Nuclear Energy Canada Inc.

Peterborough Community Liaison Committee
Meeting Record

Meeting Date: September 28, 2023

BWXT NEC: Monifa Miller, Senior Director, Corporate Affairs
Jordan Brown, Engineering Manager, Fuel Shop Engineering
Carlos Reyes, Specialist, Communications and Community Relations

CLC Members: Bruce Roxburgh (Co-Chair), Christa Lemelin, Deirdre McGahern,

Absent: Julian Aherne, Julie Ingram, Jake Wadland, Dikuse Mulumba, Andrew Gartenburg

Guests: **Laurentis Energy Partners (LEP)**
Matthew Mairinger, Business Development Manager

Ontario Power Generation (OPG)
Diana Benjamin, Senior Manager, Community Engagement
Terry Campkin, Senior Manager, Isotope Sales

Action Items:

Action Item	Status
1. BWXT to share information about uranium and beryllium soil sampling with CLC and the public once available.	Closed
2. BWXT to share CLC best practices from industry chats.	Open
3. CNSC independent study – BWXT beryllium air sampling report.	Closed

Discussion Notes:

Miller commenced the meeting by welcoming CLC members. She then reviewed the meeting agenda, which included a presentation by guests from Laurentis Energy Partners and Ontario Power Generation (OPG). She then shared a land acknowledgement, followed by Safety Moment shared by Reyes. No alarm was scheduled or planned for the evening.

Miller invited Mairinger to share his presentation on OPG nuclear sustainability.

Mairinger provided an overview to Ontario Power Generation (OPG), which has been in operation for over 100 years and produces approximately 19,000 MW of electricity capacity for the use of around 19 million people in Ontario.

Mairinger highlighted OPG's industry leadership in redefining how to deal with nuclear waste while fighting climate change towards Net Zero in 2050. Additionally, he mentioned that OPG operates two Nuclear Stations, Thermo Stations, Hydro Electric Plants, Solar facilities, and Natural Gas Stations.

Mairinger clarified that Thermo Stations burn Bioenergy or Natural Gas, contributing to approximately 20% to 30% of the total power generation in Ontario. He also stated that in Ontario, 60% of the power generation is from Nuclear, 20% to 30% is generated from Hydro, and 10% from Wind and Gas.

CLC McGahern: What is a thermo station?

Mairinger: These are stations that burn Bioenergy or Natural Gas.

CLC McGahern: What percentage of electricity do these stations provide?

Mairinger answered: In Ontario, 60% Nuclear, 20% to 30% Hydro, 10% Wind and Gas

CLC McGahern: Does that 10% include solar energy?

Mairinger: Solar energy production a very small amount of electricity due to the geolocation of Ontario. Solar is at its peak production during the summer months.

Mairinger stated that Ontario is one of the world leaders in carbon emission. He recommended the use of the phone app "Electricity Maps" (https://electricitymaps.com/). This app allows users to track CO2 emissions and electricity consumption levels around the world, providing valuable insights for those countries looking to reduce their environmental impact.

Mairinger discussed the impact of the OPG Climate Change Action Plan, comparing Ontario's CO2 emissions from 2005 to 2018. Before closing the coal plants, the electricity sector accounted for 17% of the province's emissions. However, after closing the coal plants, this number drastically decreased to 2%, resulting in a reduction in daily smog. This achievement is a significant step towards a greener future for Ontario and the planet.

He mentioned that OPG Climate Change Action Plan also includes the following:

- Net Zero Carbon company by 2040.
- Net Zero Carbon economy by 2050.
- Darlington road map and preparation to build a new licensed Small Modular Reactor (SMR) by 2024.

CLC McGahern: Will this new SMR be running with enriched uranium?

Mairinger: The SMR will use slightly enriched uranium for the GE/Hitachi design (BWRX-300) - 3% enriched in comparison to CANDU reactors which uses 0.7% enriched.

He added that the SMRs will produce 300 MWe each and will be connected to the electrical grid by 2029.

CLC McGahern: Where would you get the fuel from?

