



CMD 26-H7.47

Date: 2026-08-13

**Written Submission from
Northwatch**

**Mémoire de
Northwatch**

In the matter of

À l'égard de

Ontario Power Generation

Application to refurbish Pickering Nuclear
Generating Station and to renew licences
for the Pickering Nuclear Generating
Station and Waste Management Facility

Ontario Power Generation

Demande concernant la réfection de la
centrale nucléaire de Pickering et le
renouvellement de ses permis pour la
centrale et l'installation de gestion des
déchets

**Commission Public Hearing
Part 2**

**Audience publique de la Commission
Partie 2**

October 2026

Octobre 2026

August 12, 2026

Canadian Nuclear Safety Commission
280 Slater St
PO Box 1046 Stn B Ottawa ON K1P 5S9

Ref. 2026-H7

Sent by email interventions@cnsccsn.gc.ca

Commission Members:

Re. **Ontario Power Generation's Application to refurbish Pickering Nuclear Generating Station and to renew licences for the Pickering Nuclear Generating Station and Waste Management Facility**

On July 21, 2025, the Canadian Nuclear Safety Commission (CNSC) issued a notice of its intent to conduct a public hearing on an application by Ontario Power Generation (OPG) to refurbish the Pickering Nuclear Generating Station and renew its Pickering Nuclear Generating Station and Waste Management Facility licences. A revised notice was issued on January 22, 2026, announcing changes to the hearing locations and hearing dates and to clarify that the purpose and the scope of the hearing include the Commission's duties as an agent of the Crown.

Ontario Power Generation is seeking authorization for the refurbishment of the Pickering Nuclear Generating Station (PNGS), the renewal of its power reactor operating licence for the PNGS and the renewal of its waste facility operating licence for the Pickering Waste Management Facility (PWMF) for a 10-year period and to consolidate the licensed activities of the separate licences into a single Pickering power reactor operating licence.

OPG's current power reactor operating licence for the PNGS and waste facility operating licence for the PWMF are valid until August 31, 2028. OPG is currently authorized to operate Units 5 to 8 until December 31, 2026. OPG sought and received amendments to their waste facility operating license in 2024 and 2025.

OPG is requesting renewal of the PROL for a 10-year licence term from January 1, 2027 to December 31, 2036

In 2024 the CNSC held a hearing in writing on an application from OPG to change the licensing basis for the PWMF to authorize wastes being removed from the irradiate fuel bay that has been cooled for only 6 years, rather than the required 10 years. The requested amendment was approved.

In 2025 the CNSC held a hearing-in-writing to amend the waste facility operating licence for the Pickering Waste Management Facility (PWMF) to authorize the construction and operation of a new structure called the Pickering Component Storage Structure (PCSS) for the storage of low- and intermediate-level radioactive waste that would be generated during future decommissioning and proposed (but not approved) refurbishment activities at the Pickering Nuclear Generating Station.



Northwatch's Interest

Northwatch is a public interest organization concerned with environmental protection and social development in northeastern Ontario. Founded in 1988 to provide a representative regional voice in environmental decision-making and to address regional concerns with respect to energy, waste, mining and forestry related activities and initiatives, Northwatch has a long term and consistent interest in the nuclear chain, and its serial effects and potential effects with respect to northeastern Ontario, including issues related to uranium mining, refining, nuclear power generation, and various nuclear waste management initiatives and proposals as they may relate or have the potential to affect the lands, waters and/or people of northern Ontario.

Northwatch is interested in Ontario Power Generation's waste-generating activities (i.e. the operation of nuclear reactors for the purpose of electric power production) and their approach to nuclear waste management and containment over various time frames. Northwatch's key areas of focus in licencing reviews are OPG's past, present and proposed management of the radioactive wastes it generates and the condition and containment of those wastes. Throughout OPG's operations, Northwatch is interested in how operations and operational decisions affect fuel conditions, waste volumes, and waste attributes. In this review, Northwatch is particularly interested in wastes that will be generated during decommissioning, refurbishment and extended operation at PNGS and their containment.

For the record, Northwatch wishes to note that while listed among those to whom the CNSC awarded participant funding, for a variety of reasons including reasons related to the funding decision, the failure of OPG's application or submission to provide sufficient information to support Northwatch's identified areas for expert review, external factors, and Northwatch's ongoing review of our approach to nuclear licensing reviews, Northwatch will not be drawing on that award and as such is an unfunded participant.

Context

The Pickering Waste Management Facility is co-located with the Pickering Nuclear Generating Station (NGS) on the north shore of Lake Ontario, in the City of Pickering, and is located 32 km northeast of downtown Toronto. Owned and operated by Ontario Power Generation Incorporated (OPG), the Pickering NGS consists of eight CANDU pressurized heavy water reactors and associated facilities. Of the eight reactor units, Pickering "A" units 1 through 4 are no longer operating. Pickering "B" units 5-8 s have a nominal electrical output of 516 MWe. CNSC has approved a series of extensions of operation for units 5-8 units until the end of 2026.

