

DNGS Community Advisory Council
Darlington Nuclear Information Centre
Tuesday, April 25, 2023
Highlights

Site Update

Richard Geoffroy presented a site update. The operating status of the four units, progress of the refurbishment of Units 1 and 3, and OPG building bench strength in leadership and staff development were among the items mentioned. In response to a Council question, Richard talked about the mockup training facility at the Darlington Nuclear Information Centre.

Nuclear Sustainability Services at OPG

Kapil Aggarwal explained the rationale for the name change of OPG's Nuclear Waste Management division to Nuclear Sustainability Services (NSS); he also presented an NSS update. He detailed how NSS manages all nuclear by-products at Pickering and Darlington. Kapil also talked about waste minimization and about the role of Pickering and Darlington in ensuring a steady supply of life-saving isotopes.

Implementing Canada's Plan for Used Nuclear Fuel

Joe Gaboury presented an update on the activities of the Nuclear Waste Management Organization (NWMO), whose mandate is a safe, long-term plan for the storage of used nuclear fuel in Canada. The search for a site has now been narrowed down to two communities. Council members asked a number of questions.

DNNP Project Update

Jesara Holla presented an update on the Darlington New Nuclear Project (DNNP), which will be Canada's first grid-sized small modular reactor (SMR). She noted that a Site Preparation Licence has been issued and an SMR technology been selected. Site preparation activities have begun. OPG has submitted a Licence to Construct application to the CNSC. Construction is to be completed in 2028.

Community Update

Lindsay Hamilton presented an update on recent and forthcoming OPG activities in the community. A number of school classes visiting the Darlington site, Earth Week activities, a Darlington open house planned for September, and other activities were mentioned.

**DNGS Community Advisory Council
Darlington Nuclear Information Centre
Tuesday, April 25, 2023**

DNGS CAC:

Jim Boate
Sami Elhajjeh
Cara Gregory
Sheila Hall
Bethany Matovic
Jennifer O'Meara
Heather Reid
Penny Smith
Stacy Wanamaker

Regrets:

Jim Cryderman
Mary Novak
Pat Pingle

OPG:

Kapil Aggarwal
Richard Geofroy
Lindsay Hamilton (via video)
Jesara Holla

NWMO

Joe Gaboury

Hardy Stevenson and Associates:

Francis Gillis
Dave Hardy

Topic #1: Health and Safety Moment

Following a Land Acknowledge, Lindsay Hamilton talked about health and safety. She noted that April is Distracted Driving Awareness month. Cell phone usage while driving is a particular hazard. It is recommended that drivers put their phone on silent or in Do

Not Disturb mode. Better yet, put the phone in the glove compartment or purse—out of sight out of mind. Eating and grooming should be done before driving.

Topic #2: Introductions and Review of Minutes

CAC Facilitator Dave Hardy asked participants to introduce themselves (for a list of Council members and their affiliations, please see Appendix 1).

The minutes from the CAC meeting of Jan. 24 and the meeting/plant tour of Mar. 28 were approved without changes.

Topic #3: Site Update

Site Vice President Richard Geofroy presented a site update:

- Units 2 and 4 are operating at full power.
- Units 1 and 3 are in refurbishment, which is going quite well at both units in terms of safety, quality and being on time and on budget.
- The Unit 3 reactor and its supporting systems are fully reconstructed and progressing through the regulatory approval stages prior to beginning the restart sequence. Early July is the target date for Unit 3's return to service. A celebration on site, which will include OPG's shareholder (the Government of Ontario), is planned for the August timeframe. Unit 3 will join Unit 2 in extending operations for another three decades.
- Unit 1 refurbishment began in February 2022 and is still in the disassembly stage.
- In terms of future growth, OPG is building bench strength in leadership and staff development. This takes years of technical training, which fosters greater employee engagement. OPG benchmarks against facilities in the U.S. and around the world.
- OPG was recently awarded Canada's Best Diversity Employer Award. To win the award, OPG had to demonstrate how well it is doing around Equity, Diversity and Inclusion (ED&I).
- On April 28, OPG will again recognize the National Day of Mourning for the men and women who lost their lives or were seriously injured in the workplace. OPG emphasizes safety as its number one priority, realizing that the company is

always one error away from a significant safety event. We note that there was a recent fatality at the nearby St. Mary's Cement plant.

