significance with internal governance was identified and satisfactorily addressed by Bruce Power. This was a procedure adherence issue in the Human Performance Management SCA.
- The details of the inspections' findings and corrective actions contain prescribed information and are classified confidential.
- CNSC staff continue with quarterly oversight of short-term clearances granted under an accepted licensee process. In 2024, Bruce Power conducted a force-on-force security exercise at the BNGS and WWMF to meet subsection 36(2) of the NSR. As of the end of 2024, CNSC staff are reviewing Bruce Power's report of the results.
- In 2024, Bruce Power continued to make adequate progress in addressing Vital Area issues raised during a 2022 inspection. As a result of questions raised during 2022 inspection activities, Bruce Power initiated a vital area reassessment in 2023. The vital area analysis has been completed and was submitted to CNSC staff for review in late 2024.

## 2.5.13 Safeguards and Non-Proliferation

**Performance rating: Satisfactory**

Number of findings by rating: 6 compliant findings

- In 2024, CNSC staff conducted a field inspection during the IAEA's physical inventory verification.
  - CNSC staff confirmed that Bruce Power provided access and assistance to the IAEA inspectors to facilitate the IAEA's inspection.

- No actions were placed on Bruce Power as a result of the inspections.
- During the 2024 reporting period, Bruce Power:
  - Provided the required nuclear material accountancy and control reports to the CNSC and the IAEA for safeguards verification activities.
  - Granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment.
  - Submitted the required annual operational program with quarterly updates and the annual update to the Additional Protocol to the CNSC in a timely manner. CNSC staff reviewed these documents and determined that they met requirements and expectations.
  - Provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.
  - Reported 2 events with negligible safety significance: 1 involving damaged IAEA equipment and 1 involving an unplanned power interruption of safeguards equipment.

## 2.5.14 Packaging and Transport

### Performance rating: Satisfactory

Number of findings by rating: 1 compliant finding

In 2024 CNSC staff conducted 3 field inspections of Bruce Power's Packaging and Transport program and all findings were compliant.

- There were 2 reportable events related to Packaging and Transport:
  - In January 2024, Bruce Power reported an event with a vendor related to shipment documentation. CNSC staff concluded that Bruce Power's response and actions taken were satisfactory.
  - In March 2024, Bruce Power reported an event related to the shipment of industrial package drums that did not meet packaging requirements. No immediate health and safety concerns were noted and CNSC staff concluded that Bruce Power's response, investigation, and actions taken were satisfactory.

## 2.6 Western Waste Management Facility

### Overview



Figure 8: Western Waste Management Facility

The WWMF lies within the Traditional Territory of the Saugeen Ojibway Nation (SON), and the harvesting areas of the Georgian Bay Métis Nation of Ontario (MNO) and the Historic Saugeen Métis (HSM) peoples.

**Licence:** WWMF: WFOL -W4-314.00/2027; RWOS-1: WNSL-W1-320.05/2029.

**Licence term:** WWMF June 2017 – May 2027; RWOS-1: October 2019 – October 2029.

**Licensee:** Ontario Power Generation.

**Location:** Tiverton, Ontario.

- The WWMF spans 2 separate areas – the Low and Intermediate-level wastes (L&ILW) Storage Facility and the Western Used Fuel Dry Storage Facility (WUFDSF) – within the overall boundary of the Bruce site.
- The L&ILW Storage Facility consists of the Amenities Building, the Waste Volume Reduction Building, the Transportation Package Maintenance Building, 14 above-ground, low-level storage buildings (LLSBs), and 2 above-ground, refurbishment waste storage buildings; and various in-ground containers, trenches, and tile holes for the storage of ILW.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- The WUFDSF consists of 1 DSC processing building and 6 DSC storage buildings (Storage Buildings #1, #2, #3, #4, #5 and #6).
- The licence for the WWMF authorizes OPG to construct 2 additional DSC storage buildings (Storage Buildings #7 and #8), 11 additional LLSBs, 270 additional in-ground containers, 30 in-ground containers for heat exchangers, 1 large object processing building, and 1 waste sorting building.
- The nearby RWOS-1 site is in a state of care and maintenance and regulated under a WNSL.
- WWMF Storage Capacity: 2,984 DSCs containing used nuclear fuel waste.
- In 2024, 115 DSCs were transferred to WUFDSF.

Table 18: Summary of the number of inspections performed for WWMF & RWOS-1 (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
0	7	0	0	Compliant: 81 Non-Compliant: 8 Total: 89

## Event Initial Reports (EIRs)

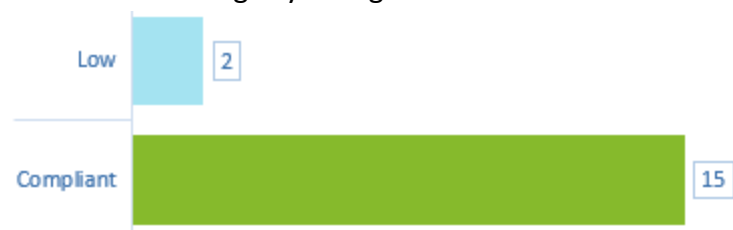
One EIR pertaining to WWMF was submitted to the Commission for the reporting period between January 1, 2024, and December 31, 2024:

- CMD 24-M35, “Ontario Power Generation, Bruce Power: Potential neutron exposure of workers”, September 12, 2024 Commission Meeting.

## 2.6.1 Management System

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Management System SCA at the WWMF and RWOS-1 in 2024.

- In March 2024, CNSC staff conducted a baseline management system inspection. Two non-compliant findings of low safety significance were identified where a copy of a procedure in the field was observed to be out of date and hard copies of records were not adequately protected to prevent damage or loss. CNSC staff were satisfied with OPG's corrective actions.
- Changes to licensing basis documents were reviewed by CNSC staff to ensure that OPG maintains its management system at the WWMF and RWOS-1 and that changes do not impact safety.
- OPG has adequate contingency plans in place to maintain or restore critical safety and business functions in the event of disabling circumstances.

## 2.6.2 Human Performance Management

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the requirements, and its performance met CNSC staff expectations for the Human Performance Management SCA at the WWMF and RWOS-1 in 2024.
- CNSC staff reviewed OPG's 2024 annual compliance reports for the WWMF and RWOS-1 and there were no issues identified for the specific areas under this SCA.

## 2.6.3 Operating Performance

**Performance rating: Satisfactory**

Number of findings by rating: 7 compliant findings

- CNSC staff concluded that OPG met the applicable regulatory requirements and CNSC staff expectations for the Operating Performance SCA at the WWMF and RWOS-1 in 2024.
- In total, OPG transferred a total of 115 DSCs to the WUFDSF in 2024. The total volume of radioactive waste received at the L&ILW Storage Facility in 2024 was 6,087 m<sup>3</sup>. During 2024, the incinerator operated for 171 days on solids and 65.5 days on liquids.



**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- In 2024, OPG discontinued quarterly reporting. CNSC staff determined that there is no regulatory, licence requirement or request from the Commission for OPG to report quarterly to the CNSC.
- In 2024, OPG submitted their annual compliance report as required and within the appropriate timelines. CNSC staff's review of OPG's annual compliance report determined that OPG has implemented and maintained an effective operating program in order to ensure licensed activities are conducted safely at the WWMF. The reviews also confirmed that OPG's reporting and trending, and its responses to comments and requests for follow-up information and clarification, met CNSC staff's expectations.
- In 2024, OPG reported 5 events at the WWMF that impacted the Environmental Protection, Packaging and Transport, and Security SCAs. The events are described in more detail under those SCA sub-sections.

## **2.6.4 Safety Analysis**

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff's expectations for the Safety Analysis SCA at the WWMF in 2024. The Safety Analysis SCA is not applicable to the RWOS-1 waste nuclear substances licence.

## **2.6.5 Physical Design**

**Performance rating: Satisfactory**

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Physical Design SCA at the WWMF & RWOS-1 in 2024.
- CNSC staff confirm that OPG maintains an effective design program and pressure boundary program and implements modifications to the facilities in accordance with established engineering control process to maintain the design basis.
- OPG continues to implement its fire protection program in accordance with the requirements of CSA N393, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*.

## 2.6.6 Fitness for Service

### Performance rating: Satisfactory

Number of findings by rating: 6 compliant findings

- CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations, for the Fitness for Service SCA at the WWMF and RWOS-1 in 2024.
- As part of the aging management activities for DSCs, OPG submitted the aging management report for the WWMF and RWOS-1. CNSC staff reviewed the submission and determined that it complied with OPG's aging management program.

## 2.6.7 Radiation Protection

### Performance rating: Satisfactory

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Radiation Protection SCA at the WWMF and RWOS-1 in 2024.

- In March 2024, a Management System inspection was conducted at WWMF. The inspection identified 1 non-compliant finding of low safety significance pertaining to the Radiation Protection SCA relating to the establishment of zoning for entering and exiting buildings. CNSC staff were satisfied with OPG's corrective actions to resolve this non-compliance and consider the matter closed.
- In August 2024, CNSC staff conducted a reactive Radiation Protection inspection at the WWMF which identified 1 non-compliant finding of low safety significance related to the pre-operational source check for a radiological monitoring instrument. OPG developed corrective actions to address this finding, and CNSC staff were satisfied with OPG's proposed corrective actions. The action item remains open to track OPG's implementation of corrective actions.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- CNSC staff review of the annual compliance report submitted by OPG confirmed that:
  - WWMF achieved its year-end collective dose target.
  - OPG did not exceed any action levels for dose to workers and the annual effective doses for all WWMF Nuclear Energy Workers were well below the regulatory dose limit.
  - OPG did not exceed any action levels for contamination control.
  - There were no recordable radiological exposures for OPG staff performing caretaking duties at RWOS-1.
  - The perimeter dose rates at the WWMF were within OPG's targets and consistent with the results of previous years.
  - Measures were implemented to ensure that the WWMF was compliant with regulatory requirements related to Radiation Protection.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of *General Nuclear Safety and Control Regulation* to all Canadian nuclear power plants and their associated waste management facilities to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.6.8 Conventional Health and Safety

### Performance rating: Satisfactory

Number of findings by rating: 3 compliant findings

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff's expectations for the Conventional Health and Safety SCA at the WWMF and RWOS-1 in 2024. OPG did not report any lost-time accidents at the WWMF and RWOS-1 in 2024.
- There were no lost time injuries, no restricted work injuries, and no medically treated incidents at the WWMF in 2024.
- In 2024, CNSC staff compliance verification activities did not identify any non-compliant findings relevant to conventional health and safety. OPG did not report any lost-time accidents at the WWMF.

## 2.6.9 Environmental Protection

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Environmental Protection SCA at the WWMF and RWOS-1 in 2024. OPG made adequate provision for the protection of the public and the environment.

- In May 2024, CNSC staff conducted an environmental protection focused inspection at the WWMF, and 1 non-compliant finding of low safety significance was identified where a flow controller for a stack monitor was replaced and not retested once the new controller was installed. CNSC staff were satisfied with OPG's corrective actions.
- In September 2024, OPG reported an event of low safety significance where a sewage spill occurred as a result of the pumping system being overwhelmed during simultaneous sump pumping and fire water testing. Sampling from the spilled material indicated negligible impacts to people and the environment, and the spill was promptly cleaned. CNSC staff were satisfied with OPG's corrective actions.
- CNSC staff review of the annual compliance report did not result in findings for the Effluent and Emission Control Specific Area, and releases remained well below the Derived Release Limits and Action Levels.
- CNSC technical assessment did not result in findings related to the Assessment and Monitoring Specific Area. Dose to the public remained low (1.1  $\mu\text{Sv}$  for the Bruce Power site, of which the operation of the WWMF is a small fraction), and in a similar range to the previous years, which shows that radionuclide concentrations measured in the environment remain low.

## 2.6.10 Emergency Management and Fire Protection

### Performance rating: Satisfactory

Number of findings by rating: 3 compliant findings

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Emergency Management and Fire Protection SCA at the WWMF and RWOS-1 in 2024.
- OPG has a formal agreement in place with Bruce Power to provide fire response services to the WWMF. To ensure familiarity with the facility, Bruce Power's Facility Fire Brigade (FFB) are provided with site-specific training and participate in annual fire response drills in coordination with OPG-WWMF staff.
- Overall, OPG has an adequate Fire Protection Program (FPP) to minimize both the probability of occurrence and the consequences of fire at the WWMF and RWOS-1. The FPP complies with the requirements of CSA N393-22, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances requirements*.

## 2.6.11 Waste Management

### Performance rating: Satisfactory

Number of findings by rating:



CNSC staff concluded that OPG met the applicable regulatory requirements, and its performance met CNSC staff expectations for the Waste Management SCA at the WWMF and RWOS-1 in 2024.

- In November 2024, during a Waste Management focused inspection at WWMF, 3 non-compliant findings of low safety significance were identified. CNSC staff are reviewing OPG's corrective actions for these non-compliant findings.
  - The first involved a radioactive waste package at a different location than described in the related waste characterization record.

- The second pertained to the integrity of a few legacy waste wooden crates in storage.
  - The third involved a few radioactive waste packages missing a clear label or other unique identifier.
- An inspection at RWOS-1 was conducted in November 2024. There were no items of non-compliance identified in the Waste Management SCA.
- RWOS-1 is in storage with surveillance and no waste was placed in or removed from RWOS-1 in 2024.
- CNSC staff confirmed that OPG continued to maintain an effective waste management program and preliminary decommissioning plan (PDP). CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the WWMF and RWOS-1 in 2024.
- OPG's next submission of the set of PDPs with the associated consolidated FG is expected in 2027.

## 2.6.12 Security

### Performance rating: Satisfactory

Number of findings by rating: 6 compliant findings

- CNSC staff oversight of the OPG security program for the WWMF is conducted through periodic meetings, desktop reviews and on-site security inspections which are conducted every 18 months. The Security SCA is not applicable to RWOS-1.
- CNSC staff were satisfied with the information provided by OPG in the annual compliance report for the WWMF in 2024.
- In 2024, OPG reported 1 event that impacted the Security SCA. The details of the event are confidential and contain prescribed information. CNSC staff considered the event to be of low safety significance and found that OPG took appropriate corrective actions.
- One security inspection took place at the WWMF in December 2023 where the inspection report was issued outside the period covered in the 2023 NPGS ROR. The inspection resulted in no non-compliant findings.
- CNSC staff reviewed and were satisfied with the WWMF threat and risk assessment for 2024.

## 2.6.13 Safeguards and Non-Proliferation

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable CNSC regulatory requirements, and performance met CNSC staff's expectations for the Safeguards and Non-Proliferation SCA at the WWMF in 2024.
- CNSC staff determined that OPG's safeguards program complied with the applicable regulatory requirements at the WWMF. OPG granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment at the WWMF.
- CNSC staff determined that OPG met the applicable regulatory requirements for operational and design information at the WWMF. OPG provided the required operational and design information to facilitate IAEA safeguards activities. OPG also provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.

## 2.6.14 Packaging and Transport

### Performance rating: Satisfactory

- CNSC staff concluded that OPG met the applicable regulatory requirements, and performance met CNSC staff expectations for the Packaging and Transport SCA at the WWMF in 2024. This SCA is not applicable to RWOS-1.
- OPG reported 3 separate events of low safety significance in October, November, and December 2024. The events involved a delayed shipment of radioactive material due to transport vehicle mechanical issues, turnbuckles on a select set of waste packages requiring replacement to meet requirements for a Type B package, and a shipment of radioactive material being sent to a qualified waste receiver without meeting all documentation and labelling requirements, respectively. CNSC staff were satisfied with OPG's corrective actions for all 3 events.
- OPG maintains a packaging and transport program for the WWMF that ensures compliance with the *Packaging and Transport of Nuclear Substances Regulations, 2015* and the *Transportation of Dangerous Goods Regulations*.

## 2.7 Point Lepreau Nuclear Generating Station

### Overview



Figure 9: Point Lepreau Nuclear Generating Station

The Point Lepreau site is located on the Lepreau Peninsula, 40 kilometres southwest of Saint John, New Brunswick. The Point Lepreau site lies within the traditional territory covered by the Peace and Friendship Treaties with the Wolastoqey, Peskotomuhkati and Mi'gmaq peoples.

**Licence:** PROL 17.00/2032.

**Licence term:** July 1, 2022 to June 30, 2032.

**Licence last amended:** N/A.

**Licensee:** New Brunswick Power Corporation.

**Location:** Lepreau Peninsula, New Brunswick.

**Fisheries and Oceans Canada (DFO) Authorization expiration:** December 31, 2032.

- The PROL includes the Solid Radioactive Waste Management Facility (SRWMF) which comprises the following Phase I, II and III sites:
  - Phase I of the facility is used to store operational waste.
  - Phase II is a dry storage facility for used fuel.
  - Phase II Extension is an additional area prepared in 2006 to allow for dry storage of used fuel. Approval is required in accordance with the PROL prior to its commissioning and use.



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- Phase III of the facility stores waste from fuel channel replacement and other activities completed during the refurbishment outage.

[Learn more about Point Lepreau Nuclear Generating Station](#)

Table 20: Summary of the number of inspections performed for Point Lepreau (Full inspection list found in Appendix A: List of Inspections reports at each NPP and WMF)

Type 1	Type 2	Desktop	Field	Number of findings
1	11	1	44	Compliant:263 Non-Compliant:76 Total:339

Table 21: Number of Inspections by Primary Focus SCA (provided in parentheses) and Total Inspections with Findings per SCA.

Inspections generally focus on a specific area or program associated with a particular SCA, known as the primary focus SCA (number in parentheses). However, inspections may also assess additional criteria that fall under other SCAs. As a result, findings can occur in SCAs that were not the primary focus of the inspection.

SCA	Rating	Number of Type 1 inspections	Number of Type 2 inspections	Number of Desktop inspections
Management System	Satisfactory	1	11(3)	1
Human Performance	Satisfactory	1(1)	11(2)	1
Operating Performance	Satisfactory		11(4)	1
Safety Analysis	Satisfactory		2	
Physical Design	Satisfactory		5	1
Fitness for Service	Satisfactory		8(1)	1(1)
Radiation Protection	Satisfactory		6	

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>Conventional Health and Safety</b>	Satisfactory		6	
<b>Environmental Protection</b>	Satisfactory		3	
<b>Emergency Preparedness and Fire Protection</b>	Satisfactory		6(1)	
<b>Waste Management</b>	Satisfactory		2	
<b>Security</b>	Satisfactory		2	
<b>Safeguards and Non-Proliferation</b>	Satisfactory		3	
<b>Packaging and Transport</b>	Satisfactory		1	

## Periodic Safety Review (PSR)

CNSC staff noted that the PSR conducted in 2021 did not identify any major gaps between the current state of the NPP and modern requirements for the PSR validity period (2022–2032). Table 22 summarizes the IIP tasks, or commitments, which were planned to be completed, those completed, and those closed following the CNSC review, in 2024.

Table 22: NB Power IIP Item Status (based on planned dates as of December 2024)

Total Commitments	Overall	2024
<b>Planned</b>	346	10
<b>Completed by NB Power</b>	327*	15*
<b>Closed by the CNSC</b>	285	13

\*According to the NB Power internal tracking system, 15 IIP items were completed in 2024 and 327 overall including the 3 IIP items that were deferred from 2023 to 2024. As of December 31, 2024, a total of 291 IIP items have been submitted to CNSC staff for closure review.

NB Power has been completing their IIPs according to their plan and CNSC staff are satisfied with NB Power's progress.

## Event Initial Reports (EIRs)

There was no EIR pertaining to PLNGS for the reporting period between January 1, 2024 and December 31, 2024.

### 2.7.1 Management System

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff inspections in Management System in 2024 identified non-compliant findings corresponding to low and negligible safety implications.

- The low safety non-compliances were related to Organization, Operating Experience, and Problem Identification and Resolution.
- CNSC staff continue to monitor NB Power's implementation of corrective actions.

### 2.7.2 Human Performance Management

**Performance rating: Satisfactory**

Number of findings by rating:



As a result of inspection activities, CNSC staff identified 2 non-compliances of low safety significance and 1 non-compliance of medium safety significance related to personnel training, and fitness for duty.

- The *Quarterly Field Inspection Summary Report: Quarter 3, Fiscal Year 2024-2025*, identified 1 non-compliant finding of medium safety significance in the specific area of Fatigue Management
  - During a fitness for duty field inspection, CNSC staff found that NB Power was not compliant with REGDOC-2.2.4 sections 4.2 and 4.3, as non-compliances were identified with the scheduling software, hours worked, and recovery periods.
  - These non-compliances in scheduling software, hours worked and recover periods were also identified during previous inspections such as: Type I inspection in October 2022 and field inspection in fiscal year 2023 – 2024 Q2.
  - CNSC staff note that the corrective actions were inadequate at preventing the recurrence of non-compliant findings as they were found in multiple follow-up inspections. As the repeated non-compliant findings were rated low, CNSC staff have rated the current finding as medium.
  - As a result of these continued non-compliances identified, and in accordance with the requirements of REGDOC-2.2.4, CNSC staff issued a warning letter to NB Power on January 7, 2025. NB Power responded to the warning letter on January 22, 2025.
  - **UPDATE:** On March 20, 2025, the CNSC issued an administrative monetary penalty (AMP) of \$24,760 to New Brunswick Power Corporation. CNSC staff will continue to monitor NB Power's progress in implementing the corrective actions.
- As part of the Type I Inspection Report for Implementation of REGDOC-2.2.4, Fitness for Duty, *Volume II: Managing Alcohol and Drug Use*, 1 non-compliant finding of low safety significance was identified in the specific area of personnel training and 1 non-compliant finding of low safety significance was identified in the specific area of fitness for duty.
  - NB Power required standard training on alcohol and drug use for all staff but did not mandate additional training for roles with extra responsibilities, such as the Program Administrator (PA) and Fitness for Duty contacts. The Training Needs Analysis (TNA)

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

for the PA role did not cover all job performance requirements. This resulted in 2 non-compliant findings.

