



**Written submission from
BWXT Canada Limited**

**Mémoire de
BWXT Canada Limited**

In the Matter of the

À l'égard d'

Ontario Power Generation Inc.

Ontario Power Generation Inc.

Applicability of the Darlington New Nuclear Project environmental assessment and plant parameter envelope to selected reactor technology

Applicabilité de l'évaluation environnementale et de l'enveloppe des paramètres de la centrale à la technologie de réacteur sélectionnée pour le projet de nouvelle centrale nucléaire de Darlington

Commission Public Hearing

Audience publique de la Commission

January 2024

Janvier 2024



November 20, 2023

Senior Tribunal Officer, Secretariat
Canadian Nuclear Safety Commission
280 Slater Street
P.O. Box 1046, Station B
Ottawa, Ontario
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Subject: CNSC public hearing on applicability of the Darlington New Nuclear Project environmental assessment and plant parameter envelope to selected reactor technology – Ref. 2024-H-02

Dear President and Commission Members,

BWXT Canada Limited (BWXT) appreciates the opportunity to provide written feedback to the Canadian Nuclear Safety Commission (CNSC) on the applicability of the Ontario Power Generation (OPG) Darlington New Nuclear Project (DNNP) environmental assessment (EA) to OPG's selected reactor technology in advance of the public hearing scheduled for January 22, 2024. For background, BWXT is Canada's most comprehensive nuclear supply chain company, with over 60 years of expertise and experience in the designing, manufacturing, commissioning, and servicing nuclear power generation equipment.

As a supplier of more than 300 CANDU and pressurized water reactor steam generators worldwide - in addition to other major plant components and fuel - BWXT is on the front line of developing innovative solutions for all areas of plant operations, from the nuclear reactor itself to conventional systems, fuel handling equipment and parts, pressurizers, primary piping, critical heat exchangers and spent fuel storage. Our core business is maintaining the supply of nuclear fuel, components, services, engineering, equipment, and parts for the nuclear power industry, as well as producing nuclear medicine for life science companies, radio pharmacies, hospitals, and researchers.

In the Province of Ontario, nuclear power is the backbone of the electricity system, representing fully one-third of installed capacity and satisfying more than 50 per cent of the energy needed to power Canada's largest economy. With a current site output of more than 3,500 MW, the Darlington Nuclear Generating Station (NGS) is one of Ontario's most valuable pieces of infrastructure, supplying approximately 20 per cent of the province's electricity reliably, affordably, and without producing greenhouse gas (GHG) emissions through the creation of its energy.

In December 2021, OPG selected GE Hitachi Nuclear Energy as their technology development partner to deploy BWRX-300 Small Modular Reactor (SMR) technology on the Darlington site. In July 2023, OPG announced that it proposes to develop four BWRX-300 units, at 300 megawatts (MW) per unit, for a combined plant envelope of 1,200 MW consistent with OPG's power reactor site preparation licence for DNNP which the CNSC renewed in 2021. Ontario's Independent Electricity System Operator (IESO) forecasts that annual demand for electricity in the province will increase by more than 40 terawatt hours (TWh), or approximately 30 per cent, by 2035. The development of this new capacity is a central element of Ontario's plan to meet that growing demand for electricity without increasing GHG emissions.

In August 2011, the Joint Review Panel (JRP) for the DNNP submitted its EA to the Minister of the Environment. The EA considered a plant parameter envelope with an upper limit of 4,800 MW across four potential reactors based on the presumption of an initial need for 2,000 MW and reserving the remaining licensed capacity for future electricity planning needs. This was again confirmed when CNSC renewed the power reactor site preparation licence in 2021.

The 1,200 MW across the proposed four BWRX-300 unit configuration clearly conforms to the plant parameter envelope established in the approved EA. While the boundaries for the plant parameter envelope were established based on four commercially available nuclear technologies at the time, the EA itself was not intended to constrain OPG's ability to select a preferred technology. Technical considerations in that domain are subject to CNSC's review in parallel of OPG's Licence to Construct application, which was submitted in October 2022.

In April 2022, OPG and the Tennessee Valley Authority (TVA) announced plans for collaboration on the development and deployment of SMRs in both Canada and the United States, entering into a Memorandum of Understanding (MOU) allowing for coordinated efforts on the design, licensing, construction, and operation of the BWRX-300 technology. Subsequently in September 2022, CNSC and the United States Nuclear Regulatory Commission (USNRC) announced their intention to enhance their cooperative work under their Memorandum of Cooperation (MOC) on Advanced Reactor and Small Modular Reactor Technologies by working on regulatory and safety issues in the licensing review specifically of the BWRX-300 SMR design.

The goal of this collaboration is to reduce duplication of licensing review efforts, jointly utilizing third party verification, identifying areas for collaborative verification, sharing expertise and leveraging analysis done by each organization, as well as joint safety reviews and/or a risk-informed acceptance of the other regulator's technical conclusions. BWXT believe that this collaboration between nuclear regulators is extremely beneficial and has confidence in its ability to deliver on its mandate to the advantage of both countries.

BWXT is likewise confident that OPG's detailed evaluation, resulting in both the approval of the original EA and CNSC's subsequent renewal of the power reactor site preparation licence has confirmed the appropriateness of the Darlington site for SMR deployment and that all activities authorized therein will be undertaken without any negative impact to employees, contractors, the public, or the surrounding environment. BWXT has first-hand experience working closely with OPG over more than 50 years and can attest to their exceptional standards of nuclear safety culture, commitment to regulatory compliance, and demonstrated commitment to project excellence.

We would similarly submit, based on our own extensive experience, that CNSC regulatory processes are in all respects world-class when it comes to oversight of the use of nuclear energy and materials to protect health, safety, and security of Canadians, as well as Canada's environment. Furthermore, we believe the deployment configuration of the BWRX-300 technology is consistent with the approved DNNP EA, including the plant parameter envelope, and are confident that OPG possesses all necessary competencies to adhere to the conditions prescribed in the EA. OPG is a proven leader in the generation of safe, clean, reliable, and affordable electricity, and DNNP is a critical infrastructure project required to power Canada's largest economy.

It is for these reasons, as well as DNNP's alignment with Canada's environmental commitments and climate objectives, and the necessity for Ontario to bring online additional clean energy resources in a timely manner, that BWXT endorses OPG's ability to continue to move forward with the project.

Sincerely,

A handwritten signature in blue ink that reads "John MacQuarrie". The signature is written in a cursive, flowing style.

John MacQuarrie
President