Richard responded to Council questions:

- *I assume that putting a unit back on line is not just a matter of pushing a green button.*
No, there is no green startup button. There is much testing before returning a unit to the grid. Any latent issues get flushed out. We ensure emergency systems are at the ready just in case. All equipment is tested.
- *So, I'm assuming the refurbishment is finished and now all systems are being tested.*
Yes. There are three to four systems to go.
- *Have more updates of control room systems been made?*
Yes, in many instances there have been updates.
- *Is there a calandria tube on display here at the Information Centre?*
Yes, there is a full-scale calandria tube on display here as well as a full-scale pressure tube. (The calandria tube contains the pressure tube, which contains the fuel bundles. A video providing a full explanation of fuel channels in a CANDU reactor is available at: https://www.google.com/search?q=calandria+tubes+nuclear+reactor&rlz=1C1CHBF_enCA864CA864&oq=nuclear+calandria+tube&aqs=chrome.1.69i57j0i22i30j0i390i650i5.24909j0j15&sourceid=chrome&ie=UTF-8#fpstate=ive&vld=cid:2d1ebd49,vid:kjfkRTeqtzE) There is also a full-scale mockup of a reactor in the Information Centre. The mockup provides workers hands-on exposure to a reactor to practice refurbishment tasks. This practice creates major efficiencies in the actual refurbishment.

Topic #4: Nuclear Sustainability Services at OPG

Kapil Aggarwal, Vice President Nuclear Sustainability Services, talked about the name change of OPG's Nuclear Waste Management division to Nuclear Sustainability Services (NSS); he also presented an NSS update (Appendix 2).

Kapil said that the name change was appropriate, as his division manages waste but does much else besides. The Nuclear Sustainability Services mandate is responsible management of all nuclear by-products at Pickering and Darlington. The three pillars of NSS are: stewardship; lasting solutions; and peace of mind.

Kapil mentioned that, based on feedback from the public, NSS has made some improvements to its website (<https://www.opg.com/powering-ontario/our-generation/nuclear/nuclear-sustainability-services/>), making it more transparent.

Kapil presented an update on the operations of the Pickering (PWMF) and Darlington (DWMF) waste management facilities, which safely store used nuclear fuel from the plants. Also at Darlington, the Retube Waste Storage Building provides on-site storage in support of refurbishment.

Kapil shared the good news that the Canadian Nuclear Safety Commission (CNSC) had renewed the DWMF licence a few days ago.

Kapil noted that both Pickering and Darlington play a role in ensuring a steady supply of an array of life-saving isotopes. Pickering has been producing Cobalt-60 for many years. Now Cobalt-60 will be produced at Darlington.

Darlington will become the only source of Molybdenum-99 (Mo-99) in North America. Mechanisms to produce and extract Mo-99 from Unit 2 have been installed, and are now awaiting approval from the CNSC.

Helium-3 (He-3) is also extracted at Darlington. Right now, the only source of He-3 is Russia. Since He-3 is derived from tritium, its production at Darlington means much less tritium waste.

Regarding waste minimization, Kapil said that waste reduction is achieved through sorting and processing in three ways:

- At source
- Through sorting
- Through incineration

Kapil noted that OPG subsidiary Laurentis Energy Partners and McMaster University are jointly researching innovations in sorting and recycling. He also noted that, back in 2020, OPG started looking at legacy waste. He mentioned the recent construction of the Western Clean-Energy Sorting and Recycling Facility, which is now awaiting CNSC approval, expected imminently.

Kapil, Richard and Joe Gaboury responded to Council questions:

- *Will the name of the Darlington Waste Management Facility (DWMF) and its buildings be affected by the new name of Nuclear Sustainability Services?*

Kapil: No, the DWMF will keep its old name.

- *What is happening regarding low- and intermediate-level nuclear waste?*

Joe: Construction of a deep geologic repository for low- and intermediate-level (L&IL) nuclear waste was being explored at a Bruce site, but OPG had committed to not going forward without approval of the nearby Saugeen Ojibway Nation. In the end, OPG respected the Native veto of this project.

Kapil: OPG is now looking at alternative solutions for permanent disposal of low-level waste. (Jesara Holla said she would share information on this project with the Council member.)

Richard: Dry storage containers can store used nuclear fuel for approximately 100 years. The Moltex facility in New Brunswick is exploring new technologies for reusing used nuclear fuel.

Topic #5: Implementing Canada's Plan for Used Nuclear Fuel

Joe Gaboury, Director of Indigenous Engagement, Southern Ontario, presented an update on the activities of the Nuclear Waste Management Organization (NWMO) (Appendix 3).

Joe noted that the NWMO mandate is a safe, long-term plan for the storage of used nuclear fuel in Canada. Created in 2002, the NWMO is a non-profit organization funded by waste owners. OPG provides 90 percent of that funding. Through dialogue with Canadians and Indigenous peoples, Canada's plan emerged. This is a multi-billion-dollar project that will last for decades. Joe's focus is on the complicated challenge of finding a host community for the project.

