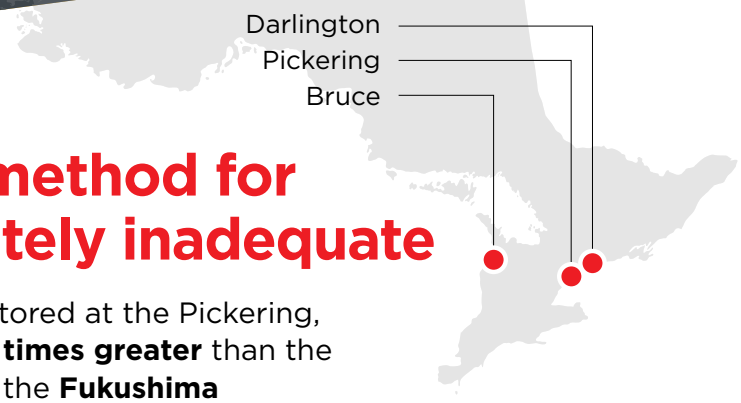
A Safer Interim Storage Solution for Ontario's Nuclear Wastes



OPG's current storage method for nuclear waste is completely inadequate

The total radioactivity of the nuclear wastes stored at the Pickering, Darlington and Bruce Nuclear Stations is **700 times greater** than the total radiation released to the atmosphere by the **Fukushima accident** in 2011.[1]

Ontario Power Generation (OPG) is proposing to continue to store these wastes in dry storage containers in **conventional commercial storage buildings** at its nuclear stations **until at least 2043**.[2] In the long term, OPG is hoping that the nuclear wastes can be transferred off-site to a permanent storage facility where they would be placed in caverns 500 to 1,000 metres below ground.

OPG wants to keep radioactive waste in conventional storage buildings on the edge of the Great Lakes for decades to come.

There is no deep geological repository (DGR) facility for high-level nuclear fuel wastes currently operating anywhere in the world, despite decades of effort on the part of the nuclear industry to establish such a facility. **In Canada, after almost 50 years of trying to solve the long-term radioactive waste storage problem, there is still no site selected or accepted by a "host" community and there is no completed design for the DGR itself.** As well, the used-fuel transfer facility is still in the conceptual stage, as is the transportation system for getting waste from nuclear stations to the DGR.

According to the Nuclear Waste Management Organization (NWMO), if a radioactive release occurs in a DGR "it may be difficult for a future generation to detect the breach in a timely way and take corrective action."[3]

Ontario needs a safer interim storage solution for its nuclear wastes than conventional commercial storage buildings

High-level radioactive wastes at Pickering, Darlington and Bruce Nuclear Stations are housed in **conventional warehouse buildings** on the edge of Lakes Ontario and Huron.

In Germany, six nuclear stations have **on-site, above-ground, attack-resistant, reinforced concrete vaults** for the interim storage of their nuclear wastes. The concrete walls and roofs of these vaults are approximately 1.2 and 1.3 metres thick respectively.[4]

The International Joint Commission's Great Lakes Water Quality Board is calling for OPG's storage facilities to be **"hardened" and located away from shorelines** to prevent them from becoming compromised by flooding and erosion.[5]

According to a report prepared for OPG, the total capital cost of building above-ground, attack-resistant, reinforced concrete vaults at the Pickering, Darlington and Bruce Nuclear Stations would be approximately $1 billion.[6]

Pros and Cons of building above-ground, attack-resistant, reinforced concrete vaults:

Pros

1. Greater protection against deliberate attacks and greater radioactivity containment in the event of leaks, ruptures or other incidents.
2. Construction of these facilities will create good jobs.
3. They can be fully paid for by OPG's nuclear waste storage fund, which has a market value of $11.3 billion.[7]

Cons

1. Higher financial cost for OPG.

OPG has more than enough funds to cover the cost of this shift to an interim solution that will provide **much greater safety and security** over the coming decades.

For the SAFETY of all Ontarians and people living throughout the Great Lakes Basin, the Premier of Ontario should order OPG to store its high-level radioactive wastes in above-ground, attack-resistant, reinforced concrete vaults at its nuclear stations.

References

1. Nuclear Waste Management Organization, *Nuclear Fuel Waste Projections in Canada – 2021 Update*, (September 2021), page 3; and Gordon R. Thompson, Institute for Resource and Security Studies, *Storage of Spent Nuclear Fuel at the Pickering Site: Risks and Risk-Reducing Options*, (May 2018), pages 38 and 39. **2.** Ontario Power Generation, *Preliminary Decommissioning Plan – Pickering Generating Stations A & B*, (December 2016), page 77. **3.** Nuclear Waste Management Organization, *Choosing a Way Forward: The Future Management of Canada's Used Nuclear Fuel: Final Study*, (2005), page 169. **4.** The six German nuclear stations with on-site above-ground, attack-resistant, reinforced concrete vaults for the interim storage of their spent nuclear fuels are: Brunsbuttel, Brokdorf, Krummel, Unterweser, Emsland and Grohnde. Email from Dr. Wolfgang Botsch, TUV NORD GROUP to Jack Gibbons (October 7, 2020); and Bruno Thomauske, *Realization of the German Concept for Interim Storage of Spent Nuclear Fuel – Current Situation and Prospects (2003)*. **5.** Great Lakes Water Quality Board, *Decommissioning of Nuclear Power Facilities in the Great Lakes Basin*, (November 2021), page viii. **6.** According to reports prepared for Ontario Power Generation by CTECH Radioactive Materials Management, the total capital cost of building above-ground, attack-resistant, one-metre-thick reinforced concrete vaults at the Bruce, Darlington and Pickering Nuclear Stations would be $709,269,000 (2002$). According to Statistics Canada's gross domestic product price index, this is equivalent to $974,821,000 in 2021$. CTECH Radioactive Materials Management, *Conceptual Designs for Reactor-site Extended Storage Facility Alternatives for Used Nuclear Fuel: Alternatives for the Pickering, Bruce and Darlington Reactor Sites*, (April 2003), Section 3.2.4; and CTECH Radioactive Materials Management, *Cost Estimates for Reactor-site Extended Storage Facility Alternatives for Used Nuclear Fuel: Alternatives for Pickering, Bruce and Darlington Reactor Sites*, (December 2003), Table 3; and Statistics Canada, Table 36-10-0106-01. **7.** *Ontario Power Generation Inc. Consolidated Financial Statements December 31, 2021*, page 44.