Mairinger: Most likely the fuel will be procured from the United States. He added that OPG is hoping to obtain this fuel from Canada, once Canada starts producing it.

On a side note, Mairinger informed everyone that the cost of electricity in Ontario already includes the cost of decommissioning and disposal of nuclear reactor and material.

Mairinger mentioned that one interesting fact about the nuclear industry in Ontario is that 95% of the material that OPG gets and uses for the production of electricity, comes from Ontario and the rest of Canada.

Mairinger added that BWXT, a leading supplier of nuclear components and fuel to the Canadian nuclear industry, has completed the full cycle of fuel production for Canadian nuclear reactors. The company has sourced uranium ore from Saskatchewan, manufactured fuel pellets at their Toronto facility, and fuel bundles at their Peterborough facility. This achievement marks a significant milestone for the Canadian nuclear industry and highlights BWXT's expertise in the field. The company remains committed to providing safe, reliable, and efficient nuclear solutions to meet the growing energy needs of Canada and beyond.

He continued by saying that OPG has renamed its Nuclear Waste department to "Nuclear Sustainable Services". The new name better reflects the current Nuclear Waste and Lifecycle Planning Profile at OPG. This change is in line with OPG's commitment to sustainable and responsible management of nuclear waste.

Mairinger explained how the OPG's Nuclear Sustainability Division is subdivided within their organization:

Nuclear Sustainability Services (NSS), Radioactive Materials Transportation (RMT), Decommissioning and Permanent Disposal and Nuclear Medicine and Radioisotopes (NMR).

All low and intermediate waste plus used fuel gets dealt with within each nuclear facility.

He explained that OPG's Current Nuclear Waste and Lifecycle Planning Profile, where Darlington Nuclear Generating Station, Bruce Nuclear Generating Station and Pickering Nuclear Generating Station, store their used fuel onsite.

He added that the used fuel is cooled for 10 years then stored inside concrete cannisters made by BWXT in Cambridge.

He added that OPG has added 2 more steps to their waste minimization strategic plan. Reduce, Reuse, Recycle Recover and Disposal.

CLC McGahern: Can you talk more about the last step (Disposal)?

Mainringer answered that 20 years ago all of Ontario's power generators got together with the government and proposed that they needed an independent non-profit organization to help with the storage of spent fuel. The process included a repository site, sorting and best practices and how to communicate with the community. At the moment, two host communities have the ideal geologic conditions and have expressed that they are willing to be host communities. OPG is working with the Nuclear Waste Management Organization (NWMO). Next year the location will be announced.

Mairinger introduced Campkin who delivered the second part of the presentation, which focused on nuclear medicine.

Campkin mentioned that nuclear medicine is a growing segment of the global market. He added that the decommissioning of aging reactors leave a big gap in medical isotopes production in Canada and that OPG has formulated a plan to produce some of these isotopes in a commercial reactor.

He noted the OPG Tritium Removal Facility (TRF), which helps to ensure continued safe operations of Ontario's CANDU fleet by removing approximately 2 kg of tritium per year and safely storing/reusing.

This facility is the largest civilian tritium removal facility in the world and the only one in North America that serves for isotope business, reusing valuable isotopes where they would otherwise be wasted.

He touched on the importance of the partnership with BWXT, and the design and manufacture of the Target Delivery System (TDS) installed in Darlington. Darlington is the first global power-generating station to produce irradiated Mo-99, which are shipped to BWXT Medical facilities in Kanata, Ontario for processing.

He spoke briefly about Cobalt-60 (Co-60), Helium-3 (He-3), adding that OPG is working on a project to expand TDS capability throughout Darlington.

Campkin closed his presentation by expressing that the medical industry in Ontario and Canada is in good hands thanks in large part to OPG's partnership with BWXT, Bruce Power, Laurentis Energy Partners, McMaster University and other key players. He stated that all of these companies are making it possible to locally produce isotopes to use in Canada and other nations around the world.

Miller asked if there were any additional questions or comments.

The CLC had no questions or comments.

Miller thanked everyone for attending and adjourned the meeting.