



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



Application to Renew the Darlington Waste Facility Operating Licence

Licensee: Ontario Power Generation

CNSC staff presentation

Commission Hearing

January 26, 2023

CMD 23-H9.B





Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B

Presentation Outline

- Purpose of Hearing
- Revised Recommendation
- Facility and Licence Overview
- Licence Renewal Application
- CNSC Staff Regulatory Oversight and Assessment of Safety and Control Areas
- Indigenous and Public Engagement
- Other Matters of Regulatory Interest
- Participant Funding and Interventions
- Conclusions and Recommendations



Source: OPG



Purpose of Hearing

Ontario Power Generation (OPG) has applied to the Commission to:

- Renew the Class IB waste facility operating licence WFOL-W4-255.00/2033 for a period of 10 years

CNSC staff completed a technical assessment of OPG's application:

- Confirmed that OPG's application complies with regulatory requirements

CNSC staff recommend that the Commission:

- Conclude, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* (NSCA), that the licensee:
 - i. **Is qualified** to carry on the activity that the licence will authorize the licensee to carry on; and
 - ii. **Will, in carrying on that activity, make adequate provision** for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- **Renew the 10-year waste facility operating licence** until April 30, 2033, with the updated licence condition 15.1
- **Delegate the authority to CNSC staff** as set out in section 5.6 of CMD 23-H9



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REVISED RECOMMENDATION



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Name Change of the Facility (1/2)


- **OPG request:** Darlington Waste Management Facility be identified in the renewed licence as Nuclear Sustainability Services-Darlington
- **CNSC staff assessment and recommendation in CMD 23-H9:** Change is administrative. No impact on the activities authorized under the licence. No impact on CNSC regulatory oversight.
 - Proposed licence attached to CMD 23-H9 has Nuclear Sustainability Services-Darlington in its heading
- **CNSC reassessment (CMD 23-H9.A):** Nuclear Sustainability Services-Darlington is not a separate legal entity for the purpose of the NSCA; OPG is the licensee. Term waste management facility better aligns with CNSC regulatory framework. Intervenors raised concerns that the licensed activity at the facility was not clearly reflected in the name that appeared in the proposed licence.
- **CNSC staff's revised recommendation:** Title in the licence appear as “Ontario Power Generation Inc. Darlington Waste Management Facility”

CNSC staff recommend the title in the licence appear as “Ontario Power Generation Inc. Darlington Waste Management Facility”



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Name Change of the Facility (2/2)


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PDF Ref.: e-Doc 6896075
 Word Ref.: e-Doc 6822670
 File / Dossier: 37-2-5-0 / 2.05

WASTE FACILITY OPERATING LICENCE

NUCLEAR SUSTAINABILITY SERVICES-DARLINGTON

I) LICENCE NUMBER: WFOL-W4-355.00/2033

II) LICENSEE: Pursuant to section 24 of the *Nuclear Safety and Control Act* this licence is issued to:

Ontario Power Generation Inc.
 700 University Avenue
 Toronto, Ontario
 M5G 1X6


III) LICENCE PERIOD: This licence is valid from **March 30, 2023** to **April 30, 2033**, unless suspended, amended, revoked, replaced, or transferred.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

(i) operate the Nuclear Sustainability Services-Darlington (herein referred to as "the facility"), a waste management facility located at the Darlington Nuclear Generating Station, Township of Darlington, Municipality of Clarington, Regional Municipality of Durham, Province of Ontario;

Original Proposed draft licence CMD 23-H9


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PDF Ref.: e-Doc XXXXX
 Word Ref.: e-Doc 6951709
 File / Dossier: 37-2-5-0 / 2.05

WASTE FACILITY OPERATING LICENCE

**ONTARIO POWER GENERATION INC.
DARLINGTON WASTE MANAGEMENT FACILITY**

I) LICENCE NUMBER: WFOL-W4-355.00/2033

II) LICENSEE: Pursuant to section 24 of the *Nuclear Safety and Control Act* this licence is issued to:

