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Oral Presentation

Written submission from North American Young Generation in Nuclear

Exposé oral

Mémoire de North American Young Generation in Nuclear

In the Matter of the

Darlington New Nuclear Project

Application to renew the nuclear power reactor site preparation licence for the Darlington New Nuclear Project

Commission Public Hearing

June 10, 2021

À l'égard de

Projet de nouvelle centrale nucléaire de Darlington

Demande de renouvellement du permis de préparation de l'emplacement d'une centrale nucléaire pour le projet de nouvelle centrale nucléaire de Darlington

Audience publique de la Commission

10 juin 2021

Canada

NAYGN Oral Intervention

RENEWAL OF ONTARIO POWER GENERATION INC.'S NUCLEAR POWER REACTOR SITE PREPARATION LICENCE FOR THE DARLINGTON NEW NUCLEAR PROJECT
JUNE 9-10, 2021

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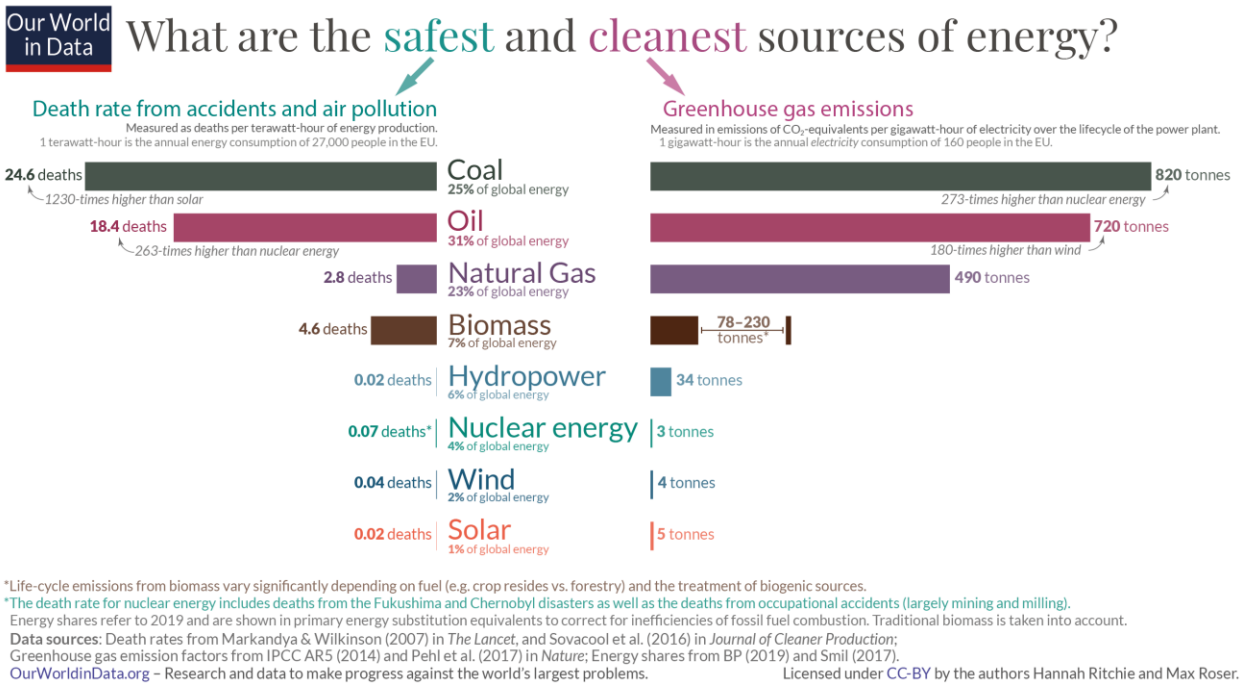
Matthew Mairinger, for the record.

I would like to start by thanking the Canadian Nuclear Safety Commission (CNSC) for providing an opportunity to submit an intervention for Ontario Power Generation Inc. (OPG) to renew its nuclear power reactor site preparation licence for the Darlington New Nuclear Project (DNNP). I have eight years of experience working for Ontario Power Generation at both the Pickering and Darlington nuclear sites. I have worked in Project Controls, Minor Modifications, Reactor Safety, Stakeholder Relations, and I currently work in Performance Engineering at Darlington. I earned my Bachelor of Engineering degree in Nuclear Engineering from Ontario Tech University Technology, am taking graduate courses in Nuclear Engineering, I am a Professional Engineer in the province of Ontario and am a Project Management Professional. I live in Bowmanville less than 10 kilometers from the DNNP site.

