

DNGS Community Advisory Council
Darlington Nuclear Information Centre
Tuesday, Sept. 26, 2023
Highlights

Darlington New Nuclear Project Update

Karim Osman presented a project update. The current focus is on site preparation for a small nuclear reactor (SMR) at Darlington. The next step will be an application to the CNSC for a licence to construct a grid-sized SMR on the site. Ultimately, three additional SMRs are planned. Cammie Cheng talked about an Environmental Impact Statement related to the project.

Site Update

Richard Geofroy presented a site update. Among the items mentioned: The operating status of the station's four units; the progress of the Darlington refurbishment project; OPG's recruitment campaign; and the electricity demand challenge facing OPG.

Environmental Monitoring Program (EMP)

Margo Curtis presented the 2022 results of OPG's Darlington EMP. The 2022 site public doses remain a small fraction of both the annual public dose limit and the annual natural background radiation in the area. CAC members found the results reassuring.

Groundwater Monitoring Program

Ali Esmaeily presented the 2022 results of OPG's Darlington Groundwater Monitoring Program (GMP). Ali noted that groundwater data collected from the key areas remained stable, which indicates consistent environmental performance. There were no indications of off-site impacts.

Environmental Action Levels – new methodology

At OPG, there are levels of environmental releases that trigger action by OPG and reporting to the CNSC. These "action levels" are far below regulatory limits. Ali Esmaeily talked about a new methodology that OPG is using to identify such action levels. Ali remarked that, by proposing a new methodology for identifying action levels, the CNSC has asked OPG to raise the bar, but OPG's performance has always been good.

OPG Public/Community Affairs

Lindsay Hamilton talked about recent and forthcoming OPG activities in the community. Among the items mentioned: the success of this past summer's Tuesdays on the Trail program; OPG participation in Kars on King and Autofest; the Samuel Wilmont Monarch Tagging Event; the Darlington Energy Complex participation in the Community Power Expo.

**DNGS Community Advisory Council
Darlington Nuclear Information Centre
Tuesday, Sept. 26, 2023**

CAC:

Jim Boate
Sami Elhajjeh
Cara Gregory
Sheila Hall
Heather Reid
Penny Smith
Stacy Wanamaker

Regrets:

Jim Cryderman
Bethany Matovic
Mary Novak
Jennifer O'Meara
Pat Pingle

OPG:

Cammie Cheng
Margo Curtis
Ali Esmaeily
Richard Geofroy
Lindsay Hamilton
Karim Osman
Lillian Yin [SP?]

Hardy Stevenson and Associates:

Francis Gillis
Dave Hardy

Topic #1: Health and Safety Moment

Following a Land Acknowledgment, Lindsay Hamilton, Senior Manager Corporate Relations and Projects, Corporate Affairs, noted there are new vaccines covering cold, flu and COVID viruses. If ill with COVID or other viruses, OPG encourages employees to stay home and wear a mask outside the home.

Topic #2: Review of Minutes

The CAC minutes of June 27, 2023, were approved without changes.

Topic #3: Comments from the Community

CAC members talked about what they're hearing about OPG from neighbours and co-workers.

A member said that people were wondering about the "pile of dirt" that suddenly appeared along the trail. Will it stay there? Be grassed over?

Karim Osman said workers were just removing earth to level the site for the SMR. OPG may be looking at landscaping with this earth.

Cammie Cheng added that people can rest assured that there will be restoration of this area. OPG is still figuring out long-term plans.

A member who has a son in Grade 9 asked if OPG goes out to high schools to talk about career opportunities at OPG and the nuclear industry in general.

Lindsay noted that OPG is conducting a big recruitment campaign, working with high schools and post-secondary institutions. Speakers go out to classrooms. She mentioned that a video about the robotic dog used at nuclear plants creates a great link with gamers.

Topic #4: Darlington New Nuclear Project Update

Karim Osman, Director Design Engineering, presented a DNNP update (Appendix 1).

He noted that, in December 2021, OPG selected the technology for the small modular reactor (SMR) to be constructed at Darlington: GE Hitachi: BWRX-300. This stands for Boiling Water Reactor, 10th generation, 300 megawatts. This unit will be a grid-sized reactor.

Karim noted that a lot of the components in the Darlington SMR are based on previous generations of boiling water reactors.