In January 2025 the Ontario government approved Ontario Power Generation's (OPG) plan to proceed with the Project Definition Phase, projected at that time to be carried out through 2026 with a budget of \$4.1 billion budget, part of a total of \$6.2 billion in "development" work.¹ In June 2025 Ontario Power Generation's license application included the of decommissioning of Pickering NGS Units 1 to 4, and refurbishment of Pickering NGS Units 5 to 8.²

¹ <https://news.ontario.ca/en/release/1005620/ontario-advancing-plan-to-refurbish-pickering-nuclear-generating-station>

² <https://www.opg.com/documents/pickering-licence-renewal-application-pdf/>

OPG's application would authorize OPG to refurbish and continue to operate units 5-8 of the Pickering NGS and renew and consolidate the operating licences of the Pickering NGS and Pickering WMF into a single licence, valid for a 10-year period.³

During the proposed refurbishment of units 5-8, OPG plans to replace major reactor components (e.g., fuel channels, feeders, and steam generators) and make other "enhancements to improve plant safety, reliability, and performance". These planned "enhancements" include a deep-water intake (DWI), a containment filtered venting system, and high wind hazard protections.⁴

Review of Key Issues

Sequencing of Licence Review with Reporting

There are several instances where this license review is hampered or potentially unduly limited by the reviews or plans not yet being completed, not being available to the Commission and intervenors, or the scheduling of cyclical reporting not being aligned with the license terms.

Examples of this include:

- OPG plans to complete the PSR3 GAR by August 2026 and submit it to CNSC staff for review. CNSC staff anticipate completing this review and providing feedback to OPG by January 2027; the effect of this timing combined with the earlier license application is that these reports were not available for the license review⁵
- OPG plans to submit the IIP to CNSC staff for acceptance by August 31, 2027. CNSC staff's review and acceptance of the IIP is anticipated to be completed by November 30, 2027; the effect of this timing combined with the earlier license application is that these reports were not available for the license review⁶
- CNSC staff have included licence condition 3.4 in the proposed PROL that would require OPG to conduct a PSR at least every 10 years and implement the associated IIP⁷

REQUEST: align this reporting cycle with licensing process so the PSR, GAR, IISP are available prior to licensing review, not after; to achieve this, next reporting cycle should be shortened to seven years

- The staff CMD description of Detailed Decommissioning Plan for Pickering A indicates that Volume 3, or Planning Envelop (PE) PE-C includes "Nuclear Component Removal – Removal of component and systems that are considered part of a nuclear system (including IFB-A and AIFB)"⁸
- PE-C has not yet been submitted, meaning that this information is not available to the Commission or intervenors as part of this license review

³ CNSC Staff CMD 2026-H7, Pg 1

⁴ CNSC Staff CMD 2026-H7, Pg 1

⁵ CNSC Staff CMD 2026-H7, page 14

⁶ CNSC Staff CMD 2026-H7, page 14

⁷ CNSC Staff CMD 2026-H7, page 14

⁸ CNSC Staff CMD 2026-H7, page 24

REQUEST: establish a regulatory hold point for the submission and review of PE-C with a comment period or the public and Indigenous peoples and a public hearing by the Commission to review the decommissioning plan for the irradiated fuel bays (IFB-A and AIFB)⁹

- According to the CNSC Staff CMD OPG is currently conducting decommissioning activities at the Pickering NGS associated with PE-A and PE-B, which the staff CMD generalizes to be “of non-nuclear outbuildings” and “removing and recycling of non-nuclear SSCs” and CNSC staff determined that these activities could proceed under the current PROL for the Pickering NGS;¹⁰ however, there is some lack of clarity, per a statement with respect to PE-A3 that “Outbuildings not required after units 1-4 irradiated fuel bays (IFBs) are emptied, drained, and dried”¹¹ which suggests that the IFBs are to be emptied, drained and dried as part of PE-A activities

REQUEST: OPG and CNSC staff should clarify the intended timing of the draining of the IFBs to the Commission during the Day 2 hearing; the Commission should direct that the IFBs are not to be emptied, drained and dried until after the submission and review by the Commission of PE-C (describing the decommissioning of the irradiated fuel bays)

- OPG is required to update the DDP submission at least every 5 years to provide up-to-date detail on activities anticipated over the next 5-year period. OPG’s next DDP update, expected in 2030, would include a detailed discussion of work associated with PE-A3, which is anticipated to begin in 2034. CNSC staff found that the anticipated work associated with PE-A3 is similar to that of PE-A1 and PE-A2. Therefore, CNSC staff have no concerns with OPG initiating work on PE-A3 during the proposed licence period under the existing decommissioning program, once DDP Volume 1 (24) is suitably updated and accepted by CNSC staff.¹²

REQUEST: the updating of the DDP every five years should be aligned so the updated DDP is reviewed shortly before the license review or as part of the license review process

- The CNSC staff CMD indicates that OPG has tentatively scheduled the next “safety culture” assessment for Pickering NGS staff and on-site contractors for 2026.¹³

REQUEST: “safety culture” assessments carried out every five years should be aligned to report in advance of license reviews and should directly discuss reported incidents that inconsistent with the demonstration of a “safety culture” at the nuclear generating station

⁹ Northwatch was offered participant funding to support our technical review of the decommissioning of the irradiated fuel bays, but the detailed decommissioning plan for the irradiated fuel bays was not available as part of this license review. Consequently, Northwatch did not draw on the participant funding award. Northwatch requests that the funding awarded to Northwatch for the review of the decommissioning plan for the irradiated fuel bays be reserved to draw on for the review of volume 3, and that a public comment period be included; alternatively, a stand-alone offer of participant funding could be announced and available to all intervenors.

