



Supplementary Information

Presentation from Ontario Power Generation Inc.

In the Matter of the

Ontario Power Generation Inc.

Application to renew power reactor operating
licence for the Darlington Nuclear
Generating Station

**Commission Public Hearing
Part-1**

March 26, 2025

Renseignements supplémentaires

Présentation d' Ontario Power Generation Inc.

À l'égard de

Ontario Power Generation Inc.

Demande concernant le renouvellement du
permis d'exploitation d'un réacteur de
puissance pour la centrale nucléaire de
Darlington

**Audience publique de la Commission
Partie-1**

26 mars 2025

OPG Proprietary

March 19, 2025

CD# NK38-CORR-00531-26058 P

Ms. Candace Salmon
Commission Registrar
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
OTTAWA, Ontario, K1P 5S9

Dear Ms. Salmon:

**Darlington NGS – Supplemental Update in support of the renewal of the
Darlington Nuclear Generating Station Power Reactor Operating Licence (CMD
25-H2.1A)**

As per CNSC Notice of Public Hearing 2025-H-02, the purpose of this letter is to submit OPG's presentation as part of supplemental Commission Member Document (CMD) 25-H2.1A.

OPG's presentation is provided in Attachment 1 and is in support of the renewal of the Darlington Nuclear Generating Station (NGS) Power Reactor Operating Licence (PROL) provided in written submission CMD 25-H2.1 (Reference 1). The material will be presented by OPG at Part 1 of the Commission Public Hearing scheduled for March 26, 2025.

Reference 1 consisted of items discussed in OPG's original renewal application submitted in Reference 2 and the supplemental to the application submitted in Reference 3.

Recently there was an amendment to Darlington NGS PROL 13.04/2025 to PROL 13.05/2025 via CNSC Record of Decision DEC 24-H110 in Reference 4. The amendment consisted of the inclusion of an updated version of regulatory document REGDOC-2.2.3, "*Personal Certification, Volume III, Certification of Persons Working at Nuclear Power Plants*" to REGDOC-2.2.3, "*Personal Certification, Volume III: Certification of Reactor Facility Workers, Version 2*". OPG previously referenced Version 2 as a pending update in Safety and Control Area section 2.2, "*Human Performance Management*", subsection 2.2.3, "*Personnel Certification*" (Reference 1).

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As communicated in Reference 5, OPG has received feedback regarding the 30-year licence renewal term and engagement opportunities before the Commission. OPG is supportive of a 10-year review throughout the term.

Should you have any questions please contact Ms. Aditi Bhardwaj, Senior Manager, Regulatory Affairs at (289) 387-2110 or at aditi.bhardwaj@opg.com.

Sincerely,

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

Allan Grace
Senior Vice President
Darlington Nuclear
Ontario Power Generation Inc.

Attach.

cc: CNSC Site Supervisor - Darlington
A. Viktorov - Ottawa
A. Mathai - Ottawa
forms-formulaires@cnscccsn.gc.ca
registry-greffe@cnscccsn.gc.ca

- References:
1. OPG letter, A. Grace to C. Salmon, "Darlington NGS – Notice of Participation at CNSC Public Hearing 2025-H-02 and Written Submission in support of the renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence", February 25, 2025, CD# NK38-CORR-00531-25966.
 2. OPG letter, A. Grace to C. Salmon, "Darlington NGS – Application for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence 13.03/2025", May 30, 2024, CD# NK38-CORR-00531-25450.
 3. OPG letter, A. Grace to C. Salmon, "Darlington NGS – Supplemental Update in Support of the Power Reactor Operating Licence Renewal Application", December 18, 2024, CD# NK38-CORR-00531-25844.
 4. CNSC Record of Decision DEC 24-H110, "Application to amend four Nuclear Power Reactor Operating Licences to reference REGDOC-2.2.3, *Personnel Certification, Volume III: Certification of Reactor Facility Workers*, Version 2", February 7, 2025, e-Doc 7461022 (PDF).
 5. OPG letter, S. Gregoris to C. Salmon, "Darlington NGS – Additional Update in Support of the Power Reactor Operating Licence Renewal Application", March 17, 2025, CD# NK38-CORR-00531-26049.

