

**PNGS Community Advisory Council
Pickering Nuclear Information Centre
Tuesday, November 21, 2023
Highlights**

Site Update

Jon Franke provided a site update. Among the items discussed: the operating status of the units; an OPG visit to Pickering City Council; the status of plans to extend operations of Units 5, 6, 7, and 8 to the end of 2026; and consideration of refurbishing those units.

IESO Update

Bonnie Chan presented an update on activities of the Independent Electricity System Operator, which is responsible for ensuring ensure a reliable, affordable and sustainable electricity system in Ontario, now and in the future. She noted that, by mid-century, Ontario will have to meet double the current energy demand, and talked about how the IESO plans to meet that challenge.

Nuclear Energy: powering Ontario's growth

Tracy Leung discussed OPG plans for carbon free energy in the province's future. She talked about: Ontario's "clean advantage," which helps to attract investment to the province; the role of refurbishment at Darlington Nuclear and, potentially, at Pickering Nuclear; and the role of SMRs.

Community / Public Affairs

Analiene St. Aubin presented an update on OPG involvement in community activities. Among the items talked about: a station visit of municipal councillors from cities and towns across Ontario; Take Our Kids to Work Day at Pickering Nuclear; Pickering and Darlington employees contributing over \$20,000 to the DRPS Food and Toy Drive.

**PNGS Community Advisory Council
Pickering Nuclear Information Centre
Tuesday, November 21, 2023**

CAC:

Denise Bacon
Craig Bamford
Frank Dempsey
Mary Gawen
Pat Mattson
Sean McCullough
Cody Morrison
Peter Ottensmeyer
Eric (Zhen) Qin
Robert Rock
John Simpson
Nicholas (Nick) West

Regrets:

Samira D'Souza
Bill Houston
Tim Kellar
Tracy MacCharles
Tavis Nimmo
Rishita Peterson
Helen Shamsipour
Dan Shire

OPG:

Jon Franke
Tracy Leung
Analiese St. Aubin

IESO:

Justin Bremner
Bonnie Chan (main presenter)
Sari Gerwitz

Hardy Stevenson and Associates:

Francis Gillis
Dave Hardy

Topic #1: Health and Safety Moment

Following a Land Acknowledgment, Senior Vice President Jon Franke noted that winter is coming, and drivers should get winter tires put on. People should be aware of slipping hazards on driveways and sidewalks. They should also be considerate of neighbours who may not be so mobile.

Topic #2: Review of Minutes

Minutes from the CAC meeting of Sept. 19, 2023, were approved without changes.

Topic #3: Introductory Business

Council Facilitator Dave Hardy introduced a new CAC member, Nicholas West. Nick is a resident of Pickering's Bay Ridges neighbourhood and is part owner of The West Group, a real estate company.

Dave summarized the contents of a recent intervention letter from the Darlington CAC to the Canadian Nuclear Safety Commission (CNSC), a copy of which was sent to the Pickering CAC. The letter relates to a CNSC public hearing in January regarding the applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment and Plant Parameter Envelope to the selected reactor technology planned for the Darlington site.

The Pickering CAC will have the opportunity to intervene in a CNSC public hearing in the summer of 2024 regarding extending the operations of Units 5 to 8 to the end of 2026.

Topic #4: Site Update

Jon Franke presented a site update:

- Units 1 and 4, and 5, 6, and 7 are all operating at or near full power. Unit 8 is about half-way through a planned outage.
- During the Unit 8 outage, Cobalt-60 was harvested. Pickering Nuclear and Bruce Power produce Cobalt-60, which is used to sterilize medical equipment. Cobalt-60 production is a unique feature of CANDU reactors. Bruce and Darlington have expanded their ability to produce other isotopes as well, for example Molybdenum-99 (Mo-99), which is used in cancer treatment.

- This fall, we have been presenting annual OPG updates to local municipal councils. On Nov. 6, we presented to Pickering Council.
- Regarding the refurbishment of Units 5 to 8, OPG has reported to the province on the feasibility of this project. Indications are that there is a lot of support for the project in government circles. OPG hopes to hear a government recommendation by the end of this year.
- OPG submitted detailed paperwork to the CNSC in June regarding extending operation of Units 5 to 8 to the end of 2026. OPG believes they will get authority to extend this operation from the Commission.
- Units 1 and 4 will be put into safe storage next year. (Units 2 and 3 have been in safe storage for many years.) Among the first steps, Units 1 and 4 will have their fuel removed and be de-watered. Dismantling and decommissioning will take place years later.
- Units 1 and 4 are on valuable property. It is expected that nuclear or interrelated products will be developed on this property.

Jon responded to Council questions:

- *What happens to the water in Units 1 and 4?*
It goes through our tritium removal facility. Helium 3, a very valuable substance, is produced from the radioactive decay of tritium. And there is a market for heavy water.
- *How will you schedule refurbishment so as not to threaten the electricity supply?*
By the time Units 5 to 8 would begin their refurbishment, Bruce Power and Darlington will be fully back in service. Refurbishment is the quickest way to achieve clean energy in the future.

Topic #5: IESO Update

Bonnie Chan, Manager Planning Assessments, who attended the meeting virtually, presented an update from the Independent Electricity System Operator (IESO) (Appendix 1).