Joe remarked that people think "fuel" is a liquid. We have to explain that the fuel is in the form of solid pellets, he said.

Twenty-two communities expressed interest in hosting a Deep Geological Repository (DGR), which surprised the NWMO; the organization would have been happy with half-a-dozen expressions of interest. The search has now been narrowed down to two communities, Ignace and South Bruce, which NWMO is assessing.

Joe noted that other countries envy the many spaces Canada has that would be safe for storage. He emphasized that the NWMO will not go forward without a willing partner.

Joe stated that the planned opening date for the DGR is 2043. He noted that Finland is the only country right now with a DGR under construction.

Willingness and Reconciliation

Joe remarked that reconciliation with First Nations represents an opportunity for OPG and the rest of the nuclear industry.

He noted that, in discussions with First Nations, NWMO never talks about money but always about the environment. The organization does not want to be seen as bribing communities.

Joe remarked that the Town of Ignace has always been supportive of development. Engagement in the South Bruce area is less easy, but “things are progressing.” He emphasized that NWMO won’t build a DGR without community agreement.

Joe noted that the DGR will not have a large footprint above ground. It will be about one kilometre square. The area where the waste will be stored, as deep underground as the CN Tower is tall, will be several kilometres square.

Joe referred to a proof-testing and technological demonstration facility in Oakville. For example, the facility demonstrates the DGR’s level of safety from underground water.

He also talked about bore hole investigations at the two potential sites. Among the findings of these investigations is that water below the level of the DGR is millions of years old and very salty. This means that this water has never been disturbed for thousands of years.

Joe said that transportation would be very robust. He noted that there has never been an accident anywhere in the world in transporting nuclear materials. That said, discussion of transportation of used nuclear fuel with communities along the route will be challenging, since the benefit to them is not obvious.

Regarding small modular reactors (SMRs), Joe noted that used fuel characteristics will be determined by the type of SMR chosen; different technologies will create different fuel characteristics. NWMO is now in discussion with several SMR vendors and utilities to get a better sense of the kinds of waste that these technologies will produce.

Joe responded to Council questions:

- *Are there visitor displays of a DGR model?*
Yes, the facility in Oakville that I mentioned has a DGR model. I would be happy to arrange a CAC tour of the facility if Council members are interested.
- *Before you narrowed the list of potential sites down to two, what provinces expressed interest in hosting the DGR?*
Ontario and Saskatchewan were the only two provinces where communities expressed interest. Regarding First Nations, we are well positioned to discuss the DGR with them, as we have built up relations over the years with various communities. Only one First Nations community refused to talk with us.
- Dave Hardy remarked that, at last week’s meeting in Pickering, Joe mentioned food as a way of communicating with people.
Yes, we have conducted virtual home visits with First Nations communities. We send them dinner, over which they can talk to us virtually in the comfort of their own home. We use “meat bingo” to get sign-ups for virtual visits to educate people on the DGR project. The bingo prize is a baloney cylinder the size of a CANDU fuel bundle.

- *Why is the relationship with Indigenous people of special importance?*
Both the Ignace and South Bruce areas are traditional Indigenous land. South Bruce is privately owned land; Ignace is crown land.
- *Does the NWMO collaborate with government ministries?*
Yes, we provide updates to Natural Resources Canada every year and we work with the CNSC.
- *You talked about ancient water below the level of DGR. Is there any possibility of this water reaching the water table?*
No water at that level ever reaches the water table, a situation that has been stable for millions of years.
- *Has there been any blowback from Cameco's uranium refinery in Blind River?*
No, there is not a lot of nuclear knowledge in that area. (Jesara noted that NWMO has built up a good relationship with the Cameco uranium conversion facility in Port Hope.)
- *What type of land surrounds the two DGR sites under consideration?*
Ignace is surrounded by wilderness and South Bruce by mostly farmland. In terms of safety, there are no issues at either location.
- *Once a site is determined, will there be on-site information available?*
Yes, there will be a bricks and mortar building, a Centre of Excellence, showing what's coming to the site.

Topic #6: DNNP Project Update

Jesara Holla, Senior Manager Corporate Relations and Projects, presented an update on the Darlington New Nuclear Project (DNNP) (Appendix 4).

She noted that Ontario's electricity system today has a capacity of 42,000 megawatts. The demand forecast for the province is a capacity of 88,000 megawatts by 2050 in order to meet Ontario's climate change goals. There is no net-zero carbon emissions without nuclear. Hence the interest in nuclear from other provinces and around the world.

