



# Responsible Management of Nuclear By-Products

Durham Nuclear Health Committee

April 23, 2021

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# Agenda

- 1 | Safety and COVID-19 Response
- 2 | Operations
- 3 | Supporting Refurbishment
- 4 | Embracing the 3 Rs
- 5 | Innovation
- 6 | Lasting Solutions

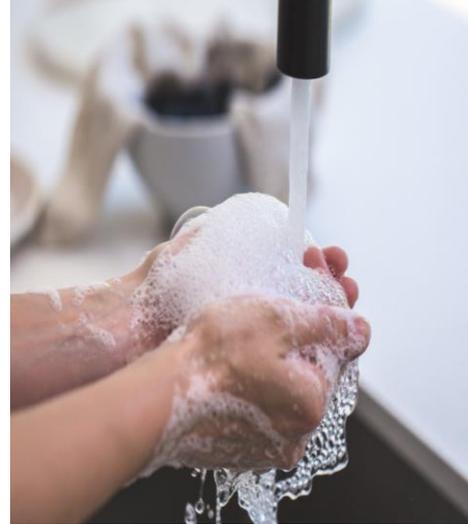
## NUCLEAR WASTE MANAGEMENT



**STEWARDSHIP**  
**LASTING  
SOLUTIONS**  
**PEACE OF MIND**

# Safety and COVID Response

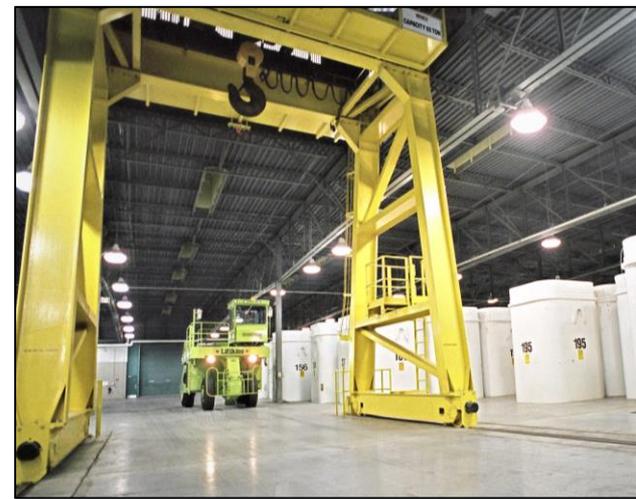
- **Safety:** Strong safety performance continues across OPG Nuclear Waste Management (NWM) division.
  - 10 years with no lost-time accident in all of NWM.
  - 14 years at DWMF; 26 years at PWMF.
- **COVID-19:** As in all of OPG, NWM has strict protocols:
  - Self-monitoring, temperature testing, sanitizing and hand-washing, physical distancing, and wearing masks and other protective equipment.
  - Operators and trades keep the stations generating electricity; and our waste facilities continue to safely transfer, process, and store nuclear materials.



# Operations

## Pickering Waste Management Facility (PWMF)

- In 2020, Used Fuel from Pickering Nuclear Generating Station continued to be removed from the station, and stored safely and on time.
- In 2020, Pickering loaded 54 Dry Storage Containers (DSCs), exceeding their target of 50. The 2021 target is 60 DSCs.
- Construction of Storage Building 4 completed – the building opened in October. Storage buildings 5 and 6 will follow in future years.
- 1,053 loaded DSCs are stored in the PWMF.



**Ribbon-cutting at Pickering's Storage Building 4, completed in 2020.**

# Operations

## Darlington Waste Management Facility (DWMF)

- In 2020 Used Fuel from Darlington Nuclear Generating Station continued to be removed from the station, and stored safely and on time.
- In 2020, DWMF loaded 59 Dry Storage Containers (DSCs), above target of 57. Target for 2021 is 57.
- 716 loaded DSCs are stored in two Used-Fuel Dry Storage Buildings at DWMF.
- As well, the Retube Waste Storage Building provides on-site storage in support of Darlington Refurbishment.



**Above: Retube Waste Storage Building.**

**Below: DWMF, seen at lower left of photo.**



# Supporting Darlington Refurbishment

- Nuclear Waste Management plays a key role in Refurbishment – safely transporting, processing and storing the used reactor components and other materials.
- **Unit 2:** Completed in 2020.
- **Unit 3:** Work began in November 2020, with defuelling and draining of heavy water. In 2021, the Feeder Campaign will remove hundreds of used feeders, end fittings, pressure tubes and calandria tubes.
- Transportation packages were modified, and new ones created, to safely move refurbishment waste and protect workers and the environment.



Special DSTAR packages were built for Refurbishment project.

# Embracing the 3 Rs

- OPG embraces the 3 Rs – reduce, reuse, recycle – to minimize the volume of stored materials:
  - Reducing production of waste at source.
  - Reducing volumes through sorting, processing and recycling.
- OPG subsidiary Laurentis Energy Partners and McMaster University are jointly researching innovations in sorting and recycling, at new laboratory in Hamilton.
- In Pickering, OPG's Centre for Canadian Nuclear Sustainability (CCNS) is a new research hub to focus on innovations in decommissioning nuclear plants.



**Research laboratory at McMaster Innovation Park – a partnership between OPG subsidiary Laurentis Energy Partners, and McMaster University – opened in 2020**

# Innovation

- OPG's Nuclear Waste Management has stepped up its innovation portfolio:
  - Two X-labs (Pickering, Western site at Bruce).
  - Hired innovation catalysts.
  - Alignment meetings with rest of nuclear fleet.
- Areas being explored:
  - Metal melt (to reduce volumes of large metal objects, such as used heat exchangers).
  - Advances in welding, sorting, automation.
  - Small Modular Reactors (including the possible recycling in future of some used fuel).



# Lasting Solutions

- OPG remains committed to safe and permanent disposal. We are exploring options:
  - For lower-level materials, some countries use near-surface facilities.
  - For higher-level materials, deep geologic repositories are considered best practice. OPG supports the NWMO process for a used-fuel DGR.
- Any new OPG siting process would engage the public, interested communities and Indigenous peoples.
- In 2021, Natural Resources Canada is reviewing the federal policy framework for radioactive waste. OPG will participate, and see whether the policy or strategy identifies alternate solutions for disposal.



Near-surface: Centre de l'aube, France



Deep repository: Forsmark, in Sweden

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**Questions?**

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