Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Written Submission from the North American Young Generation in Nuclear (NAYGN) – Durham Chapter

Mémoire de North American Young Generation in Nuclear (NAYGN) – Durham Chapter

In the matter of the

À l'égard d'

Ontario Power Generation Inc.

Ontario Power Generation Inc.

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

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

Commission Public Hearing
Part-2

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May 7th, 2025

Tribunal Officer, Commission Registry

Canadian Nuclear Safety Commission

280 Slater Street

P.O. Box 1046, Station B

Ottawa, Ontario K1P 5S9 Email: interventions@cnsc-ccsn.gc.ca

Re: Application for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence 13.03/2025

Salutation President and Commission Members,

We appreciate the opportunity to submit this intervention on behalf of the North American Young Generation in Nuclear (NAYGN) – Durham Chapter, in support of Ontario Power Generation's (OPG) application to renew the Darlington Nuclear Generating Station (DNGS) Power Reactor Operating Licence (PROL).

NAYGN Durham is a local chapter of NAYGN, representing approximately 1,500 students and professionals across Ontario's Durham Region. As a youth-led organization, we are committed to advancing public understanding of nuclear energy through professional development, technical seminars, community outreach, and public advocacy initiatives.

Nuclear power is a cornerstone of Ontario's electricity system, supplying around 60% of the province's electricity. DNGS alone contributes about 20% of Ontario's electricity, with an installed capacity of 3,500 megawatts (MW) (Independent Electricity System Operator [IESO], 2022), providing reliable baseload power to support the province's growing, low-carbon economy.

Extending the DNGS licence is critical for supporting the next generation of energy leaders in Durham Region. For NAYGN Durham and youth across our community, DNGS creates pathways into high-quality, steady careers in STEM fields, while providing hands-on learning opportunities through educational tours, scholarships, and community programming. As a reliable source of power, DNGS also supports Ontario's clean energy future, ensuring young people inherit a strong economy and a sustainable environment. Renewing DNGS's licence means continued investment in education, workforce development, and the long-term prosperity of Durham's youth.

With electricity demand projected to rise by 75% over the next 25 years (Independent Electricity System Operator [IESO], 2022), Darlington's continued operation will be essential to ensuring grid reliability. NAYGN – Durham strongly supports OPG's application to extend the Darlington PROL through to 2055.

NAYGN Durham actively supports the DNGS application for the following reasons:

1. Long-term license extensions, such as the one being proposed, are feasible and have proven successful in practice.
2. DNGS continues to exceed standards put in place, ensuring minimal impact and public safety.
3. DNGS' PROL extension will continue to boost Ontario's economy while assisting both Canada and Ontario in reaching their climate change goals.

30 years licenses have been done before and succeeded

Refurbishing a nuclear power plant is a modernization process that updates the facility to meet current safety and operational standards, ensuring long-term, reliable performance. Darlington's recent refurbishment has achieved this by replacing life-limiting components and upgrading systems to meet the latest regulatory expectations. As a result, Darlington's operational life expectancy now matches that of a newly constructed plant.

Internationally, leading nuclear energy producers have shown that long-term to indefinite Power Reactor Operating Licence (PROL) extensions are technically feasible and responsible when supported by strong safety protocols and aging management strategies. France, a prominent nuclear operator, has extended the licenses of 49 nuclear plants, with operational life ranging from 30 to 49 years. These extensions are based on robust regulatory frameworks, 10-year periodic safety reassessments (IAEA SSG-25, 2013), and proactive aging management. France's Long-Term Operation (LTO) strategy aims to extend plant life spans up to 60 years through exceptional maintenance, regular safety assessments, and rigorous R&D (NEA, 2019). With its recent modernization and adherence to rigorous safety protocols like decennial Periodic Safety Reviews (PSR), Darlington is well-positioned to adopt a similar approach to long-term, responsible operation.

Closer to home, Mexico provides a recent example of longer-term PROLs becoming approved. Its nuclear facility, consisting of two reactors, received 30-year license extensions following major refurbishment work in 2020 (World Nuclear News, 2020) and 2025 (World Nuclear News, 2022). This case demonstrates that 30-year extensions are feasible for refurbished nuclear facilities in the region.

The international precedents support OPG's request for a 30-year extension to DNGS's Power Reactor Operating Licence. The investment in refurbishment, coupled with a commitment to ongoing safety oversight, positions Darlington to continue providing reliable, clean electricity in line with global best practices.

Social Accountability: Environmental Stewardship

Regulatory oversight in nuclear power plant operations is crucial and is independent of the license duration. The standards for reporting, compliance verification, and environmental protection will remain consistently rigorous regardless of the length of the license. NAYGN Durham strongly supports OPG's application for a 30-year license renewal due to their consistent track record of meeting and exceeding regulatory requirements through formal assessments, safety reviews, and

proactive community engagement. The decision to grant a license depends on the applicant's ability to demonstrate qualifications in environmental protection, public health, safety, and adherence to national and international obligations. DNGS's long-standing commitment to environmental stewardship and public safety further reinforces its qualification to hold a longer-term licence.