- NB Power's process identifying reasonable cause for drugs and alcohol testing did not require independent verification by at least 2 people, including a supervisor. In addition, the requirement for post-incident testing was not clearly documented in various procedures, and many documents did not enforce the need for post-incident testing after safety-significant incidents where a human act or omission may have caused or contributed to the event. This resulted in 2 non-compliant findings.
- In 2024, CNSC staff completed 2 compliance assessments under the Human Performance Management SCA:
  - 1 Compliance Assessment was completed on Certified and Non-Certified Training Programs
  - 1 Compliance Assessment was completed on Simulator Based Certification Examinations
  - In both assessments, NB Power was found to meet regulatory requirements.
- CNSC staff will continue to monitor NB Power's progress in implementing the corrective actions through ongoing compliance verification activities.
- CNSC staff confirmed that NB Power has maintained sufficient personnel at PLNGS for all certified positions, and that all certified workers possessed the necessary knowledge and skills to perform their duties safely and competently.
- In 2024, NB Power reported 1 MSC violation at the PLNGS.
  - This was due to an Electrical Instrumentation and Control worker leaving due to a family emergency and NB Power being unable to find a replacement, resulting in NB Power going below MSC for 8 hours.
  - CNSC staff reviewed and were satisfied with NB Power's corrective actions.

## 2.7.3 Operating Performance

**Performance rating: Satisfactory**

Number of findings by rating:



A Type II Inspection of Supply Management led to 1 non-compliant finding of negligible safety significance in the area of procedure adequacy, where discrepancies were identified between documented and actual used practices. However, due to the corrective actions taken by NB Power through their corrective action program, no further enforcement was required.

- In 2024, NB Power experienced 1 planned outage.
  - NB Power completed all planned regulatory commitments during this outage.
  - The outage was extended after issues were identified during testing of the generator on run-up. Upon investigation, NB Power determined the issue was caused by a ground fault in a Generator Stator Bar. NB Power disassembled the generator, repaired or replaced the faulty stator bars, applied a temporary repair to the remaining stator bars, and reassembled the generator. CNSC staff are satisfied with the actions taken. During the outage extension, CNSC staff continued to complete outage compliance inspections, including periodic confirmation that heat sink and criticality monitoring were occurring at the required frequency.
- In 2024, CNSC staff continued the follow-up of an Action Item related to an inspection report which included a non-compliant finding to ensure adhesive/duct tape

requirements are followed to prevent the accumulation foreign material and preserve the function of the Emergency Core Cooling strainers.

- In response, NB Power formalized the updated margin analysis by updating their procedures to include information on the methodology used to calculate the amount of particular foreign material in the systems.
- NB Power is also assessing the relevance of installing additional ECC strainers.
- CNSC staff find the progress made on this Action Item acceptable.
- All REGDOC-3.1.1 scheduled reports were submitted to the CNSC in a timely manner. NB Power was compliant with the regulatory requirements in REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants* in 2024.

## 2.7.4 Safety Analysis

### Performance rating: Satisfactory

Number of findings by rating:



### Deterministic Safety Analysis

- NB Power completed the submission of all their committed updated safety analyses under REGDOC-2.4.1 implementation plan by April 2024 with the exception of a few Anticipated Operational Occurrences (AOOs) that were judged by NB Power to have negligible dose consequences based on the DBA conservative approach.
  - Assessing the need to analyze these events or any additional AOOs was suggested to be deferred until the updated REGDOC-2.4.1 is issued and implemented, and this suggestion was accepted by CNSC staff.
  - At the end of 2024, CNSC staff were continuing their review of the submitted safety analyses and the completeness of the REGDOC-2.4.1 implementation plan activities.
- In 2024, CNSC staff reviewed and accepted NB Power submissions of analyses for pressure-tube/calandria-tube with end-fitting ejection with the reactor building hatch

open, small loss of coolant accident trip coverage, loss of condenser vacuum pressure, shutdown cooling events, loss of pressure and inventory control.

- **UPDATE:** In March 2025, CNSC staff reviewed and accepted NB Power submission on fuel handling safety analysis.
- CNSC staff reviewed NB Power's plans to conduct 2 new flux perturbation tests using shutoff rods during runup from the 2024 outage.
  - The objective of the tests is to confirm the proper response of newly installed Shutdown System 2 (SDS2) Horizontal Flux Detectors (HFDs) at relatively low powers (i.e., 14% Full Power (FP) and 35% FP).
  - CNSC staff concluded that NB Power took appropriate actions including following a systematic process to design their test campaign, completing supplementary analyses to evaluate the safety consequences, reviewing impacts on the reactor physics safe operating envelope and establishing operational controls to ensure the station will remain within its licensing basis.

#### **Large Break Loss of Coolant Accident (LBLOCA) Composite Analytical Approach (CAA)**

- NB Power requested to reclassify large break LOCA scenarios with break sizes equivalent or larger than 5% of the reactor inlet header guillotine break as Beyond Design Basis Accidents (BDBA) instead of Design Basis Accidents (DBA) for specific heat transport system pipes.
  - This reclassification is based on a Composite Analytical Approach (CAA) that demonstrates larger safety margins under BDBA safety analysis rules.
  - CNSC staff found the request adequate, except for heat transport system pipes that were not subjected to post-weld-heat-treatment (PWHT), which must still follow DBA safety analysis rules.
  - CNSC staff conditioned their acceptance on continued monitoring and periodic inspections to ensure the assumptions in the analysis remain valid. NB Power must inform CNSC if any assumptions become invalid.
  - **UPDATE:** Between March and July 2025, NB Power updated their procedures to ensure that CNSC conditions are captured and CNSC will be informed with any changes relevant to these conditions.



## Probabilistic Safety Assessment

- During 2024, CNSC staff continued to review planning documents relevant to the 2026 PSA as they were submitted.
- A low safety significance non-compliance was found during a field inspection in the fourth quarter (Q4) of Fiscal Year 2023/2024.
  - NB Power did not have an online risk monitor as required by their governance.
  - NB Power took corrective actions to revise their procedures to note that an online risk monitor is not currently part of their risk management process and is not a regulatory requirement.
- CNSC staff were satisfied with these corrective actions, and no further enforcement action is needed at this time. However, CNSC staff recommended that NB Power consider industry best practices and relevant Quality Assurance standards for the development, verification, and implementation of the risk monitor.

## 2.7.5 Physical Design

### Performance rating: Satisfactory

Number of findings by rating:



Two non-compliant findings with low safety significance were observed in the area of physical design under design governance and seismic qualification.

### Design Governance

#### Systems, Structures and Components (SSC)

- During routine surveillance related to use of tape for leak mitigation, a low safety significance finding was noted due to inconsistencies in system classification.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- This created uncertainty about whether the system should be exempted or registered for safety functions, which presents a challenge to the process of checking compliance with the applicable codes and standards.
- A NNC was issued for NB Power to correct these inconsistencies and review the extent of this observation to other entries.
- NB Power provided adequate justification for the observed inconsistencies and reviewed twenty other systems that are either exempted or unclassified to ensure there is no adverse impact.
- CNSC staff were satisfied with NB Power's actions and closed the NNC with recommendations for continuous improvement.

**Environmental Qualification (EQ)**

- During a field inspection in the Reactor Building, NB Power was found compliant with the EQ requirements for maintaining a list of EQ equipment for design-basis accidents and new installations and maintenance practices relevant to EQ.
- A non-compliant finding of negligible safety significance was identified when an incorrect change was made to one of the components in the EQ List.
  - NB Power took the appropriate actions to correct the problem.
  - 2 recommendations for improving the process of managing Environmental Qualification Assessments (EQAs) were provided.

**Component Design****Seismic Qualification**

- One non-compliant finding of low safety significance was discovered during Q4 of Fiscal Year 2023/2024 field inspection.
  - CNSC staff observed untethered, or inadequately tethered items in seismic control areas.
  - NB Power removed the observed items and provided the required coaching to line staff.
  - CNSC staff were satisfied by NB Power immediate corrective actions, and no further actions were conducted.

Code classification, implementation of Registration and Reconciliation Procedure, and pressure boundary repair, replacement and modification.

- CNSC staff conducted a pressure boundary desktop inspection and concluded that NB Power is compliant with the applicable codes and standards for documenting relevant activities to the inspected pressure retaining systems.

#### Fuel Design

- Based on the Annual Fuel Performance Report for 2023, NB Power inspected more fuel bundles than CNSC staff minimum annual inspection expectation and appropriately proportional to the observed elevated defect rate.
- No abnormal trends in bundle inspection observations were present. In fact, the number of bundles with endcap stop marks, although still elevated, has trended down from 2022. This is also true for the number of sheath scrapes observations. Overall, the inspection observations show a general improvement in the fuel conditions, and they do not appear to be indicative of any safety issues.
- A total of 4 defects were confirmed which is more than the CNSC expected defect rate of 1 defect per unit per year.
  - One defect is judged to be due to foreign material interaction with the fuel elements due to the ongoing issue of debris existence in heat transport loop 2 due to the degradation of the mesh screens in the pump hydrostatic bearing that was discovered in the 2022 outage. NB Power decided to discontinue the use of wire mesh screens on PHT pump bearings and 1 PHT pump bearing was replaced without screens in the 2024 outage and a second PHT pump bearing is planned for replacement without screens in the 2026 outage.
  - Three defects were discovered on bundles from heat transport loop 1. It is suspected that the defects are due to fretting from a screw or similar threaded fastener that might have been introduced during the 2022 unplanned outage in mid December. Given the nature of the debris fretting and the suspected sources of the foreign material, the defect rate for loop 1 is expected to diminish in near future, as the debris gets filtered out of the reactor. NB Power committed to providing an update on loop 1 defects in next year's Annual Fuel Performance Report.
  - Elevated PHT iodine-131 activity spikes were observed in both heat transport loops although no suspected fuel defects were reported. This observation was due to brief removal and return to service of the PHT Purification System, while performing maintenance activities. The observed spikes were much lower than the corrective action concentration.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- The average defect residency time (detection to discharge) for the reporting year was 6.5 days, which is an improvement compared to both the past performance (i.e., last year defect residency time was 13 days) and the industry average.
- NB Power met and exceeded the expectations for the number of fuel bundle inspections and has established a strategy to address the recent elevated defects levels. Overall, the inspection observations show satisfactory fuel condition. CNSC staff will continue monitoring NB Power mitigating strategies to resolve the elevated fuel defect rate.

### System Design

- CNSC staff initiated a compliance assessment for software maintenance to review software design changes to confirm the integrity and reliability of software for instrumentation and control (I&C) and verify that changes to the software are performed as per design, configurations are controlled, and all software deficiencies are identified with appropriate corrective action plans.
  - Based on the reviewed documents, CNSC staff concluded that the PLNGS software maintenance activities met the applicable requirements.

#### Electrical Power systems:

- Based on the CNSC compliance activities in 2024, CNSC staff determined that electrical power systems including cables met CNSC staff performance expectations at PLNGS.

## 2.7.6 Fitness for Service

### Performance rating: Satisfactory

Number of findings by rating:



Four non-compliant findings of low safety significance were documented in the area of Fitness for Service as detailed below.

## Maintenance

- In May 2024, during a field inspection in the PLNGS High Pressure Emergency Core Cooling (HPECC) Building, 1 non-compliant finding of low safety significance was documented as vendor documentation did not have an NB Power document number and did not have evidence of review, approval, or acceptance by NB Power.
- On May 8, 2024, CNSC staff issued a report on the use of tape for leak mitigation, based on observations made during surveillance and monitoring activities at PLNGS.
  - One non-compliant finding of low safety significance was identified as there was a lack of adequate written procedures and instructions within a managed process to control the deployment of “Leak Mitigation” temporary repairs.
  - NB Power submitted a request for closure of the resulting NNC in March 2025 which is under review by CNSC staff.
- During a field inspection of the Service Building, 1 non-compliant finding of low safety significance was identified as a temporary repair was in place with no controls on the continued integrity of the repair.
  - This resulted in a NNC for NB Power to develop and implement a corrective action plan to ensure that temporary repairs are performed, approved and controlled. A corrective action plan is under development and NB Power will provide an update by August 29, 2025.
- Point Lepreau maintained both the critical corrective maintenance backlog and the number of critical preventive maintenance deferrals low.
  - The critical deficient maintenance backlog was above the industry average (noting that the industry average improved in the last 5 years) but has been significantly reduced since middle of 2024.
  - Given that the components associated with the deficient maintenance backlog can still maintain their safety function, CNSC staff is monitoring the number and trending of the critical deficient maintenance backlog through baseline compliance activities, and if necessary, reactive compliance activities can be conducted.
  - The average preventative maintenance completion ratio was around 96%. There were no safety significant findings in the maintenance specific area based on the review of the events reported by the licensee.

### Equipment Fitness for Service/Equipment Performance

- In 2024, CNSC staff reviewed NB Power's 2023 Annual Report on risk and Reliability and confirmed that it met the applicable regulatory requirements.
- CNSC staff confirmed that all systems Important to Safety, including Special Safety Systems, for Point-Lepreau met their Actual Past Unavailability (APU) targets in 2023, except for the Heat Transport Pressure and Inventory Control (PIC), Boiler Pressure Control (BPC), and End Shield Cooling (ESC). CNSC staff are satisfied with NB Power's corrective actions to address the APU exceedances and will continue monitoring these actions.
- CNSC staff conducted a Type II system inspection of NB Power's Shutdown Cooling system at PLNGS from January 29 to February 2, 2024. Five compliant findings in the specific area of Equipment Fitness for Service were identified.
- CNSC staff conducted a Type II inspection of NB Power's reliability program. One compliant finding in the specific area of Equipment Fitness for Service was identified.

### Chemistry Control

- In February and September 2024, CNSC staff completed 2 compliance assessments of the chemistry control program at PLNGS and concluded, in both cases, that the documentation provided met the requirements of CSA N286-12, *Management System Requirements for Nuclear Facilities*, on the control of system chemistry for the purpose of that compliance assessment.

### Periodic Inspection and Testing

- Inspection report, Quarterly Field Inspection Summary Report: Quarter 1, Fiscal Year 2024-2025, documented results from a field inspection related to the Periodic Inspection Program for Containment.
  - This included 1 finding of low-safety significance as inspection criteria did not reflect previous examinations results, examination results were not compared to previous results, and a review by a qualified professional engineer was not documented.
  - CNSC staff reviewed the action plan to address the non-compliance submitted by NB Power and found it acceptable.

## 2.7.7 Radiation Protection

**Performance rating: Satisfactory**

Number of findings by rating:



CNSC staff conducted 4 RP field inspections and 1 compliance assessment of NB Power's RP action levels.

- The 3 non-compliant findings of negligible safety significance were related to procedural non-compliances with the storage of a dosimeter, the calibration of radiation monitoring instrumentation and the required frequency to update radiation warning signs for 2 rooms.
- The non-compliant finding of low safety significance was associated with the maintenance of the list describing the status for the Rubber Area/Rubber Change Areas (RA/RCA).
- NB Power developed corrective actions to address the findings, and CNSC staff were satisfied with NB Power's corrective actions and consider the matter closed. CNSC staff will continue to monitor NB Power's implementation of corrective actions.
- CNSC staff determined that at the PLNGS:
  - Radiation doses to workers were below the regulatory dose limits.
  - There were no exceedances of an action level listed in NB Power's RP program.
  - Appropriate measures were used to control occupational exposures and to keep doses ALARA.
  - Actions were taken to control radiological hazards to protect workers.
- In June 2024, CNSC staff issued a request pursuant to subsection 12(2) of the *General Nuclear Safety and Control Regulations* to all Canadian nuclear power plants to evaluate potential unaccounted doses, neutron source characterization, and mitigation measures. More details can be found in CMD 24-M35.

## 2.7.8 Conventional Health and Safety

**Performance rating: Satisfactory**

Number of findings by rating:



There were no fatalities, lost-time injuries or disabling injuries. However, there were 4 medically treated injuries due to an injured knee, cuts to an arm and a thumb, and pinched fingers.

- The accident severity rate continued to be 0.00, with no lost-time injuries. Due to the medically treated injuries, the Accident Frequency (AF) for PLNGS was 0.27, which is comparable to the 2023 value.
- During surveillance and monitoring activities related to Fire Resistant Fluid (FRF) Dry Air Purges, CNSC staff identified 1 non-compliant finding of low safety significance as corrective actions taken by NB Power did not prevent recurrence of safety-related concerns raised by NB Power staff regarding FRF vapours and mitigating measures were not fully implemented in a timely and effective manner. This resulted in 2 NNCs being issued to NB Power.
- NB Power completed their corrective actions and CNSC staff reviewed the submission and concluded that NB Power's corrective actions taken to address both NNCs were adequate, and the action item has been closed.
- During the Q3 field inspection, 2 non-compliant findings of low safety significance were identified as issues were observed with several eyewash stations and bottles, and several housekeeping issues were identified. NB Power's corrective actions to address the NNC were adequate, and the action item has been closed.
- During a Type II Inspection for the 2024 Planned Outage, a non-compliant finding of low safety significance was identified due to multiple housekeeping issues. NB Power was required to develop and implement a corrective action plan. CNSC staff were satisfied with the actions taken by the licensee.
- In inspection report, *Quarter 2, Fiscal Year 2024-2025*, there was 1 non-compliant finding of low safety significance related to out-of-date requirements for working with asbestos. A NNC was issued for NB Power to develop and implement a corrective action plan to



ensure mandatory safety requirements are documented within the management system. CNSC staff are reviewing the corrective action plan response received from NB Power.

## 2.7.9 Environmental Protection

### Performance rating: Satisfactory

Number of findings by rating:



Results from CNSC staff's assessments of the quarterly and annual reports determined that NB Power met regulatory requirements in REGDOC-3.1.1 and REGDOC-2.9.1.

- Dose to the public from the Point Lepreau site (0.76  $\mu\text{Sv}/\text{yr}$ ) remained well below the regulatory limit of 1 mSv/yr.
  - Releases of nuclear substances were well below the DRLs for PLNGS in 2024.
  - No action levels were triggered for airborne and waterborne releases.
  - CNSC staff did not note any safety-significant environmental exceedances or spills at the PLNGS in 2024.
  - NB Power has implemented and continues to maintain an environmental management system in accordance with CNSC requirements.
- 1 non-compliant finding of negligible safety significance resulted from a Hazardous Waste field inspection which was summarized in the *Quarterly Field Inspection Summary Report Quarter 3 of Fiscal Year 2023-2024* where some hazardous materials were mislabeled, and waste inventory sheets were not updated as required. NB Power was notified of this finding and immediately rectified the issues.
- NB Power has implemented the requirements set out in the recently revised CSA standards N288.0-22, N288.5-22, N288.6-22 and N288.4-19.

## 2.7.10 Emergency Management and Fire Protection

**Performance rating: Satisfactory**

Number of findings by rating:



To meet the requirements of REGDOC-2.10.1: Nuclear Emergency Preparedness and Response, NB Power conducted a full-scale exercise from October 29-30, 2024.

- CNSC staff conducted a Type II inspection of NB Power’s Emergency Preparedness and Response. The scope of this regulatory activity was the Emergency Preparedness and Response Program including the exercise implementation and response to 2024 Synergy Challenge emergency exercise. The findings for this inspection were all considered compliant.
- NB Power was not compliant with station procedures as not all drill evaluation criteria was met during an observed fire drill at PLNGS.
- CNSC staff also received NB Power submission regarding updated Fire Hazard Assessment (FHA) and Fire Safe Shutdown Analysis (FSSA). Based on the reviews, the approach and methodology used for the reaffirmation of the 2022 FHA and FSSA satisfy the requirements of CSA N293-12, *Fire Protection for CANDU Nuclear Power Plants*.
- Based on a Type II inspection of NB Power’s Emergency Preparedness and Response CNSC staff concluded that NB Power’s testing of emergency measures and fire response met the regulatory requirements. Overall, CNSC staff is satisfied with the licensee’s performance and corrective actions.

## 2.7.11 Waste Management

**Performance rating: Satisfactory**

Number of findings by rating: 3 compliant findings

- The PROL for PLNGS requires NB Power to submit a quarterly report on the Solid Radioactive Waste Management Facility (SRWMF). CNSC staff were satisfied with all reports and additional information submitted by NB Power for the SRWMF in 2024.
- In 2024, spent fuel bundles were transferred to Phase II of the SRWMF from the PLNGS, as documented in NB Power's scheduled reports. CNSC staff reviewed these reports and found no issues or concerns regarding the licensed activities at the SRWMF.

## 2.7.12 Security

**Performance rating: Satisfactory**

Number of compliant findings:



In 2024 Canadian Nuclear Safety Commission staff reviewed Point Lepreau Nuclear Power Generating Station's 2023 Threat and Risk Assessment and determined that the threat and risk assessment report was completed in accordance with regulatory requirements.

### Physical Security

- In 2024, Canadian Nuclear Safety Commission staff conducted 4 field inspections.
- Findings from these field inspections were documented in the Quarterly Field Inspection Summary Reports. CNSC staff issued 2 non-compliant findings, 1 non-compliant finding of low safety significance for the Security SCA and another finding of negligible safety significance for the Management System SCA. NB Power responded with corrective action plan and the CNSC staff are reviewing.

## Cyber Security

- In 2024, CNSC staff continued to track NB Power's action plan to address the non-compliant findings from the 2021 CNSC Type I inspection of NB Power's cyber security program regarding the implementation of the CSA N290.7-14, *Cyber Security for Nuclear Power Plant and Small Reactor Facilities*. NB Power requested to close Action Item and submitted 2 closure requests. CNSC staff were satisfied with the action taken by NB Power and agreed to close the Action Item.

## 2.7.13 Safeguards and Non-Proliferation

### Performance rating: Satisfactory

Number of findings by rating: 4 compliant findings

- The IAEA was not able to fully attain its objectives for the verification of loadings of nuclear material before transfers to dry storage due to a lack of sufficient inspections and therefore could not draw a positive conclusion.
  - This result was not as of the result of any action or inaction by the licensee. PLNGS continues to ensure its procedures provide the IAEA with timely access for verification activities.
  - The CNSC will coordinate follow-up activities with the IAEA and PLNGS to resolve this issue.
- In 2023 and 2024, CNSC staff conducted field inspections during the IAEA's physical inventory verification.
  - CNSC staff confirmed that NB Power provided access and assistance to the IAEA inspectors to facilitate IAEA's inspection.
  - No actions were placed on NB Power as a result of the inspections.
- During the reporting period of 2024, PLNGS,
  - Provided the required nuclear material accountancy and control reports to the CNSC and the IAEA for their safeguards verification activities.
  - Granted the required access and assistance to the IAEA for safeguards activities, including inspections, and for the maintenance of IAEA equipment.
  - Submitted the required annual operational program with quarterly updates and the annual update to the Additional Protocol to the CNSC in a timely manner. The CNSC reviewed these documents and determined that they met requirements.