ATTACHMENT 1

OPG letter, A. Grace to C. Salmon, "Darlington NGS – Supplemental Update in support of the renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence (CMD 25-H2.1A)"

CD# NK38-CORR-00531-26058 P

OPG Presentation

**Darlington Nuclear Generating Station
Power Reactor Operating Licence Renewal**

CMD 25-H2.1A

(27 pages)



Electrifying life in one generation

Hearing Part 1

Steve Gregoris, Chief Nuclear Officer



OPG Proprietary



*Electrifying
life*

Darlington Nuclear ***Generating Station***

Power Reactor Operating Licence Renewal

CMD 25-H2.1A



Who we are

We are the largest
clean, low-carbon
power generator in
Ontario **with a
diverse generating
portfolio.**

18,236
megawatts



Climate *Change Plan*

**“We are striving to be
a catalyst for efficient,
economy-wide
decarbonization.”**

Nicolle Butcher
President and CEO, OPG

A net-zero
carbon
company by
2040

**Our
net-zero
goals**

A net-zero
carbon
economy by
2050



OPG's Environmental *Stewardship*

We are committed to:

- Environmental sustainability
- Maintaining and enhancing natural areas



Request to Renew the Darlington Nuclear Generating Station Power Reactor Operating Licence for a 30-year licence term.

*December 1, 2025 to
November 30, 2055*



Darlington NGS has been safely and reliably operating for **decades** and is recognized as a **top-performing** nuclear power plant in the world.



The concept of a 30+ year licence is **common in the international community**.



CANDU reactors have a strong track record of reliability and are a **robust technology with multiple safety features**.



The Darlington **Refurbishment** Project will enable continued safe and reliable operations through 2055.



A **Periodic Safety Review** is performed every 10 years.



The CNSC's **continuous regulatory oversight** of compliance and safety performance at Darlington NGS is independent of licence length.

Darlington Nuclear *Generating Station*

- Four-unit CANDU station ~ **provides 3,512 megawatts**
- 20% of **Ontario's electricity**
- Tritium Removal Facility
- Isotopes: generating more than just **power**
- Safe and reliably operating **for over 30 years**



Darlington *Refurbishment* Project

The project includes:

- **Replacement** of critical components
- Completion of **upgrades**
- **Rehabilitation** of components