¹⁰ CNSC Staff CMD 2026-H7, page 25

¹¹ CNSC Staff CMD 2026-H7, page 26

¹² CNSC Staff CMD 2026-H7, page 26

¹³ CNSC Staff CMD 2026-H7, page 33

Consolidation of the Operating Licences for the Pickering NGS and Pickering WMF

OPG has requested that the PROL for the Pickering NGS and the WFOL for the Pickering WMF be consolidated into a single renewed PROL. OPG describes this as “an administrative change with no impact to the safe operations, regulatory requirements, or governance programs of either facility”, which is a proposition that CNSC staff have accepted.¹⁴

While we do not object to the consolidation of the licenses we do take exception to CNSC having reported on the two licenses as if already combined in their *General assessment of SCAs*. This should have been done separately for this review, as it was presumptuous to consolidate prior to Commission approval of the consolidation of the licenses.

Fuel Defects

During the proposed licence period, OPG plans to encapsulate damaged/defective fuel currently stored in the IFB-A and AIFB for storage in DSC storage buildings at the Pickering WMF. This project is in the preliminary design phase, and CNSC staff will review applicable information once submitted.^{15,16,17}

Northwatch has been identifying concerns with fuel waste management at the Pickering Generating Station over several license terms for both the PROL and PWMF licenses, including issues with respect to the Pickering Nuclear Generating Station’s history of fuel defects and failures in the fuel detection system.¹⁸ We have raised this concern in the past relative to the potential for the defective fuel to further exacerbate the already large challenge of long-term management of nuclear fuel waste, but the history – and challenge – of fuel defects is directly relevant to the current discussion of decommissioning and on-site fuel waste management. Fuel defects have multiple consequences, including increased potential for worker exposure, additional radiological burdens in intermediate level wastes in the short, medium and long term. As CNSC staff acknowledged during the Pickering license review in 2013, fuel defects are a precursor to public dose.¹⁹

Fuel cladding has two primary purposes: to maintain the geometry of the fuel, and to act as a container. Fuel cladding is the first physical barrier between the irradiated fuel pellets and the environment. Changes that alter the physical structure and mechanical properties of a fuel bundle can cause damage. For example, oxidation of the cladding weakens its mechanical properties and decreases its thermal conductivity. In-reactor corrosion can also lead to embrittlement. Any of the just described phenomena can lead to damage or even failure of the fuel cladding.²⁰

As was discussed during the Pickering licence review in 2013, over longer periods of time, even micro-defects in fuel bundles – which effectively become waste containers after removal from the reactor core – have increasingly more significant potential consequences. Long term storage – either

¹⁴ CNSC Staff CMD 2026-H7, page 28

¹⁵ CNSC Staff CMD 2026-H7, page 46

¹⁶ CNSC Staff CMD 2026-H7, page 55

¹⁷ CNSC Staff CMD 2026-H7, page 60

¹⁸ See Northwatch 13-H2.123 Section on fuel defects; excerpts in Appendix 1

¹⁹ CMD 13-H2.1B, page 1

²⁰ “Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel”, United States Nuclear Waste Technical Review Board, December 2010

dry storage on site or some form of centralized storage – rely on a multiple barrier approach. The weakening of the first barrier by any means – corrosion, dryout, temperature fluctuations – can potentially lead to failure. This, in turn, may lead to or hasten the release of radioactive materials into the storage container or even, ultimately, into the environment.²¹

Fuel defects are a continued concern in reactor operations reviews in Ontario. Historically, there have been issues around fuel integrity at Pickering, Bruce and Darlington nuclear generating stations. During the 2013 licence review for the Pickering Nuclear Generating Station Northwatch raised concerns about fuel defects that had been reported during operations at the PNGS and the implications of those defects for long term waste management. During the 2015 license review for the Bruce NGS issues were flagged with respect to end-plate cracking. Fuel defects were also an issue during the last license review for the Darlington station. As reported in that license application¹, the application addendum² and OPG’s August 2013 CMD²², issues with fuel integrity were a matter of concern at the Darlington NGS.

REQUEST: the Commission should require OPG to specifically report on the issue of fuel defects in any future applications, and a section on fuel defects should be included in the annual regulatory oversight reports on nuclear power plants.

As CNSC staff have noted, while OPG indicated in their application that damaged and defective fuel would be “cleaned” from IFB-A and AIFB, the application did not provide further details, particularly regarding storage after removal from the IFB. CNSC further noted that OPG had committed that “as a part of the project to store defective fuel, a safety analysis will be completed for the transfer, processing and storage of DSCs containing canned defective fuel at the Pickering WMF.” CNSC staff noted that such an assessment has not yet been provided to CNSC staff and a determination on its acceptability has not yet been made.²³ It is also important to note that there was no discussion of the damaged/defective fuel currently stored in the IFB-B.

While CNSC in their comment requested that OPG provide additional details regarding the cleanup and storage of damaged or defective fuel, including the amount currently stored in the IFBs and the status of the safety analysis, in Northwatch’s view this must be conveyed to OPG as direction rather than a “request”, and the more detailed proposal must be the subject of a regulatory hold point with an opportunity for public review and comment (supported by technical assistance).

In their response, OPG referenced the recently submitted Decommissioning plan and very generally described their intention to follow an approach similar to that employed by Hydro-Quebec, while noting at the same time that the volume is quite different and the dry storage containers employed by Hydro Quebec are of a different design.

In their response, OPG estimated that the “defective volume is estimated as less than 2% of the full bundle inventory”, which means there is a significant volume of damaged or defective fuel.

²¹ “Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel”, United States Nuclear Waste Technical Review Board, December 2010

²² CMD 15H-8.1

²³ OPG’s Responses to CNSC Staff’s Sufficiency Review on the Renewal Application for the Pickering NGS and PWF Licenses, undated, CNSC Staff CMD Attachment 1 - Page 10 of 51

Purportedly, the modification to design and build the canning system is currently in the detailed design phase, while the modification to modify fuel modules for dry storage of canned damaged/defective fuel (referred to as Damaged or Defective Fuel (DDF) Module) is currently in preliminary engineering phase.