- Provided the support required for the IAEA's safeguards equipment, containment, and surveillance activities.

## 2.7.14 Packaging and Transport

**Performance rating: Satisfactory**

Number of findings by rating: 2 compliant findings

In 2024, CNSC staff conducted 1 field inspection on NB Power's Packaging and Transport program and all findings were compliant.

- The findings were related to the packaging and transportation of nuclear substances shipment and preparing the associated documents.

## 2.8 Gentilly-2 Facilities

### Overview



Figure 10: Gentilly-2 Facilities

Located in Bécancour, the Gentilly-2 Nuclear Power Plant is located within territory that the Abenakis of Wôlinak and Odanak identify as the Ndakina, an ancestral territory over which the Abenakis claim rights protected by section 35 of the *Constitution Act, 1982*. Today, these two communities are grouped under the aegis of the Grand Conseil de la Nation W8banaki, a tribal council.

The Gentilly-2 power plant is also located on territory identified by the Wendat Nation as Nionwentsïo, an ancestral territory over which the Wendat claim Treaty rights.

**Licence:** PDRP 10.00/2026.

**Licence term:** July 2016 - June 2026.

**Licensee:** Hydro-Québec.

**Location:** Bécancour, Québec.

[Find out more about Gentilly-2 Facilities](#)

Table 23: Summary of the number of inspections performed at Gentilly-2 (Full inspection list found in Appendix A)

Type 1	Type 2	Desktop	Field	Number of findings
0	1	0	0	Compliant: 6 Non-compliant: 3 Total: 9

## Event Initial Reports (EIRs)

- No event initial reports pertaining to the Gentilly-2 Facilities were submitted to the Commission in 2024.

### 2.8.1 Management System

Performance rating: **Satisfactory**

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements, and that its performance met CNSC staff expectations regarding the Management System Safety and Control Area (SCA) at Gentilly-2 in 2024.
- Hydro-Québec has audited its service providers and updated documents relating to its management system. It has also met the deadlines for implementing corrective actions resulting from the management systems inspection that took place in 2023 by completing its third-party calibration verification process and its document retention process.

### 2.8.2 Human performance management

Performance rating: **Satisfactory**

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Human Performance Management SCA at Gentilly-2 in 2024. However, in 2024, CNSC staff reviewed the annual report of records of exceedances of limits for hours worked for the previous year, and a negative trend was identified. CNSC staff reviewed the corrective plan submitted by Hydro-Québec and found it to be acceptable.
- In 2024, Hydro-Québec had a Radiation Protection Technical Authority at the Gentilly-2 Facilities. She was assisted by three Radiation Protection Officers (RPOs), two of whom

were trained in 2024, to support the Radiation Protection Technical Authority in carrying out authorized activities at the Gentilly-2 Facilities.

## 2.8.3 Operating performance

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Operating Performance SCA at the Gentilly-2 Facilities in 2024.
- Quarterly, biannual, and annual reports submitted by Hydro-Québec in 2024 documenting what had been done showed compliance with licence requirements. During CNSC staff's review of these reports, no gaps or situations indicating the occurrence of unsafe activities or activities below CNSC staff standards were found at Gentilly-2. Hydro-Québec provided satisfactory responses within an acceptable timeframe to staff.
- CNSC conducted the review of these reports.
- Hydro-Québec reported to CNSC staff that one of the two annual visits scheduled by the local fire department (under the Operating Performance SCA) was missed. As a corrective measure, the licensee has already scheduled the two visits for 2025 and communicated the dates to CNSC staff in advance.

## 2.8.4 Safety analysis

### Performance rating: Satisfactory

Number of findings by rating: One compliant finding

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Safety Analysis SCA at the Gentilly-2 Facilities in 2024.

## 2.8.5 Physical design

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Physical Design SCA at the Gentilly-2 Facilities in 2024.



- The compliance activities carried out in 2024 demonstrated that the performance of the power supply systems is satisfactory.
- Given that Hydro-Québec met the requirements and performance expectations, Gentilly-2's rating is satisfactory.

## 2.8.6 Fitness for service

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Fitness for Service SCA at the Gentilly-2 Facilities in 2024.
- CNSC staff were satisfied with the report on safety system pressure boundary degradation for 2024.

## 2.8.7 Radiation protection

### Performance rating: Satisfactory

Number of findings by rating:



CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Radiation Protection SCA at the Gentilly-2 Facilities in 2024.

- No dose limits were exceeded in 2024. The doses received by workers are below these limits. There were also no exceedances of action levels.
- A general inspection was completed in 2024. Three findings leading to three notices of non-compliance were issued for this inspection, including two in the Radiation Protection area.
  - One finding of minor safety significance involved a contamination meter with a calibration date of “March 2024” (more than one year since the last calibration). The notice of non-compliance is now closed.

- A second finding of minor safety significance concerned the display at the entry point for a structure containing contaminated equipment. The radiation warning sign was present at only one of the structure's two entry points. The notice of non-compliance is now closed.

## 2.8.8 Conventional health and safety

### Performance rating: Satisfactory

Number of findings by rating: One compliant finding

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements of CNSC staff for the Conventional Health and Safety SCA at Gentilly-2 in 2024.
- CNSC staff notes that no event in 2024 involving accidents with lost time, accidents requiring medical care or lost work days.

## 2.8.9 Environmental protection

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding the Environmental Protection SCA at the Gentilly-2 Facilities in 2024.
- The review of the various compliance reports showed that the quantities of radioactive and non-radioactive releases to the environment in 2024 remained well below the established limits. The dose to the public in the vicinity of the Gentilly site (1 uSv) was below the regulatory dose limit of 1 mSV/year and remains in the same order of magnitude as the dose in previous years, demonstrating that radionuclide concentrations in the environment remain low.
- Information on performance from the technical evaluation of these reports shows that Hydro-Québec met the requirements in terms of effluent and emissions control for 2024.
- Hydro-Québec requested the release of the large volume of water contained in the main storage pool and auxiliary pools at the Gentilly-2 Facilities. CNSC staff reviewed the submission and contacted Environment and Climate Change Canada (ECCC) for their input. ECCC staff provided comments, which were forwarded to Hydro-Québec in January 2025.
- The revised Environmental Risk Assessment (ERA) was accepted by CNSC staff.

- In April 2024, following the annual leak test on an industrial air-conditioning system, a gas leak was detected. A nitrogen test identified the location of the leak. The leak was repaired and a leak test was conducted before the system was put back into service. CNSC staff reviewed the event and was satisfied with Hydro-Québec's actions.

## 2.8.10 Emergency management and fire protection

### Performance rating: Satisfactory

Number of findings by rating:



CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations for the Emergency Management and Fire Protection SCA at the Gentilly-2 Facilities in 2024.

- CNSC staff reviewed the safety performance indicators in relation to the participation index for the emergency response organization exercise and the emergency response resources completion index and were satisfied with the results shared by Hydro-Québec in 2024.
- CNSC staff concluded that Hydro-Québec continued to maintain the ability to respond in case of a fire, and a fire protection program that met applicable regulatory requirements in accordance with the requirements of CSA N293.
- Emergency response in case of a fire is now provided by the town of Bécancour; specifically, an agreement was renewed in 2024 with the Bécancour fire department to officialize and bolster emergency response in case of fire and rescue by the fire department at the Gentilly-2 Facilities.
- A general inspection was conducted in June 2024. The inspection identified one finding leading to a notice of non-compliance in this safety area. The minor finding related to the fact that the annual inspection of some fire extinguishers had not been carried out. Hydro-Québec has taken steps to correct the situation, and CNSC staff is satisfied with the corrective measures.
- Hydro-Québec reported three events at the Gentilly-2 Facilities to the CNSC in 2024:

- A fire alarm was detected in the technical services administration building (TSAB) in the mechanical room at the elevator. First responders found smoke, but no fire. Responders from the fire department arrived on site and used their thermal imaging camera to confirm that there was no fire.
- The second event reported by Hydro-Québec was an unfounded fire alarm.
- The third event was an incipient fire on a towing vehicle. The fire was brought under control with fire extinguishers by Gentilly-2 personnel. The Bécancour fire department was contacted and confirmed the end of the fire. CNSC staff reviewed the three events and was satisfied with Hydro-Québec's actions.

## 2.8.11 Waste management

### Performance rating: Satisfactory

Number of findings by rating: One compliant finding

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations for the Waste Management SCA at the Gentilly-2 Facilities in 2024.
- CNSC staff examined a quarterly report from 2024 on the management of the Gentilly-2 solid radioactive waste and irradiated fuel facilities. The reports reviewed satisfied regulatory requirements, and CNSC staff had no comments to make.
- In December 2024, Hydro-Québec submitted its detailed decommissioning plan, associated cost study, waste management strategy and financial guarantees. The documents are currently under review by CNSC staff.
- Hydro-Québec has submitted its detailed decommissioning plan for the periodic inspection building and treatment plant. CNSC staff reviewed the documentation submitted and submitted comments following the review.

## 2.8.12 Security

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations for the Security SCA at the Gentilly-2 Facilities in 2024.

- CNSC staff reviewed the annual threat and risk assessment report as well as the four quarterly security reports for Gentilly-2, and confirmed that Hydro-Québec met all applicable regulatory requirements for the Facilities and Equipment SCA in 2024.
- The licensee revised its response protocol with the local police department to ensure a rapid response by armed police in the event of a security incident.
- The new tactical plan was tested during a force-on-force security exercise in May 2024 in collaboration with the Sûreté du Québec, in response to the Commission's decision in CMD 21-H101. Hydro-Québec submitted a detailed report with a proposed action plan to address the findings and lessons learned from the security exercise. Hydro-Québec has continued to make progress in implementing the measures set out in the report on the security exercise.
- The rating for the Cybersecurity SCA at Gentilly-2 cannot be determined due to the lack of compliance activity in 2024.

## 2.8.13 Safeguards and non-proliferation

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations for the Safeguards and Non-Proliferation SCA at the Gentilly-2 Facilities in 2024.
- CNSC staff concluded that the accountancy and control of nuclear material at Gentilly-2 met all relevant regulatory requirements in 2024. Hydro-Québec provided CNSC and the International Atomic Energy Agency (IAEA) the nuclear material accountancy and control reports required for safeguard activities, including inspections, in 2024.

## 2.8.14 Packaging and transport

### Performance rating: Satisfactory

- CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations for the Packaging and Transport SCA at the Gentilly-2 Facilities in 2024.
- Hydro-Québec maintains a packaging and transport program at Gentilly-2 that ensures compliance with the *Packaging and Transport of Nuclear Substances Regulations, 2015* and the *Transportation of Dangerous Goods Regulations*.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- The program was put in place in an effective manner, and the transportation of nuclear substances coming from and going to the facility was done in a safe manner. No incidents were reported in 2024.

## 3 Consultation, Engagement and Public Disclosure

### 3.1 Indigenous Consultation and Engagement

The Canadian Nuclear Safety Commission (CNSC), as an agent of the Government of Canada and as Canada's nuclear regulator, acknowledges the importance of building relationships and consulting with Indigenous peoples in Canada. The CNSC ensures that all its licensing decisions under the *Nuclear Safety and Control Act* uphold the honour of the Crown, uphold Indigenous peoples' potential or established Indigenous and/or treaty rights, pursuant to section 35 of the Constitution Act, 1982, and uphold the principles of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP).

The CNSC works closely with Indigenous Nations and communities as part of its ongoing commitment to consultation, engagement and reconciliation. The CNSC's engagement and consultation practices are guided by:

- The principles of UNDRIP, [\*United Nations Declaration on the Rights of Indigenous Peoples Act\*](#) (UNDA), and Free, Prior and Informed Consent (FPIC)
- The Crown's Legal Duty to Consult and Accommodate obligations.
- Canada's [\*Aboriginal Consultation and Accommodation – Updated Guidelines for Federal Officials to Fulfill the Duty to Consult\*](#) (March 2011)
- The CNSC's [\*Commitment to Indigenous Consultation and Engagement\*](#)
- The CNSC's statement on [\*Reconciliation\*](#)

The CNSC is committed to building long-term relationships and conducting ongoing engagement with Indigenous Nations and communities who have rights and interests in relation to CNSC-regulated facilities. Ongoing Indigenous engagement practices include:

- Sharing information and discussing topics of interest with Indigenous Nations and communities.
- Creating meaningful opportunities for participation and actively seeking feedback on CNSC processes.
- Working collaboratively to address the issues and concerns raised and engaging in meaningful dialogue to find constructive solutions.
- Incorporating and reflecting Indigenous Knowledge into the CNSC's regulatory processes as per the CNSC's [\*Indigenous Knowledge Policy Framework\*](#).

- Providing opportunities to participate in environmental monitoring through the CNSC's Independent Environmental Monitoring Program (IEMP).
- Funding opportunities through the CNSC's Participant Funding Program (PFP) to support participation in Commission proceedings and ongoing regulatory activities and build knowledge and capacity through the CNSC's Indigenous and Stakeholder Capacity Fund (ISCF).
- Upholding the principles of UNDRIP by working with Indigenous Nations to understand, support and respect their governance processes for coming to their FPIC position in relation to proposed nuclear projects that may impact their rights and interests.

CNSC staff's efforts in 2024 supported the CNSC's ongoing commitment to engage and build positive relationships with Indigenous peoples with interests in Canada's Nuclear Power Generating Sites (NPGS). CNSC staff worked with Indigenous Nations, communities, and organizations to identify opportunities for formalized and regular engagement throughout the lifecycle of these facilities and welcomed the opportunity to meet with Indigenous Nations and communities to discuss and address topics of interest or concern.

CNSC staff have existing Terms of Reference (ToR) for Long-Term Engagement with Curve Lake First Nation (CLFN), Hiawatha First Nation (HFN), Historic Saugeen Métis (HSM), Mississaugas of Scugog Island First Nation (MSIFN), Métis Nation of Ontario (MNO) and Saugeen Ojibway Nation (SON). The CNSC is open to developing ToRs for long-term engagement with other interested Indigenous Nations and communities as appropriate. In 2024, engagement with these Indigenous Nations and communities included regular meetings and work plan items, as per the established ToRs. Further information on engagement conducted in relation to each ToR can be found in Appendix E.

### 3.1.1. CNSC Engagement Efforts

#### 3.1.1.1 Pickering and Darlington sites

CNSC Engagement Efforts Pickering and Darlington sites CNSC staff's engagement with Indigenous Nations and communities in 2024 included activities relevant to licensing and Commission hearing processes for OPG's Darlington and Pickering sites. In 2024, CNSC staff conducted engagement or consultation, where appropriate, for the following projects relevant to the Pickering and Darlington sites:

- OPG's Darlington New Nuclear Project (DNNP) Licence to Construct (LTC) application.
- OPG's Darlington Nuclear Generating Station (DNGS) licence renewal application.



- OPG's application to amend the Power Reactor Operating Licence (PROL) for DNGS to produce Cobalt-60.
- OPG's application to amend the PROL for DNGS to produce Lutetium-177 and Yttrium-90.
- OPG's application to extend the operations of Pickering B Units 5-8 to December 31, 2026.
- OPG's application to change the licensing basis for the Pickering Waste Management Facility (PWMF) to process and store dry storage containers containing a minimum of 6-year cooled fuel.
- OPG's application to amend the PWMF LTC and operate the Pickering Component Storage Structure (PCSS).

CNSC staff's engagement in relation to these projects and their CNSC processes included notifying Indigenous Nations and communities about the applications, email notifications regarding the application, notifications regarding PFP opportunities, sharing information about opportunities to participate and get involved, providing regular updates through monthly meetings established under ToRs for Long-Term Engagement, and offering to meet to discuss any questions or concerns. Alongside the regularly scheduled monthly meetings, additional topic-specific meetings were held with AFN, CLFN, HFN, MSIFN, SON, Six Nations of the Grand River (GR), and Mississaugas of the Credit First Nation (MCFN). Other relevant parties, including CNSC subject matter experts, proponents, licensees, and other federal departments, were brought in to support discussions and explore matters of interest in greater detail, as required. GAs per the CNSC's [Indigenous Knowledge Policy Framework](#), the CNSC recognizes the importance of considering and including Indigenous Knowledge in all aspects of its regulatory processes, including Environmental Protection Review (EPR) Reports. In September 2024, CNSC staff shared the DNGS EPR with HFN, CLFN and MSIFN to review and add comments to ensure it appropriately reflects any information in relation to Indigenous Knowledge as well as Indigenous and/or Treaty rights. CNSC staff updated the report based on the feedback received from MSIFN and CLFN and collaborated to include a "Views Expressed" section within the EPRR.

### 3.1.1.2 Bruce Site

CNSC staff engages with the SON, on whose Treaty and traditional territory the Bruce site is located. CNSC staff also engages with the MNO and the HSM, on whose claimed traditional harvesting territory the Bruce site is located, and the Chippewas of Kettle and Stony Point First Nation (CKSPFN) on areas of interest to them. CNSC staff engage with Indigenous Nations and communities through a variety of in-person and virtual forums.

In 2024, CNSC staff engaged with SON, HSM, MNO, and CKSPFN to provide updates and information on regulatory oversight at the Bruce site. This included regular and meetings upon request with each Nation to discuss topics such as the ongoing operation of the Bruce Power NGS, the CNSC's IEMP, and the integration of Indigenous perspectives, values, and Knowledge into regulatory processes. Engagement activities also involved sharing notifications and updates on regulatory matters, outlining opportunities for participation, and maintaining regular communication through monthly meetings established under ToRs for Long-Term Engagement, with additional meetings offered as needed to address questions or concerns.

CNSC staff, in collaboration with staff from the Impact Assessment Agency of Canada (IAAC), also conducted early engagement with regards to Bruce Power's proposed Bruce C project and the associated Integrated Impact Assessment and licensing. In August 2024, Bruce Power submitted an Initial Project Description to IAAC and the CNSC. This triggered both the start of the Planning Phase of an Integrated Impact Assessment for the proposed project, and the start of formal consultation with Indigenous Nations and communities. IAAC maintains the Crown Consultation Coordinator role for this Integrated Impact Assessment and licensing, working in close coordination with the CNSC.

### 3.1.1.3 Point Lepreau Site

CNSC staff regularly engages and communicates with Wolastoqey Nation of New Brunswick (WNNB), Mi'gmawé'l Tplu'taqnn Incorporated (MTI), Kopit Lodge/Elsipogtog First Nation, and the Passamaquoddy Recognition Group Inc. (PRGI) on areas of interest to them in relation to the Point Lepreau site.

In 2024, a major focus of CNSC's engagement activities was to formalize and continue to strengthen relationships with Indigenous Nations and communities in New Brunswick. CNSC staff provided information and updates to MTI, WNNB, Kopit Lodge/Elsipogtog First Nation and the PRGI and regularly met with each Nation and organization to discuss topics of interest including the on-going operation of the Point Lepreau Nuclear Generating Station (PLNGS), the CNSC's IEMP, the gathering and inclusion of Indigenous knowledge, funding opportunities and CNSC's role in regulating potential Small Modular Reactor (SMR) projects in New Brunswick.

As the CNSC does not yet have formalized ToRs for Long-Term Engagement for MTI, WNNB, Kopit Lodge/Elsipogtog First Nation and the PRGI, details on engagement activities completed in 2024 are included in this section, as opposed to Appendix E.

In February and May 2024, CNSC staff attended in-person community engagement sessions, hosted by MTI, with each of the First Nations represented by MTI. In the summer of 2024, CNSC staff also attended multiple powwows in Mi'gmawé'l communities.

In September 2024, WNNB, MTI and PRGI participated in the [CNSC's IEMP](#) around the Point Lepreau site. The Indigenous Nations and communities demonstrated how to locate and harvest species of importance, including sweetgrass, clams, mussels and periwinkles. CNSC staff also sampled lobster tomalley at the request of PRGI. CNSC staff greatly appreciate the knowledge shared by the Indigenous Nations and communities and are committed to continuing to work together to ensure the IEMP reflects their Indigenous Knowledge, land use and values, where possible.

In 2024, CNSC staff worked with MTI and WNNB to draft ToRs for long-term engagement. CNSC staff anticipate ToRs to be finalized with these Nations in 2025.

CNSC staff are committed to ongoing engagement and collaboration with interested Indigenous Nations, communities and representative organizations in New Brunswick and will continue to provide opportunities for meaningful long-term engagement and regular meetings and collaboration.

#### **3.1.1.4 Gentilly-2 site**

In 2024, CNSC staff continued to provide updates and information on regulatory oversight at the Gentilly-2 Site through the Regulatory Oversight Report for Canadian NPGS for 2023.

In 2024, CNSC staff conducted [IEMP sampling at the Gentilly-2 site](#). As part of the CNSC's commitment to meaningful engagement and transparency, both the W8banaki and Le Conseil de la Nation Wendat were invited to collaborate on the development of the sampling plan and to participate directly in the sampling campaign. While both Nations declined the invitation to participate, CNSC staff proceeded with the sampling activities and subsequently shared the results with the W8banaki.

In March 2024, CNSC staff attended an open house hosted by Canadian Nuclear Laboratories to bring awareness to the CNSC's roles and responsibilities, CNSC regulatory processes and share information about upcoming projects in the area.

### **3.1.2. Engagement with Indigenous Nations and Communities on the NPGS ROR**

In addition to the outreach and engagement sessions, CNSC staff ensure that all interested Indigenous Nations and communities are made aware of the opportunities to review the NPGS ROR, submit interventions to the Commission, intervene orally, as well as opportunities to receive funding through the CNSC's PFP to support their participation in the process.

In 2024, CNSC staff engaged with each Indigenous Nation and community who intervened with regards to the 2023 NPGS ROR and continued to work on addressing their concerns, comments and recommendations. ROR-specific issues and concerns and addressed further in Appendix D.

### 3.1.3 Issues and Concerns Tracking

In direct response to the Commission's action (RIB 26782) following the presentation of the 2021 RORs, CNSC staff have established issues and concerns tracking tables for each Indigenous Nation or community who intervenes in CNSC regulatory processes, including RORs.

These tables capture the requests, concerns and comments included in the interventions in relation to each ROR, or other Commission proceedings as appropriate, from each Indigenous Nation and community. The tables also track CNSC staff's responses and proposed actions. The tracking tables are shared with each Indigenous Nation and community for validation and discussion in order to make progress on addressing their requests and concerns collaboratively.

