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Oral Presentation

Submission from
North American Young Generation in Nuclear (NAYGN) - Canada

In the Matter of

**Ontario Power Generation Inc.,
Pickering Nuclear Generating Station**

Request for a ten-year renewal of its Nuclear Power Reactor Operating Licence for the Pickering Nuclear Generating Station

Commission Public Hearing – Part 2

June 2018

Exposé oral

Mémoire de
North American Young Generation in Nuclear (NAYGN) - Canada

À l'égard de

**Ontario Power Generation Inc.,
centrale nucléaire de Pickering**

Demande de renouvellement, pour une période de dix ans, de son permis d'exploitation d'un réacteur nucléaire de puissance à la centrale nucléaire de Pickering

Audience publique de la Commission – Partie 2

Juin 2018

Canada

NAYGN Canada Oral Presentation

PICKERING LICENCE RENEWAL PUBLIC HEARING
JUNE 26-28, 2018

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NORTH AMERICAN YOUNG GENERATION IN NUCLEAR (NAYGN)

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Matthew Mairinger, for the record.

I would like to start by thanking the Canadian Nuclear Safety Commission for providing an opportunity to speak about the Pickering Nuclear Generating Station's licence renewal. I have 5 years of experience working for Ontario Power Generation at both Pickering and Darlington in Project Controls, Minor Modifications, Reactor Safety and Performance Engineering. I earned my Bachelor of Engineering degree in Nuclear Engineering from UOIT and am taking graduate courses in Nuclear Engineering at UOIT. Currently I live in Ajax less than 10 kilometres from the Pickering site.

I am here representing North America Young Generation in Nuclear (NAYGN) as the Durham chapter president and as the NAYGN Canadian Affairs Chair. NAYGN is an association of young professionals and students passionate about the nuclear industry and is focused on professional development, public relations, networking, and community outreach. There are currently 123 chapters across North America with 10 chapters in Canada. NAYGN was just recently presented with a Top Industry Practice Award for their work in making the nuclear power industry a safer and more efficient industry.

Through my experience in the nuclear industry I am amazed at how open, transparent and collaborative the industry is. Through organizations such as WANO, INPO, and COG, information about issues throughout the nuclear industry across the globe are shared in an open manner so that all stations and employees can learn, and take corrective action if necessary. Unlike other industries where issues and improvements are kept secret to maintain a competitive advantage, the nuclear industry operates as a global community and adamantly tries to ensure other stations operate as effectively as possible. For young professionals in nuclear this open and collaborative approach works well as our generation has been brought up in a globally connected environment. By the nuclear industry culture mirroring the preferences of our young generation this leads to a more rewarding work experience, and collaboratively working on problems leads to greater results and innovations. This global connectedness was never clearer than after Fukushima Daiichi. Even though this was a completely different reactor design than the Pickering CANDU reactor, was operated on a different continent, and experienced a tsunami (which would be quite strange to see in Lake Ontario), I saw how OPG completely re-analyzed their safety analysis and implemented millions of dollars in upgrades and projects to protect the station from beyond design basis initiating events. OPG also updated their consolidated nuclear emergency plan after Fukushima. In the unified control exercise over 30 agencies participated from all levels of government to test the elements of the response plan. I personally was involved in several post-Fukushima modifications at OPG and I worked on an industry best practices guideline for external

flooding protection with EPRI. This approach to openly share experiences and lessons learned has allowed the nuclear industry to exponentially advance in terms of safety and human performance improvements and is one of the underlying factors of why I have so much faith for the future of nuclear.

It is unfortunate that every year there are almost 1,000 workplace deaths and almost 250,000 claims accepted for lost time due to work-related injuries or diseases in Canada. Young workers are a group particularly at risk due to a number of factors such as lack of experience, hesitation about refusing work, and generally having a higher risk tolerance. Ontario Power Generation, however, has robust and comprehensive safety programs in place to protect young workers. This includes computer based training, qualification requirements before work can be performed, work-plans that are reviewed by various stakeholders, the work protection program in which equipment is isolated and workers can put on their own work protection locks to ensure that equipment will not be energized while they are working. New workers are assigned a mentor at the company, and in the engineering new-grad program these new workers participate in rotations at both sites in various departments and do one month of shift rotation before they go to their home base location. These experiences allow for a greater breadth of experience and allow for a transition period from school to work. Beyond this Ontario Power Generation has an excellent nuclear safety culture – this includes reviewing the nuclear safety trait of the week at the start of meetings, having an environment open to raising concerns in which all employees can document deficiencies via station condition records, to focusing on safety at the lowest level by enforcing that all staff hold handrails while traversing stairs. In addition to the company there is the Society of United Professionals and the Power Workers unions which are part of the joint health and safety team and are another defender of protecting young workers from workplace injuries. With such comprehensive programs in place, and by safety being reiterated at all levels within the company, young workers have the privilege of working for a company in which safety is the top priority and young workers are not subjected to precarious work.

