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Cost and Timeline

Who is financing the DNNP?

**A:** As a publicly owned generator and a good steward of the electricity sector, Ontario Power Generation (OPG) ensures the ratepayer is top of mind in everything we do.

OPG’s nuclear facilities are regulated, meaning that the project costs we incur must be reviewed and accepted as prudent by the Ontario Energy Board (OEB) through a public and accessible process before they are included in electricity rates. Any new plant at Darlington will go through the same process.

Energy Supply and Generation Growth

What is the outlook for nuclear and broader energy mix buildout?

**A:** The outlook for nuclear and the broader energy mix in Ontario is set for significant growth and transformation. According to the IESO’s recently released report, [Ontario’s Affordable Energy Future: The Pressing Case for More Power](#) the province is preparing for a substantial increase in energy demand, projected to rise by 75% by 2050.

What transmission buildout is required to support the project?

**A:** The province recognizes the need for infrastructure development to support future energy growth. This includes constructing and upgrading high-voltage transmission lines. OPG is collaborating closely with the province and Hydro One to prepare for work required to support the DNNP.



## Reactor Technology and Design

### **Does this reactor allow for online fueling?**

### **Will maintenance be done during the fueling window?**

**A:** All Boiling Water Reactors (BWRs) are fueled periodically during short refueling outages. The first BWRX-300 at DNNP, is initially planned for a 12-month refueling outage cycle, with the intention to move to up to 24-month intervals in the future. All necessary maintenance and inspections requiring outage conditions are scheduled during these refueling outages to minimize downtime. A typical refueling outage is expected to last about two weeks with a longer maintenance outage expected approximately every 10 years.

### **What is the difference between cooling towers and once-through cooling water options?**

**A:** Cooling towers and Once-Through-Cooling (OTC) water options are both methods used to manage heat in industrial and power generation processes, but they operate differently and are suited to different applications.

#### **Cooling Towers:**

These come in many different forms but are mechanical devices and/or structures designed to remove heat from water used in industrial processes, facilitating heat dissipation to the atmosphere.

#### **Once-Through-Cooling (OTC):**

This method removes heat through a heat exchanger/condenser with process water on one side and lake water on the other, rejecting the heat to the lake instead of the atmosphere.

Both options were considered as part of the project's environmental assessment and through a Best-Available Technology Economically Achievable (BATEA) study. A decision was made to utilize OTC for the DNNP based on the studies and engagement feedback from Indigenous partners and community members.



## Fuel Supply and Management

### **Where does the fuel come from?**

**A:** The BWRX-300 will use the same low-enriched uranium fuel assemblies currently used in many BWRs worldwide. The fuel for the DNNP will be sourced from established nuclear fuel suppliers, including both domestic and international sources.

Canadian uranium will be processed and sent to Urenco in the US or Orano in France for enrichment, before traveling to Global Nuclear Fuel (GNF) (GE Hitachi's fuel division) in North Carolina to be assembled into bundles and then sent to OPG. There are currently no uranium enrichment facilities located in Canada.

OPG has signed these contracts to secure a reliable fuel supply for our project fleet, ensuring consistent operations.

### **Where are we storing the project's nuclear waste?**

**A:** OPG has existing programs and resources that will be leveraged to safely manage nuclear waste generated from the DNNP, just as it has done for decades with the existing nuclear fleet.

Based on the options presented in the accepted environmental assessment, and until long-term storage options are operational, the DNNP's low and intermediate level waste will be stored at the Darlington site on an interim basis.

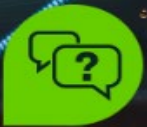
Used nuclear fuel is first cooled in water bays for about 10 years, then moved to dry storage containers. OPG ensures safe, long-term management of this fuel, collaborating with the NWMO for permanent disposal solutions.

## Existing and Future Projects

### **How many SMRs are planned?**

### **Where are you building nuclear next? Now or existing sites?**

**A:** OPG is committed to the successful execution of the DNNP. Pending regulatory approvals, OPG plans to build four GE Hitachi BWRX-300 small modular reactors at the Darlington site.



Each reactor will produce approximately 300 megawatts, enough to power about 1.2 million homes, supporting the growing electricity demand from electrification.

In the fall of 2022 under a Site Preparation Licence issued by the Canadian Nuclear Safety Commission, OPG began site preparation activities at the Darlington site, including clearing, grubbing, and grading, as well as the construction of roadways, parking lots, utilities, and support infrastructure (e.g., power, water, lighting, LAN lines) in preparation for the future fleet of SMRs.

## **Are you decommissioning the old reactor on the site where you're building the new one?**

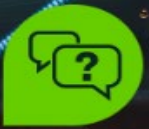
**A:** The DNNP is being built at the existing Darlington site, adjacent to the operating Darlington Nuclear Generating Station. OPG has invested, and continues to invest, in the Darlington station through the mid-life refurbishment of all four generating units.

Darlington Units 2 and 3 were returned to service following their refurbishments in 2020 and 2023, respectively, with Unit 1 scheduled to come back online in fall 2024, and Unit 4 refurbishment scheduled to wrap up in 2026.

The work done as part of this nuclear mega project, to replace major reactor components, upgrade key plant systems, and make substantial safety and equipment investments, has been done safely, with quality, and according to cost and schedule. This allows for this world-class operating facility to deliver clean electricity to the Ontario grid for an additional 30+ years.

## **Is the AECL SMR a different project?**

**A:** Yes, the SMR project targeting deployment at the Atomic Energy of Canada Limited (AECL)'s Chalk River Laboratories site is different from the Darlington New Nuclear Project. It is a project proposed by an entity called Global First Power (GFP) and focuses on a high-temperature gas-cooled Micro-Modular Reactor (MMR). You can find more information about GFP and their projects on their [website](#).



## Acronym List

- AECL: Atomic Energy of Canada Limited
- DGR: Deep Geologic Repository
- DNNP: Darlington New Nuclear Project
- GFP: Global First Power
- GNF: Global Nuclear Fuel
- IESO: Independent Electricity System Operator
- MMR: Micro-Modular Reactor
- NWMO: Nuclear Waste Management Organization
- OEB: Ontario Energy Board
- OPG: Ontario Power Generation
- SMR: Small Modular Reactor
- USNC: Ultra Safe Nuclear Corporation