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Oral presentation

Written submission from NAYGN Durham

Exposé oral

Mémoire de NAYGN Durham

In the Matter of the

Ontario Power Generation Inc.

Application for a licence to construct one BWRX-300 reactor at the Darlington New Nuclear Project Site (DNNP)

Commission Public Hearing
Part-2

January 8, 2024

À l'égard d'

Ontario Power Generation Inc.

Demande visant à construire 1 réacteur BWRX-300 sur le site du projet de nouvelle centrale nucléaire de Darlington (PNCND)

Audience publique de la Commission
Partie-2

8 janvier 2024

Canada

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Re: Darlington New Nuclear Project's Application for a Power Reactor Construction Licence

Dear President and Commission Members,

Thank you for giving us the opportunity to intervene for this public hearing. We are submitting this intervention on behalf of the North American Young Generation in Nuclear (NAYGN) – Durham Chapter in support of the Darlington New Nuclear Project's Application for a Power Reactor Construction Licence.

NAYGN is an association of young professionals and students passionate about the nuclear industry with focus on professional development, public information, networking & mentorship, and knowledge transfer. There are currently over 150 chapters across North America with over 25 chapters of those chapters being located in Canada.

NAYGN Durham is a local chapter to the Durham Region with over 1500 members, most of whom work for the nuclear industry in the Darlington and Pickering area. The chapter organizes various social, professional development and community events such as industry tours, technical seminars, lunch & learns and informative sessions in the region.

NAYGN Durham aligns with the OPG's Climate Action Plan. OPG has committed to be a net-zero carbon company by 2040, in support of Canada's commitment to be a net-zero

carbon economy by 2050. NAYGN Durham, as a youth organization, strongly supports this vision of OPG.

NAYGN Durham supports this application for the Darlington New Nuclear Project's Application for a Power Reactor Construction License due to four main reasons:

1. SMRs are Needed to Reach the Net Zero Climate Goals and Increased Demand in the Province of Ontario.
2. Safety of the Chosen Design.
3. Benefit To Ontario's and Canada's Economy and Job Creation.
4. OPG's Proven Track Record for Project Completion.

1. SMRs are Needed to Reach the Net Zero Climate Goals and Increased Demand in the Province of Ontario

Accelerating nuclear energy has been recognized as a means to achieve '*deep, rapid and sustained reductions in greenhouse gas emissions*' in the Global Stocktake agreed at the United Nations COP28 conference. This represents the first time nuclear energy has been formally specified as one of the solutions to climate change in a COP agreement.

At the same United Nations COP28 Climate Change conference, more than 20 countries engaged to commit to triple the global energy capacity worldwide. Canada was one of the countries who pledged to this increased nuclear capacity. In Ontario, nuclear power is the backbone of Ontario's electricity system, generating approximately 60% of the province's power, and providing a strong baseload source of power for the province of Ontario with a total installed capacity of 13 GW.

Adding nuclear generation capacity through the construction and operations of SMRs is a key part of that puzzle. The SMRs at the Darlington site would help to ensure reliable nuclear energy remains an important part of Ontario's low-carbon energy mix in the future.

This is also in line with the Independent Electricity System Operator (IESO) pathways to decarbonization report released in December 2022. The study has shown that for Ontario to support the increased electrification of different sectors and the growing energy demand, the electricity grid installed capacity would have to increase from 42,000 MW today to 88,000 MW in 2050. One BWRX-300 has an approximate electrical output of 300 megawatts – enough to power 300,000 homes – and is an important contribution towards supporting the increased Ontario demand.

Without these nuclear addition to the clean energy mix, it could have major consequences in terms of carbon dioxide (CO_2) emissions, air pollution and electricity supply security.

2. Safety of the Chosen Design

GEH's BWRX-300 is the tenth generation of the GEH boiling water reactor (BWR) design. The BWRX-300 design incorporates passive safety features and optimizes safety, operability and maintainability. This reactor technology already safely operates in many other operating nuclear facilities around the world.

Safety was a critical consideration in OPG's technology selection of the BWRX-300 which meets regulatory requirements. This design has leveraged lessons learned and operating experience from the previous generations of BWRs deployed and operating around the world.

3. Benefit To Ontario's and Canada's Economy and Job Creation

The study by the Conference Board of Canada, titled "A New Power: Economic Impacts of Small Modular Nuclear Reactors in Electricity Grids", released on March 17th, 2021, spoke to the impacts of deploying SMRs in the Province of Ontario. This study works under the assumption of the deployment of a 300-MW grid-scale SMRs with an operating life of 60 years, beginning in 2028 with a fleet of 4 more identical SMRs coming online shortly thereafter between 2032 and 2041.

As referenced by the study, there are numerous economic benefits and job creation opportunities that will occur due to the implementation of SMRs in the Province of Ontario. The study calculated that as a result of direct and related employment, deployment of a single SMR in Ontario will result in the following benefits on an average annual basis:

- Upwards of 700 jobs during the project development phase
- Over 1,600 jobs during the manufacturing and construction phases
- More than 200 jobs during the operating phase of the SMR
- Around 160 jobs as a result of decommissioning after the proposed lifetime of the SMR

Regarding direct economic benefits, the deployment of a single SMR in Ontario will lead to a positive impact on Gross Domestic Product of over $2.5 billion and result in an increase of revenues to the Province of Ontario upwards of $870 million.

As more and more SMRs get deployed within the province, the previous figures will increase as Ontario gets prepared to meet the challenge of soaring energy demand.

Not only will this technology cement OPG and Ontario's role as a world-leader in clean energy, it will also create downstream effects of an increased adoption of SMR technologies in other provinces such as Saskatchewan and New Brunswick, further reinforcing Canada's role in its goals to combat climate change.

4. OPG's Track Record for Projects

NAYGN Durham strongly believes that OPG has a proven track record for project and operation excellence. As a matter of fact, project and operational excellence forms part of the core business of OPG, which are both key to the vision of electrifying life in one generation.

OPG's has a history of project excellence in both the nuclear and hydroelectric industry. NAYGN Durham can list some examples in which OPG has demonstrated strong project and operational excellence:

- OPG has a 50-year history of strong safety and operational performance at its two nuclear generating stations – Darlington NGS and Pickering NGS.
- The successful and safe refurbishment of Darlington Units 2 and 3, which is part of part of a $12.8 billion project – the first unit starting refurbishment in 2016.
- In Hydroelectric redevelopment, OPG's Little Long Dam Safety Project has received the Canadian Dam Association's (CDA) Constructed Project Award of Excellence for 2024.
- The successful Niagara Hydro Tunnel project that was put in service in 2013, which was one of the largest hydroelectric projects in Ontario in the last 50 years.

These past successful projects and track record demonstrate OPG's readiness and capability to undertake the construction of a BWRX-300 unit at the Darlington Site.

Thank you,

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