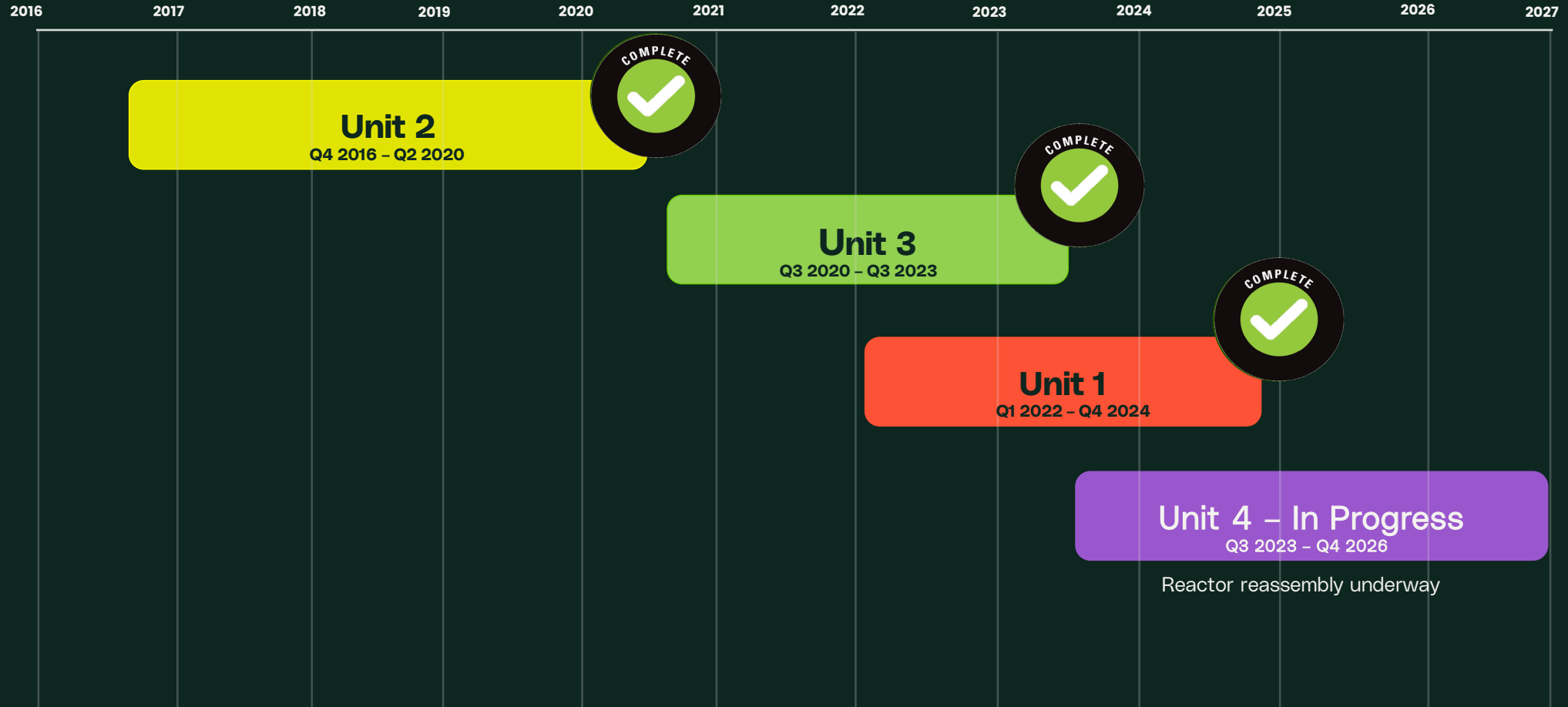
OPG has demonstrated we can perform work **safely and with quality**.

Darlington will provide *another 30-
years of clean, low-cost and reliable
electricity* for Ontario.





Refurbishment Outage Schedule



Total duration 120 months

Periodic Safety Review and **Integrated Implementation Plan**

In support of continued long-term operation into the next licence term, Integrated Implementation Plan commitments are on track for completion.

Management *System*

OPG has an effective and mature Nuclear Management System that ensures:

- Nuclear Safety and Security is prioritized above all else.
- Our facilities are operated and maintained using sound nuclear safety and defense in depth practices.
- Operating Experience is evaluated and applied to continuously improve station safety and reliability.



Human Performance *Management*

OPG's Human Performance program:

- Ensures workers are trained and qualified with the appropriate knowledge, skills and behaviours.
- Monitors performance to drive excellence.
- Fosters a culture of continuous learning and improvement.



Operating *Performance*

Darlington NGS has a proven track record of safe and reliable operating performance.

- Our effective operations program ensures the station is operated safely and reliably.
- Maintenance activities are prioritized based on operational and safety requirements ensuring high station reliability.