CNSC staff have included Appendix D which provides a summary of issues and concerns raised in interventions submitted by Indigenous Nations and communities. The information presented in Appendix D is derived from interventions submitted specifically for the 2023 ROR and the conversations that carried forward into 2024.

For Indigenous Nations and communities who have a ToR for long-term engagement with the CNSC, the concerns, comments and recommendations were further discussed in agreed-upon regular meetings and captured where appropriate in the engagement work plans with each Nation.

Overall, the issues and concerns were categorized into 9 different themes including CNSC consultation and engagement, environmental protection and monitoring, improvements to ROR process and content, and safety.

### 3.1.4 CNSC Terms of Reference for Long-Term Engagement with Indigenous Nations and communities

CNSC staff have signed 11 ToRs for long-term engagement with interested Indigenous Nations and communities. The agreements are collaboratively developed with each interested Indigenous Nation or community. Existing ToRs with Indigenous Nations and communities with an interest in NPGS and activities include: CLFN, HFN, MSIFN, SON, MNO and HSM.

A summary of the engagement activities that occurred in 2024 in relation to each of the existing ToRs for long-term engagement is included in Appendix E. These summaries were collaboratively drafted between CNSC staff and each respective Indigenous Nation or community.

CNSC staff are actively developing and finalizing a number of additional ToRs in collaboration with interested Indigenous Nations and communities. CNSC staff remain open to developing ToRs for long-term engagement with other Indigenous Nations and communities interested in NPGS as appropriate.

### **3.1.5 Licensee Indigenous Engagement Activities**

In 2024, CNSC staff monitored engagement conducted by the NPGS licensees to ensure that there was active communication with and involvement of Indigenous Nations and communities interested in their facilities and relevant licensing and Commission hearing processes.

CNSC staff confirmed that the licensees have established and ongoing Indigenous engagement, communications and outreach programs. The CNSC encourages licensees to continue to develop relationships and engage with Indigenous Nations and communities who have expressed an interest in their activities and sites.

CNSC staff are satisfied with the level and quality of Indigenous engagement conducted by NPGS licensees with regards to their operations and proposed projects at its the different NPGS in 2024. CNSC staff encourage the licensees to continue to remain flexible and responsive to the requests and needs of the Indigenous Nations and communities that have an interest in its sites, facilities, and proposed projects.

In previous ROR interventions, Indigenous Nations and communities raised concerns that their views on licensees' engagement were not reflected in the RORs. In response to this concern, CNSC staff have sought feedback from interested Indigenous Nations and communities with regards to their perspectives on the licensees' engagement with them in 2024. Feedback received from Indigenous Nations and communities on licensee's engagement efforts has been included below.

#### **3.1.5.1 Ontario Power Generation**

Throughout 2024, OPG met and shared information with Indigenous Nations and communities on whose treaty or traditional territory OPG operates, as well as interested Indigenous Nations, communities and organizations. Information and discussion topics included OPG's applications for proposed projects at the Darlington and Pickering sites (see Section 3.1.1.1 for a list of these

applications), ongoing operations at the Pickering and Darlington sites, the Darlington *Fisheries Act* authorization, waste management and SMRs.

CNSC staff remain satisfied with OPG's engagement efforts and activities in 2024. Staff encourage OPG to involve Indigenous Nations and communities at the earliest stages of decision-making and planning for the sites. Additionally, OPG should continue to provide opportunities for engagement in relation to ongoing operations of the Darlington and Pickering sites.

**The following feedback was provided by MNO regarding their experience working and engaging with OPG in 2024:**

OPG maintains a good working relationship with the MNO. The following activities frame this relationship within Region 7 (WWMF) and Region 8 (Pickering/Darlington/DNNP):

- Available and open for engagement as needed.
- Offered consultation/engagement opportunities.
- Relationship in R8 transitioning to a focus on emergency preparedness.

**The following feedback was provided by HSM regarding their experience working and engaging with OPG in 2024:**

HSM and OPG continue to hold quarterly engagement meetings to discuss OPG activities and HSM interests, as related to the Western Waste Management Facility. HSM staff also participated in on-site field visits to share our expertise and interests related to native tree seed collection and preservation. Additional site visits and topics of interest will be expanded for the 2025 season.

**The following feedback was provided by CLFN regarding their experience working and engaging with OPG in 2024:**

CLFN has been in dialogue with OPG staff since 2020 and continued to do so in 2024. OPG has invited CLFN to discuss relevant areas of interest several times and we value the face-to-face interactions along with our regular monthly meetings with OPG at various tables. Due to the volume of projects and topics, CLFN meets with OPG at least 6 times a month on consultation and engagement items. These interactions are positive relationship building strides and we look forward to our evolving relationship.

Timing and capacity are the initial barriers to meaningful consultation and CLFN is working with OPG in addressing these initial barriers and in their commitment and effort to work together to significantly improve programs, processes, approaches, and guidance in order to meaningfully progress relationships, consultations, and reconciliation.

### 3.1.5.2 Bruce Power

Throughout 2024, Bruce Power met and shared information with interested Indigenous communities and organizations, including the SON, MNO, HSM and CKSPFN.

Information and discussion topics included their normal operations at the Bruce site, the progress of their Major Component Replacement initiative, environmental mitigation and remediation measures and studies, and potential new assessments or projects on-site. Bruce Power also provided funding to support the SON's Coastal Waters Monitoring Program, the results of which are shared with Bruce Power by the SON.

CNSC staff continue to be satisfied with Bruce Power's engagement efforts and activities in 2024 and encourage Bruce Power to involve Indigenous Nations and communities in the earliest stages possible when making decisions and plans about the site.

**The following feedback was provided by MNO regarding working and engaging with Bruce Power in 2024:**

Bruce Power is exemplary in their engagement with MNO. The following activities are the foundation of our positive relationship:

- Provides capacity funding to support consultation and engagement.
- LRC staff have routine bi-weekly meetings with Bruce Power staff.
- Provides timely and transparent updates to leadership/staff on current operations and developments/next steps in the ongoing Impact Assessment.
- Attends quarterly meetings with MNO leadership.
- Encourages MNO participation in projects, including providing capacity to support MNO-led studies.
- Actively engages directly with the community, including attending (and supporting) community events, offering to host tours, etc.

**The following feedback was provided by HSM regarding their experience working and engaging with Bruce Power in 2024:**

Engagement with Bruce Power in 2024 was very extensive and was broken-down into 2 subject areas: BNGS A and B operations and the proposed Bruce C Project.

HSM and Bruce Power staff continued to hold quarterly, and technical meetings related to BNGS A and B operations. HSM staff also *assisted in field site visits related to native tree seed collection and participated in site tours of the nuclear facility.*

Engagement for the proposed Bruce C project can be summarized by regular bi-weekly meetings and scheduled technical meetings to discuss topics of interest related to the Impact Assessment Pre-planning and Planning Phases. HSM Council and staff participated in all engagement sessions and areas of interest were expanded throughout the process. HSM also held 2 Community Engagement Circles in 2024, in an effort to better understand the interests, issues and concerns of the HSM Community as related to the proposed project.

### 3.1.5.3 NB Power

In 2024, NB Power worked with several First Nation communities and organizations, including the WNNB, MTI, PRGI, Kopit Lodge, Sipekne'katik First Nation, the Union of New Brunswick Indian and Mawiw Council. NB Power maintains on-going dialogue with First Nations consultative bodies and representatives through scheduled monthly meetings and technical workshops.

Information and discussion topics included NB Power's operations at Point Lepreau, its application for a *Fisheries Act* authorization, waste management, potential new nuclear projects, SMRs, environmental monitoring, environmental and regulatory approval processes, education, cultural awareness and sensitivity.

First Nations field monitors from MTI, WNNB and PRGI take part in field activities related to the radiological and conventional monitoring of the PLNGS site. Their role includes supporting the gathering and sharing of Indigenous Knowledge as well as establishing increased awareness and sensitivity among its workers and local communities. Members of New Brunswick First Nations communities are invited to lead medicine walks, participate in regular activities at the site including collaborative environmental and safety monitoring and deliver presentations to NB Power leadership. NB Power works with Indigenous Nations and communities and members of the public in their host community, through regular community liaison committee meetings, open houses, regular newsletters, website updates and regular engagement activities with local fishing communities. NB Power's regular engagement activities are an effort to build capacity within their communities to better understand nuclear technology and its use in New ck, waste management principles and procedures, new opportunities in nuclear development, and its role in New Brunswick's electricity mix.

CNSC staff remain satisfied with NB Power's engagement efforts and activities in 2024. Staff encourage NB Power to continue involving Indigenous Nations and communities at the earliest stages of decision-making and planning for the site and providing opportunities for engagement in ongoing operations.



The CNSC does not currently have signed ToRs with any Indigenous Nations or communities in New Brunswick; no formal feedback was gathered regarding their experience working and engaging with NB Power in 2024.

#### 3.1.5.4 Hydro-Québec

In 2024, Hydro-Québec continued its commitment to engage with Indigenous Nations and communities near the Gentilly-2 site or with an interest in its operations and met and shared information with interested First Nations communities and organizations, particularly the W8banaki Nation.

CNSC continues to be satisfied with Hydro-Québec's efforts and engagement activities in 2024. Staff encourage Hydro-Québec to continue involving Indigenous Nations and communities in decision-making and planning for the site and providing opportunities for involvement in ongoing operations at the Gentilly-2 site.

The CNSC does not currently have signed ToRs with any Indigenous Nations or communities in Quebec; no formal feedback was gathered regarding their experience working and engaging with Hydro-Québec in 2024.

### 3.1.6 Licensee Disclosure of Reportable events to Indigenous Nations and Communities

Reportable events are communicated to Indigenous Nations and communities as well as the general public by licensees through a public information program. As per CNSC REGDOC-3.2.1, *Public Information and Disclosure*, licensees and licence applicants are required to develop and implement a Public Information Program that includes a disclosure protocol. Through these programs licensees and licence applicants should seek to gain an understanding of what information and reportable events Indigenous Nations and communities as well as the public wish to be informed of.

Licensees and licence applicants are required to have an established public disclosure protocol to address their target audiences' information interests in relation to the licensed activities. Licensees and licence applicants are required to consult with interested groups with a primary focus on the local community to determine what types of information would be of public interest. Each licensee or applicant makes their specific protocol available to the public and, where practicable, posts it on the licensee's and licence applicant's Web site. CNSC encourages licensees and licence applicants to discuss reportable events with Indigenous Nations and

communities that have an interest in their NPGS and ensure that the information being disclosed is relevant to the specific areas of interest the Indigenous Nations and communities have expressed.

## 3.2 Public Consultation and Engagement

The NSCA mandates the CNSC to disseminate objective scientific, technical and regulatory information to the public concerning its activities and the activities it regulates. CNSC staff fulfill this mandate in a variety of ways, including hosting in-person and virtual information sessions and through annual regulatory reports.

In 2024, CNSC staff in the Directorate of Power Reactor Regulation (DPRR) engaged extensively in outreach efforts, participating in more than 68 activities aimed at fostering communication and understanding across diverse communities. A total of 10 activities were dedicated to regular meetings and workshops with Indigenous Nations and communities aimed at enhancing understanding of CNSC operations.

### **CNSC-Canadian Association of Nuclear Host Communities (CANHC) Relationship**

CANHC is a non-profit organization representing nuclear host communities and prospective nuclear host communities in Canada. CANHC includes prospective host communities and facilitates the exchange of knowledge and insights from established host communities to those considering welcoming future projects. To support its members, CANHC has conducted fact-finding studies on host community agreements both within Canada and internationally, laying the groundwork for the development of a global best practices guide for host community agreements. They support local governments by acting as a resource for current, future, and interested.

In October 2022, Adrian Foster, Mayor of Clarington (representing CANHC) attended the first International Atomic Energy Agency (IAEA) Technical Meeting focused on engagement of Nuclear Host Communities, an opportunity to meet similar National Nuclear Host Community organizations and their mayors representing Europe, Great Britain and the United States.

Following the meeting, CNSC coordinated meetings with CANHC and other international organizations, leading to the creation of “The Global Partnership of Municipalities with Nuclear Facilities”. The Global Partnership was formerly created and recognized by the IAEA, with CANHC’s Chair named the Secretary-Treasurer of the newly formed group. In October 2023, CANHC and the CNSC signed a long-term relationship arrangement designed to promote engagement and collaboration. The arrangement provides funding to CANHC under the

Indigenous and Stakeholder Capacity Fund (ISCF) to build its capacity, promote research, and carry out engagement activities to bolster the 's relationship with host communities.

CNSC's funding helped support a CANHC survey of Mayors, councillors, and key community staff on their understanding of issues and concerns and science on nuclear, their understanding of the role of the CNSC and past engagement, and on host community agreements. This year, CNSC staff have also met individually with municipal representatives and the broader CANHC membership to discuss items of interest, including emergency preparedness arrangements. Moving forward, CANHC and the CNSC plan on continuing to engage and build relationships between the regulator and host communities. This will include further enhancing CANHC internal capacity, attending meetings, developing a strategic communications plan, and supporting CANHC participation in CNSC regulatory processes.

### 3.3 Participant Funding Program

The Canadian Nuclear Safety Commission (CNSC) established the Participant Funding Program (PFP) in 2011 to:

- enhance individual, not-for-profit organization and Indigenous Nations and Communities participation in the CNSC's environmental assessment (EA) and licensing processes for major nuclear facilities (e.g., uranium mines, nuclear power plants, nuclear substance processing, or nuclear waste facilities)
- assist individuals, not-for-profit organizations and Indigenous Nations and Communities to bring value-added information to the Commission through informed and topic-specific interventions related to EAs and licensing (i.e., new, distinctive and relevant information that contributes to a better understanding of the anticipated effects of a project).

The CNSC also offered participant funding to review the 2024 NPGS ROR (this report). The details of this offering can be found online [here](#). Once the funding decision has been made by the CNSC, this online announcement will be updated with the list of funding recipients.

### 3.4 Licensee Public Information and Disclosure

- The CNSC requires licensees to maintain and implement Public Information and Disclosure Programs (PIDP), in accordance with CNSC's REGDOC-3.2.1, *Public Information and Disclosure*.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- These programs are supported by disclosure protocols that outline the type of information to be shared with the public as well as details on how that information is to be disseminated by the licensee.
- This ensures that timely information about the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities, is effectively communicated to the public in a meaningful, transparent, effective, and appropriate way.
- In 2024, following an assessment of each licensee's annual PIDP summary which included online, print, media, social media and public communications tactics and practices, CNSC staff determined that overall, the PIDPs for the Nuclear Power Plants (NPP) and Waste Management Facilities (WMF) complied with REGDOC-3.2.1.
  - All NPP and WMF operators delivered PIDPs which engaged and informed their stakeholders about activities at their nuclear facilities. Many programs continue to be available both in-person and virtually, while continuing to respect post-pandemic health and safety guidelines.
  - Licensees complied with section 2.3.1 of REGDOC-3.2.1. They sent revisions of their public disclosure protocols to the CNSC, indicating the changes and the reasons for them. This practice ensures that the programs remain relevant to target audiences and reflect the current communications environment.

## 4 Other matters of regulatory interest

### 4.1 Financial Guarantees

- CNSC staff reviewed the annual reports for licensees' financial guarantees (FGs).
  - CNSC staff were able to confirm that the FG cost estimates were valid and that the licensees had sufficient funds to meet decommissioning liabilities in 2024.
  - Note: The Bruce Power FG is covered under OPG's FG.
- In February 2025, OPG submitted the 2024 Annual Report update for its Consolidated Financial Guarantee (2023-2027). CNSC staff confirmed that the FG is valid and that OPG had sufficient funds to meet decommissioning liabilities in 2024. The next OPG Annual Report is expected in February 2026.
- OPG's next submission of the consolidated FG is expected in 2027.
- In 2024, Hydro-Québec submitted its FG. These documents are currently under review by CNSC staff.
- The next Hydro-Québec Annual Report of the FG is expected in 2025.

CNSC staff have reviewed all 3 updated funding agreements and found that they were acceptable. CNSC staff informed the Commission ([CMD 24-M27](#)) that NB Power had completed its corrective action plan to verify the financial instruments which form the Financial Guarantee Funds, following administrative amendments that were made to the financial instruments after the May 2022 Point Lepreau NGS licence renewal hearing.

### 4.2 Independent Environmental Monitoring Program

CNSC staff continued to carry out its Independent Environmental Monitoring Program (IEMP) at planned sites in 2024. Each of the following sites have their own dedicated IEMP results page linked below:

- [Darlington Nuclear Generating Site](#)
- [Pickering Nuclear Generating Site](#)
- [Bruce Nuclear Generating Station A and B](#)
- [Point Lepreau Nuclear Generating Site](#)

- [Gentilly-2 Nuclear Facilities](#)

[Learn more about the IEMP](#)

## 4.3 Forum between the CNSC and Canadian Environmental Non-Governmental Organizations

Collaboratively drafted by CNSC staff and ENGO representatives

The CNSC and members of Environmental Non-Governmental Organizations (ENGOS) have an established forum to exchange information and ideas and consider substantive and procedural concerns relating to Canadian nuclear regulation – especially those of a more structural rather than project-specific nature. The Forum promotes constructive dialogue, discussion, and debate in a respectful, open, and transparent setting, and is separate from formal regulatory proceedings and comment periods. It does not constitute ENGO endorsement of the CNSC or its processes.

The CNSC provides funding to support ENGO participation in the Forum through the CNSC's Indigenous and Stakeholder Capacity Fund. The Forum meets quarterly and is co-chaired by the CNSC's Regulatory Affairs Branch Vice-President and Chief Communications Officer, and a representative nominated by the ENGO members.

In 2024, the CNSC-ENGO Forum welcomed a new organization as part of its membership: the Inter-Church Uranium Committee Educational Co-operative (ICUCEC). ICUCEC, based in Saskatchewan, increases representation at the Forum for a region of Canada which is seeking to develop several new nuclear projects.

The Forum now includes 6 member organizations:

- Canadian Environmental Law Association.
- Northwatch.
- Nuclear Transparency Project.
- Ottawa Riverkeeper.
- Saskatchewan Environmental Society.
- Inter-Church Uranium Committee Educational Co-Operative.

The Forum provides an opportunity for CNSC staff to engage and collaborate with ENGOS to work together to improve transparency and address challenges that ENGOS and members of the public may encounter when participating in CNSC's regulatory processes. It also helps ENGOS to

better understand the CNSC's regulatory role and approaches, and ongoing Commission modernization activities.

In 2024, Forum discussions focused on many procedural themes highlighted as priorities in the 2023 ROR including: CNSC-led Environmental Reviews, projects under the Canadian Environmental Assessment Act 2012 (CEAA 2012), and CNSC Website Migration. [ENGO Forum meeting agendas](#) are available on the CNSC website. Notable discussions in 2024 were on the following substantive topics:

- March 26, 2024 – Questions for Registry; Update on CNSC-led environmental reviews; Financial guarantees for decommissioning and CNSC staff's assessment.
- September 25, 2024 – Formal introduction of Pierre Tremblay, President and Chief Executive Officer of the CNSC; Overview of information sharing protocols with Commission and CNSC approach to confidentiality; Modernizing the CNSC website.
- December 11, 2024 – CNSC work in Saskatchewan: environmental assessments, impact assessments and licensing; Federal and provincial cooperation on environmental assessments.

Identified and agreed-upon commitments and issues are recorded and tracked to monitor whether, or to what extent, they are addressed over time. Long-standing thematic areas of concern raised by ENGO members include:

- Proactive disclosure and availability of data and resources.
- Transparency and traceability of the Commission's decision-making process and tracking of progress on points of intervention.
- Opportunities for public participation including enhanced funding support, time for oral interventions and more time to complete document reviews and prepare written interventions.

ENGO members noted that while CNSC staff generally provide timely responses to specific requests for reports or information, progress on procedural or structural issues raised since 2020 remains slow. They emphasize that the Forum will only reach its full potential when more progress is made on these outstanding items. CNSC staff acknowledge ENGO members' concern on the rate of progress on procedural issues raised.

The ENGO Forum conducted a survey of its members at the end of the 2024 calendar year to identify topics of interest and priorities for improvement. Priorities for the 2025 ENGO Forum meetings include decommissioning and release from institutional control of former nuclear facility sites, CNSC's delegations to forums and international conferences and authoring and

availability of document such as the National Report under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and regulations for the transportation of nuclear materials.

CNSC staff's intent is to continue to gain important insight and various perspectives from ENGOs and Civil Society Organizations on regulatory processes, practices, and policies as the nuclear industry evolves. CNSC staff and ENGO forum members hope that their discussions can increase mutual understanding and the development of measures to address issues of shared importance.



## 5 Conclusions

- In 2024, CNSC staff continued to conduct regulatory oversight of NPPs and WMFs.
- CNSC staff concluded that the NPPs and associated WMFs on their respective sites operated safely and complied with the applicable requirements for all safety and control areas in 2024.
- This conclusion was based on detailed CNSC staff assessments of findings from compliance verification activities for each facility in the context of the 14 CNSC safety and control areas and supported by reported safety performance indicators and other observations.
- Important observations include the following:
  - NPP and WMF licensees took appropriate corrective actions for all events reported to the CNSC.
  - NPPs and WMFs operated within the bounds of their operating policies and principles.
  - There were no serious process failures at the NPPs. The number of unplanned transients and trips in the reactors was low and acceptable to CNSC staff. All unplanned transients in the reactors were properly controlled and adequately managed.
  - Radiation doses to the public and the workers were below the regulatory limits.
  - Releases to the environment were at levels protective of health and the environment.
  - The frequency and severity of non-radiological injuries to workers were low.
  - Licensees met the applicable requirements related to Canada's international obligations.

## 6 Glossary

For definitions of terms used in this document, see [REGDOC-3.6, Glossary of CNSC Terminology](#), which includes terms and definitions used in the [Nuclear Safety and Control Act](#) and the [Regulations](#) made under it, and in [CNSC regulatory documents](#) and other publications.

## Appendix A: List of Inspections Reports at each NPP and WMF in 2024

The table below lists the inspection reports containing the findings included in this ROR, along with the corresponding inspection types. Descriptions of each inspection type are provided in section 1.7.2. "DTI" refers to Desktop Inspections, while findings from Field Inspections are reported in the Quarterly Inspection Reports. Field inspections where stand alone reports were issued are listed in the table below.