The extension of the Pickering plant is not just a local issue – it is essential to maintain Ontario as a world leader in clean energy generation. The continued operation of Pickering is important to young nuclear professional across the Province. As the chapter lead from the NAYGN Bruce chapter puts it, “the continued operation of Pickering will ensure baseload power is available to the province as Bruce and Darlington undergo refurbishment. By continuing the operation of Pickering, Ontarians will continue to have reliable, low-cost, low-emissions power.” With the refurbishment of Darlington and Bruce there needs to be a dependable, base load generator to ensure uninterrupted services such as hospitals and

other essential services. Ontario has such a stable grid that brownouts and blackouts are unusual and as a result most of us are not prepared and not willing to tolerate of power interruptions. As a millennial I don't realize how dependant on electricity I am until a power outage occurs – the Wi-Fi goes down and as soon as the phone battery dies and can't be recharged I can't event think of where to look to check for updates about the progress of the outage – Twitter, unfortunately, doesn't run on candlelight. While wind and solar are beneficial additions to the grid - with capacity factors around 30% and having variable production based on external factors this means that with the closure of nuclear Ontario will be forced to utilize fossil fuels to fill in the baseload generation gap. This is apparent in Germany where nuclear is being phased out and they are investing heavily in renewables. Even with heavy economic investment in renewables Germany consumed 80% fossil fuels (34.6% mineral oil, 23.7% natural gas, 11% coal, 11.2 Lignite) and only 13% renewables in 2017 while the cost of electricity is the highest in Europe. The lifecycle greenhouse gas emissions from nuclear are far less than fossil fuel sources and comparable with wind and solar. Nuclear power is also the most efficient means of electricity production in terms of land use, producing almost 30 times more power per square-kilometer than wind. The NAYGN Chalk River chapter stated that they support the Pickering Licence Renewal because "it will support the generation of affordable low-carbon electricity in Ontario and will deliver on national policy objectives and international commitment for non-fossil fuel electricity generation. The Licence Renewal will be a key driver of Ontario's future prosperity and economy." Ontario has made great strides in terms of phasing out coal and it is essential to keep this trend going by extending Pickering and not having natural gas fill the void.

From the Pickering facility, the public dose resulting from operation has consistently been well below the regulatory limit. From 2013 to 2016 the maximum effective dose to a member of the public occurred in 2016 and has a dose equivalent to eating 15 bananas. There is a widespread misunderstanding about radiation in the public, and more education and training is needed. In the 2017 NAYGN Career Survey, in which members were surveyed from across North America, 36% of respondents stated that their peers/family impression of nuclear changed to more supportive since they started working in the nuclear industry and 60% were already consistently supportive. These high levels of support, and high increased levels of support, demonstrate the powerful alteration in outlook towards nuclear power once more is learned and discussed about the topic. Frequently when the word 'radiation' is raised it invokes fear in the public. This is a shame as radiation is used in smoke detectors to save lives; nuclear procedures and materials are used in the medical sector to diagnose, monitor and treat a wide variety of issues; carbon dating has helped us learn more about our past and electron beam radiation is used to

remove toxic pollutants in industries such as coal-fired plants. Radiation is a naturally occurring process all around us, from transuranics in the soil to cosmic radiation from the sun. Besides Pickering utilizing this amazing energy source to produce electricity, OPG and Bruce Power have been working with Nordion to supply more than 50% of the world's Cobalt-60, which is used to sterilize medical equipment and food products. Therefore the Pickering plant is essential not just as an electricity generator, but also as a producer of life-saving medical isotopes.

Ontario Power Generation is a model company in terms of giving back to the community, providing support to over 900 grassroots host community charitable and non-profit initiatives annually. I've been to many community events around Pickering in which OPG was listed as a sponsor and these events have made a significant impact on creating a positive impact in the region. Without the Pickering station I strongly believe that the overall quality of life in Durham would decrease – not only due to the loss of thousands of dependable careers but also due to the lack of community funded events and non-profit initiatives.

In summary I believe OPG represents an ideal opportunity for young professionals to have access to safe, dependable, rewarding careers. I believe OPG represents the ideal model of an outstanding corporate citizen. I believe the Pickering plant can continue to deliver low cost, clean, dependable energy across Ontario safely. On behalf of North American Young Generation in Nuclear, I strongly support the continued operation of the Pickering Nuclear Generating Station and the renewal of their Power Reactor Operating Licence.

Thank you.