Safety *Analysis*

Darlington NGS has a rigorous Safety Analysis which:

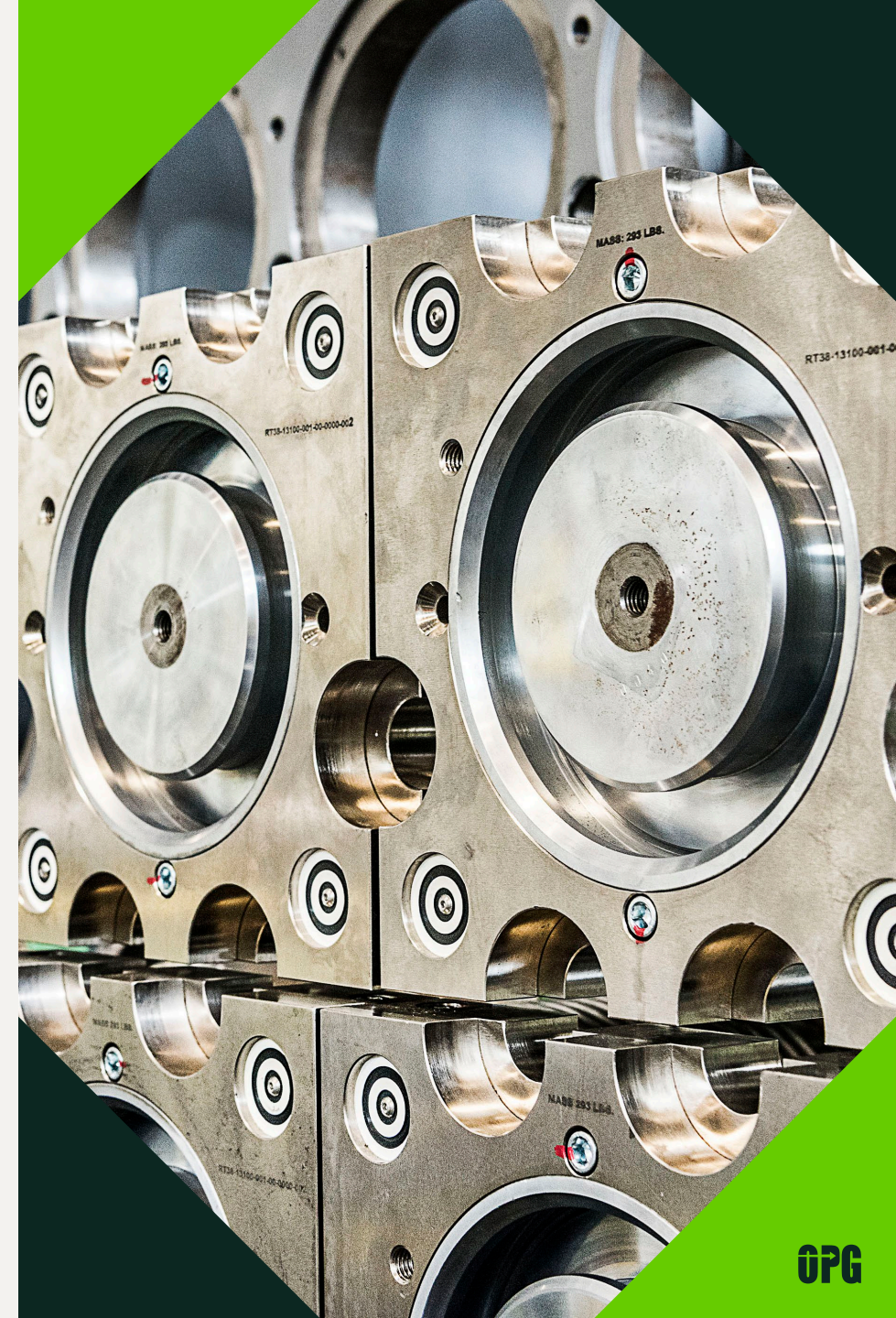
- Includes comprehensive safety assessments performed at regular cycles demonstrating regulatory and design requirements are met.
- Is continuously enhanced through CANDU Owners Group (COG) programs, and the implementation of CNSC regulatory documents.
- The Darlington Probabilistic Safety Assessment is updated every five years.



Physical *Design*

Darlington NGS uses an effective program to maintain its design basis, which ensures:

- Facility systems, structures and components operate safely, reliably and effectively.
- OPG's design program is consistent with the design basis, safety analysis and quality control measures.
- All design activities and resulting documentation are controlled in a manner consistent with the station's licensing basis through Engineering Change Control.



