

# Responsible Management of Nuclear By-Products

Durham Nuclear Health Committee (DNHC)

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# Agenda

- 1 | What We Do & Who We Are
- 2 | New Name, New Mission
- 3 | Operations Update
- 4 | Safety and COVID-19 Response
- 5 | Embracing the 3 Rs
- 6 | Lasting Solutions



# What We Do

We operate a sophisticated suite of services, adapted to the type of nuclear by-product being managed, and the infrastructure in place, at our facilities.

## Low-Level Waste (LLW)

*Gloves, small tools, paper, plastic, and parts such as pumps and valves*  
*Radioactive: 100-300 years (Cs-137)*

## Intermediate-Level Waste (ILW)

*Resins and filters used to keep reactor water systems clean as well as reactor components*  
*Radioactive: up to 100,000 years (c-14)*

## High-Level Waste (HLW)

*Used fuel that powered the reactors*  
*Radioactive: 1 Million years (I-129)*

### Sort and Segregate

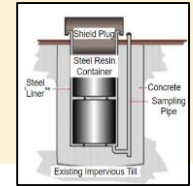
### Process (Reduce Volumes)

### Wet Storage

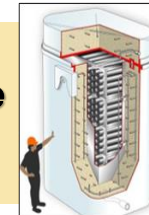


### Recycle and Free Release (Clean)

### Interim Storage



### Dry Storage



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# Who We Are

## Handling with Care, Pride and Purpose

- By-products are safely managed and fully funded
- Excellent safety record
- Only North American nuclear utility to handle all levels of waste through entire life-cycle, and own its own transportation fleet and incinerator
- Expertise sought internationally
- Openness and transparency with public
- Respectful indigenous collaboration/engagement
- Licensed, rigorously audited and inspected



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# New Name, New Mission

- New name for OPG Nuclear Waste Management:  
**Nuclear Sustainability Services**
- All energy sources have by-products. Many nuclear by-products are valuable (not “waste”), such as medical isotopes, tritium, heavy water, Helium-3
- Name better reflects the division’s mission to reduce our environmental footprint
  - We embrace the 3 Rs: reduce, reuse, recycle
  - Multi-year plan to increase processing, reduce stored volumes, maximize recycling
- Aligns with OPG’s Climate Change Plan. Nuclear is clean energy, vital to achieving net-zero goals

## Nuclear Sustainability Services



STEWARDSHIP  
LASTING  
SOLUTIONS  
PEACE OF MIND

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# OPG's Nuclear Sustainability Services



# Operations

## Nuclear Sustainability Services Pickering (NSS-P)

- In to resume in April 2022. 2021, Used Fuel from Pickering Nuclear Generating Station continued to be removed from the station, and stored safely and on time.
- In 2021, Pickering loaded 61 Dry Storage Containers (DSCs), exceeding their target of 60. The 2022 target is 65 DSCs.
- 1,142 loaded DSCs are stored at NSS-P.
- In 2021, a project began to replace the roofs at Storage Buildings 1 and 2 and the workshop. The workshop was completed last year, with work on Storage Buildings 1 and 2 set



**Aerial view of NSS-P**



**NSS-P Dry Storage Container (DSC)  
Processing Building**

# Operations

## Nuclear Sustainability Services Darlington (NSS-D)

- In 2021, NSS-D loaded 58 Dry Storage Containers (DSCs), above their target of 57. Target for 2022 is 57.
- 803 loaded DSCs are stored in two Used-Fuel Dry Storage Buildings at NSS-D.
- Retube Waste Storage Building provides on-site storage in support of Darlington Refurbishment.
- Operating Licence for NSS-D expires on April 30, 2023. OPG is requesting another 10-year licence term, from May 1, 2023, to April 30, 2033.



**NSS-D Dry Storage Container Processing Building**



**NSS-D Used Fuel Dry Storage Building (UFDSB) #2**



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# Safety and COVID Response

## Safety

- Strong safety performance continues across OPG's Nuclear Sustainability Services (NSS) division.
  - 11 years with no lost-time accident in all of NSS.
  - 14 years at NSS-D; 27 years at NSS-P.

## COVID-19

- OPG's Crisis Management and Communications Centre continues to monitor the situation
  - Protocols remain in place: self-monitoring, sanitizing and hand-washing, physical distancing, wearing masks, antigen testing.
  - Operators have kept the stations generating electricity; and NSS specific facilities have continued to safely transfer, process, and store nuclear materials.



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# Embracing the 3 Rs

- OPG embraces the environmental 3 Rs:
  - ✓ **Reduce**
    - Focus on minimizing waste at source.
    - Sorting and segregating.
  - ✓ **Re-use**
    - Clean tools found in the waste stream are saved for re-use.
  - ✓ **Recycle**
    - Clean materials, such as copper and steel.
    - Supporting research into recycling of used fuel.



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# Research and Innovation in Materials Handling

- In Pickering, OPG's Centre for Canadian Nuclear Sustainability (CCNS) is focusing on innovations in decommissioning nuclear plants.
- Laurentis Energy Partners, an OPG subsidiary, has a partnership with McMaster University to research advances in sorting and recycling.
  - Research at Hamilton laboratory since 2020, to support increased processing, volume reduction and the Three Rs



**Pickering CCNS**



**McMaster Innovation Park lab**

# Western Clean-Energy Sorting and Recycling

- OPG is applying the R&D from the Laurentis-McMaster Clean-Energy Materials Sorting and Recycling facility
- In 2022, OPG with Laurentis support is building a Western Clean-Energy Sorting and Recycling Facility (WCSR)
- The 42,000-square-foot facility will enhance sorting of low-level materials from OPG nuclear operations, to support the 3 Rs – reducing our environmental footprint



**Western Clean-Energy Sorting and Recycling – ground-breaking on Thursday, Dec. 16, 2021**

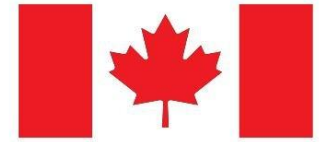
# Lasting Solutions

- OPG remains committed to the safe and permanent disposal of nuclear by-products:

**Used fuel:** OPG supports NWMO process to site a Deep Geological Repository for all of Canada

**Low- and intermediate-level materials:**

- February 2022, Natural Resources Canada released draft new policy framework for radioactive waste
  - Awaiting NWMO recommendation on supporting Integrated Strategy for Radioactive Waste
- Any OPG site-selection process for a disposal facility would engage with stakeholders, Indigenous peoples, the public



Canada





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