Ontario Power Generation Inc.
 700 University Avenue
 Toronto, Ontario
 M5G 1X6

III) LICENCE PERIOD: This licence is valid from **March 30, 2023** to **April 30, 2033**, unless suspended, amended, revoked, replaced, or transferred.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

(i) operate a waste management facility (herein referred to as "the facility") located at the Darlington Nuclear Generating Station in Township of Darlington, Municipality of Clarington, Regional Municipality of Durham, Province of Ontario;

Revised Proposed draft licence CMD 23-H9.B



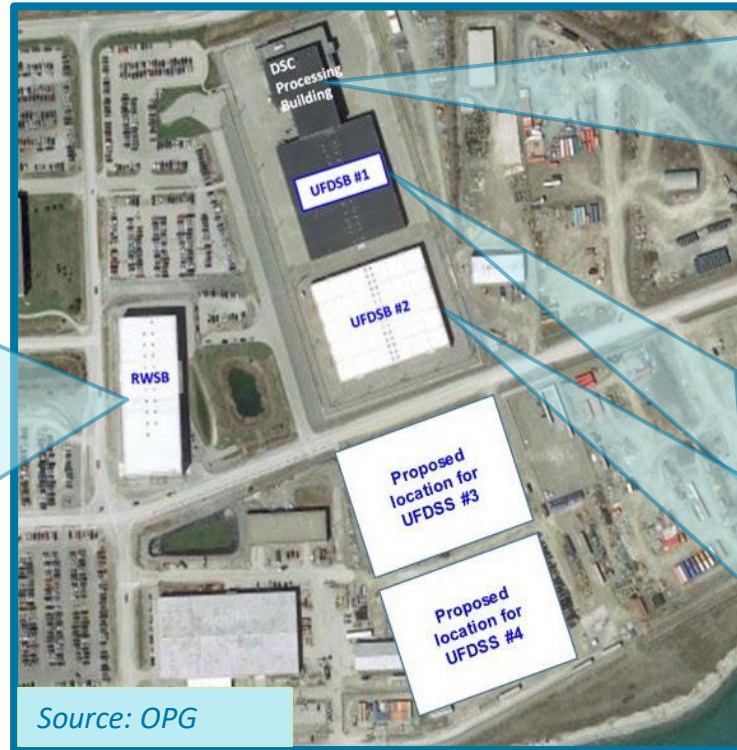
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FACILITY AND LICENCE OVERVIEW



Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B

Darlington Waste Management Facility



Source: OPG





Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B



Current Licence

The current licence authorizes OPG to:

- **Operate the Darlington Waste Management Facility**
- **Possess, transfer, use, process, package, manage, and store nuclear substances** that are required for the operation of the Darlington Waste Management Facility
- **Transport** Category II nuclear materials
- **Carry out the site preparation, construction, or construction modifications** at the facility associated with the **authorized additional storage buildings***
* The current licence authorizes four (4) buildings
- **Possess and use prescribed equipment** and prescribed information that are required for the operation of Darlington Waste Management Facility



Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B

Current Licence History

2013

The licence was issued and valid until April 30, 2023

2016

The licence was amended to:

- **Remove a licence condition on the Environmental Assessment Follow-up Program** (requirement had been fulfilled in 2012 and was not previously removed in 2013 as an administrative oversight)
- **Modify the operational reporting transmittal period** to align the reporting timeline with other OPG nuclear facilities
- **Standardize the licence conditions**

[Record of Decision](#)

2016

CNSC staff, as delegated by the Commission, authorized OPG to operate Used Fuel Dry Storage Building #2 (UFDSB)

2017

CNSC staff, as delegated by the Commission, authorized OPG to operate the Retube Waste Storage Building (RWSB)



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LICENCE RENEWAL APPLICATION



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Licence Renewal Application

OPG's licence application requests the Commission to:

Renew the Class IB waste facility operating licence WFOL-W4-255.00/2033.