REQUEST: require OPG to report to the Commission specifically and in detail on their fuel defect detection program and its performance, and that the Commission’s review of their fuel detection program be incorporated into a hold point for the licence renewal.

REQUEST: Direct OPG to develop and present a strategy for removal of defective and damaged fuel for IFB-B, to present that plan to the Commission for implementation prior to restart of operation of units 5-8.

In their response to CNSCs comments OPG indicated that they have informed NWMO of the canning project, and plans on involving them throughout the design phase, to ensure canned fuel can be accepted by the NWMO at the Deep Geological Repository.²⁴

REQUEST: Direct CNSC staff to utilize the Impact Assessment Agency’s public registry for the NWMO’s Deep Geological Repository Project to ensure that the review process for OPGs “canning project” is open and transparent and that those interested parties engaged in the Impact Assessment Review process are apprised of this related development.

Security Concerns with Transfers of Used Fuel to WMF Phase II

According to the CNSC Staff CMD, Pickering units 5-8 refurbishment activities may impact the availability of the transporter route for DSCs, and OPG has extended this route to allow for more transportation flexibility. CNSC staff found that OPG’s extension of the transporter route adequately met physical design requirements.²⁵

The extension of this route increases concerns previously raised by Northwatch with respect to the security of unsealed dry storage containers during transfer to the processing building, which in the future will be located in the Phase II protected area, some distance from the irradiated fuel bay from which the unsealed DSCs will be transported.

The Pickering WMF handles and stores used nuclear fuel produced at the Pickering NGS and spans two phases within the overall boundary of the Pickering site. Phase I is situated within the protected area of the Pickering NGS and includes the current DSC processing building, and DSC storage buildings #1 and #2. Phase II is located northeast of phase I within its own protected area. It includes DSC storage buildings #3 and #4, dry storage modules (DSMs), and the currently under construction DSC storage building #5 and the approved but potentially not yet constructed Processing Building which is to replace the Processing Building located in the Phase I protected area (shared with the IFBs).

²⁴ OPG’s Responses to CNSC Staff’s Sufficiency Review on the Renewal Application for the Pickering NGS and PWF Licenses, undated, CNSC Staff CMD Attachment 1 - Page 10 of 51

²⁵ CNSC Staff CMD 2026-H7, page 60

During the 2017 license review of the Pickering Waste Management Facility License and the 2018 Pickering Reactor Operating License Reviews Northwatch raised concerns with respect to the security of waste during transfer to the Phase II Pickering Waste Management Area and the potential for sabotage of the irradiated fuel in dry storage containers while being transferred from the irradiated fuel bays to the processing building.

Once out of the spent fuel pool, the primary hazard associated with a DSC loaded with irradiated fuel bundles is an act of malice that breaches the integrity of the container(s) and releases radioactivity. The transfer of used fuel from the irradiated fuel bay to the dry storage container building involves multiple steps including transport of the DSC from the refueling bay to the processing building and then from the processing building to the Dry Storage Container Building.

Currently the processing building is in the same protected area as the irradiated fuel bay. WFOL-W4-350.02/2028 authorizes OPG to construct two additional DSC storage buildings in Phase II and one DSC processing building to replace the current DSC Processing Building.²⁶ The new processing building will be in Phase II of the Waste Management Facility, i.e. in a different protected area.

As described by OPG in their 2016 license application²⁷ the new DSC Processing Building – described in the 2016 application but seemingly still not constructed - would be located in Phase II because “the existing DSC Processing Building at the Phase I site is small and congested, and many of the support functions, offices and workshop areas are located elsewhere on the Pickering Nuclear site. Since there is no room available for the expansion of the Phase I site, moving DSC processing activities to the Phase II site will increase the space for work activities and improve PWMF performance... The (then) proposed location for the new DSC Processing Building is the area west of the existing DSC Storage Building #3 on the PWMF Phase II site.”

When the new DSC Processing building is in operation, DSCs will be transported across unprotected areas before being sealed. Given that it would be easier to remove a transfer clamp holding a lid onto a DSC base or tamper with the unsecured drain plug on a DSC than to breach a sealed DSC, the new location plan introduces a sabotage vulnerability, unless additional security measures are employed during DSC journeys between protected areas. Section 1.5.7 of Attachment 3 to the Ontario Power Generation PWMF license renewal application dated October 28, 2016, stated that a “security escort will continue to be used for each transfer” of a DSC. The nature of this security escort was not described. Testing or other qualification standards applied to this security escort was not described either.

As noted above, an extended route expands this concern.

REQUEST: Retain a third-party expert to undertake a specific review of the exposure of irradiated fuel to the risk of malevolent acts or acts of sabotage during transfer in an unsealed condition between protected zones.

²⁶ OPG CMD 2026-H7.1, page 4

²⁷ OPG CMD, 2016, 1.5.6 New DSC Processing Building during the Next Licensing Period, page 22

Aging Irradiated Fuel Bays

Ontario Power Generation and CNSC staff make multiple references and provide short descriptions for the aging management program for the Pickering reactors in their commission member documents and in OPG's application, confirming that OPG continues to implement its aging and obsolescence management programs and processes and that OPG has implemented lifecycle management plans at the Pickering NGS that establish the strategy and identify necessary actions to ensure that aging effects on major reactor SSCs are appropriately managed for the operating life of the Pickering NGS. These include plans for reactor components and structures, fuel channels, feeders, and steam generators. They do not include the irradiated fuel bays.²⁸

The irradiated fuel pools at Pickering have been performing poorly for two decades, as has been documented over several licensing periods and commented on by Northwatch. The issue of aging and functioning of the irradiated fuel bay that will service Pickering B after refurbishment is a key issue which has been inadequately addressed (if addressed at all). This is a fundamental operating concern for any future operations at Pickering B.

