



CMD 25-H2.10

Date: 2025-04-29

**Written Submission from
Conexus Nuclear Inc.**

**Mémoire de
Conexus Nuclear Inc.**

In the matter of the

À l'égard d'

Ontario Power Generation Inc.

Application to renew power reactor
operating licence for the Darlington
Nuclear Generating Station

Ontario Power Generation Inc.

Demande concernant le renouvellement
du permis d'exploitation d'un réacteur de
puissance pour la centrale nucléaire de
Darlington

**Commission Public Hearing
Part-2**

**Audience publique de la Commission
Partie-2**

June 24-26, 2025

24-26 juin 2025



April 29, 2025

Senior Tribunal Officer, Commission Registry
Canadian Nuclear Safety Commission
280 Slater Street, P.O. Box 1046
Ottawa, ON K1P 5S9

Email: interventions@cnsccsn.gc.ca

Subject: Renewal of the Darlington Nuclear Generating Station Power Reactor Operating License

This submission supports the renewal of the Darlington Nuclear Generating Station (NGS) Power Reactor Operating License (PROL). The Darlington NGS facility consists of four nuclear reactors, which have been designed, constructed, and operated since 1990, primarily to generate electrical power. The reactors have been operated and maintained to the highest safety standards, and their continued operation plays a key role in achieving Ontario's clean energy goals.

Darlington NGS has a long-standing history of strong safety practices and exceptional operational performance, along with a proven track record in project management. With the expertise and dedication of qualified partners and vendors, Darlington NGS has showcased world-class project performance through the successful and safe refurbishment of its units.

Ontario Power Generation (OPG) is a founding member of Conexus Nuclear Inc. (Conexus, formerly CANDU Owners Group). Today, all owners of CANDU reactors, both in Canada and internationally, are members of Conexus. Our mission is to achieve excellence through collaboration in CANDU technology, small modular reactors and advanced nuclear technologies. In partnership with its members, suppliers, research institutions, and other organizations, Conexus continuously innovates nuclear plant equipment and processes to ensure the highest standards of safety, efficiency, and environmental performance.

To fulfill our mission, Conexus is organized around the following five operational program areas:

- Nuclear Safety and Environmental Affairs
- Information Exchange
- Learning and Development
- Research and Development, and
- Joint Projects



OPG plays a significant role by offering its expertise and sharing experiences with others. It contributes to or takes the lead in all program areas and has been collaborating with CANDU operators worldwide for over 40 years.

Conexus members invest approximately \$75 million annually in research and development, and joint projects aimed at enhancing the safety, reliability, environmental performance, and cost-effectiveness of CANDU nuclear generating stations. This investment is made by our members in proportion to the number of operating units, benefiting the entire CANDU community, both domestically and internationally.

The top priority for our members is nuclear safety. Work done via Conexus has resulted in significant results that demonstrate the commitment of the Canadian nuclear utilities to this end, including:

Safety Analysis improvements:

- Aging Management Assessments
- Probabilistic and Deterministic Safety Assessments
- Severe Accident studies and management
- Analysis of external hazards
- Modifications to the stations and procedures to enhance safety

Numerous projects to ensure ongoing safe, long-term operation, including:

- Fuel Channel Life Management
- Research into pressure tube behaviour and longevity
- Optimization of plant processes through innovation and artificial intelligence
- Plant modernization
- Waste management and minimization

Further, through Conexus' network of peer teams, staff from nuclear utilities collaborate to improve plant safety and operations. They focus on key areas, including Nuclear Safety, Environmental Affairs, Human Performance, Equipment Reliability, and Radiation Protection, and fora such as the Regulatory Affairs Vice Presidents Forum, where the regulatory framework and improvements to an already robust and mature regulatory framework are discussed. By sharing experiences and developing common strategies, Conexus members support one another and assist emerging nuclear utilities. In addition, Conexus has established a leadership and knowledge management training program to improve leadership and management skills among high-potential technical managers in the nuclear industry.

Moreover, the members are leveraging over 40 years of experience to deploy new CANDU reactors, small modular reactors and advanced technologies, ensuring safe, reliable, and clean electricity is available worldwide.



Conexus supports its members by engaging skilled and knowledgeable suppliers with extensive expertise, human resources, and research facilities to conduct innovative nuclear science. This research, along with the related engineering activities, is primarily carried out in Canada by organizations such as Canadian Nuclear Laboratories, Kinectrics, AtkinsRéalis, Calian, Stern Laboratories, and nuclear utilities like OPG.

Over the past 35 years, Darlington NGS has created numerous high-paying technical jobs directly related to its operations. Additionally, many jobs have been added to support the supply chain for building and maintaining the reactors, as well as for ongoing research and development necessary for their continuous improvement. For example, Darlington NGS is involved in a collaborative project with Conexus aimed at modernizing nuclear standards set by the Canadian Standards Association (CSA). Many of these standards were established during the early and middle phases of CANDU reactor operation, which began in the 1970s. Several standards will be updated in the coming years with the industry's accumulated operating experience, best practices, and data from refurbishments. Compliance with specific CSA standards is mandated by the current Darlington NGS PROL.

OPG has completed a Periodic Safety Review (PSR) of the Darlington NGS to support its license renewal and ongoing operation. A PSR is an internationally recognized method for evaluating the safety of a nuclear generating station against current standards and identifying feasible enhancements to further improve safety. This PSR was prepared following Canadian regulatory requirements and accepted international practices. The review confirmed that Darlington NGS meets all modern safety standards, validated its safety and operational performance, and identified enhancements that would increase safety and strengthen the overall defence-in-depth for its continued safe operation.

Conexus and its members are committed to continuously enhancing safety, reliability, affordability, and environmental performance in Canada's nuclear plants, with Darlington NGS at the forefront of these initiatives. Conexus supports the renewal application for Darlington NGS's PROL with a 30-year duration and is confident that the facility will maintain its exemplary safety record across all areas of operation.

We look forward to elaborating on aspects of this letter during the oral presentation in June, which will be delivered by Sonia Qureshi, Vice-President Projects and CTO.

Sincerely,

Rachna Clavero
President and CEO
Conexus Nuclear Inc.