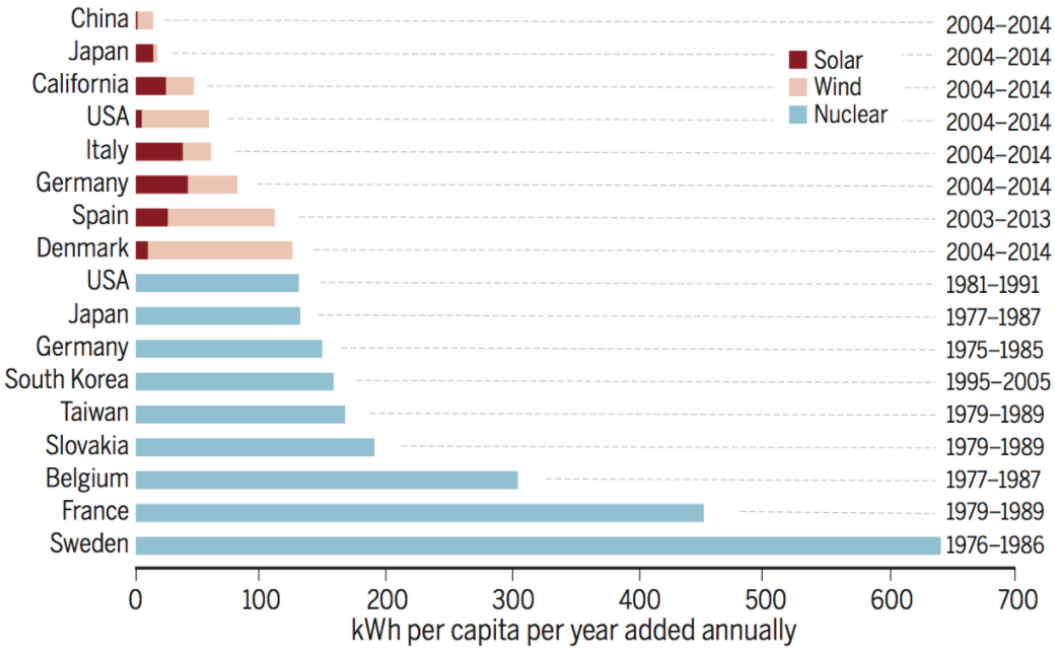
I am here representing North American Young Generation in Nuclear (NAYGN) as the NAYGN Canadian Operating Officer. NAYGN is an association of young professionals and students passionate about the nuclear industry and is focused on professional development, public relations, networking, and community outreach. There are currently over 100 chapters across North America with 14 chapters in Canada.

I want to start with a broad perspective - fossil fuel air pollution causes almost 1 in 5 deaths globally each year and already the global average atmospheric carbon dioxide is over 400 parts per million. This is the current situation, this is the reality we have. As global citizens we need to rapidly adopt technologies that help us to reach our net zero targets. Ontario, thankfully, already has one of the cleanest grids on the planet thanks to ~60% nuclear in combination with hydroelectricity and other clean sources. With the push for more electrification (such as transportation) we will need new clean, reliable baseload power more than ever. I am excited for the DNNP for several reasons:

1. As an Engineer I love 'optimization'. Life is full of compromises and risk so finding the right balance is key. When accounting for the deaths from accidents and air pollution (and therefore the "safety") and combining the greenhouse gas emissions by source nuclear is a clear winner.