According to the Canadian Nuclear Safety Commission's (CNSC) Environmental Protection Review (EPR) Report (2016-2023), potential risks from DNGS operations to atmospheric, terrestrial, aquatic, and human environments are low (Canadian Nuclear Safety Commission, 2025). This demonstrates the effectiveness of OPG's environmental protection program, which aligns with regulatory standards and safeguards public health and the environment. DNGS emissions are comparable to natural background levels, highlighting exceptional operational performance.

Earlier assessments, such as the CNSC's 2015 Regulatory Oversight Report, rated DNGS's environmental protection and waste management as "above satisfactory," reinforcing its reliability and commitment to responsible operations (Canadian Nuclear Safety Commission, 2016). Extending the PROL to 30 years will not alter DNGS' regulatory compliance behavior or their commitment to social accountability, as OPG has consistently prioritized public safety and exceeded expectations since beginning operation over 30 years ago.

DNGS to continue to boost Ontario's economy while assisting both Canada and Ontario in reaching their climate change goals

Approving OPG's application for an extended PROL term will provide significant economic and environmental benefits for Ontario. Darlington's refurbishment and continued operation from 2010 to 2055 is projected to contribute $90 billion to Ontario's GDP, with $75 billion from operations between 2017 and 2055, supporting over 14,000 jobs annually. DNGS also prevents approximately 2 million tons of CO_2 emissions each year, aligning with Ontario's climate objectives (The Conference Board of Canada, 2016).

DNGS has a workforce of approximately 2,800 full-time employees, significantly contributing to the economic stability of the Durham Region. The DNGS workforce has highly skilled roles in trades, engineering, and project work that support Ontario's energy future. OPG also invested approximately $20 million in local educational partnerships with Ontario Tech University and Durham College (Ontario Power Generation, 2021). Extending DNGS's license ensures Ontario retains critical technical expertise, while advancing climate goals and developing the next generation of energy professionals.

In addition to the economic benefits of keeping Darlington online, DNGS has been a proactive member of the Durham community since it first came online. Through the Corporate Citizenship Program (CCP), OPG supports over 140 local initiatives every year, including education programs for food security and environmental restoration (Ontario Power Generation, n.d.-a).

One example of Darlington's community engagement programs is the Darlington Energy Complex, the facility home to a full-scale reactor mockup used to host hands-on educational tours. NAYGN

Durham has worked closely with OPG to organize guided visits for high school students, interns, and early-career professionals. These tours offer firsthand exposure to CANDU reactor systems, nuclear safety protocols, and career pathways in clean energy.

OPG has also supported social services across Durham. In April 2023, OPG donated $25,000 to Feed the Need Durham and contributed more than $900,000 province-wide to combat food insecurity (Ontario Power Generation, 2023). OPG also hosts Community outreach activities such as the annual community power expo and science and environmental engagement programs hosted with local partners. These events aim to break down barriers to STEM careers by connecting students directly with engineers and scientists.

DNGS also enhances global healthcare security through the production of medical isotopes using CANDU reactors and the Target Delivery System (TDS) (Ontario Power Generation, n.d-b). These isotopes, such as Cobalt-60, Molybdenum-99, and Yttrium-90, are essential for sterilizing approximately 30% of the world's single-use medical devices, enabling 80% of nuclear medical imaging, and delivering targeted therapies for conditions such as liver and colorectal cancers. Extending the PROL will enable DNGS to continue its contributions to Ontario's clean energy grid and global healthcare needs, reinforcing OPG's role as a leader in both energy and community support.

In conclusion, the NAYGN Durham Chapter strongly supports OPG's application to renew the PROL for DNGS. Darlington's operation for an additional 30 years is not only technically feasible, but also essential for meeting Ontario's growing electricity demands, economic development goals, and climate commitments. DNGS continues to demonstrate a strong performance in safety, environmental stewardship and public accountability. Extending the license will ensure the continued delivery of clean, reliable and affordable electricity to Ontario while supporting local communities, driving innovation, and strengthening Canada's energy future.

Thank you,

Calista Jonah

Calista Jonah, NAYGN Durham Public Outreach Chair

E Nazareth

Elton Nazareth, NAYGN Vice-President

Jonathan Jeyarajah

Jonathan Jeyarajah, NAYGN President

Contributors

Calista Jonah, NAYGN Durham Public Outreach Chair

Alexandra Hynes, NAYGN Durham Public Outreach Officer

Jonathan Jeyarajah, NAYGN President

Avleen Sindhar, NAYGN Communications Chair

Spring Fu, NAYGN Durham Public Outreach Officer

Elizabeth Gill, NAYGN Durham Public Outreach Officer

Lakysha Moonemalle, NAYGN Durham Public Outreach Officer

Gurvaj Gosal, NAYGN Durham Public Outreach Officer

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