In its renewal, OPG is requesting the following:

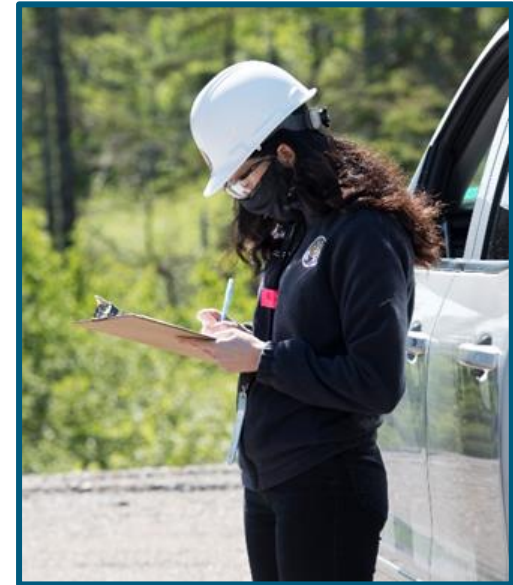
- **A ten-year licence** to operate the waste management facility
- **Change the name** of the Darlington Waste Management Facility to Nuclear Sustainability Services-Darlington
- **Change the name** of the used fuel dry storage buildings to used fuel dry storage structures
- **Carry-over the future construction of two additional used fuel dry storage structures** into the new licence term (further discussed on slide 35)

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CNSC Staff's Review of the Licence Application

CNSC staff:

- **Verified** that the information submitted in support of the application is complete
- **Assessed** OPG's past performance against the regulatory requirements
- **Confirmed** all aspects of OPG's application and proposed safety and control measures complies with CNSC regulatory requirements



Source: CNSC



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Environmental Protection Review under the NSCA

CNSC staff conducted an [Environmental Protection Review \(EPR\)](#) under the NSCA to assess the environmental and health effects of the DWMF

OPG's measures for the protection of the environment and health of persons have been effective



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CNSC Staff Engagement with Indigenous Nations and Communities (1/2)

CNSC staff engaged with
the following Indigenous Nations and Communities:

- Alderville First Nation
- Chippewas of Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation
- Curve Lake First Nation

- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Mohawks of the Bay of Quinte
- The Métis Nation of Ontario
- Six Nations of the Grand River



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CNSC Staff Engagement with Indigenous Nations and Communities (2/2)

Activities related to this renewal in 2022:

March	Notification of public hearing via emails with follow-up phone calls
June-August	Notification of public hearing and availability of participant funding via emails with follow-up phone calls
September	Funding awarded to Indigenous Nations and communities through CNSC's Participant Funding Program. Virtual meetings held with Curve Lake First Nation and Mississaugas of Scugog Island First Nation
October	In-person meetings with Curve Lake First Nation, Hiawatha First Nation, and Mississaugas of Scugog Island First Nation took place
November	Indigenous Nations and communities provided with CMD 23-H9 and Environmental Protection Review Report. Webinar took place.



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CNSC Staff Public Engagement

Event	Date
Announcement for Notice of Hearing	July 21, 2022
CNSC Webinar	November 9, 2022

82 people registered for the webinar



49 participants attended



Polling showed participants' understanding of the licence renewal increased from 26% to 90%.



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CNSC REGULATORY OVERSIGHT AND ASSESSMENT OF SAFETY AND CONTROL AREAS



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Regulatory Oversight Activities

Activity	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Number of Inspections	1	3	3	4	2	4	1	3	0	4	25
Number of Events Reported	2	2	6	5	2	5	4	3	3	1	33

- A dedicated CNSC facility and compliance team oversees all licensed activities
- CNSC staff track and verify completion of corrective actions to address all non-compliances

CNSC staff report annually to the Commission on licensee performance through Regulatory Oversight Reports



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Assessment of the Safety and Control Areas

- CNSC staff assessed OPG’s licence application and performance against all 14 safety and control areas
- Assessment criteria and results are summarized in CMD 23-H9

CNSC staff confirmed that OPG’s programs meet regulatory requirements

Safety and Control Areas
Management System
Human Performance Management
Operating Performance
Safety Analysis
Physical Design
Fitness for Service
Radiation Protection
Conventional Health and Safety
Environmental Protection
Emergency Management and Fire Protection
Waste Management
Security
Safeguards and Non-Proliferation
Packaging and Transport