Darlington possesses the only site preparation licence for SMR construction in Canada. The next step will be an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct (2024), followed by an application for a licence to operate (2028).

Asked about Canadian content in the project, Karim said that OPG has targets for Canadian people and equipment as well as spending in Ontario.

Karim noted that the DNNP is based on an integrated model for project delivery. The various companies involved act as a team:

- Ontario Power Generation: Owner and licence holder
- GE Hitachi: Technology developer
- SNC-Lavalin: Architect engineer
- AECON: Constructor

OPG plans to have a total of four SMRs on the site, with a total capacity of 1200 megawatts. The four reactors will have a lifespan of 60 years.

Karim remarked that a four-unit project gives OPG a lot more leverage with suppliers.

In response to a Council question, Karim said that, yes, OPG has looked at anticipated bluff erosion in its planning for the site.

Karim noted that the CNSC will hold a public hearing in the week of Jan. 22, 2024, on OPG's application to construct one 300-megawatt SMR at the Darlington site.

Environmental Impact Statement (EIS) Review

Cammie Cheng, Senior Manager Environment Health and Safety, added that the January hearing will address the applicability of the original environmental assessment (EA) of the DNNP to the selected SMR technology. (A decision to issue a construction licence will be made at a public hearing in October 2024.)

It was noted that requests to intervene must be filed through the CNSC online form by Nov. 20, 2024.

Members agreed that the CAC should make a request to intervene in the November hearing and that the intervention should be publicly presented at the hearing.

Facilitator Dave Hardy said that Hardy Stevenson and Associates will provide a draft submission for CAC consideration in the coming weeks.

Cammie talked about the original DNNP environmental assessment (EA) and an environmental impact statement (EIS) summarizing the results of the EA in 2009, when a CANDU reactor was being considered (Appendix 1, beginning at Slides 8).

A review of the environmental impact statement (EIS) submitted by OPG in June 2023 determined that the conclusions of the EIS are not impacted by the BWRX-300 and remain valid. Link to review: <file:///C:/Users/Francis/Downloads/Enclosure-1-NK054-REP-07730-00055-R001-FINAL-ua.pdf> (For a summary of the review, see Appendix 1, Slide 12.)

Cammie noted that the BWRX-300 will have a much smaller footprint than the originally planned CANDU reactor. She added that OPG is doing everything it can to protect the shoreline, including colonies of bank swallows. It turns out that erosion is actually good for the bank swallows, so OPG will not be in-filling.

Find us in the Community

Lindsay listed forthcoming community activities where OPG will provide information about the new nuclear project:

- Upcoming Community Events
 - Newcastle Harvest Festival – Oct. 7
 - Bowmanville Applefest – Oct. 14
- Public Information Sessions
 - Oct. 24 – Newcastle Town Hall
 - Oct. TBC – Virtual
- Pop-up Shops
 - Oshawa Centre – Oct. 3 – 22
 - Bowmanville Mall – Oct. 22 – Nov. 10
- Now offering a Speaker Series
- opg.com/newnuclear to see where we'll be next!

Topic #5: Site Update

Senior Vice President Richard Geofroy presented a site update:

- Units 2 and 3 are currently operating at 100 percent. Units 1 and 4 are in refurbishment.
- On July 7, Provincial Energy Minister Todd Smith announced the government will work with OPG to commence planning and licensing for three additional SMRs, for a total of four at the Darlington new nuclear site.

Darlington Refurbishment Project

- On July 17, Unit 3 was returned to service, its refurbishment completed 169 days ahead of schedule. Unit 3 refurbishment took 35 months, in contrast with the refurbishment of Unit 2, which took 44 months.
- It is expected that refurbishment of Unit 1 will be quicker than was the case for Unit 3, and Unit 4 quicker than Unit 1.

- Unit 1 reactor reassembly is now taking place, with lessons applied from Unit 3. At Unit 4, all fuel bundles have now been removed and the reactor dewatered. These tasks were completed in half the time they took for Unit 2.

Pickering Nuclear Generating Station (PNGS)

- Exercise Unified Command (ExUC 2023), a national emergency and preparedness response exercise, will be conducted at the Pickering station in the last week of September. The exercise will involve organizations at all levels of government and will create an emergency scenario to test their communications procedures. All participants as well as Darlington Nuclear will draw on all the lessons arising from the exercise.