Jesara reviewed the highlights of the DNNP history. Among the key dates she mentioned:

2006 – 2009: Environmental Assessment (EA)

2011: A 17-day public hearing on the EA

2020: OPG announces planning for a small modular reactor (SMR)

2021: After a hearing, the CNSC announces approval of OPG's application to renew its Site Preparation Licence for 10 years. OPG selects GE Hitachi to further develop the BWRX-300 SMR design, with the mutual goal of constructing Canada's first commercial grid-scale SMR.

Jesara noted that the "BWR" stands for boiling water. "X" stands for the 10th generation of the technology. The BWRX-300 SMR is based on a light water, boiling water reactor technology. Designed for a 60-year operational life, it features an approximately 300-megawatt electrical (MWe) capacity. Its footprint is about the size of an American football field.

Jesara talked about site preparation work and about rerouting of the Darlington East Waterfront Trail. Recent work includes vegetation removal (clearing and grubbing) and grading on the DNNP site.

Jesara noted that every step in Canadian nuclear facility licensing includes public involvement: site preparation, construction, operation, and decommissioning.

The CNSC will hold a public hearing in January 2024 on the applicability of the DNNP Environmental Impact Statement review and Plant Parameter Envelope review to OPG's selected reactor technology. A decision on whether to issue a construction licence will be contemplated at a second public hearing that will be held no earlier than October 2024.

Jesara presented a licensing and activity timeline:

- 2021: Site Preparation Licence renewal issued
SMR technology selected
- 2022: Site preparation activities begin
Licence to Construct application submitted
- 2024: CNSC public hearings for Licence to Construct
- 2025: Licence to Construct issued*
- 2028: CNSC public hearing Licence to Operate
Licence to Operate issued
Construction completed
- 2029: Commercial operation begins

*Pending outcomes of public hearings

Jesara noted that, in the coming months, OPG will hold public engagement workshops on its EIS review, PPE review and Licence to Construct application.

ACTION: Choose a couple of CAC members to sit in on a stakeholder workshop on June 1.

Topic #7: Community Update

Lindsay Hamilton, Senior Manager Corporate Relations and Projects, Corporate Affairs, presented an update on recent and forthcoming OPG activities in the community:

- The Darlington Nuclear stakeholder relations team has led 18 site and mockup tours and visits in 2023.
- On April 4, the stakeholder relations team welcomed Courtice Secondary School students back to the site in support of the bird monitoring program. Over the winter months, the students had built replacement nest boxes, which were installed along the Darlington Waterfront Trail.
- On April 13, the Grade 11 Environmental Science class from Durham Christian High School visited the Darlington Nuclear Information Centre for CANDU 101 and a tour of the Mockup Training Facility.
- On April 19, in celebration of Earth Week, students from Central Public School helped to clean up the Bowmanville Creek watershed. This activity is part of the multi-tiered Bring Back the Salmon educational program.
- On April 21, Courtice Secondary School students participated in a garbage cleanup along the nearby Courtice Millennium Trail, as part of a community partnership between OPG Darlington and the school.
- On April 22, the Central Lake Ontario Conservation Authority (CLOCA) celebrated Earth Day at the Bowmanville and Westside Marshes. The public event offered tree planting, litter pickup and various activities to learn about these two important coastal wetlands.
- On Saturday, April 8, the OPG SES Aerial Support Team (Drones) attended the “Float Your Fanny Down the Ganny” event at the request of the Port Hope Fire Department. The event was an opportunity for OPG to demonstrate the readiness of aspects of its emergency plans and its drone capabilities.
- The Spring issue of *Neighbours* will be delivered to homes over the next two weeks.
- A community open house at the Darlington Nuclear Information Centre will take place on Sept. 16.

Jesara noted that the Bowmanville Maplefest will be held on May 6 to celebrate the start of spring. Details of this and other spring and summer events are listed on the New

Nuclear website: <https://www.opg.com/powering-ontario/our-generation/nuclear/darlington-nuclear/darlington-new-nuclear/event/opg-in-the-community/>

A Council member noted that CLOCA is a participant in the Bring Back the Salmon program. She mentioned the fish tanks here at the Information Centre, which is visited by public school groups. In May, CLOCA will be talking to school groups about the watershed and salmon. There is an information plaque at the Centre to educate the public.

Topic #8: Closing Comments

Richard thanked Council members for their time and attention. He remarked that members should never hesitate to ask questions.

Next Meeting

Darlington Nuclear Information Centre
Tuesday, June 27, 2023
4 pm to 7 pm