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SCA – Operating Performance Storage Inventory (December 2022)

Waste Class	Description of waste	Storage Container	Inventory	Authorized Storage Capacity
Used Fuel Dry Storage Buildings (UFDSB)				
High Level Waste (HLW)	DNGS used nuclear fuel	Dry Storage Container (DSC)	841 DSCs	1000 DSCs
Retube Waste Storage Building (RWSB)				
Intermediate Level Waste (ILW)	DNGS refurbishment waste	Retube Waste Container/ Darlington Storage Overpack (RWC/DSO)	198 RWC/DSO	490 RWC/DSOs



SCA – Safety Analysis

- Safety Analysis Report (SAR) for DWMF must be submitted to the CNSC at a minimum every 5 years
 - OPG submitted a revised SAR in November 2021
- CNSC staff assessed the SAR and confirmed that it:
 - Provides a description of the facility and processes, operating limits, and scenarios based on appropriate hazards and postulated initiating events
 - Provides an assessment of potential consequences and demonstrates the safety case through defence-in-depth
 - Demonstrates that the DSC is the safety-related structure that prevents releases of radiation
- CNSC staff accepted the DWMF SAR in November 2022
- CNSC staff confirm that defective used fuel is stored in the spent fuel bays and is not transferred to DSCs

OPG's safety analysis assesses the hazards associated with licensed activities and demonstrates an adequate level of protection



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SCA – Physical Design

- Current licence authorizes OPG to carry out the:
 - Construction and commissioning of three UFDSB
 - Construction and commissioning of one RWSB
- CNSC staff were delegated authority to approve the operation
- Following submissions by OPG for one UFDSB and one RWSB, CNSC staff confirmed:
 - The design and locations of the new buildings remained within the licensing basis
 - Construction and commissioning results demonstrated that the installation met the functional, performance and safety requirements
- CNSC staff authorized the operation of these buildings in 2016 and 2017

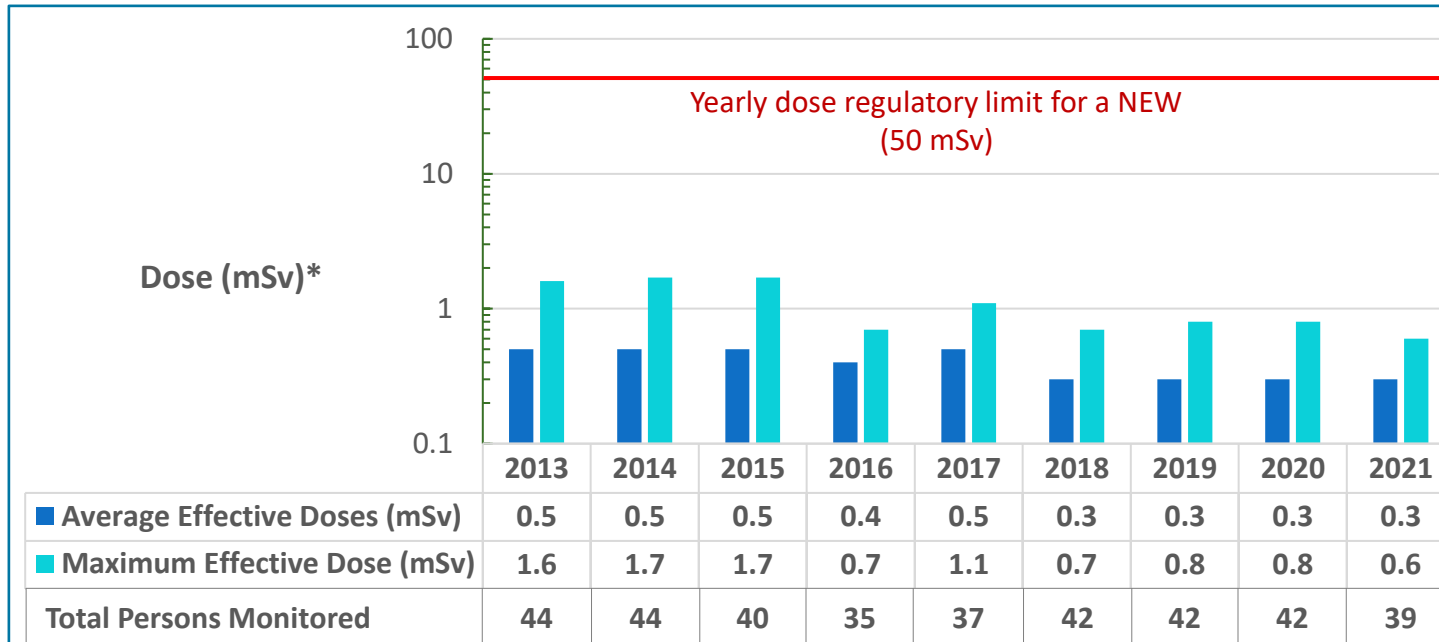
OPG has maintained an effective design program in accordance with its licensing basis