Fitness for service

Darlington NGS has a robust inspection and surveillance program that ensures:

- Station reliability and availability of equipment.
- Fitness for service of major components including fuel channels, feeders, steam generators, and reactor components and structures.
- A comprehensive Integrated Aging Management program is in place.



Radiation *Protection*

OPG has an effective Radiation Protection program that:

- Protects the health and safety of employees, the public and the environment.
- Drives continuous improvement to align with industry best practices and latest innovations.



Conventional *Health & Safety*

Safety is our top priority at OPG.

- Darlington NGS continues to demonstrate excellent safety performance throughout its operations.
- OPG takes proactive steps to prevent incidents before they occur and uses operating experience for continuous improvement.



Environmental **Protection**

OPG's mature Environmental Protection program:

- Ensures monitoring and evaluation of environmental parameters.
- Implements control measures to eliminate, manage and reduce risk.
- The Environmental Risk Assessment for the Darlington Nuclear site is updated at least once every five years.



Emergency Management & *Fire Protection*

OPG has effective nuclear, conventional and fire emergency preparedness and response programs.

- Our stations operate to the strictest of standards and regulatory requirements to ensure our employees, the public and the environment are always safe.
- A variety of methods are used to engage and inform the public on OPG's operations and Emergency Preparedness.



Waste *Management*

OPG has been a world-leader in safe and environmentally-sound radioactive waste management for over 50 years.

- OPG's waste management program:
 - Reduces the amount of waste generated.
 - Safely manages all waste.
- The nuclear power industry is the only energy source that accounts for, manages, and fully funds the safe, long-term management of all waste.



Security

Safety and security are ingrained in OPG's culture.

- OPG continues to ensure our nuclear stations are safe and secure for our employees, the public, the environment and the stability of Ontario's electricity system.
- OPG has established a comprehensive Cyber Security Program to protect assets and information from internal and external threats.



Safeguards and Non-Proliferation

- OPG's Safeguards and Non-Proliferation program meets Canada's international IAEA agreements and Non-Proliferation Treaty obligations.

Packaging and *Transport*

- OPG's Packaging and Transport program ensures packaging and transport of nuclear substances is conducted safely.



Investing in *Innovation*

OPG embraces innovation to improve safety, efficiency and to evolve with changing technologies.

- Robotics
- Simulators to enhance operator proficiency
- Remotely piloted vehicles (drones/submersibles)
- Virtual tours and 3D scanning technology



Community Engagement

OPG continuously engages with the local community through its comprehensive public outreach and communications program.

- Committees & Councils
- Tours and presentations
- OPG educational programs and events
- Community partnerships



Conclusions



Darlington has a **proven history** of safe and reliable performance.



The Darlington **Refurbishment** Project enables continued safe operation through the next 30 years.



OPG continues to be **qualified** to carry-on our licensed activities and will:

- make adequate provisions to protect the health, safety and security of persons and the environment;
- maintain national security and measures required to implement international obligations.



Darlington will **continue to operate safely and reliably through 2055**, allowing OPG to meet the growing energy needs expected in the province.

Electrifying
life

OPG

**Summary of Regulatory Commitments, Regulatory Obligations and Regulatory
Management Actions Made/Concurrence Requested**

CD# NK38-CORR-00531-26058 P

Submission Title: **Darlington NGS – Supplemental Update in support of the renewal of the
Darlington Nuclear Generating Station Power Reactor Operating
Licence (CMD 25-H2.1A)**

Regulatory Commitments (REGC):

| No. | Description | Date to be Completed |
|------------|--------------------|-----------------------------|
| | None | |

Regulatory Management Action (REGM):

| No. | Description | Date to be Completed |
|------------|--------------------|-----------------------------|
| | None | |

Regulatory Obligation Action (REGO):

| No. | Description | Date to be Completed |
|------------|--------------------|-----------------------------|
| | None | |

**Concurrence
Requested:** None.