



*Electrifying  
life*

# Darlington Nuclear Refurbishment Project Update

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# Darlington Nuclear

- One of the world's top-performing nuclear stations.
- Four-unit station generates 3,512 megawatts.
- 20% of Ontario's electricity or enough power for about 2 million homes.
- Gold Level certification from the Wildlife Habitat Council (WHC).
- Recognized for performing to exceptionally high levels of safety, operational performance and equipment reliability by the World Association of Nuclear Operators (WANO).
- Only site in Canada licensed for new nuclear build with completed and accepted environmental assessment.
  - Recently awarded License To Construct 1st Small Modular Reactor



# Darlington Refurbishment



\$12.8B investment



20-year project: **10 years of planning, 10 years of work. 35-44 months per unit to execute.**



**14,200 jobs per year.**



**\$89.9B dollars** into Ontario's GDP.

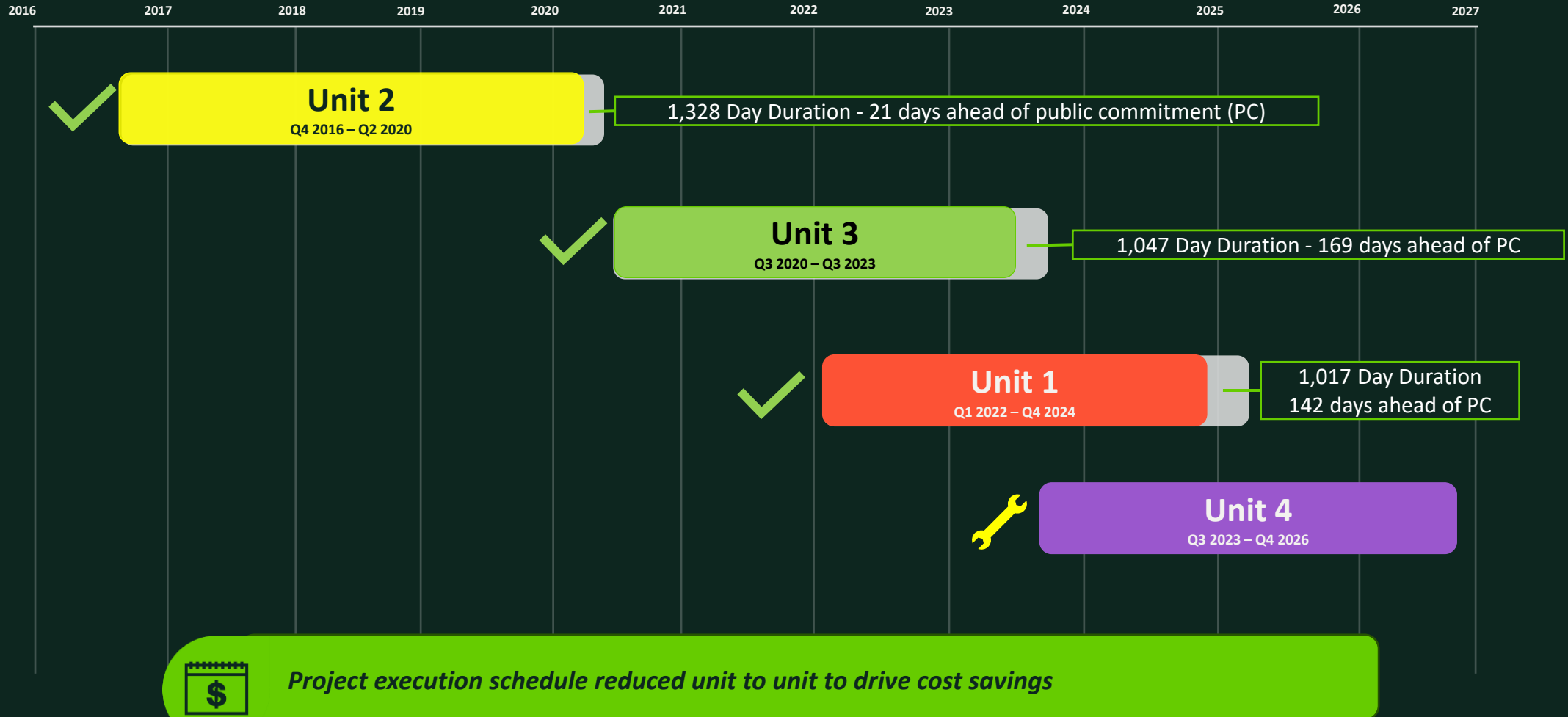


96% of expenditures **spent within Ontario** –  
**revitalized nuclear supply chain.**