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SCA – Radiation Protection

Occupational Exposures of DWMF Nuclear Energy Workers (NEWs)



No action level exceedances for a dose of radiation during the current licensing period

*Vertical Axis is in Logarithmic Scale



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SCA – Environmental Protection (1/3)

Stack Air Emission Monitoring Results, 2013 - 2021

Year	Licence Limit (Bq)	Gross beta-gamma (Bq)
2013	6.7 x 10 ¹¹	5.2 X 10 ⁴
2014		4.862 X 10 ⁴
2015		6.5094 X 10 ⁴
2016		2.849 X 10 ³
2017		1.6983 X 10 ⁴
2018		1.2739 X 10 ⁴
2019	6.06 x 10 ¹¹	2.812 X 10 ³
2020		5.069 X 10 ³
2021		2.516 X 10 ³

DWMF has a dedicated monitored active ventilation system at the DSC processing building which monitors any airborne particulates



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SCA – Environmental Protection (2/3)

Estimated Dose to the Public from Darlington Nuclear Generating Site

Maximum annual effective dose to a member of the public									
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Dose (mSv)	0.0006	0.0006	0.0005	0.0006	0.0007	0.0008	0.0004	0.0004	0.0006

Doses for a member of the public are well below the regulatory limit of **1 millisievert/year (mSv/yr)**



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SCA – Environmental Protection (3/3) Independent Environmental Monitoring Program (IEMP)

- 4 IEMP sampling campaigns for Darlington Nuclear Generating site were conducted
- Samples included: air, water, soil, sand, vegetation, and local food samples
- Results are posted on the IEMP [online dashboard](#)

IEMP results confirm that around the Darlington site the environment and health of persons are protected



Source: CNSC



Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B

SCA - Waste Management

Waste Management Program:

- Minimal radioactive wastes generated from DWMF operations; all wastes are characterized as low-level wastes (LLW). The LLW is transferred to the DNGS for segregation and then dispositioned to a licensed Waste Management Facility
- CNSC staff confirmed that OPG's waste management procedures ensure radioactive wastes are characterized and segregated from likely clean wastes

Preliminary Decommissioning Plan:

- OPG submitted a revised preliminary decommissioning plan (PDP) in 2022
- CNSC staff reviewed the PDP against regulatory expectations and found it to be acceptable, however provided some clarification and recommendations for the next revision

CNSC staff
are satisfied
with OPG's
performance
in the waste
management
SCA



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INDIGENOUS AND PUBLIC ENGAGEMENT



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Public Information and Disclosure Program

- CNSC staff **assessed** OPG's Public Information and Disclosure Program (PIDP) and confirmed that it meets REGDOC-3.2.1, *Public Information and Disclosure*.
- CNSC staff **review** quarterly reports and meet with OPG annually to discuss their PIDP program
- CNSC staff **confirm** OPG communicated appropriate and timely information to the target audiences

OPG's Public Information and Disclosure Program communicates information related to the health, safety and security of persons and the environment related to the DWMF