### A1 Darlington NGS

SCA	Report Number	Type of Inspection	Report Issue Date
<b>Management Systems</b>	DRPD-2024-21460 - Verification of the Completion Assurance Process for DNRU1 RHP2	Type II	November 12, 2024
	DRPD-2024-FIR-20108 Management Systems Reactive Field Inspection- Molybdenum-99 Target Delivery System	Field	July 11, 2024
<b>Human Performance Management</b>	DRPD-2024-20605/PRPD-2024-20606- Implementation of REGDOC-2.2.4 Fitness for Duty - Drugs and Alcohol	Type I	August 9, 2024
	DRPD-2024-20649/PRPD-2024-20695 - Hours of Work and Minimum Shift Complement Reactive Inspection at Darlington and Pickering NGS	Type II	August 14, 2024
	DRPD-2024-21279- Conduct of Simulator-based Initial Certification Examination	Type II	January 28, 2025
<b>Operating Performance</b>	DRPD-2024-18915/PRPD2024-18703 - Report - Safe Operating Envelope	DTI	March 26, 2024
	DRPD-2023-18801 - Quarterly Inspection Report Q3 FY 23/24	Type II	April 10, 2024
	DRPD-2024-T2-19580 - Quarterly Inspection Report Q4 FY 23/24	Type II	August 7, 2024

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	DRPD-2024-19446- D2421 Planned Outage Inspection	Type II	August 27, 2024
	DRPD-2024-20678 - Quarterly Inspection Report Q1 FY 24/25	Type II	October 7, 2024
	DRPD-2024-T2-21612 - Quarterly Inspection Report Q2 FY 24/25	Type II	January 17, 2025
<b>Physical Design</b>	DRPD-2024-20970 - Commissioning of SSCs DNRU1 RHP2	Type II	November 4, 2024
<b>Fitness for Service</b>	DRPD-2024-18247 Service Water System Inspection	Type II	May 28, 2024
	DRPD-2024-T2-21483 - Reliability Program	Type II	October 29, 2024
	DRPD-2024-18689 - Periodic Inspection Program	DTI	January 17, 2025
<b>Radiation Protection</b>	DRPD-2024-20673 - Radiation Protection During Dismantlement of the Core - Unit 4	Type II	August 28, 2024
<b>Security</b>	DRPD-2024-18997/PRPD-2024-19084 Reactive Type I Compliance Inspection on Physical Nuclear Security Program	Type I	June 7, 2024
	DRPD-2023-17230/PRPD-2023-17556 Security Stand Alone Field Inspection Report Search and Screening and NRF Special Equipment	Type II	February 16, 2024

## A2 Darlington WMF

SCA	Report Number	Type of inspection	Report Issue Date
<b>Security</b>	OPG-DWMF-2023-04 - Security Compliance Inspection	Type II	February 22, 2024
<b>Radiation Protection</b>	DRPD-2024-FIR-21255 – Reactive Inspection for Neutron Dose Event	Field	June 17, 2024

## A3 Pickering NGS

SCA	Report Number	Type of inspection	Report Issue Date
<b>Management System</b>	PRPD-2023-17942 - Engineering Change Control	Type II	February 29, 2024
	PRPD-2024-18458- P2381 Planned Maintenance Outage	Type II	May 2, 2024
<b>Human Performance Management</b>	DRPD-2024-20605/PRPD-2024-20606 - Implementation of REGDOC-2.2.4 Fitness for Duty - Drugs and Alcohol	Type I	August 9, 2024
	DRPD-2024-20649/PRPD-2024-20695 - Hours of Work and Minimum Shift Complement Reactive Inspection at Darlington and Pickering NGS	Type II	August 9, 2024
<b>Operating Performance</b>	PRPD-2024-18703/DRPD-2024-18915 - Safe Operating Envelope	DTI	March 26, 2024
	PRPD-2024-18771 - Quarterly Field Inspection Report Q3 FY 23/34	Type II	April 25, 2024
	PRPD-2024-19436 - Quarterly Inspection Report Q4 FY 23/24	Type II	July 10, 2024
	PRPD-2024-19281 - Outage Inspection – Unit 7 (P2471)	Type II	September 4, 2024
	PRPD-2024-20694 - Quarterly Field Inspection Report Q1 FY 24/25	Type II	December 13, 2024
	PRPD-2024-21367 - Quarterly Field Inspection Report Q2 FY 24/25	Type II	January 20, 2025
<b>Physical Design</b>	PRPD-2024-18363 - Pressure Boundary - Reactive at Pickering NGS	DTI	April 3, 2024
<b>Fitness for Service</b>	PRPD-2023-19228 - System Inspection - Shutdown Systems at Pickering NGS	Type II	May 13, 2024
	PRPD-2024-17945- Periodic Inspection Program for Feeder Pipes	DTI	August 27, 2024
	PRPD-2024-21489 - SDS-1 System Inspection at Pickering NGS	Type II	December 17, 2024

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>Environmental Protection</b>	PRPD-2024-21264 - Environmental Monitoring at Pickering NGS	Type II	November 20, 2024
<b>Emergency Management &amp; Fire Protection</b>	PRPD-2024-21165 - Fire Protection at PNGS	Type II	November 19, 2024
<b>Security</b>	DRPD-2024-18997/PRPD-2024-19084 - Reactive Type I Compliance Inspection on Physical Nuclear Security Program	Type I	June 7, 2024
	PRPD-2024-21302 – Field Inspection, Site Security	Field	December 13, 2024

## A4 Pickering WMF

SCA	Report Number	Type of inspection	Report Issue Date
<b>Security</b>	OPG-PWMF-2023-03 – Security Compliance Inspection	Type II	February 22, 2025
<b>Fitness for Service</b>	OPG-PWMF-2024-01 – Fitness for Service Focused Inspection	Type II	January 9, 2025

## A5 Bruce NGS

SCA	Report Number	Type of inspection	Report Issue Date
<b>Management System</b>	BRPD-MCR6-2024-20625 - Major Component Replacement Effectiveness Inspection	Type II	July 5, 2024
	BRPD-MCR3-2024-19384 - Major Component Replacement (MCR3) - Contractor Management	Type II	May 10, 2024
	BRPD-AB-2023-17457 - Management System Assessment	Type I	July 19, 2024
<b>Human Performance Management</b>	BRPD-MCR3-2024-20624- Evaluation of Licensee's Training Changes Due to Major Component Replacement	Type II	July 19, 2024

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	BRPD-AB-2024-19658 - Health Physicist, Authorized Health Physicist Training Program	DTI	August 28, 2024
	BRPD-A-2024-22262 - Design, Development and Grading of Simulator Examinations and Requalification Tests	DTI	January 29, 2025
	BRPD-AB-2024-21634 - Personnel Training - Control Maintenance	Type II	October 29, 2024
<b>Operating Performance</b>	BRPD-AB-2023-18783 Quarterly Field Inspection Summary Report Q3 FY 23/24	Type II	April 3, 2024
	BRPD-AB-2024-19543 Quarterly Field Inspection Summary Report Q4 FY 23/24	Type II	August 6, 2024
	BRPD-B-2023-18572 - B2381 Planned Outage (Bruce B Unit 8)	Type II	June 14, 2024
	BRPD-AB-2024-20956 - Quarterly Field Inspection Summary Report for Q1 FY 24/25	Type II	October 22, 2024
	BRPD-A-2024-19653 - Unit 1 (A2411) Planned Maintenance Outage	Type II	June 26, 2024
	BRPD-AB-2024-21464 Quarterly Field Inspection Summary Report Q2 FY 24/25	Type II	January 29, 2025
	BRPD-B-2024-20666 Unit 7 (B2471) and Vacuum Building Outage (B2401) Planned Maintenance Outage	Type II	January 29, 2025
<b>Fitness for Service</b>	BRPD-A-2024-19634 - Bruce A Maintenance Cooling System Inspection	Type II	September 10, 2024
	BRPD-B-2024-19352 - System Inspection - Bruce B Maintenance Cooling System	Type II	January 22, 2025
	BRPD-MCR3-2024-21495 - Bruce A Unit 3 Major Component Replacement – Foreign Material Exclusion Inspection	Type II	November 28, 2024
	BRPD-A-2024-21584 - Electrical Power Systems	Type II	January 1, 2025
<b>Radiation Protection</b>	BRPD-MCR3-2024-19207 - Major Component Replacement (MCR3) -	Type II	April 3, 2024

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	Radiation Protection During Dismantlement of the Core (INS-07-04)		
	BRPD-BA-2024-21370 - Application of ALARA (RP)	Type II	January 17, 2025
<b>Environmental Protection</b>	BRPD-AB-2024-21912 - Effluent Control and Monitoring	Type II	December 23, 2024
<b>Emergency Management and Fire Protection</b>	BRPD-AB-2024-22047 Fire Protection Field Inspection Summary Report	Field	December 24, 2024
<b>Security</b>	BRPD-AB-2024-19598 Nuclear Security	Type II	January 31, 2025

## A6 WWMF & RWOS-1

SCA	Report Number	Type of inspection	Report Issue Date
<b>Security</b>	OPG-WWMF-2023-07 – Security Compliance Inspection	Type II	February 22, 2024
<b>Management System</b>	OPG-WWMF-2024-01 – Management System focused Inspection at Western Waste Management Facility	Type II	June 6, 2024
<b>Environmental Protection</b>	OPG-WWMF-2024-02 – Environmental Protection Focused Inspection	Type II	July 29, 2024
<b>Radiation Protection</b>	OPG-WWMF-2024-03 – Reactive Radiation Protection Inspection at the Western Waste Management Facility	Type II	November 13, 2024
<b>General</b>	OPG-WWMF-2024-04 - General Inspection at Western Waste Management Facility	Type II	February 3, 2025
<b>Waste Management</b>	OPG-WWMF-2024-05 – Waste Management Focused Inspection	Type II	February 3, 2025
<b>General</b>	OPG-RWOS1-2024-01 – Compliance Inspection Radioactive Waste Operations Site-1	Type II	January 29, 2025



## A7 Point Lepreau NGS

SCA	Report Number	Type of inspection	Report Issue Date
<b>Management Systems</b>	PLRPD-2024-19559 - Quarterly Field Inspection Report - Q4 FY 23/24	Type II	June 21, 2024
	PLRPD-2024-21656 - Quarterly Field Inspection Report - Q2 FY 24/25	Type II	December 20, 2024
	PLRPD-2024-21546 - Reliability	Type II	December 20, 2024
<b>Human Performance Management</b>	PLRPD-2024-19354 - Supply Management	Type II	May 14, 2024
	PLRPD-2024-19577 - Implementation of REGDOC 2.2.4-Managing Alcohol and Drug Use	Type I	May 24, 2024
	PLRPD-2024-20756 - Conduct of Simulator-based initial Certification Examination	Type II	December 2, 2024
<b>Operating Performance</b>	PLRPD-2024-18804 - Quarterly Field Inspection Report Q3 FY 23/25	Type II	March 22, 2024
	PLRPD-2024-20993 - Quarterly Field Inspection Report - Q1 FY 24/25	Type II	October 11, 2024
	PLRPD-2024-22275 - Quarterly Field Inspection Report - Q3 - FY24/25	Type II	March 14, 2025
	PLRPD-2024-20591 - Planned Outage	Type II	February 27, 2025
<b>Fitness for Service</b>	PLRPD-2024-19178 - System Inspection - Shutdown Cooling	Type II	April 17, 2024
	PLRPD-2024-20735 - Pressure Boundary	DTI	September 25, 2024
	PLRPD-2024-20712 - Use of Tape for Leak Mitigation	Field	May 8, 2024
<b>Conventional Health and Safety</b>	PLRPD-2024-20423 - Fire Resistant Fluid (FRF) Dry Air Purges	Field	March 21, 2024

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>Emergency Management &amp; Fire Protection</b>	PLRPD-2024-21768 - Emergency Exercise – Synergy Challenge 2024	Type II	January 13, 2025
<b>Security</b>	PLRPD-2024 -21023 Security (Vital Areas)	Field	July 8, 2024

## A8 Gentilly-2 Facilities

SCA	Report Number	Type of inspection	Report Issue Date
<b>General</b>	HQ-G2-2024-01 – Inspection de conformité générale des installations nucléaires de Gentilly-2	Type II	August 27, 2024

## Appendix B: Significant changes to the Licence Condition(s)

The following table lists the licence conditions handbook (LCH) for facilities covered by the regulatory oversight report and updated in 2024.

Table 25: Details of LCHs that were revised in 2024.

Facility	LCH #	Revision # as of December 31, 2024	Revision date
PWMF	LCH-W4-350.00/2028	R002	August 13, 2024
PNGS	LCH-PR-48.00/2028	R006	March 26, 2024
PNGS	LCH-PR-48.00/2028	R007	November 27, 2024
PLNGS	LCH-PR-17.00/2032	R001	February 13, 2024

### B1: Pickering Waste Management Facility LCH R002

Table 26: Summary of changes made during revision 002.

Condition	Description of change
3.2	Added reporting requirements for OPG to proceed past commissioning of processing DSCs loaded with less than 10-year cooled fuel.

### B2: Pickering NGS LCH R006

On March 26, 2024, CNSC staff made a number of clarification changes in various sections, and updated referenced CNSC regulatory documents, CSA Group standards, and licensee documents. The table below summarizes the changes made in revision R006:

Table 27: The table below summarizes the changes made in revision R006.

Condition	Description of change
1.1	Updated L.C. 1.1 Licensing Basis Publications effective date to reflect OPG's full implementation of REGDOC-2.1.2 (Safety Culture), including the evaluation of security culture within associated nuclear safety culture governance.
2.1	Updated Section 2.1 text regarding CNSC staff communicative actions with OPG in regard to their implementation of REGDOC-2.2.4 (Fitness for Duty:

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	Managing Alcohol and Drug Use) Vol II, version 3 requirements, with the exception of section 5.1 (pre-placement testing) and section 5.5 (random testing).
2.4	Updated L.C. 2.4 related text regarding an optional pilot program for the General Written Initial Certification Examination's use of a Multiple-Choice Question format in accordance with OPG's document N-INS-08920-10004 (Written and Oral Initial Certification Examinations for Shift Personnel)
3.1	Updated L.C. 3.1 Licensing Basis Publications effective date and text to reflect OPG implementation and integration of REGDOC-2.3.2 (Accident management) version 2 and removed REGDOC-2.3.2 version 2 as Guidance documents in Section 3.1 and Section 10.1.
4.1	Updated L.C. 4.1 related text regarding REGDOC-2.4.1 (Deterministic Safety Analysis) deterministic safety analysis implementation strategy for compliance with requirements that cannot be demonstrated by the existing design, such as Level 3 Defence in Depth (DiD) for DBAs, AOOs, and hazard Postulated Initiating Events (PIEs).
4.1	Updated Section 4.1 regarding completed PSA status for PNGS Unit 1-4 and Unit 5-8, and that PSA models shall be updated every 5 years.
5.3	Updated L.C. 5.3 Licensing Basis Publications CSA N290.13, <i>Environmental Qualification of Equipment for Nuclear Power Plants</i> to include the 2018 version and provide month of Update No.1 to 2005 version.
6.1	Updated L.C. 6.1 Compliance Verification Criteria (CVC) to reflect OPG's transition plan commitment for the identification of compliance date, plan description and key transition dates for the implementation of CSA N285.5, <i>Periodic Inspection of CANDU Nuclear Power Plant Containment Components</i> (2022 version) and added missing prefix of "No." when referring to CSA N285.5-08 (Update No.1).
6.1	Updated L.C. 6.1 CVC regarding acceptance criteria for Probabilistic Fracture Protection (PFP) assessments for pressure tubes done in accordance with CSA Standard N285.8 Clause 4.3.2.2.
7.1	Updated L.C. 7.1 CVC and Radiation Protection Action Levels table and text to reflect OPG documents N-REP-03420-10001 R003 superseded by N-STD-RA-

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	0044 R000 (Occupational Radiation Protection Action Levels for Power Reactor Operating Licences).
9.1	Updated L.C. 9.1 content and tables related to: CSA N288.8-17, <i>Establishing and Implementing Action Levels for Releases to the Environment from Nuclear Facilities</i> implementation and added CSA N288.8 2023 Update No.1, and removed CSA N288.8-17 as guidance document; revised Environmental Action Levels (ALs) for Airborne Releases and Waterborne Releases; added OPG document P-REP-03482-00007 to Prior Written Notification documents and provided updated text for AL clarifications.
9.1	Updated L.C. 9.1 Licensing Basis Publications for CSA N288.1, <i>Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities</i> (2020 version) and removed as guidance document.
9.1	Updated L.C. 9.1 Licensing Basis Publications REGDOC-2.9.1, <i>Environmental Protection: Environmental Principles, Assessments and Protection Measures</i> with Version 1.2 and removed as guidance document.
9.1	Updated L.C. 9.1 Licensing Basis Publications effective date and text with CSA N288.4, <i>Environmental Monitoring Programs at Nuclear Facilities and Uranium Mines and Mills</i> (2019 version) and removed as guidance document.
10.2	Updated L.C. 10.2 Licensing Basis Publications CSA N293-12, <i>Fire Protection for Nuclear Power Plants</i> and Update No.1 (Nov 2017) to reflect implementation, and removed related text no longer required.
11.1	Updated L.C. 11.1 Licensing Basis Publications REGDOC-2.11.1 (Waste Management, Volume I: Management of Radioactive Waste) to reflect implementation following OPG gap analysis for PNGS against REGDOC-2.11.1 requirements where no gaps were found. Removed REGDOC-2.11.1 as guidance document.
11.1	Updated L.C. 11.1 Licensing Basis Publications CSA N292.0-19, <i>General Principles for the Management of Radioactive Waste and Irradiated Fuel</i> to reflect implementation following OPG gap analysis for PNGS against CSA N292.0-19 requirements where no gaps were found. Removed CSA N292.0-14 as guidance document.
11.1	Updated L.C. 11.1 Licensing Basis Publications CSA N292.2, <i>Interim Dry Storage of Irradiated Fuel</i> (2013 version) and Update 1 (January 2015) to

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

	reflect implementation and effective date following OPG gap analysis for PNGS against CSA N292.2-13 requirements where no gaps were found.
11.1	Updated L.C. 11.1 Licensing Basis Publications CSA N292.3, <i>Management of Low and Intermediate-Level Radioactive Waste</i> (2014 version), to reflect implementation and effective date following OPG gap analysis for PNGS against CSA N292.3-14 requirements where no gaps were found. CSA N292.3-14 was removed from guidance, as well as removal of CSA N292.3-08 from CVC.
11.1	Updated Section 11.1 to include CSA N292.4, <i>Storage of Radioactive Waste and Irradiated Fuel</i> (2023 version) as Guidance document.
11.1,	Updated Section 11.1 to add CSA N292.8-21, <i>Characterization of Radioactive Waste and Irradiated Fuel</i> , as a guidance document following OPG gap analysis for PNGS against CSA N292.8-21 requirements where an implementation plan was committed to be provided to the CNSC by May 31, 2024, to address the found gaps.
11.2	Updated Section 11.2 to reflect latest revision of OPG's P-PLAN-00960-00001, and OPG commitment to provide the CNSC with a Detailed Decommissioning Plan (DDP) for Pickering NGS Units 1-4, including Storage with Surveillance Stage (SWS).
12.1	Updated L.C. 12.1 Licensing Basis Publications REGDOC-2.12.1, <i>High Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices</i> , to reflect implementation and removed as guidance document. Corrected title for Volume I of REGDOC-2.12.1 to be "High-Security Facilities, Volume I: Nuclear Response Force, Version 2".
12.1	Updated L.C. 12.1 Licensing Basis Publications to remove RD-321 and RD-361, both superseded by REGDOC-2.12.1, <i>High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices</i> , and update text to reflect the document change.
12.1	Updated L.C. 12.1 Licensing Basis Publication REGDOC-2.12.3, <i>Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material</i> , Version 2.1 to reflect implementation following a successful OPG compliance review against the requirements of REGDOC-2.12.3, Version 2.1. Removed the 2013 version of REGDOC-2.12.3 from CVC. Removed REGDOC-2.12.3, Version 2.1 from guidance documents.
12.1	Updated L.C. 12.1 Licensing Basis Publication CSA N290.7, <i>Cyber Security for Nuclear Facilities</i> (2021 version) and effective implementation date.

12.1	Removed L.C. 12.1 OPG's Written Notification document TRAN-PLAN-03450-10000 Transport Security Plan following OPG declaring the document obsolete due to them no longer conducting the licensed activity.
------	---

## B3: Pickering NGS LCH R007

On November 27, 2024, CNSC staff made a number of clarification changes in various sections, and updated referenced CNSC regulatory documents, CSA Group standards, and licensee documents. The table below summarizes the changes made in revision R007:

Table 27: The table below summarizes the changes made in revision R007.