Since at least as far back as 2007, there has been leakage from the irradiated fuel bays and multiple instances of OPG being directed by the CNSC to correct issues associated with the IFBs. Examples include:

- uncompleted repairs to liner cracks
- at the time of the 2023 PSR, the seismic capacity of the current spent fuel basket stacking had not been documented; OPG advised Northwatch by email during the 2025 review that these issues have been addressed, but provided no supporting documentation of the issues having been resolved
- issues identified with associated equipment and availability of parts; specifically, in at least one case OPG had no spare parts available for IFP supporting equipment

In addition, there was a lack of clarity in the 2018 documentation around the degree to which enhancements to water makeup/cooling capability for the Irradiated Fuel Bays have been completed. While OPG's documentation includes general references to makeup water enhancements, we were unable to clearly establish that this important safety measure was actually fully in place with respect to the irradiated fuel bays in particular. Similarly, we were unable to find any indication in the 2023 Pickering NGS: Periodic Safety Review 2-B (PSR2-B) Global Assessment Report (GAR) or Pickering NGS: Periodic Safety Review 2-B (PSR2-B) Integrated Implementation Plan (IIP) that this issue had been addressed.²⁹

The 2018 Period Safety Review reported that there was a corrective maintenance backlog across all bays and systems, described the problems with irradiated fuel bay leakage as chronic and noted equipment deficiencies associated with all three irradiated fuel bays.³⁰

Despite the seriousness of this issue, the 2023 Pickering NGS Periodic Safety Review 2-B (PSR2-B) provided no updates or reports on the state of the irradiated fuel bays or progress in addressing

²⁸ For example, see CNSC Staff CMD 2026-H7, page 65

²⁹ Pickering NGS Periodic Safety Review 2-B (PSR2-B): Global Assessment Report, Kinectrics File No. K-20506/RP/0002 R02, OPG File No. P-REP-03680-00048 R000, April 28, 2023

³⁰ OPG Document No. P-REP-03680-00005 R01, PSR SF2, Section 4.1.4 REVIEW TASK #4 - SPENT FUEL STORAGE FACILITIES

equipment deficiencies associated with the three irradiated fuel bays. The 2024 CNSC staff Commission Member Document also failed to provide any report on progress in addressing these previously reported operational failures.³¹ In Ontario Power Generation’s 2023 application to extend operations at Pickering until 2026 they stated that “*upcoming projects include improvements to the Irradiated Fuel Bay (IFB) cooling and purification system, chemistry analyzer and stack monitor improvements, system performance monitoring data acquisition upgrades, investments in Fuel Handling (FH) reliability, and further investments in equipment reliability across a number of systems*”. This statement might have been indicating that addressing these deficiencies is still on OPG’s “to-do” list, but the account lack sufficient detail.³²

The 2018 period safety review noted that leakage from IFB-B to the collection sumps has been increasing since 2007. Reportedly, the intended strategy was to maintain the water levels in the collection sumps below groundwater level so that any leakage is inward and not outward. Northwatch questioned this selection of strategies in the 2018 review, suggesting that a decade-old leak warranted direct attention, rather than makeshift management. There was no report of mitigative actions or of the status of this leakage included in the 2023 PSR2-B.³³ It is unclear whether this condition persists and applies to the IFB

OPG also described in the 2018 PSR their “intention to mitigate leaks from the P058 IFB, and its collection sumps, to minimize the leak rate and to reduce the potential for environmental risk.” There was no report of whether this intention to mitigate these leaks was realized, and no report on the status of this leakage included in the 2023 PSR2-B.³⁴

These issues were not addressed or reported out in the 2023 PROL licencing documents, including the application, the CNSC staff CMD and the Periodic Safety Review or in the 2026 application, OPG CMD or the CNSC staff CMD. Therefore, they continue as live issues which require the attention and address of the Commission.

In 2015 Northwatch retained the Wreathwood Group to support our review of OPG’s application to renew the operating license for the Darlington Nuclear Generating Station³⁵ and their findings in that review are instructive for the current review of OPG’s application to renew the Pickering operating license and to refurbish Pickering B.

One area of focus for The Wreathwood Group’s review was the effects of aging on structural integrity of the irradiated fuel bays. Issues identified by the Wreathwood Group that are directly relevant to OPG’s current application for Pickering operating license relate to the physical degradation of the IFBs because of the prior exposure to radiation effects from the fuel stored there and the importance of addressing IFB function and operations within aging management program.