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OPG Engagement with Indigenous Nations and Communities

Throughout the current licensing period, OPG has:

- Continued to reach out to all of the identified Indigenous Nations and communities
- Provided facility tours to Indigenous Nations and communities, upon request
- Followed-up with Nations and communities in response to concerns and questions
- Provided CNSC staff regular updates on their engagement activities

CNSC staff are satisfied with OPG's engagement activities to date and encourage OPG to continue their engagement regarding the DWMF facility



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OTHER MATTERS OF REGULATORY INTEREST



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Financial Guarantee

- OPG maintains a consolidated financial guarantee for decommissioning that includes the DWMF
- On December 6, 2022, the Commission concluded that OPG's proposed revised financial guarantee is adequate to fund the future decommissioning of OPG's nuclear facilities (Record of Decision [DEC 22-H104](#))
- The Commission accepted OPG's financial guarantee for 2023-2027

The financial guarantee is valid, enforceable and sufficient to fund the decommissioning of DWMF



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Name Change of Storage Buildings to Storage Structures

OPG requested the name of the two future DSC storage buildings be changed from **Used Fuel Dry Storage Buildings (UFDSB)** to **Used Fuel Dry Storage Structures (UFDSS)**.

CNSC staff's assessment:

- Aligns with the definition of structure in CSA N292.0-19, *General principles for the management of radioactive waste and irradiated fuel*
- No impact on the activities authorized under the licence
- No impact on CNSC regulatory oversight of the waste management facility

The name change from storage building to storage structures is administrative and has no regulatory impact



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Additional Used Fuel Dry Storage Buildings (1/2)

- The current licence authorized the construction of 3 additional UFDSB, of which 2 remain to be constructed
- OPG has requested to carry-over into the new licence term, the future construction of the two remaining UFDSBs with a potential:
 - Modification to the current design
 - Increase in total storage capacity from 1000 to 1200 DSCs over 2 buildings
- OPG's licence renewal application did not include design details of the proposed additional structures



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Additional Used Fuel Dry Storage Buildings (2/2)

CNSC staff's recommendation: Change licence condition 15.1 as follows:

Current

The licensee shall submit an environmental management plan, a construction verification plan and the project design requirements prior to the commencement of construction activities described in paragraph (iv) of Part IV of this licence.



Proposed

The licensee shall not carry out the activities referred to in paragraph (iv) of Part IV of this licence until the submission of an environmental management plan, a construction verification plan, the project design requirements **and a preliminary safety analysis report** without prior written approval of the Commission or a person authorized by the Commission.



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PARTICIPANT FUNDING AND INTERVENTIONS



Darlington Waste Management Facility Licence Renewal: CMD 23-H9.B

Participant Funding Program and Interventions

CNSC awarded \$69,735.95 in participant funding to the following recipients:

- Curve Lake First Nation
- Mississaugas of Scugog Island First Nation
- Nuclear Transparency Project
- Canadian Association of Nuclear Host Communities
- Northwatch

A total of 30 interventions from local businesses, groups and individuals were received for the DWMF licence renewal.

The general themes from the interventions are as follows:

- Renaming of DWMF
- Indigenous engagement and consultation
- Location of new storage structures



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CONCLUSIONS AND RECOMMENDATIONS



Conclusions

Based on the technical assessment of OPG's application and supporting information, CNSC staff conclude:

- The application and supporting documentation comply with the regulatory requirements
- OPG has programs in place to ensure the health and safety of workers and public, and the environment continues to be protected
- OPG's performance during the current licence period was satisfactory and met regulatory requirements



Recommendations

CNSC staff recommend that the Commission:

- **Conclude** that pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* (NSCA) in that the licensee:
 - i. Is qualified to carry on the activity that the licence will authorize the licensee to carry on; and
 - ii. Will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- **Renew the 10-year waste facility operating licence** until April 30, 2033, with the updated Licence Condition 15.1
- **Delegate the authority to CNSC staff** as set out in section 5.6 of CMD 23-H9



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