Condition	Description of change
G.1	Updated Section G.1 to reflect removal of licence condition 15.3, Pressure Tube Assessment for Safe Operation (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
G.1	Updated Section G.1 to reflect letters pertaining to Pickering Nuclear Generating Station – Power Reactor Operating Licence Amendment Application.
6.1	Updated Section 6.1 to reflect operating limit for Pickering NGS-B Units 5 to 8 (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
6.1	Updated Section 6.1 to reflect removal of licence condition 15.3, Pressure Tube Assessment for Safe Operation (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
6.1	Updated Section 6.1 to reflect CSA N285.5 transition plan
6.2	Added Section 6.2 to reflect new licence condition 6.2, Fitness for Service Program for Fuel Channels in Extended Operation (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
15.1	Updated Section 15.1 Periodic Safety Review Integrated Implementation.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

15.3	Removed Section 15.3 (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
15.4	Updated Section 15.4 to reflect updated end of commercial operation (as per Summary Record of Decision in the matter of Ontario Power Generation Inc., Application to extend the operation of the Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, e-Doc 7370531).
Appendix C	Updated Appendix C - List of Licensee Documents that Require Notification of Change to add OPG document Prior Written Notification: P-REP-03680-00052 Pickering NGS Periodic Safety Review 2-B (PSR2-B) Integrated Implementation Plan.
Appendix E	Updated Appendix E – List of Guidance Publications to remove COG JP-4491-V197 <i>Fuel Channel Life Management</i> ; and <i>Third-Party Review of Probabilistic Fracture Protection Evaluation Methodology Acceptance Criteria 2017</i> ; and COG JP-4452-V119 <i>Theory Manual for the Evaluation Module of Probabilistic Core Assessment Computer Code SCEPTR V1.2e 2015</i>

## B4: Point Lepreau NGS LCH

Condition	Description of change
General	On February 13, 2024, CNSC staff updated references and timelines of Licensing Basis Publications and Licensing Basis Documents. Updated references to licensee documents and removed obsolete documents. Removed redundancy in text, and ensured consistency in naming convention, document titles, document numbers, tables formats, and section titles and text



## Appendix C: Indigenous Nations, Communities and organizations that have traditional and/or Treaty Territories and/or interests within proximity to the licensed facilities

Facility	Indigenous Nations, Communities and/or Organizations
<b>Darlington/Pickering</b>	<ul style="list-style-type: none"> <li>• Williams Treaties First Nations, which include: <ul style="list-style-type: none"> <li>○ Alderville First Nation</li> <li>○ Curve Lake First Nation</li> <li>○ Hiawatha First Nation</li> <li>○ the Mississaugas of Scugog Island First Nation</li> <li>○ the Chippewas of Beausoleil First Nation</li> <li>○ the Chippewas of Georgina Island First Nation</li> <li>○ the Chippewas of Rama First Nation</li> </ul> </li> <li>• Métis Nation of Ontario (Region 8)</li> <li>• Mohawks of the Bay of Quinte</li> <li>• Six Nation of the Grand River</li> <li>• Mississaugas of the Credit First Nation</li> <li>• Saugeen Ojibway Nation</li> </ul>
<b>Bruce</b>	<ul style="list-style-type: none"> <li>• Saugeen Ojibway Nation</li> <li>• Métis Nation of Ontario</li> <li>• Historic Saugeen Métis</li> <li>• Chippewas of Kettle and Stony Point First Nation</li> </ul>
<b>Point Lepreau</b>	<ul style="list-style-type: none"> <li>• Wolastoqey Nation of New Brunswick (representing 6 Wolastoqey communities in New Brunswick)</li> <li>• Mi'gmawe'l Tplu'taqnn Incorporated (representing 8 Mi'gmaq communities)</li> <li>• Kopit Lodge (representing Elsipogtog First Nation)</li> <li>• Passamaquoddy Recognition Group Inc. (representing the Peskotomuhkati Nation)</li> </ul>
<b>Gentilly-2</b>	<ul style="list-style-type: none"> <li>• Nation W8banaki <ul style="list-style-type: none"> <li>○ Abénakis of Wôlinak</li> </ul> </li> </ul>

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

	<ul style="list-style-type: none"><li>○ Abénakis of Odanak</li><li>● Le Conseil de la Nation Wendat</li></ul>
--	---

# Appendix D: Status of issues, concerns and requests from intervenors

## D1 Indigenous Nations and Communities Interventions

In 2024, CNSC staff engaged with each Indigenous Nation and communities who intervened with regards to the 2023 NPGS ROR and continued to work on addressing their concerns, comments and recommendations.

This appendix provides an overview of the issues raised in the interventions in relation to the 2023 NPGS ROR. Table 1 provides an overview of the key thematic categories raised by all Indigenous Nations and communities 2023 NPGS ROR intervenors and the total number of times each theme or topic was raised across the interventions. Tracking this thematic information will help CNSC staff to focus their efforts on areas that generate the most concerns.

CNSC staff's [CMD 25-M9.A](#), supplements the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites: 2023* and provides responses to key themes from interventions on the report. CNSC staff remain committed to engaging with Indigenous Nations and communities, working collaboratively to address concerns where possible.

For Indigenous Nations and communities with a ToR for long-term engagement, ROR-related requests and concerns have been integrated into regular meetings and, where appropriate, engagement work plans. This includes collaboratively developing an issues and concerns tracking table and engaging in meaningful dialogue to find constructive solutions.

The CNSC received 4 interventions from the following Indigenous Nations and communities in relation to the 2023 NPGS ROR:

- Three Fires Group on behalf of the Chippewas of Kettle and Stony Point First Nation.
- Passamaquoddy Recognition Group Inc.
- Wolastoqey Nation in New Brunswick.
- Mississaugas of Scugog Island First Nation.

Table 29: Interventions by Thematic Category

Issues and concerns thematic category	Number of times the topic was raised	Number of interventions the topic was raised in
<b>CNSC Consultation and Engagement</b> (e.g., suggestions for improvements to the approach to consultation and engagement and request for meaningful responses to issues raised)	13	3
<b>ROR Process and Content</b> (e.g., requests related to expanding the scope of the ROR, providing additional information or clarification in specific sections of the report)	17	2
<b>Environmental Protection and Monitoring</b> (e.g., requests for Indigenous inclusion in long-term monitoring and risk assessments, concerns regarding impacts to the environment and wildlife and the cumulative impacts of NPGS activities)	8	2
<b>Safety</b> (e.g., requests for providing additional information regarding safety measures and events)	5	4
<b>UNDRIP, UNDA and FPIC</b> (e.g., concerns regarding CNSC's implementation of UNDRIP, UNDA and FPIC)	12	3
<b>Waste and Decommissioning</b> (e.g., requests for further information regarding waste management plans, decommissioning plans and financial guarantees)	3	2
<b>Emergency Management</b> (e.g., request for information about the process for notification in an emergency and emergency preparedness)	1	1
<b>NPGS Operations and Compliance</b> (e.g., requests for more information regarding compliance verification activities and criteria used to assess compliance with CNSC regulations)	4	2
<b>Licensee Consultation and Engagement</b> (e.g., expressed interest in licensee socio-economic opportunities and reviewing licensee reports)	2	1

## D2 Public Interventions

CMD 25-M9.A - Supplementary submission from CNSC Staff - 2023 Regulatory oversight report for Canadian nuclear power generating sites, discussed most of the key themes raised by interveners and attempted to address them.

The following table provides an overview of the key thematic categories raised in the public interventions in relation to the 2023 NPGS ROR and the number of times each theme or topic was raised in total across all interventions. The categories included in Table 30 have been ordered from most frequently raised to least.

Table 30: Interventions by topic category

Topic of concern, request, comment	Number of times the topic was raised	Action(s) taken by CNSC
Supporting licensee performance	10	No action required
Supporting CNSC staff conclusions	5	No action required
ROR format	4	Addressed during the Commission meeting proceedings
Further details on events and inspections	4	Addressed during the Commission meeting proceedings. Inspection reports are available on Open Government portal.
Indigenous Engagement and Reconciliation	2	Addressed in Section 3 and Appendix D1 above
Environmental Protection	2	Addressed in CMD 25-M9.A
Update on Regulatory documents	1	Addressed in CMD 25-M9.A
Expansion of the delivery of KI pills	1	Addressed in CMD 23-M36.B
Aging Management	1	Addressed during Commission proceedings
Availability of data	1	Efforts are being made to upload more data to Open Governmental portal

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

NB power's human performance and maintenance backlog	1	Addressed during Commission proceedings
Emergency management and Fire protection	1	Addressed during Commission proceedings

## D3 Conclusions

CNSC staff appreciate the issues and concerns raised by intervenors and continue to work with Indigenous Nations and communities who have intervened in the NPGS ROR Commission meeting on identifying approaches to addressing the different topics areas, requests and comments raised, as appropriate. CNSC staff acknowledge that the 2 main themes of issues raised in the 2023 NPGS ROR were “CNSC Consultation and Engagement” and “ROR Process & Content” and has made it a priority to further discuss and address these issues where feasible. The inclusion of this Appendix in the ROR is part of this commitment and CNSC staff are working towards the efficient reporting to the Commission on issues tracking and engagement efforts.

The CNSC is open to having dialogue and working towards improving understanding around key issues within the CNSC's mandate and authority.

## **Appendix E: Summary of engagement in relation to CNSC's Terms of Reference for Long-term Engagement and Associated Workplans in 2024**

CNSC staff have formalized 11 Terms of Reference (ToRs) for long-term engagement. Existing ToRs with Indigenous Nations and communities with an interest in NPGS sites and activities include: CLFN, HFN, HSM, MSIFN, MNO and SON. The CNSC is open to developing ToR for long-term engagement with other interested Indigenous Nations and communities as appropriate.

A summary of engagement conducted in relation to each ToR for each Indigenous Nation and community can be found below.

### **E1: Curve Lake First Nation - CNSC Long-term Engagement Terms of Reference**

As committed to with Curve Lake First Nation (CLFN) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with CLFN representatives.

In February 2021, CNSC staff and CLFN signed a ToR for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in CLFN's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and CLFN that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2024 the work plan included activities that CNSC staff and CLFN collaborated on to implement throughout 2024 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP).
- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest.
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects).
- Developing a plan for a CLFN Indigenous Knowledge Study.

In 2024, due to capacity constraints and other priorities CLFN and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge study. However, CLFN and CNSC are committed to developing a plan for a Regional IK Study in 2025. Due to capacity constraints, despite best efforts by CLFN, and funding opportunities made available by CNSC, there are topics and issues that have not been adequately discussed and addressed. Both CLFN and CNSC are committed to an ongoing effort to e such gaps.

In 2024, CLFN and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through monthly meetings and interactions, CLFN and CNSC have developed a good working relationship; one that has been conducive to open and direct communications.

Topics of discussion related to Nuclear Power Generating Sites in CLFN's territory included ongoing environmental monitoring activities, Darlington Nuclear Generating Station licence renewal application, OPG's Pickering Nuclear Generating Station application to authorize operations until 2026 and OPG's application to amend the Pickering Waste Management facility licence. In 2024, OPG's application for a licence to construct the Darlington New Nuclear Project was a major focus with CLFN.

CNSC staff and CLFN continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history, Rights and interests and perspectives that help CNSC staff and CLFN learn from each other and improve collaboration and communications. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to CLFN.

**The following feedback was provided by CLFN regarding their experience working and engaging with the CNSC in 2024:**

CLFN has been in dialogue with CNSC staff since 2020 and continued to do so in 2024. There are many topics and projects that have been covered and as everyone can appreciate, meaningfully consulting on and addressing each topic or project takes time, commitment, and focus. We continue to be optimistic that our Terms of Reference and Work Plan will result in progress and improvements in 2025 and beyond. We acknowledge that the CNSC has provided additional capacity support through CNSC's Indigenous and akeholder Capacity Fund; this is under implementation and in concept will help in the numerous nuclear sector topics and projects.

CLFN's Consultation Department is progressively building capacity to match the various consultation needs in the nuclear sector and CLFN is looking forward to the future when the CNSC decisions are made in conjunction with the Nation.



## E2: Hiawatha First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with Hiawatha First Nation (HFN) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared and shared with HFN for review; however, no comments were received prior to finalization.

In May 2023, CNSC staff and HFN signed a ToR for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in HFN's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and HFN that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2024, the work plan included activities that CNSC staff and FN collaborated on implementing throughout 2024 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects)
- Developing a plan for a HFN Indigenous Knowledge Study

HFN and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge Study (IKS). However, HFN and CNSC are committed to developing a plan for a HFN IKS Study in 2025.

In 2024, HFN and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through monthly meetings and interactions, HFN and CNSC are progressing their working relationship.

Topics of discussion related to Nuclear Power Generating sites in HFN's territory included ongoing environmental monitoring activities, the Darlington Nuclear Generating Station licence renewal application, OPG's Pickering Nuclear Generating Station application to authorize operations until 2026 and OPG's application to amend the Pickering Waste Management facility licence. In 2024, OPG's application for a licence to construct the Darlington New Nuclear Project was a major focus with HFN.

In 2024, CNSC staff and HFN had focused discussions on the key themes raised in their interventions to the Commission and are working together to discuss and address the issues, concerns and recommendations raised in HFN's interventions.

CNSC staff and HFN continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history and perspectives that help CNSC staff and HFN learn from each other and improve collaboration and communication. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to HFN. HFN would like to see real change in the CNSC's regulatory and consultation processes. This includes the implementation of the 2018 Williams Treaties Settlement Agreement, which would in effect uphold the Inherent and Treaty rights of the First Nation. The Williams Treaties Settlement Agreement was signed in 2018 and recognized the pre-existing treaty harvesting rights for the First Nations members and included both federal and provincial apologies for the negative impacts of the Williams Treaties on the First Nations. CNSC staff and HFN are committed to working together to ensure HFN's rights and interests are protected and reflected in the CNSC's regulatory process and documents.

## **E3: Historic Saugeen Métis – CNSC Long-term Engagement Terms of Reference**

As committed to with the Historic Saugeen Métis (HSM) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with HSM representatives.

Following the licence renewal hearing for the Bruce Nuclear Generating Station in 2018, a ToR was agreed upon and signed April 12, 2019, between CNSC staff and the HSM. This ToR provides a framework for engagement between HSM and CNSC staff and is supported by the CNSC's Indigenous and Stakeholder Capacity Fund and Participant Funding Program, which ensure that HSM is provided with adequate and meaningful funding, support and capacity to participate in consultation and engagement activities required throughout the year. Topics of discussion related to the facilities in this ROR included updates and discussions about the Bruce Nuclear Generating Station (Major Component Replacement and operational activities including updates on pressure tubes), OPG's Western Waste Management Facility, CNL's Douglas Point decommissioning project and NWMO's Adaptive Phase Management project.

The CNSC's Independent Environmental Monitoring Program (IEMP) is scheduled to sample near the Bruce Nuclear Generating Station in 2025. Late in 2024, as part of HSM and CNSC's semi-

annual meeting series, CNSC staff notified HSM that this sampling was scheduled and had initial conversations about HSM's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

HSM invited CNSC staff to participate in a Turtle Stewardship Workshop in May of 2024, which allowed CNSC staff to learn more about the significance of Ontario's turtles to HSM and about their stewardship efforts. HSM provided a cultural walk in MacGregor Park in June of 2024 to share some of the geological history of the land, as well as HSM's cultural connections to the area. CNSC staff learned more about the environment around the Bruce site, including traditional uses and importance of various plant species. Using the CNSC's Indigenous and Stakeholder Capacity Fund, HSM compiled a Community Plant Guide to document plants that are important to the HSM community, which was also shared with CNSC staff.

In 2024, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC established a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC) in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the Impact Assessment Act, 2019 and the NSCA. CNSC staff have been collaborating with IAAC to conduct early engagement on the Integrated Impact Assessment process, including presentations to HSM's staff and Council. CNSC staff and IAAC have been proactively engaging with the HSM on the integrated assessment process for this potential project, as well as providing participant and capacity funding to support HSM. IAAC staff are frequently invited to the regular bi-annual meetings with HSM established under the HSM-CNSC ToR, as well as to ad-hoc meetings held on topics of interest to HSM in order to maintain regular communication and lessen the demand on HSM's time and resources.

CNSC staff and HSM continue to dialogue about HSM's outstanding concerns on fish impingement and entrainment, thermal effluent, and climate change. HSM continued to actively participate and make informed contributions to the CNSC's regulatory processes and oversight. CNSC staff plan to continue to engage and update HSM on regulatory activities on a semi-annual basis as agreed upon in the ToR.

**The following feedback was provided by HSM regarding their experience working and engaging with the CNSC in 2024:**

Overall, HSM Council and staff are exceptionally pleased with the working relationship with CNSC staff. CNSC staff are approachable and professional and continue to address the interests of the HSM community to stay informed and engaged in all facets of the nuclear industry.

On April 24, 2024, IAAC and CNSC co-provided a training session for HSM Council and staff regarding the Impact Assessment process and CNSC guidelines/policies related to new nuclear projects and the proposed Bruce C Project.

During the spring 2024 semi-annual meeting, CNSC provided a presentation regarding Best Available Technology and Techniques, Economically Achievable (BATEA) REGDOC 2.9.2, 2.9.1 at the request of HSM. The information was very helpful in relation to the proposed Bruce C project.

On October 2, 2024, CNSC and IAAC co-provided a presentation and discussion regarding Cumulative Impacts on Rights related to the Bruce C Project as this was another topic of interest for HSM Council and staff.

## **E4: Mississaugas of Scugog Island First Nation – CNSC Long-term Engagement Terms of Reference**

As committed to with the Mississaugas of Scugog Island First Nation (MSIFN) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with MSIFN representatives.

In September 2021, CNSC staff started discussions with MSIFN to establish a formal long-term relationship with the Nation, and a ToR was signed between MSIFN and the CNSC in March 2022. As part of the ToR, a yearly work plan is developed between the CNSC and MSIFN, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. CNSC also provides funding and capacity support to the MSIFN through its Indigenous and Stakeholder Capacity Fund to support the meetings, engagement and collaboration work as per the ToR and engagement work plan.

In 2024, the work plan included:

- Long-term relationship meetings, engagement and issue-tracking.
- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP).
- Updates and discussions on specific projects and ongoing operations of licensed nuclear facilities of interest.
- Discussions on CNSC's interpretation of and adherence to the UN Declaration on the Rights of Indigenous Peoples Act (UNDA).
- Participation in the CNSC Regulatory Oversight Reports (RORs) of interest.
- Review of updates to CNSC REGDOC-3.2.2 and REGDOC-1.2.3.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

- Updates and discussion on other topics of interest such as Bill C-21, emergency management and preparedness, cumulative effects and risk assessment and Indigenous knowledge and land use data.

In 2024, MSIFN and CNSC staff continued to meet monthly and work collaboratively to make progress on a number of the agreed-upon initiatives in the work plan. CNSC staff and MSIFN continued to track, collaboratively verify, and provide responses to key concerns and issues raised by MSIFN throughout 2024. Alongside the regularly scheduled monthly meetings, additional topic-specific meetings were held with MSIFN and CNSC staff. Other relevant parties, including subject matter experts, proponents, licensees, and federal departments, were brought in to support discussions and explore matters of interest in greater detail. Some topic-specific meetings were inclusive of the larger Michi Saagiig Nations of the Williams Treaties First Nations (WTFN), including Curve Lake, Alderville, and Hiawatha.

MSIFN emphasizes the need for CNSC compliance with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), including Free, Prior, and Informed Consent (FPIC), and calls for the Crown to facilitate enforceable agreements with proponents, environmental protections, economic inclusion, and active participation in regulatory processes..

Topics of discussion related to Nuclear Power Generating Sites within WTFN's territory included updates and discussions on OPG's Darlington and Pickering sites, with a major focus on the Darlington New Nuclear Project (DNNP).

In 2024, MSIFN submitted interventions for the following projects related to Nuclear Power Generating Sites:

- OPG's DNNP Licence to Construct (LTC) application.
- OPG's Darlington Nuclear Generating Station (DNGS) licence renewal.
- OPG's application for the production of additional isotopes at the DNGS.
- OPG's licence application to extend the operations of Pickering B (units 5-8).
- OPG's application to change the licensing basis for the Pickering Waste Management Facility (PWMF) to process and store dry storage containers containing a minimum of 6-year cooled fuel.
- Regulatory Oversight Report for Nuclear Power Generating Sites: 2023

CNCS staff remain committed to working collaboratively with MSIFN to address the issues and concerns raised in their interventions and to engage in meaningful dialogue to find constructive solutions.

Regarding the Darlington site, updates and discussions continued regarding the Darlington Waste Management Facility (DWMF) licence renewal, the DNGS licence amendment application to include Cobalt-60, the DNGS licence amendment application to allow production of Lutetium-177 and Yttrium-90, and OPG's application to renew the DNGS Power Reactor Operating Licence.

As per the CNSC's [Indigenous Knowledge Policy Framework](#), the CNSC recognizes the importance of considering and including Indigenous Knowledge in all aspects of its regulatory processes, including Environmental Protection Review Reports (EPRRs). In September 2024, CNSC staff shared the Darlington Nuclear Site EPR with MSIFN to review and add comments to ensure it appropriately reflects any information in relation to Indigenous Knowledge as well as Indigenous and/or Treaty rights that is shared with the CNSC. MSIFN provided comments on the report and CNSC staff updated the report based on the feedback received and worked with MSIFN to include views expressed within the EPRR.

Regarding the Pickering site, updates and discussions continued regarding OPG's applications to amend the PWSF licensing basis to process and store dry storage containers containing a minimum of 6-year cooled fuel as well as OPG's licence amendment to authorize construction and operation of the Pickering Component Storage Structure.

In 2023, CNSC staff and MSIFN began working on a community-specific Potassium Iodide (KI) Pill fact sheet. The MSIFN community is located within the 50km Ingestion Planning Zone (IPZ) for 2 CNSC regulated facilities: DNGS and PNGS. KI pills have been pre-distributed to the community in preparation for a potential nuclear emergency. CNSC staff continued to collaborate with MSIFN to develop related communication materials for leadership and community members in 2024.

CNSC staff and the MSIFN are dedicated to strengthening their relationship through ongoing, respectful dialogue that fosters mutual learning and enhances communication and collaboration. By sharing knowledge, cultural insights, historical perspectives, and key information, both parties aim to deepen their understanding of each other. Additionally, CNSC staff will continue to engage in discussions on areas of interest, such as UNDRIP and FPIC, as well as any issues or concerns related to CNSC-regulated activities relevant to the MSIFN.

## **E5: Métis Nation of Ontario - CNSC Long-term Engagement Terms of Reference**

As committed to with the Métis Nation of Ontario as part of the terms of reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with Métis Nation of Ontario (MNO) representatives.

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

Following the licence renewal hearing for the Bruce Nuclear Generating Station in 2018, a ToR was agreed upon and signed on December 18, 2019, between CNSC staff and the MNO, which formally documents the engagement with their Nation. As the MNO is a province-wide organization, a specific engagement plan under the Terms of Reference was also signed in December 2019 with MNO Region 7.