³¹ CNSC Staff CMD 24-H5

³² Application to extend the operation of Pickering Nuclear Generating Station Units 5 to 8 until December 31, 2026, June 2023, 24-H5-1, page 94

³³ Pickering NGS Periodic Safety Review 2-B (PSR2-B): Global Assessment Report, Kinectrics File No. K-20506/RP/0002 R02, OPG File No. P-REP-03680-00048 R000, April 28, 2023

³⁴ Pickering NGS Periodic Safety Review 2-B (PSR2-B): Global Assessment Report, Kinectrics File No. K-20506/RP/0002 R02, OPG File No. P-REP-03680-00048 R000, April 28, 2023

³⁵ Northwatch comment on 2025-H-02, Ontario Power Generation’s application to renew power reactor operating licence for the Darlington Nuclear Generating Station, May 2025

As was the case with the Darlington license application in 2025, we found no evidence in the current Pickering application and supporting documents of OPG having an aging management program specifically for the IFBs, including no description of the extent to which any reanalysis of the IFB structural integrity has taken account of any aging effects of the IFBs. As a result, there is no basis for judging the integrity of the IFBs over the next 30 years of operation.

Concerns about the effects of aging on the performance of the irradiated fuel bays are supported by observations with respect to the aging Pickering Nuclear Generating Station. As disclosed in the 2013 licence application for the Pickering Nuclear Generating Station, there were two serious incidents at the Pickering NGS involving leaks of tritiated water to groundwater, both associated with the aging pumps and pools. According to the brief descriptions, tritium in groundwater in the Units 5-8 Irradiated Fuel Bay B (058 IFB) area was due to the bay sumps not operating as designed, allowing tritium to escape to groundwater, beginning in 2005 and first in 2007. Also in 2007, chronic leaks of active water to inactive Unit 6 Reactor Building foundation drainage sumps were identified as the cause of elevated tritium in groundwater. It is not clear if the two above noted incidents were as a result of station aging or were failures that should be attributed to more general failures in either design or maintenance, but it is reasonable to expect that incidents of this type are more likely to increase as the station goes beyond its design life. One of the results of IFB related failures is the contamination of groundwater. As noted in the CNSC staff's 2018 "Environmental Assessment Report" for Pickering³⁶, groundwater samples from 140 sampling points that were collected and analyzed for tritium in 2016 showed that "in many cases, concentrations have remained nearly constant or decreased ... In a few cases, tritium concentrations increased unexpectedly over recent years."

REQUEST: that the Commission require Ontario Power Generation to carry out an assessment of the effect of aging on the irradiated fuel bay, and return to the Commission with this report for the Commission's consideration; a hold point should be included in the license to create an exit ramp if the report or its review identify elevated risk.

Dry Storage Container Re-design

As outlined in the documents for this license review, OPG plans to commission a redesigned Dry Storage Container (MKIII) in 2027.³⁷

The new MKIII DSC modifies the lid-to-base closure weld, with the objective of improving efficiency. In January 2026, OPG submitted a notice of intent to change the DSC design that includes supporting analyses. CNSC staff are currently reviewing this submission.^{38,39}

Northwatch welcomes the intent to redesign the dry storage container for purpose of improving the effectiveness of the containment system. A key added feature should be the addition of internal

³⁶ Environmental Assessment Report: Ontario Power Generation Inc. Pickering Nuclear Generating Station – PROL 48.00/2018 Licence Renewal, CNSC, March 2018

³⁷ CNSC Staff CMD 2026-H7, page 46

³⁸ CNSC Staff CMD 2026-H7, page 55

³⁹ CNSC Staff CMD 2026-H7, page 60

monitoring of the dry storage container in order to measure the performance and condition of the contained fuel waste and monitor any changing conditions within the dry storage container.

REQUEST: the Commission should create a hold point in the license for their review of the redesigned dry storage container

REQUEST: a public review process should be carried out with respect to the dry storage container redesign including a full-day workshop convened by CNSC staff with supporting information and funding for technical assistance available in advance and a comment period to the Commission to follow as part of the Commission's review of the redesigned DSC.

Long-Term Management of Radioactive Waste

In a tidy package of 415 words Ontario Power Generation attempts to dispatch its responsibility for the long-term management of the low, intermediate and high-level radioactive wastes operations at the Pickering Nuclear Generation Station have produced.⁴⁰ For the sake of brevity, OPGs very brief and summary statements are presented here followed by brief commentary presented in bullet-form of the points presented by the NWMO; this is by no means the comprehensive analysis the Commission requires to assess statements made by the NWMO to the Commission in previous presentations or the summary presented by OPG (who has majority control of the NWMO and provides more than 90% of NWMO's funds):

The NWMO, in accordance with the federal Nuclear Waste Act (2002), is responsible for implementing Canada's plan for the safe, long-term management of used nuclear fuel. Under the NWMO's plan, a deep geological repository for used fuel is expected to be in-service in the mid-2040s. On November 28, 2024, the NWMO announced the selection of the Wabigoon Lake Ojibway Nation and Township of Ignace as the host communities for the future site for Canada's deep geological repository for used nuclear fuel. After extensive technical study and community engagement, the NWMO selected a site that is safe and where the host communities have demonstrated that they understand the project and support making it part of their community.

