



## **Oral presentation**

### **Written submission from the North American Young Generation in Nuclear**

In the Matter of the

#### **Canadian Nuclear Laboratories (CNL)**

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Application from the CNL to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility

#### **Commission Public Hearing Part 2**

**May and June 2022**

## **Exposé oral**

### **Mémoire de la North American Young Generation in Nuclear**

À l'égard des

#### **Laboratoires Nucléaires Canadiens (LNC)**

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Demande des LNC visant à modifier le permis du site des Laboratoires de Chalk River pour autoriser la construction d'une installation de gestion des déchets près de la surface

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

**Mai et juin 2022**



# NAYGN

# Oral Intervention

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**CONSTRUCTION OF CANADIAN NUCLEAR LABORATORIES'  
NEAR SURFACE DISPOSAL FACILITY  
MAY 31, 2022**

**Matthew Mairinger, P. Eng., PMP**  
CANADIAN OPERATING OFFICER  
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 (CNSC) for providing an opportunity to submit an intervention on Canadian Nuclear Laboratories' application to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility. I have nine 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, Performance Engineering, and I currently work as a Business Analyst in Nuclear Sustainability Services. I earned my Bachelor of Engineering degree in Nuclear Engineering and Graduate Diploma in Nuclear Technology from Ontario Tech University Technology. I am a Professional Engineer in the province of Ontario and am a Project Management Professional.

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 16 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 415 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 NSDF for several reasons:

1. It demonstrates environmental stewardship from Canadian Nuclear Labs - 90% of the waste intended for disposal is already on site (5% will come from hospitals/universities and the remaining 5% from other AECL sites). This project will be to conduct environmental remediation of contaminated soils and materials that are low-level waste materials and put them in an engineered facility designed to withstand extreme weather events and solve the problem of where to store low-level waste so the problem is not left to future generations (i.e. like the “TikTokers” and I).
2. For years I’ve heard from anti-nuclear groups that there is no solution to radioactive waste... well this project is ready-to-go and will make that a moot point. That leaves one less excuse to argue against the lowest carbon source of electricity (United Nations Economic Commission for Europe, 2021).
3. As an environmentalist I’m impressed with the engineering involved in this project - the site is on a bedrock ridge that naturally forces water away from the River. The NSDF will also feature an advanced waste water treatment system and will have additional monitoring for the facility displayed publicly online.
4. I also like to look at the lifecycle materials required for the energy and the land required for nuclear. 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. So while this project is a disposal facility I want to remind others that all energy creates waste – and nuclear produces far less waste compared with other low carbon sources (see figure 1). Less extraction of raw materials, less processing, and less shipping. Yes please!

**Figure 46** Lifecycle requirements of select materials for electricity technologies, in g per MWh.

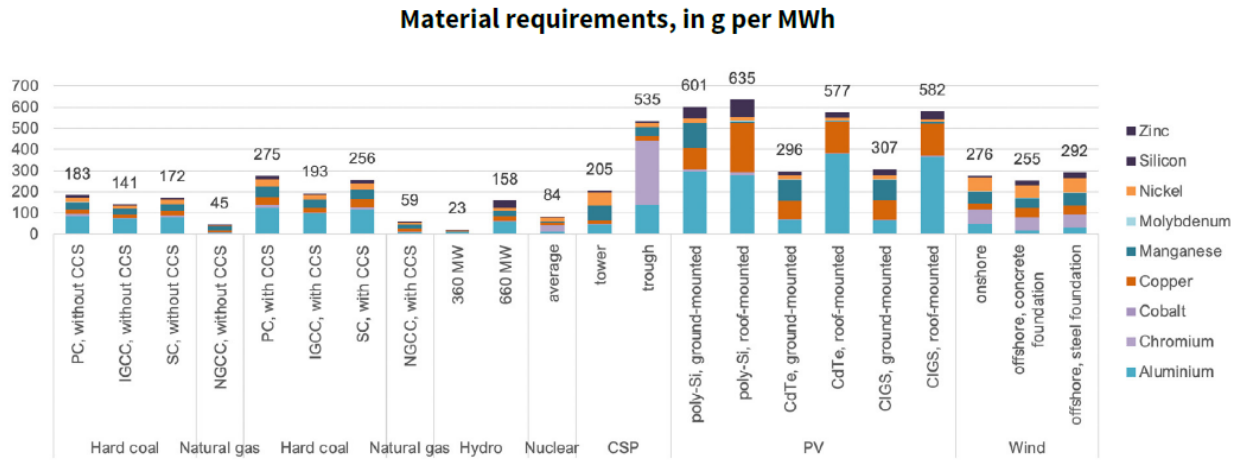


Figure 1: Source United Nations ECE Life Cycle Assessment of Electricity Generation Options

- While to some a “nuclear disposal facility” may sound alarming I want to bring back to attention what will be stored – low level waste (LLW). The IAEA defines LLW as:

Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste (International Atomic Energy Agency , 2009).

So having a near surface disposal, which CNL is proposing, is commensurate with the disposal strategy indicated by international best practices (the IAEA). When the facility is closed, the dose to someone living downriver in Ottawa or Gatineau is ONE MILLION TIMES LOWER than the regulated public dose limit.

- As I stated earlier all energy sources have downsides – coal releases over 85 hazardous toxins and air pollutants and has very high GHG emissions; natural gas (I prefer to call it what it is,

methane) has high GHG emissions; wind and solar have high land requirements and require a substantial amount of natural resources (rare earth metals in particular) and there are disposal concerns (wind turbines are notoriously difficult to dispose of, solar contains a host of toxic materials and there is currently no recycling facility in Canada). So while the focus is on a disposal facility I'd encourage others who are against this project to calculate the environmental impact if other energy sources were used for a comparable amount of energy produced.

7. This is the waste we are looking at but let us remember what was achieved from this waste – let's remember the countless people saved at hospitals from receiving nuclear medical treatment and diagnostics, let's remember the cutting edge nuclear research allowing us to explore the universe and understand the origins of life, let's remember that Ontario phased out coal in a large part due to nuclear energy.
8. This project will benefit the community, with the construction phase requiring an average of 225 full-time skilled workers. As a young professional advocate this is great news for our fellow young professionals.

In closing, I truly believe that this project is safe, that this project is a positive environmental action, and that CNL has a solid path forward. I am happy that CNL has gone through over 6 years of engagement and public feedback including 16 identified Indigenous communities. 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 approving the application to amend its Chalk River Laboratories site licence to authorize the construction of a near surface disposal facility, do it for the planet!

Thank you.



Matthew Mairinger



## References

International Atomic Energy Agency . (2009). *Classification of Radioactive Waste*. Vienna: IAEA.

United Nations Economic Commission for Europe. (2021). *Life Cycle Assessment of Electricity Generation Options*. Geneva: United Nations Publications.