In 2024, the engagement plans included:

- Participation in the CNSC's IEMP
- Sharing information on NWMO's Adaptive Phase Management initiative
- Sharing information on the Nuclear Power Demonstration (NPD) Closure project
- Sharing information on SMRs, and Global First Power's Micro Modular Reactor (MMR) project
- Sharing information on the Chalk River Laboratories site
- Sharing information on the Darlington Nuclear Generating Station and Waste management Facility
- Sharing information on the Darlington New Nuclear Project
- Sharing information on the Pickering Nuclear Generating Station and Waste management Facility
- Sharing information on the Port Hope Area Initiative
- Sharing information on the Cameco Fuel Manufacturing, Port Hope Conversion Facility, and Blind River Refinery
- Sharing information on the BWXT Facilities in Toronto, Peterborough, and Ottawa, ON
- Sharing information on the Best Theratronics facility
- Sharing information on the Nordion facility
- Sharing information on the SRB Technologies facility
- CNSC to support MNO capacity building through new Indigenous and Stakeholder Capacity Fund (ISCF), including the hiring of a community liaison to work with CNSC directly
- Communication with MNO citizens

MNO invited CNSC staff to attend a Métis and Energy Knowledge Symposium held by MNO Region 7 in June of 2024, where CNSC staff learned about Métis knowledge and culture and

provided information about nuclear safety and regulation to Métis community members. MNO also invited CNSC staff to attend a Fish Fry held by the Great Lakes Métis Council in July of 2024 to participate in cultural learning, and the MNO Annual General Assembly in August of 2024 to learn about MNO governance and share information about nuclear safety and regulation to Métis community members.

CNSC staff notified MNO of the 4 Independent Environmental Monitoring Program (IEMP) campaigns that took place in Ontario over 2024 and invited them to participate in sampling activities. MNO did not participate in sampling in 2024 but remain interested in the IEMP. The CNSC's IEMP is scheduled to sample near the Bruce Nuclear Generating Station in 2025. Late in 2024 as part of MNO Region 7 and CNSC's semi-annual meeting series, CNSC staff notified MNO that this sampling was scheduled and had initial conversations about MNO's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

As per the workplan, CNSC and MNO worked to identify areas of collaboration, including environmental monitoring through the IEMP, providing information relating to the MMR Project, the Chalk River Laboratories Site, and the NPD project, as well as MNO's potential participation in the FPIRT for this project. As per the ToR, CNSC staff continued to meet with MNO Lands Resources and Consultations branch on a monthly basis.

**The following feedback was provided by MNO regarding their experience working and engaging with the CNSC in 2024:**

The MNO highly values engagement with the CNSC. This exemplary relationship is highlighted by:

- CNSC staff being approachable and easy to work with.
- Timely and informative communication.
- Consistent/dependable engagement and follow-ups.

## **E6: Saugeen Ojibway Nation- CNSC Long-term Engagement Terms of Reference**

As committed to with the Saugeen Ojibway Nation (SON) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with SON representatives.



**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

A ToR was signed between SON and the CNSC in 2019. The ToR ensures that SON is provided with adequate and meaningful funding, support, and capacity to participate in consultation and engagement activities required throughout the year. and SON, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement.

In 2024, the work plan included:

- Joint review and analysis of licensee submissions, particularly around environmental protection.
- Following up on the CNSC's 2022 Independent Environmental Monitoring Program (IEMP) sampling to share and discuss the results.
- Inclusion on the design and review of Bruce Power's study of available mitigation measures for environmental impacts.
- CNSC staff outreach in SON communities.
- Sharing the results of CNSC's environmental oversight, such as inspection reports.
- Identifying federal, provincial, and municipal decision-making agencies, as needed.
- Coordinating meetings with federal and provincial Crown agencies, as needed.
- Sharing information on the WWMF, Douglas Point, NWMO's Adaptive Phase Management initiative, OPG's DNNP, DNGS and PNGS, and Bruce Power's existing and anticipated projects.
- The work plan sets out detailed tasks and timelines for each of these items. Topics of discussion related to the facilities in this ROR included updates and discussions about the WWMF, Douglas Point, NWMO's Adaptive Phase Management initiative, OPG's DNNP DNGS and PNGS, and Bruce Power's existing and anticipated projects.

CNSC staff understand that SON continue to have concerns regarding the environmental impacts resulting from the nuclear activities at the Bruce Nuclear Generating Station (BNGS), which were presented in their intervention in Bruce Power's licence renewal hearing on March 14, 2018. The focus of the activities in the work plan is to ensure SON oversight, inclusion, and a means to obtain additional information that will provide clarity, transparency and assurances for the communities and SON leadership regarding the interactions between the BNGS facility and the environment.

In 2024, CNSC staff and SON continued to meet and work collaboratively to complete a number of the initiatives in the work plan. One of these activities included CNSC's funding support for a

traditional land use and occupancy study to obtain a baseline inventory of mapped cultural sites in relation to SON's Territory, including the Territory around the Bruce Power site. Due to the pandemic and inability to meet with community members in person, this work had been delayed, however, SON have informed CNSC staff that data collection is complete and that the report was finalized in 2024.

After completing collaborative work on Bruce Power's mitigation measures study, SON and CNSC staff have further collaborated on environmental monitoring, mitigation measures, and updates to the CNSC's regulatory framework. In 2024, CNSC staff met with SON and Bruce Power on mitigation measures used at the Bruce site and emerging technologies to discuss how best to continue to have dialogue on potential options that could be considered in future reviews. As a result, CNSC staff and Bruce Power invited SON to attend a quarterly environment update meeting with ECCC and DFO to facilitate communication on this topic and better involve SON in regulatory oversight of the Bruce site.

CNSC staff participated in a number of outreach activities with SON. CNSC staff attended SON's Mothers' Day market and Sconefest, both as an opportunity for the CNSC to learn about and better understand SON communities, and to interact with SON members discuss and answer questions related to nuclear safety and regulation in Canada.

SON completed another year of the Coastal Waters Monitoring Program (CWMP), which is an initiative funded in part by Bruce Power, but designed, led, and implemented by SON to monitor environmental conditions in the nearshore areas of the Saugeen Peninsula. In 2023, the CNSC's Indigenous Capacity Support Fund opportunity opened for the first time, and SON applied for additional funding to support the administration of their CWMP. SON plans to share with CNSC the 2023 and 2024 Annual CWMP Reports. are interested supporting the work of the CWMP, as this will provide data that can be used in future environmental risk assessments in relation to the BNGS.

The CNSC's IEMP is scheduled to sample near the BNGS in 2025. Late in 2024, CNSC staff notified SON that this sampling was scheduled and had initial conversations about SON's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

SON has on-going concerns regarding the storage of nuclear waste in their territory. SON intervened in the January 2024 Commission Hearing related to OPG's application to determine the applicability of the DNNP Environmental Assessment to the selected reactor technology; the Spring 2024 Commission hearing in writing related to OPG's application to amend the DNGS licence to authorize the production of Cobalt-60; and the June 2024 Commission hearing related to OPG's application to extend the operation of the Pickering NGS units 5-8 until December 31<sup>st</sup>,

2026. Through each of these interventions, SON raised concerns about the projects' interactions with OPG's WWMF and due to recent Deep Geological Repository siting discussions with NWMO. SON raised concerns about the increasing volume and types of waste that these and other anticipated applications represent as well as how they are regulated. SON and CNSC staff consequently added these generating facilities to the work plan and discussed them at regular monthly meetings. CNSC staff will notify SON of licensing activities at these generating facilities going forward.

In late Summer/Fall 2024, SON and CNSC staff agreed to update the design of the collaborative workplan, rework the format of regular meeting series, and renew the SON-CNSC ToR to adapt to the evolving regulatory landscape. SON and CNSC staff paused monthly meetings in July 2024 to allow for renewed direction from SON leadership and the preparation of a draft updated workplan and relationship agreement. During this time, SON and CNSC staff continued to meet as needed to provide updates and collaborate on regulatory matters. SON and CNSC staff remain committed to continuing to work closely together to update the work plan and renew the SON-CNSC ToR.

In 2024, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC has a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC), established in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the *Impact Assessment Act*, 2019 and the NSCA. IAAC is identified as the Crown Consultation Coordinator for Integrated Impact Assessments under this MOU. CNSC staff worked closely with IAAC and SON in 2024 to conduct early engagement on the Integrated Impact Assessment process, including regular meetings with SON's Environment Office as well as presentations and workshops with SON's Nuclear Advisory Committee. The Planning Phase of this Integrated Impact Assessment was initiated in August 2024.

CNSC staff and SON will continue to work collaboratively to address areas of concern, and to understand and protect the rights and interests of SON in relation to the regulation of the Bruce site.

# Appendix F: Data

## F1: Unplanned Transients

All operating NPPs licensees are required to report serious process failures to the CNSC, in accordance with CNSC [REGDOC-3.1.1, Reporting Requirements for Nuclear Power Plants](#). Among other performance indicators, REGDOC-3.1.1 requires operating NPP licensees to submit quarterly reports on the “Number of unplanned transients”, which tracks unplanned transients (unexpected reactor power changes) for each reactor that is not in a guaranteed shutdown state. These unplanned transients indicate problems within a plant, and place strain on its systems.

Table summarizes the number of unplanned transients for the operating NPPs caused by step backs, setbacks, and reactor trips. Step backs and setbacks refer to intentional power reductions initiated by the reactor's regulating systems. These adjustments are made to proactively manage operational risks and ensure safe plant operation without the need for a rapid reactor shutdown. On the other hand, reactor trips are initiated automatically by the reactor's shutdown systems in response to conditions that pose an immediate risk to safety or in accordance with operational protocols. These trips are designed to quickly and safely shut down the reactor to prevent any potential hazards. Industry total provides the data for the operating Canadian NPPs. In 2024, all unplanned transients were properly controlled by the reactor control systems. CNSC staff also determined that no serious process failures occurred at any NPP.

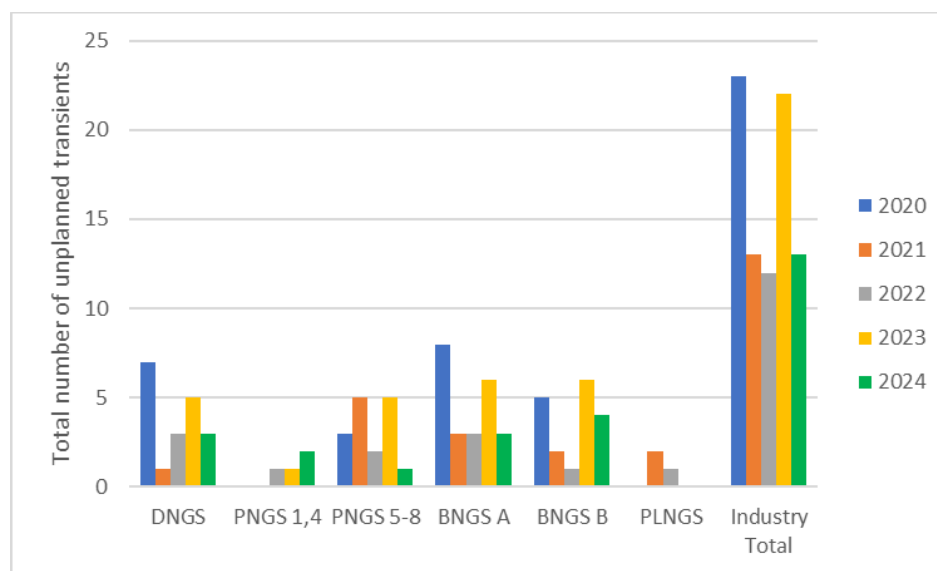
Table 31: Number of unplanned transients in 2024

NPPs	Number of operating reactors	Number of hours of operation	Un-planned reactor trips <sup>1</sup>	Step-backs	Set-backs	Total unplanned transients	Number of trips per 7,000 operating hours
DNGS <sup>2</sup>	4	16,606	1	1	1	3	0.84
PNGS 1, 4 <sup>3</sup>	2	15,282	1	0	1	2	0.46
PNGS 5–8	4	28,994	1	0	0	1	0.24
BNGS A	4	24,803	2	1	0	3	0.56
BNGS B	4	32,319	0	2	2	4	0.00
PLNGS	1	3,821	0	0	0	0	0.00
Industry total	19	121,825	5	4	4	13	0.29

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

**Notes:**

1. This includes automatic reactor trips only; it does not include manual reactor trips or trips during commissioning testing.
2. DNGS Units 1 was returned to service in November, 2024 and U4 was shutdown for all of 2024
3. Step backs are not a design feature at PNGS Units 1 and 4.



Year	DNGS	PNGS 1,4	PNGS 5-8	BNGS A	BNGS B	PLNGS	Industry Total
2020	7	0	3	8	5	0	25
2021	1	0	5	3	2	2	13
2022	3	1	2	3	1	1	11
2023	5	1	5	6	6	0	23
2024	3	2	1	3	4	0	13

Figure 11 shows the total number of unplanned transients from 2020 to 2024 for the operating NPPs.

## F2: Unplanned reactor trips

Figure 12 compares the number of unplanned reactor trips for Canada's operating NPPs per 7,000 hours of operation, which is a measure used by the [World Association of Nuclear Operators](#) (WANO). This WANO indicator is defined as the number of unplanned automatic scrams (reactor shutdown system(s) actuations) that occur per 7,000 hours of critical operation (which is approximately 1 year of operation). WANO targets include the following:

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- The target for each of the individual operational units for pressurized heavy water reactors (PHWR) is 1.5 trips per 7,000 hours critical. In 2024, all units in Canada met this target.
- The PHWR industry target, which is the equivalent industry total trips per 7,000 hours critical, is 1.0. Although the WANO target for PHWR is the appropriate benchmark for the CANDU reactors at Canadian NPPs, Figure 12 superimposes a line at the more challenging target (0.5) for pressurized water reactors, which Canadian NPPs continue to use as the more conservative target.

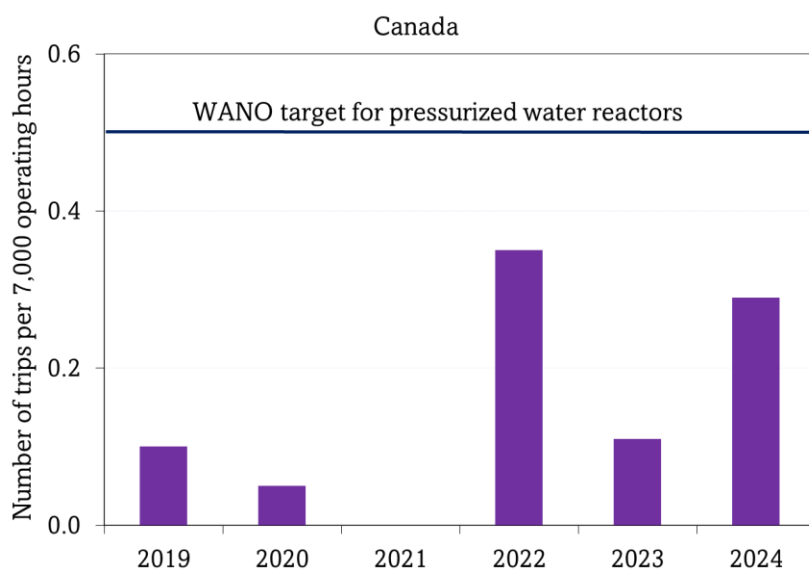


Figure 12: Trend of unplanned reactor trips per 7,000 operating hours

- CNSC staff informed the Commission of unplanned outages resulting from reactor trips and their outcomes via status reports on NPPs in 2024.
- CNSC staff confirmed that unplanned outages were managed safely and in accordance with the applicable regulatory requirements. During each unit's planned outage in 2024, CNSC staff conducted compliance verification activities and determined that regulatory requirements were met, and outages were executed safely.

### F3: Safety System Test Performance

Overall, the special safety systems (SSSs) performed well in 2024 and met their unavailability targets.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

- The number of total missed safety system tests remained very low in 2024.
- In all, 31,548 tests were performed, and the percentage of missed tests was 0.01%.
- The impact of missing a single test is negligible because the NPP designs have sufficiently high redundancy to ensure continuous availability of the safety systems.

Table 32 provides the number of planned tests versus the number of tests not completed.

Table 32: Safety system test performance for 2024

Nuclear power plant	Number of annual planned tests	Not completed: Special safety systems	Not completed: Standby safety systems	Not completed: Safety related process systems	Not completed : Total	Percent not completed
<b>DNGS</b>	6,284	0	0	1	1	<b>0.02%</b>
<b>PNGS</b>	13,138	0	0	0	0	<b>0.00%</b>
<b>BNGS A</b>	3,883	0	0	0	0	<b>0.00%</b>
<b>BNGS B</b>	5,576	1	0	0	1	<b>0.02%</b>
<b>PLNGS</b>	2,667	0	1	0	1	<b>0.04%</b>
<b>Industry total</b>	<b>31,548</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0.01%</b>

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

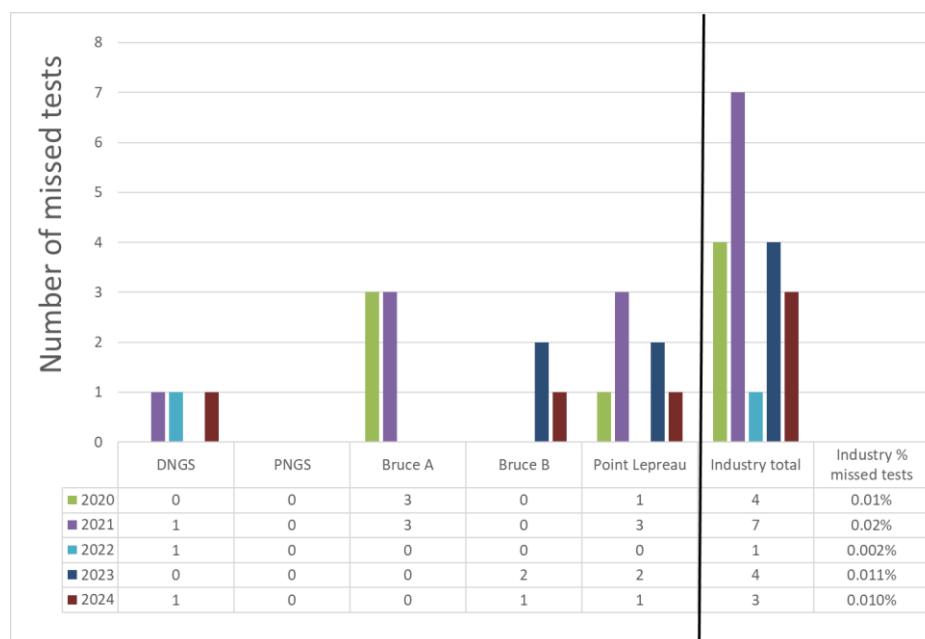


Figure 13: Trend of safety system test performance for NPPs and industry

## F4: Collective Dose

The safety performance indicator for the Application of ALARA is the “collective radiation exposure” also known as collective dose. In 2024, the total collective dose for monitored individuals at all Canadian NPPs and WMFs was 34.2 person-Sieverts (p-Sv), which is an increase from the industry-wide collective dose reported for 2023 (30.7 p-Sv) and 2022 (30.0 p-Sv), and in-line with the industry-wide collective dose reported for 2021 (35.5 p-Sv).

The collective doses for the individual NPPs are dominated by doses from outages (including refurbishment activities) rather than from routine operations. The magnitude of the doses received during refurbishment also changes depending upon the work being performed; a higher radiation exposure is experienced when a reactor core is dismantled compared to when it is being reconstructed. Table 33 shows the total collective dose for operating NPPs, as well as a breakdown of the collective dose into different work categories.

Table 33: Breakdown of collective dose for operating NPPs in 2024 (person-mSv)

NPP	Number of Units	Routine Operations (person-mSv)	Outages (person-mSv)	Refurbishment (person-mSv)	Total (person-mSv)
Pickering	6	799	1,884	0	2,683
Darlington*	4	208	1,160	12,423	13,791



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

Point Lepreau	1	107	1,216	0	1,323
BNGS A**	4	419	4,017	9,916	14,352
BNGS B	4	610	1,962	0	2,572
*Darlington Refurbishment Project; Unit 1 (complete Oct 2024), Unit 4 (entire year)					
** BNGS A Major Component Replacement Unit 3 (entire year)					

## F5: Effective Dose

The annual average effective dose in 2024 for all Canadian NPPs and WMFs was 2.96 millisieverts (mSv). The trend of average effective doses of monitored persons is provided in Figure 14. In general, the fluctuations in average dose observed from year to year reflect the type and scope of work being performed at each facility. No negative trends were identified in 2024.

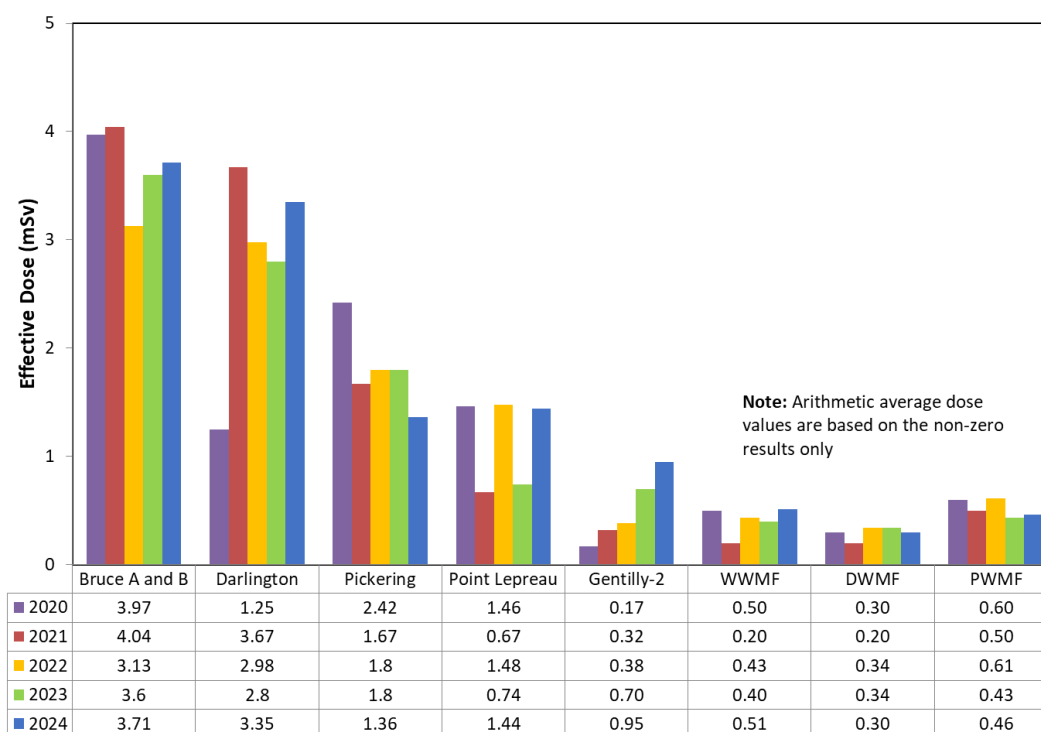


Figure 14: Trend of average effective doses of monitored persons.