- Safety of the NWMO's proposed DGR as an approach for the long-term containment of nuclear fuel waste has not been established
- NWMO has selected a candidate site; they have not presented a plan or design for the several major components of the project including transportation, processing of the wastes, the deep geological repository, supporting operations; in large part these remain at a conceptual level
- Wabigoon Lake Ojibway Nation has accepted NWMO continuing site characterization; they have not stated that they are in support of the project – in fact, their statements on November 18th and November 28th 2024 make it clear that they have not made a determination of support and will do so only at a later date and through their own sovereign process
- The Township of Ignace held an online poll that questioned if residents favoured continuing in the NWMO "process"; it did not ask respondents if they supported the transportation, processing and burial of the wastes in the region

⁴⁰ OPG CMD 2026-H7.1 pages 207-208

- The NWMO's candidate site for the DGR is not in the community of Ignace, therefore the DGR will not be "part" of the community of Ignace; the candidate site is 45 km northwest of the Township of Ignace and is in a different watershed; there are several other communities that are closer to the site who have not been asked if they are "willing" hosts and have not expressed support for the project
- Nearby communities – communities that are closer to the site than Ignace – have raised serious concerns and issues about the NWMO project during the planning phase of the Impact Assessment process which is now underway
- NWMO has provided no evidence that "extensive technical study" resulted in the selection of the Revell site (NWMO's candidate site between Ignace and Dryden in northwestern Ontario)

This process was guided by the NWMO's commitment to Reconciliation, based on co-creating a shared future, built on rights, equity and well-being for Indigenous peoples

- Grand Council Treaty #3, Nishnawbi Aski Nation and the Anishnabek Nation have all recently – and previously - passed resolutions opposing the transportation and burial of high-level nuclear fuel waste in through and in their territory; these three treaty organizations represent the First Nations in Ontario along the transportation route and in the vicinity and downstream of the Revell site
- The NWMO may truly believe that their process was guided by a commitment to reconciliation, but this is not a view that is shared by the Indigenous peoples who will be impacted by the project and have engaged with the NWMO through various means and for a

Additionally, under the Federal Government's Integrated Strategy for Radioactive Waste (ISRW), the NWMO is also responsible for the long-term disposal of ILW. As per the ISRW, ILW is to be disposed in a deep geological repository with an expected in-service date by 2050.

- OPG wrote in their CMD for their application to amend the waste facility operating licence for the Pickering Waste Management Facility that "for ILW, the ISRW determined that a Deep Geologic Repository (DGR) is appropriate for permanent disposal, and the NWMO will implement a consent-based siting process for this. The planning process for this work is now underway"⁴¹ but the only planning process that is "underway" is one that is internal to the NWMO.
- In our submission Northwatch noted that the document is dated February 18, 2025 and it may have been the legitimate expectation of the authors at that time that a "planning process" for a deep geological repository for intermediate level radioactive waste would be underway by July 2025, as NWMO had been saying for some time – as the time of writing the CMD – that they would be providing the Minister with a "plan" by March 2025 but whether any report, plan or proposal was in fact provided to the Minister by March 2025 is unknown. What is known is that in their 2024 Annual Report, published in March 2025, NWMO described developing a community-driven siting process over the next five years, while also saying that they expect to finalize that site selection process – developed over the next five years – in the

⁴¹ OPG CMD 25-H101, page 5

next two years and launch it in three years, with the site selection process itself expected by NWMO to “take several years”.⁴²

- To date the NWMO’s efforts in this area appear to be limited to the release of the June 2025 discussion paper [*Proposed site selection process for Canada's second deep geological repository for radioactive waste*](#) and a series of unannounced and undisclosed meetings

As outlined in the NWMO’s ISRW, waste owners, including OPG, are responsible for the disposal of LLW. OPG’s approach to finding disposal solutions includes two-way information sharing and engagement with Indigenous communities and community stakeholders. Before starting outreach, OPG has acted on feedback from Indigenous Nations who have requested greater information about the energy sector to make informed decisions about activities in their territories. Since 2024, OPG has offered an energy educational resource, Generation for Generations, to help empower communities to make informed decisions as they set their own path toward a clean energy future. This program is showcased at energy events, used to support Indigenous engagement activities, and provides as a self directed educational resource for Indigenous Nations and communities to learn more about Ontario’s electricity sector. As per the ISRW, LLW is to be disposed of in near surface disposal facilities with implementation by waste generators and waste owners. In alignment with NRCAN’s Policy for Radioactive Waste Management and Decommissioning, by 2050 key elements of disposal infrastructure are to be in place and planning for remaining facilities will be underway.

- The long-term management of low-level radioactive waste is briefly described in the OPG CMD, variously as “transient” and as being managed at the Western Waste Management Facility, where “once received at the WWMF, the L&ILW is further volume reduced and stored on an interim basis.”⁴³ There are no statements in the body of the Ontario Power Generation’s Commission Member Document (CMD) describing longer-term plans for the residual low-level radioactive waste, but there are repeated references included in the Pickering Nuclear Site Indigenous Engagement Report March 2023 to January 2026 to a “provincial-wide engagement for low-level waste disposal facility hosting”⁴⁴ with no actual information about this “engagement” provided.
- In Ontario Power Generation’s license renewal application, a similarly brief reference is made, stating that “OPG intends to initiate outreach to find solutions for disposal of LLW and will begin with a learning phase focusing on two-way information sharing and education, starting with Indigenous communities”. It is unclear from this statement that the “two-way information sharing” has “facility hosting” as its intended endpoint. That statement is immediately followed by the also ambiguous claim that “Before starting outreach, OPG has acted on feedback from Indigenous Nations who have requested greater information about the energy sector to make informed decisions about activities in their territories. In 2024, OPG developed an energy fundamentals outreach program which will commence in 2025 and help frame next steps for OPG’s LLW permanent disposal solutions. As per the ISRW, LLW is to be disposed of in near

⁴² NWMO 2024 Annual Report, March 2025, as posted at https://www.nwmo.ca/-/media/Reports-MASTER/Corporate-reports/Annual-and-triennial-reports/NWMO-Annual-report-2024.ashx?rev=fc0163b35b1140d4bec882947c903d89&sc_lang=en

⁴³ OPG CMD 2026-H7.1, page 207

⁴⁴ Appendix F, OPG CMD 2026-H7.1

surface disposal facilities with an expected in-service date by 2050”.⁴⁵ No description is provided in the CMD – produced approximately one year later – about these “outreach programs” about “energy fundamentals” or about “hosting” a low-level radioactive waste repository.