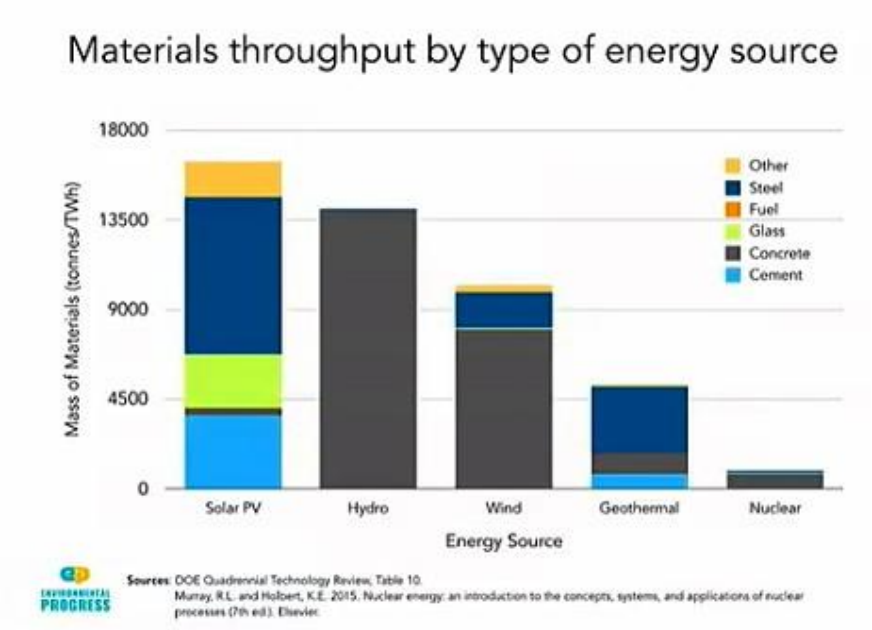


2. One argument I hear against nuclear is the speed of deployment: "it's too slow", "we have a climate emergency and we need the solution now", etc. I want to clear up this misunderstanding with *facts* – all of the countries (Sweden, France, and Belgium) that have decarbonized the fastest have utilized nuclear in their strategy. This is because nuclear, as a non-intermittent source, has a high capacity factor >90%, and has a long operating life of >60 years. California and Germany offer great case studies of locations where nuclear is being phased out with the intention of reaching 100% renewables and these have failed miserably. At these locations emissions are rising, there are rolling blackouts, and the cost of electricity has skyrocketed. In all four IPCC illustrative pathways that keep us to 1.5 C degrees warming, there is a substantial increase in nuclear power in the next few decades - Net Zero Needs Nuclear!



Average annual increase of carbon-free electricity per capita during decade of peak scale-up. Energy data from (*6*) except California renewables data from (*7*). Population data from (*8*). See supplementary materials.

3. I also like to look at the lifecycle materials required for the energy and the land required for nuclear. The OPG DNNP Ecological Risk Assessment concluded "that no residual adverse effects on human health or non-human biota are expected as the result of DNNP activities over the lifecycle of the DNNP facility". The DNNP site evaluation and licence application has also been reviewed against applicable regulatory requirements, current codes, standards and practices as well as current site baseline data. Because nuclear is incredibly energy dense (about 1 million times greater than that of other traditional energy sources) the land footprint for nuclear is much less per energy produced and that means more room for flora and fauna. This also means that the materials required to be mined, processed, and shipped are much less than other energy sources. Less extraction of raw materials, less processing, and less shipping. Yes please!



4. Small modular reactors represent a new market sector where nuclear can help decarbonize – cargo ships, isolated communities, and remote industrial sites (i.e. mining), just to name a few. The modular design also means that developing countries/communities can start small and expand as the population grows or as more capital is unlocked. Some of the SMR designs utilize a much higher temperature so opportunities such as district heating, hydrogen production, and/or desalinization become available opportunities.

I am part of the international nuclear delivery team for the United Nations Conference of Parties (COP) and our 2021 position paper has been endorsed by over 150 associations from around the world stating that Net Zero Needs Nuclear. Our petition to ensure nuclear is recognized as essential to meet climate targets already has 3000+ signatories demonstrating that projects such as the DNNP are critical to hitting our Paris Accord targets and positioning Canada as a world leader in clean technology. What this project proposal really offers is an economic and environmental benefit not only to the project site but also opens the door to be deployed throughout Canada and internationally. This expansion could be the

solution for off-grid mines and remote communities to replace their current diesel generating sources with clean, safe and reliable nuclear power.

In closing, I truly believe that nuclear power is the safest, cleanest, and most reliable electricity production method that should be one of the main strategies humanity utilizes to combat climate change and protect the environment. I am happy that OPG, a company with a long history of reliable operation and a company with a 2040 Net Zero commitment, is spearheading this project. As a young professional that is passionate about the well-being of our environment for generations to come, I urge you to take this crucial step in renewing the power reactor site preparation licence, do it for the planet!

Thank you.

Matthew Mairinger