The maximum annual individual effective doses, as reported by each NPP and WMF for 2020 to 2024, are presented in Figure 15. In 2024, the maximum individual effective dose received at a

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

single site was 20.63 mSv, received by a worker at DNGS. In 2024, no radiation exposures received by persons at any NPP or WMF exceeded the regulatory dose limit of 50 mSv/year for nuclear energy workers, as established in the [Radiation Protection Regulations](#).

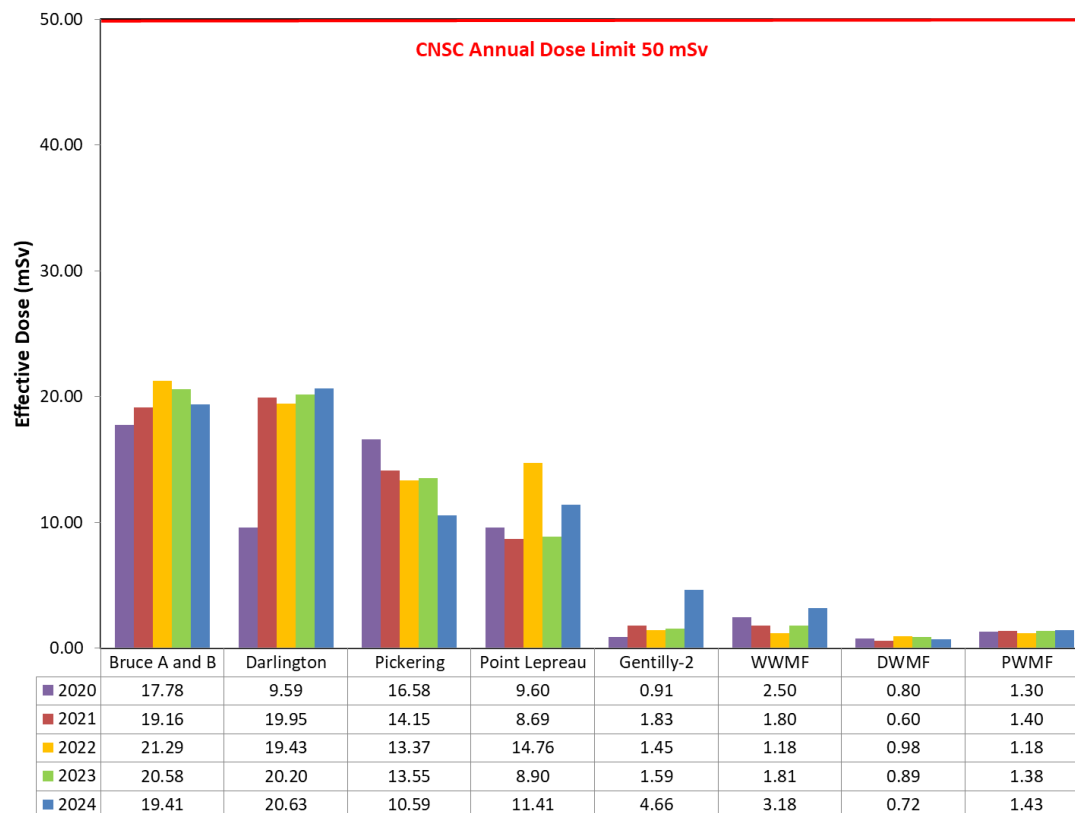


Figure 15: Maximum annual individual effective doses, as reported by each NPP and WMF for 2020 to 2024

Figure 16 provides the distribution of annual effective doses to all monitored persons at all Canadian NPPs from 2020 to 2024. All doses reported over those years were below the annual regulatory dose limit of 50 mSv for nuclear energy workers.

Overall, CNSC staff were satisfied with the licensees' control of worker doses in 2024 and concluded that workers' radiation protection was appropriately planned and managed.

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

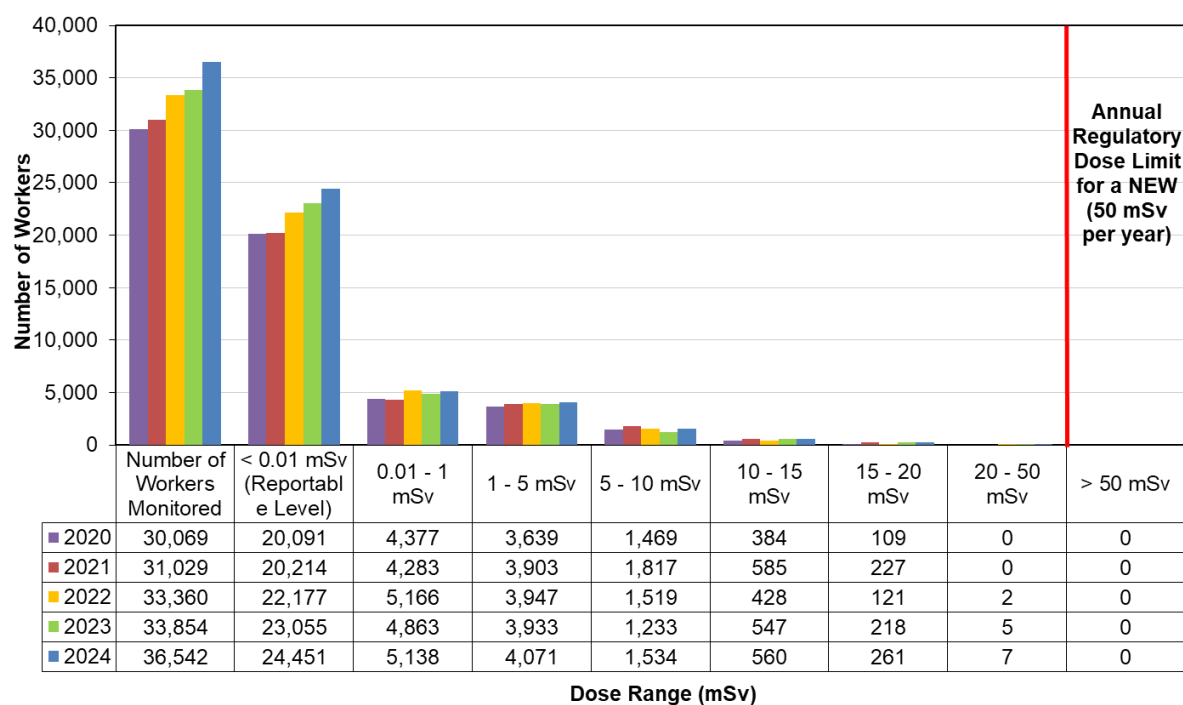


Figure 16: Trend of distribution of annual effective doses received by all monitored persons at Canadian NPPs

NPPs continued to employ performance metrics and perform self-assessments to monitor and control performance in all aspects of the RP program. Operating experience and benchmarking with industry was used to improve performance.

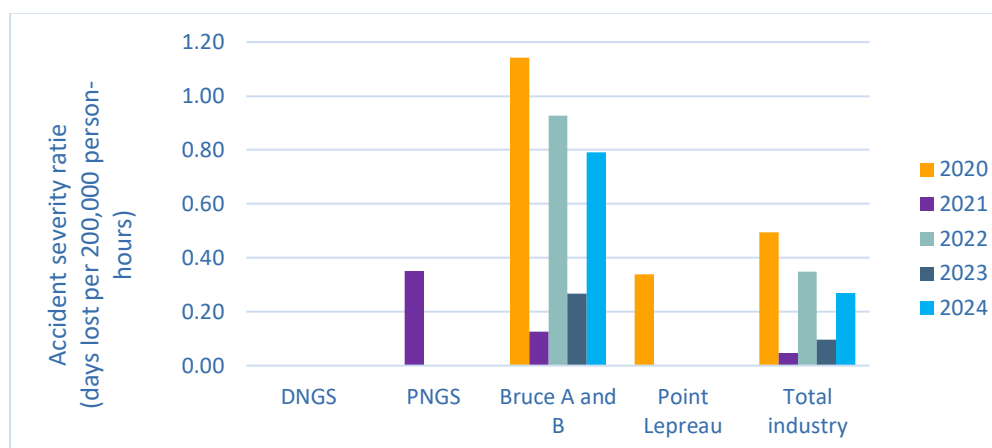
CNSC staff did not observe any failures of RP programs in 2024 and are satisfied with the industry's performance.

## F6: Accident Severity Rate, Accident Frequency and Industrial Safety Accident Rate.

The Accident Severity Rate (ASR) measures the total number of days lost due to work-related injuries for every 200,000 person-hours (approximately 100 person-years) worked at an NPP. The Accident Frequency (AF) is a measure of the number of fatalities and injuries (lost-time and medically treated) due to accidents for every 200,000 person-hours worked at NPPs. The Industrial Safety Accident Rate (ISAR) is a measure of the number of lost-time injuries for every 200,000 hours worked by NPP personnel.

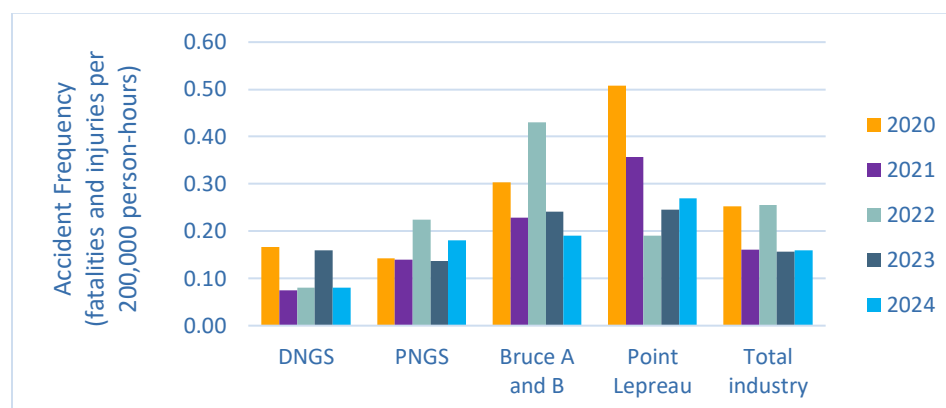
## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

The ASR, AF and ISAR values for the NPPs and industry average are presented in figures 17, 18 and 19. The data in these figures indicate continuing low rates of accidents and lost time due to accidents.



Year	DNGS	PNGS	BNGS A and B	Point Lepreau	Total industry
2020	0.00	0.00	1.14	0.34	0.50
2021	0.00	0.35	0.13	0.00	0.05
2022	0.00	0.00	0.93	0.00	0.35
2023	0.00	0.00	0.56	0.00	0.10
2024	0.00	0.00	0.79	0.00	0.27

Figure 17: Trend of accident severity rate for NPPs and Canadian industry (Covers all employees, not including third-party contractors)

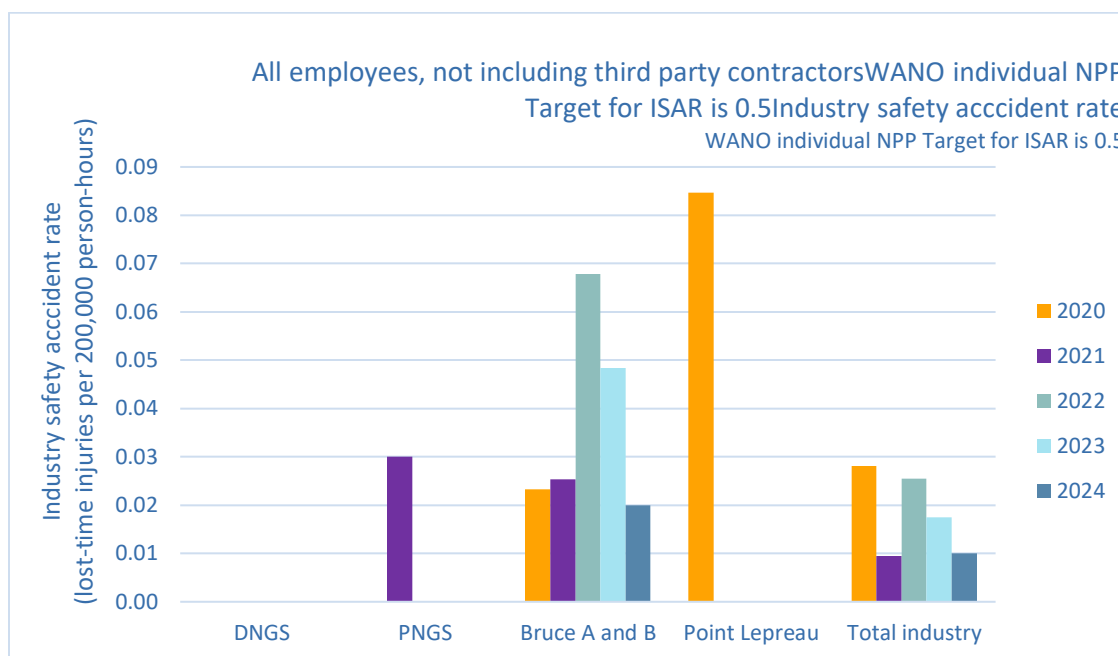


Year	DNGS	PNGS	BNGS A and B	Point Lepreau	Total industry
2020	0.17	0.14	0.30	0.51	0.25
2021	0.08	0.14	0.23	0.36	0.16
2022	0.08	0.22	0.43	0.19	0.25
2023	0.16	0.14	0.22	0.25	0.16

## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>2024</b>	0.08	0.18	0.19	0.27	0.16
-------------	------	------	------	------	------

Figure 18: Trend of accident frequency for NPPs and Canadian industry (Covers all employees, not including third-party contractors)



Year	DNGS	PNGS	BNGS A and B	Point Lepreau	Total industry
<b>2020</b>	0.00	0.00	0.02	0.08	0.03
<b>2021</b>	0.00	0.03	0.03	0.00	0.01
<b>2022</b>	0.00	0.00	0.07	0.00	0.03
<b>2023</b>	0.00	0.00	0.02	0.00	0.02
<b>2024</b>	0.00	0.00	0.02	0.00	0.01

Figure 19: Trend of industrial safety accident rate for NPPs and Canadian Industry (covers all employees, not including third-party contractors)

In addition, the values for ASR and ISAR at OPG WMFs and Gentilly-2 site were zero in 2024 with no lost-time injuries. CNSC staff observed that no work-related fatalities occurred at Canadian NPPs and WMFs in 2024.

All licensees continue to implement and maintain a safe Conventional Health and Safety program in accordance with provincial and federal regulatory requirements. In 2024, the licensees were compliant with the relevant requirements of the *Occupational Health and Safety Act of Ontario*, the *Labour Relations Act*. Conventional Health and Safety conditions at all NPPs continued to achieve a high degree of personnel safety. Licensees adequately identified

workplace hazards in 2024 and have appropriate procedures in place to ensure the protection of the environment and the health of persons against hazardous materials.

CNSC site inspectors maintain oversight of Conventional Health and Safety in the field during routine and planned field inspections and walkdowns, through daily monitoring and attendance at the licensee integrated station brief, following up on reported events, and frequent discussions with the staff.

## F7: Safeguard activities

The CNSC and licensees continued to engage with the IAEA on a revised equipment-based approach (EBA) for the verification of spent fuel loadings and transfers at the CANDU sites as part of the IAEA's revised State-level approach for Canada. In 2024, the IAEA installed the first set of equipment to support this approach: additional cameras in the spent fuel bays at the Bruce Power NGSs to monitor spent fuel loadings. Technical discussions continue for equipment installation at the other facilities.

During 2024, the IAEA continued to identify instances where some licensees provided late notifications of delays to or cancellations of spent fuel loadings or transfer activities. These late notifications had an impact on the IAEA's unannounced inspections. The CNSC has reiterated to licensees the need for the timely and accurate provision of information to support the IAEA's safeguards approach for these activities. The IAEA's future implementation of an EBA for spent fuel loadings and transfers should reduce these occurrences and their potential impact on safeguards implementation at these facilities. The numbers of activities conducted by the IAEA at each NPP and WMF in 2024 are provided in Table 34.

Table 34: IAEA safeguards activities for 2024

Activity	DNGS	DWMF	PNGS	PWMF	BNGS A	BNGS B	WWMF	PLNGS	G-2	Totals
Physical inventory verifications	1	1	1	1	1	1	1	1	1	9
Design information verifications	1	1	2	1	1	1	1	1	1	10
Short-notice random inspections	1	N/A	1	N/A	1	1	N/A	1	N/A	5

**Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024**

<b>Unannounced inspections</b>	3	4	7	4	4	4	4	3	0	33
<b>DSC/silo sealing visits</b>	N/A	8	N/A	6	N/A	N/A	13	2	0	29
<b>Complementary accesses</b>	1*	0*	0	0	0	0	0	0	0	1*

\* This covers buildings at both DNGS and DWMF.

## Appendix G: Heq Concentration Estimates

In response to the Commission's direction in RIB # 14757, for CNSC staff to inform the Commission on the maximum [Heq] of the pressure tubes, the following tables are included. The work on developing new models for pressure tube fracture toughness and the hydrogen equivalent (Heq) content in pressure tubes at BNGS A and B is addressed in section 2.5.6 of this report. The Heq Concentration estimates are generic predictions and equivalent to 97.5% upper bound.

Unit	Status as of January 1 <sup>st</sup> 2024			Future situation			
	EFPH	Predicted maximum [H]eq, ppm <sup>1</sup>	Existing fracture toughness model valid? <sup>2,3</sup>	Key date	Anticipated Target EFPH	Predicted maximum [H]eq, ppm <sup>1</sup>	Existing fracture toughness model valid? <sup>2,3</sup>
<b>PNGS Unit 5</b>	276,463	117 <sup>5</sup>	Yes	Sep 2026 <sup>6</sup>	297,500	127 <sup>5</sup>	Yes <sup>7</sup>
<b>PNGS Unit 6</b>	287,177	111 <sup>5</sup>	Yes	Sep 2026 <sup>6</sup>	305,000	119 <sup>5</sup>	Yes <sup>7</sup>
<b>PNGS Unit 7</b>	277,496	112 <sup>5</sup>	Yes	Sep 2026 <sup>6</sup>	298,000	121 <sup>5</sup>	Yes <sup>7</sup>
<b>PNGS Unit 8</b>	263,426	105 <sup>5</sup>	Yes	Sep 2026 <sup>6</sup>	283,000	112 <sup>5</sup>	Yes <sup>7</sup>
<b>BNGS Unit 4</b>	250,517	110	Yes	2025 (Refurbishment)	251,000	110	Yes
<b>BNGS Unit 5</b>	283,043	102	Yes	2026 (Refurbishment)	300,000	107	Yes
<b>BNGS Unit 7</b>	275,192	100	Yes	2028 (Refurbishment)	300,000	108	Yes
<b>BNGS Unit 8</b>	260,228	96	Yes	2030 (Refurbishment)	300,000	117	Yes

The fracture toughness model review was implemented for units with pressure tubes operating beyond 210,000 EFPH. The units listed below have either been refurbished or shut down and no longer require enhanced monitoring of Heq levels.

Unit	Status
<b>DNGS Unit 1</b>	Unit has been refurbished
<b>DNGS Unit 2</b>	Unit has been refurbished
<b>DNGS Unit 3</b>	Unit has been refurbished
<b>DNGS Unit 4</b>	Undergoing refurbishment



## Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2024

<b>PNGS Unit 1</b>	Permanently shut down October 2024
<b>PNGS Unit 4</b>	Permanently shut down December 2024
<b>BNGS Unit 1</b>	Unit has been refurbished
<b>BNGS Unit 2</b>	Unit has been refurbished
<b>BNGS Unit 3</b>	Unit has been refurbished
<b>BNGS Unit 6</b>	Unit has been refurbished
<b>PLNGS</b>	Unit has been refurbished

## Notes:

1. For reactor units in extended operation beyond 210,000 EFPH as of January 1, 2024, the [H]eq predictions do not apply to the regions of the tubes within 75 mm of the outlet rolled joint burnish mark and within 20 mm from the inlet burnish mark and are bounding for the remainder of the pressure tube between those locations.
2. For reactor units in extended operation beyond 210,000 EFPH as of January 1, 2024, the existing fracture toughness model is valid for the entire pressure tube except for the regions within 75 mm of the outlet rolled joint burnish mark and within 20 mm from the inlet burnish mark. The validity of the model for the regions near the burnish marks is under investigation. Continued operation of pressure tubes with the potential for elevated Heq near the outlet rolled joint is based on Records of Decision DEC 21-H113 [1] and DEC 22-H100 [2]. The incremental risk of continued operation of pressure tubes with the potential for elevated Heq near the inlet burnish has been assessed to be low until at least 2025 and remains under investigation [3]. This note is applied for both the Rev. 1 and Rev. 2 models because outside the locations near the burnish marks the Heq is bounded by model predictions.
3. The current Rev. 2 Fracture Toughness model is valid to 140ppm.
4. Target operating life which is subject to change
5. Estimates of the Peak Heq concentrations at the burnish mark are as of January 1, 2024, and the September 2026 target operating life, using conservative assumptions and existing modeling capabilities (including application of hydrogen-deuterium tracking model).
6. Key dates for Pickering Units 5-8 of September 2026 are pending license extension approval.
7. For pressure tubes operating beyond 210,000 EFPH, the Heq predictions are valid outside the defined Regions of Interest near the inlet and outlet burnish marks where elevated Heq has been observed. Research activities are underway to improve Heq modelling capabilities in these regions of the pressure tubes.

## References:

1. Letter, "Record of Decision DEC 21-H113 - Request for Authorization to Restart Bruce Nuclear Generating Station A Unit 4 and Bruce NGS Units 5, 7 and 8 following future outages", Bruce Power CD No. BP-CORR-00531-02629, February 28, 2022.
2. Letter, "Record of Decision DEC 22-H100 - Request for Authorization to Restart Bruce Nuclear Generating Station A Unit 3 following future outages", March 9, 2022.
3. Letter, M. Hornof to M. Burton, "Bruce A and B: CNSC Risk Assessment of Elevated Heq at the Inlet Rolled Joint Burnish Mark of Pressure Tubes – New Action Item 2022-07-26737", CNSC e-Doc 6936709, Bruce Power CD No. BP-CORR-00531-03681, December 16, 2022.