- From other sources we have verified that this is not a new initiative, and the purported timeline for this “provincial” initiative was either very speculative or simply not being met.
- For example, in OPG’s filings with the Ontario Energy Board in 2023 Ontario Power Generation wrote that “OPG intends to commence an open, consultative province-wide engagement process to identify willing host communities for disposal of its low-level waste in 2024.”⁴⁶
- Canada’s Eighth National Report to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in August 2024 reports from an unidentified source⁴⁷ that “OPG is moving forward with developing alternative solutions for the permanent disposal of low-level waste. OPG is starting the Low-Level Waste Initiative (LLWI) in 2024 with a learning phase as part of a province-wide opt-in process to seek willing host(s). In the learning phase, OPG will first engage with Indigenous Nations and communities, using a respectful approach of two-way dialogue, listening, learning and sharing to build a plan together for a low-level waste disposal facility (LLWDF)”.⁴⁸
- In their 2025 application to amend the Pickering Waste Management Licence Ontario Power Generation described having “initiated provincewide outreach to find solutions for permanent disposal of our LLW. The outreach begins with a learning phase, in which OPG reaches out to Indigenous Nations and Communities across Ontario, followed by municipalities, to begin two-way dialogue on the role of nuclear energy and disposal of LLW” in 2024.
- During that 2025 licence review we carefully reviewed Ontario Power Generation’s web site, including the sections of the web site dedicated to OPG’s “Nuclear Sustainability Services (NSS)” and find no description or even reference to this “provincewide outreach” campaign OPG purportedly carried out in 2024. As we commented in our submission on that application, it also did not appear to have been the subject of any media coverage throughout that period (although media searches generate a large volume of news items on OPG’s failed effort to develop a deep geological repository for low-level radioactive waste beneath the Bruce nuclear generating station).
- Our assessment is that OPG’s description of their “provincewide outreach” is exaggerated at best. It is also quite possible that a) the description is deceptive, and / or b) the process is secretive. None of these are positive attributes.

It is a matter of frustration to public interest intervenors such as Northwatch to have this kind of material entered into the record with no opportunity to question or test its validity.

⁴⁵ Pickering Nuclear Generating Station Power Reactor Operating Licence Renewal Application, Ontario Power Generation, June 2025, page 247

⁴⁶ ONTARIO POWER GENERATION INC., Management’s Discussion & Analysis, page 23 as posted at <https://www.oeb.ca/sites/default/files/Q4-2023-OPG-PR-MDA-FS-FINAL.pdf>

⁴⁷ Ontario Power Generation is identified as a contributor, as is the Canadian Nuclear Safety Commission, Nuclear Waste Management Organization and others, but the report lacks footnotes or references and so the actual source of information points included are not identified.

⁴⁸ CANADIAN NATIONAL REPORT for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Eighth National Report, August 2024, Page 25

REQUEST: the Commission should establish a process wherein interrogatories or information requests can be filed by intervenors as part of the CNSC review process.

REQUEST: that the Commission direct CNSC staff to update the page(s) on the CNSC web site describing and providing information about low-level radioactive waste to provide information about Ontario Power Generation's purported provincial initiative to site a low-level waste repository

REQUEST: that the Commission direct Ontario Power Generation to add information about Ontario Power Generation's purported provincial initiative to site a low-level waste repository to their web site and public information programs, making the information about the initiative, its status and activities clearly and readily available and accessible

Conclusions

Northwatch wishes to go on the record as opposing the refurbishment of the aging Pickering Nuclear Generating Station, Units 5-8. There are more affordable options to generate electricity that are less problematic than refurbishment and extended operation of an aging nuclear plant. Nuclear power generation at Pickering will continue to impose risk on the nearby population, make unwarranted financial demands on electricity rates and ratepayers, and generate quantities of low, intermediate and high-level radioactive wastes for which the industry has produced only conceptual management plans to be carried out at locations that are either not-yet identified or not acceptable to local and en route populations.

In response to the other proposed license activities – waste management, decommissioning and future generation – Ontario Power Generation continues to take a piecemeal approach, and CNSC staff continues to condone this piecemeal approach, as outlined in the earlier section of this submission on sequencing. This piecemeal approach and the resulting paucity of information available to Commission and intervenors during license review can be explained in either of two ways: either OPG doesn't actually have a plan and approach and are making it up as they go, or they do have a plan but do not want to disclose it to the Commission or to the public and Indigenous peoples. Neither of those explanations are acceptable, and the Commission must assert itself to establish a more orderly and informed approach to planning and licensing for matters within their realm of responsibility (such as this licensing process).

Northwatch recognizes that the licence is going to be renewed – there is no alternative, given the current state of operations at the Pickering Nuclear Generation. Important decisions before the Commission include the conditions of approval and the licence term. Given the magnitude of activities and decisions to be undertaken within the next five years and the failure of OPG to provide sufficient information in their application and supporting documents to allow the Commission to adequately discharge their responsibilities for oversight of the PNGS, we strongly request that the Commission limit the license term to five years and insert regulatory holdpoints as requested by Northwatch and others.

Thank you for your consideration. We look forward to a favourable outcome of the Commission's deliberations.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brenmain Lloyd', is positioned above the printed name.

Brenmain Lloyd

Northwatch Project Coordinator