Recruitment Campaign

- OPG launched a new recruitment campaign recently. The company is looking to hire people from both the engineering and skilled trades sides, including construction trades. With anticipated growth from working toward net-zero goals, OPG will be looking for new hires over the coming months and years.

Electricity Demand Challenge

- The Independent Electricity System Operator (IESO) expects to see even more demand over the next couple of years. The 2026 – 2027 timeframe will be particularly challenging for meeting demand.
- A Council member asked what the demand challenge will do to electricity rates. Richard said he expected some impact, but OPG has some extra electricity available and plans to invest in energy production. If necessary, the province will import electricity.
- Lindsay noted that OPG is looking at hydro re-development. She remarked that the IESO does a good job of projecting demand, so the province can be prepared. She referred Council members to their *Pathways to De-carbonization* report: <https://www.ieso.ca/en/Learn/The-Evolving-Grid/Pathways-to-Decarbonization>

Topic #6: Environmental Monitoring Program (EMP)

Margo Curtis, Environmental Advisor, presented the 2022 results of OPG's Darlington Environmental Monitoring Program (EMP) (Appendix 2).

The annual public doses resulting from Darlington Nuclear operations remained at very small fractions of their respective Derived Release Limits. (DRLs are limited to less than

the public dose limit of one milliSievert (mSv), that is, one thousandth of a sievert, per year to a “representative person.”) Margo presented details in graphs and charts.

607 laboratory analyses were performed for the 2022 Darlington dose calculations. The 2022 site public doses remain a small fraction of both the annual legal dose limit and the annual natural background radiation in the area. Dose calculations and the annual EMP report were reviewed and verified by an independent third party.

Tritium in drinking water measured at local water supply plants remained at a small fraction of the Ontario Drinking Water Quality Standard of 7,000 becquerels per litre (Bq/L) and OPG’s voluntary commitment of 100 Bq/L.

Two self-assessments were completed this year for the EMPs. No significant findings were identified.

Margo noted that the 2022 EMP report was submitted to the CNSC on April 19, 2023 and is available at www.opg.com.

She responded to Council questions:

- *What are milliSieverts and microSieverts?*
A sievert (Sv) is the unit for the dose of radiation that affects the human body. The unit millisievert (mSv) is its one thousandth, and microSievert (µSv) its one millionth. The “carrot” illustration I showed you (Appendix 1, slide 5) gives examples of doses from everyday activities, using these dose measurements. This illustration is useful for comparison purposes.
- *Are there variations of public dose?*
Yes, we do see variations in different areas, largely dependent on wind direction.
- *Do you sample fish?*
Yes.
- *You talked about a CNSC compliance inspection on the Darlington and Pickering EMPs in November 2022. How did you fix the two non-compliances identified by the CNSC?*
One was a typo and the other was an incorrect reference to a training document. These errors were corrected.
- *The EMP report gives me a feeling of security.*

Lindsay noted that the EMP is available at <https://www.opg.com/reporting/regulatory-reporting/>.

Topic #7: Groundwater Monitoring Program (GMP)

Ali Esmaeily, Section Manager Environment, presented the 2022 results of OPG's Darlington Groundwater Monitoring Program (GMP) (Appendix 3).

Ali noted that the groundwater flow patterns at the site remain consistent with original interpretations. Groundwater data collected from the key areas remained stable, which indicate consistent environmental performance. There were no indications of off-site impacts from Darlington Nuclear groundwater.

The groundwater report and Geographic Information Systems (GIS) maps are available at www.opg.com.

Ali responded to Council questions:

- *I assume that information regarding the SMR site was included in the GMP report.*
Yes, it was.
- *Clarington has a relatively shallow groundwater level. Does your report take this into consideration?*
We monitor the level of groundwater; it raises no special concern.

Topic #8: Environmental Action Levels – new methodology

At OPG, there are levels of environmental releases that trigger action by OPG and reporting to the CNSC. These “action levels” are far below regulatory limits. Ali talked about a new methodology that OPG is using to identify such action levels (Appendix 4).

Ali stated that action levels are precautionary measures, which are put in place to ensure that regulatory limits associated with airborne emissions and liquid releases are not exceeded. Action levels:

Identify – Identify quantity or concentration deviations from normal range of releases.

Act – Provide process control feedback to return to normal operations.

Notify – Report to the CNSC with investigation results and actions to ensure no loss of control takes place.