# Refurbishment Outage Schedule



# Unit 2 - Complete

**Unit 2 execution began Oct. 16, 2016**

**Reconnection to the electricity grid on June 4, 2020  
- a 44-month outage.**

## **Lessons Learned:**

More than 4,000 Lessons Learned captured from the knowledge and experience on Unit 2 during planning and execution were applied to plans for Units 3, 1 & 4.



# Unit 3 - Complete

Unit 3 Refurbishment started Sept. 3, 2020.

Completion July 18, 2022.

169 days ahead of public commitment schedule

## First-of-a-Kind (FOAK) Evolution:

Turbine Control modifications static commissioning (Sept 2022)

- Successful FOAK at Darlington and in the nuclear industry

## Result of Lesson Learned from Unit 2 execution:

- Combined Calandria Tube-Pressure Tube Removal series
- Resulting in 30-day reduction from previous single CT and PT removal series
- Also increased radiological safety, lowered dose to workers, and more efficient volume reduction process



# Unit 1 - Complete

**Breaker opened on Feb. 15, 2022.**

- Marking the halfway point for the Darlington Refurbishment Project *and*
- Refurbishment of two units (Unit 3 & Unit 1) at the same time - the first time ever at Darlington.

**Returned-to-Service on Nov. 27, 2024.**

- 142 days ahead of public commitment schedule
- Darlington Station again has 3 operating units – first time since Sept 2020



# Unit 4 Status Update

**Breaker open on July 19, 2022 (day after Unit 3 RTS)**

**Shortest public commitment execution schedule of all four Darlington units.**

**Progressing on schedule and on budget.**

- Fuel Channel install completed May 7, 2025
- Lower Feeder Tube install underway
- Loading New Fuel into reactor in Aug 2025
- RTS anticipated in Q1 2026 (commitment is Q4 2026)





# Refurbishment **Lessons Learned**

- OPG and our Vendor partners have developed effective Lessons Learned (LL) processes throughout the project.
- Many lessons learned are being tracked and applied to future OPG Nuclear Projects (e.g., New Nuclear & Refurbishments).

4,737  
Unit 2

1,314  
Unit 3

874  
Unit 1

374  
Unit 4

Total Refurbishment Lessons Learned (to date)

# Darlington Refurbishment Progress to date

**Safety performance continues to exceed the construction industry in Ontario.**

**At end of March 2025, approx. 58 million hours worked since the start of the project.**

Project execution continues to progress well.

The refurbishment of the four Darlington units remains on plan for completion in 2026.

Quality of work to date has surpassed industry standards and, in most cases, is industry leading.

Overall refurbishment program ahead of schedule and under budget.

Darlington Refurbishment is one of OPG's key climate change initiatives and continues to operate well below all regulatory environmental limits.



# Medical isotopes for the world

- OPG's Pickering and Darlington Nuclear help ensure a steady supply of important, life-saving isotopes for the world.
- Pickering provides 20% of the world's supply of Cobalt-60, an important medical isotope.
- Darlington's support for safe production of isotopes includes the production on
  - Units 1 & 3
    - Cobalt-60 (Co-60)
  - Unit 2 (pending Health Canada approval)
    - Molybdenum-99 (Mo-99)
    - Yttrium-90 (Y-90) and
    - Lutetium-177 (Lu-177).

Thank you.

Questions?

The logo for OPG (Ontario Power Generation) is centered on a green background. It consists of the letters 'O', 'P', and 'G' in a bold, dark blue font. The letter 'P' is stylized with a white arrow pointing to the right, integrated into its vertical stem.

**OPG**