Feedback – Re-evaluate actions levels and controls as determined.

Ali noted that action levels have been calculated using a Derived Release Limit (DRL), which are releases limited to less than the public dose limit of one milliSievert (mSv),

that is, one thousandth of a sievert, per year to a “representative person.” This is a tiny percentage of the background radiation that the public is exposed to.

Historically, the methodology used to calculate action levels has been approximately 10 percent of the DRL.

The CNSC has proposed a new methodology that replaces inconsistent approaches by nuclear licensees. It will provide transparency and structure with a standard statistical approach based on predicted or operating history. The old methodology was based on protection of humans from radiation. The new methodology also includes protection of the environment from both nuclear and hazardous substances. New action levels (and planned Licence Release Limits) are based on the control technology in place and are not exposure (dose) based.

Ali remarked that, by proposing a new methodology for identifying action levels, the CNSC has asked OPG to raise the bar, but OPG’s performance has always been good.

Action Level Exceedances

In discussing the meaning of action level exceedances, Ali noted that exceeding an action level is by no means a violation of the licence or regulations. The demonstration of appropriately responding to action levels is itself a demonstration of responsible operation and oversight.

An action level serves as an early warning system to indicate when releases may be deviating from the norm. Should an action level be exceeded, OPG will:

- determine if there has been a “loss of control” by implementing an investigation,
- identify the cause of the exceedance, and
- take action to restore the effectiveness of the radiation and environmental protection program.

Ali emphasized that these OPG actions are based on internal, not regulatory, decisions

He then presented charts of action levels for airborne and waterborne emissions of radionuclides from Darlington and from Pickering.

Richard remarked that there is always CNSC pressure on OPG to keep improving performance, which is a good thing and aligns with what the company is trying to do anyway. “In terms of releases to the environment,” he added, “we are now essentially two levels of magnitude below regulatory limits.”

OPG representatives responded to Council questions:

- *How does Darlington’s environmental performance compare with industry in other countries?*

Ali: We have benchmarks with other countries. Darlington is one of the best.

Richard: We’re constantly benchmarking; we shoot for the top quartile.

- *Are the same action levels used across OPG?*
Ali: No, each facility comes up with action levels that fit their own situation.

Topic #9: OPG Public/Community Affairs

Lindsay Hamilton, Senior Manager Corporate Relations and Projects, Corporate Affairs, talked about recent and forthcoming OPG activities in the community. She remarked that current interest in Darlington Nuclear is “like nothing we’ve seen before.”

- The recently distributed Fall issue of the Neighbours newsletter includes an article on the July 7 Ontario government announcement that it will work with OPG to commence planning and licensing for three additional SMRs at Darlington. One of the accompanying photographs features CAC member Jim Boate and his wife, Mary, standing with Minister of Energy Todd Smith.
- This past summer’s Tuesdays on the Trail program was very successful, as always. OPG works with community partners on STEM (science, technology, engineering and math) activities aimed at children aged six to 12. The program included identification of animal tracks and many other activities.
- On August 25/26, OPG’s nuclear stakeholder relations had booths set up during Kars on King and Autofest. OPG also participated in the Orono Fair (Sept. 8 – 10) and the Samuel Wilmont Monarch Tagging Event (Sept. 9).
- On Sept. 16, over 3,500 community members visited the Darlington Energy Complex to take part in the annual Community Power Expo (formerly known as the Darlington Nuclear Open House).
- The Corporate Citizenship Program will now be called the Corporate Giving Program. There is going to be a blackout period from Dec. 1, 2023 to March 2024. This period will enable OPG to launch a new online grants application platform for both donations and sponsorships. OPG will present a webinar later in the fall to update the public.

Topic #10: Closing Remarks

A Council member thanked OPG for all its support for the planned Marigold Hospice to be built in Clarington.

Richard remarked that member feedback about the CAC process is important to OPG. What information should OPG be bringing to the table and how should it be presented?

Lindsay noted that she and her team are trying to identify Council topics for next year. What level of technical information should OPG be presenting to the CAC?

Council suggestions:

- *Perhaps you could provide a list of acronyms and what they mean.*
- *Tell us how far ahead you plan for emergency exercises.*

Richard thanked Council members for their participation.

Next Meeting

Darlington Nuclear Information Centre
Tuesday, Nov. 28, 2023 (date may change)
4 pm – 7 pm