Bonnie noted that the IESO works with generators, transmitters, local distribution companies and energy consumers to ensure a reliable, affordable and sustainable electricity system in Ontario, now and in the future.

The provincial demand growth driven by the industrial, mining, and agricultural sector, alongside the electrification of transportation and the demands of decarbonization poses major challenges for the electricity grid.

Bonnie talked about the role of refurbishment of nuclear assets and of new resources in ensuring a reliable supply of electricity. She noted that the IESO has to look out to 20 and 30 years or more into the future. By mid-century, Ontario will have to meet double the current energy demand.

Pickering's role in meeting future demand includes extension of operations of Units 5 to 8 to the end of 2026 and, potentially, the refurbishment of those units to provide power for another 30 years.

To meet future demand growth, the IESO has a Resource Adequacy Framework, a resource acquisition strategy to procure resources to meet the electricity system requirements. The system will need to double in size by 2050, which will require Ontario to:

- Increase non-emitting resources supply.
- Increase energy storage facilities.
- Natural gas facilities are needed in the near and mid-term to manage reliability requirements.
- Manage a number of risks and uncertainties.

Bonnie noted that nuclear and hydro generally provide baseload power in Ontario. Intermittent resources provide energy only when the wind blows or the sun shines.

Bonnie also talked about IESO's Pathways to Decarbonization report, issued in 2022 (link: <https://www.ieso.ca/en/Learn/The-Evolving-Grid/Pathways-to-Decarbonization>).

This report evaluated two different future scenarios to illustrate the cost, scale and pace of change required for Ontario's decarbonization efforts. The two futures looked at 1) a moratorium on the procurement of new natural gas, and 2) to develop an achievable pathway towards net zero.

The assessment identified a number of no regret actions to ensure a state of readiness to manage future decarbonization policy. This can include:

- Beginning the planning, siting and environmental assessment work needed for long lead time projects, to allow for faster implementation.
- Build partnerships across the sector with other provinces and with the United States, to share learnings and collaborate on potential solutions.
- Municipalities have a key role to play, particularly having a community host for new and expanded generation facilities. We may need transmission lines, to help

relieve existing lines as demand grows. They also have a key role to play in energy efficiency initiatives, the most economical route to decarbonization.

Resources for community involvement in decarbonization are available on the IESO website (see link above).

Bonnie, and Sari Gerwitz, responded to Council questions:

- *Two weeks ago, in a community I'm familiar with, they were laying new wires underground. I suggested that thicker wires were called for, given the increased electricity demand that will come from electric cars. I was told there was not enough supply of thick wire.*

Bonnie: IESO planners undertake studies to identify demand projections and solutions for meeting it. We work with transmitters and perform regional studies. These solutions could be demand-side management, transmission, or non-wire solutions.

- *What is the IESO doing to develop energy storage systems?*

Sari: We are doing competitive procurement for large-scale energy storage systems. So far, 15 battery energy storage systems will be coming on line in the coming years.

- *Are you liaising with the Nuclear Waste Management Organization (NWMO)?*

Bonnie: I'm sure that we are. I will get the details on that and get back to you. [Following the presentation, the IESO noted that Lesley Gallinger, CEO of IESO, is on the Board of Directors of NWMO.]

- *What are the maximum demand periods on the grid?*

There is a predictable pattern of peak demand. Overnight charging of electric vehicles will change that pattern.

Topic #6: Nuclear Energy: Powering Ontario's Growth

Tracy Leung, Director Projects, New Nuclear Growth, talked about OPG plans for carbon free energy in the province's future (Appendix 2).

She noted that demand for electricity is increasing and expected to double in 30 years. Peak demand occurs on hot summer days and cold winter nights.

Tracy presented a power chart showing that Ontario's grid is already a low emission one. This "clean advantage" helps to attract investment into the province. To maintain that advantage, we need to phase out gas as a source of energy. This will require stepping up generation from nuclear and hydroelectric sources. We need to add 18 gigawatts of new nuclear capacity by 2050.

The refurbishment of Darlington Units 2 and 3 demonstrated that OPG can deliver such projects on time and on budget. The lessons learned from refurbishment at Darlington have been shared with Bruce Power. In 2022, OPG was recognized as the best of the best in terms of refurbishment.

The refurbishment of Pickering Units 5 to 8, now under consideration, will also use lessons from Darlington's experience.

OPG is a Small Modular Reactor leader in North America, with its plan to construct four SMRs at Darlington, which will produce a total of 1200 megawatts of electricity. Overall, this project will lower the cost of electricity per kilowatt hour in the province.

OPG is going to help SaskPower develop SMRs in the Province of Saskatchewan.

OPG is also involved in planning for off-grid, industrial SMR applications.

Jon and Tracy responded to Council questions:

- *What level of government in Ontario would give the first green light for Pickering refurbishment?*
Jon: The Cabinet. Then, of course, we would have to go through the process for CNSC approval.
- *OPG would need to take maintaining the province's energy supply into account in scheduling the refurbishment of Pickering Units 5 to 8.*
Jon: We've actually done that. Also, we anticipate that the first unit would take a little longer to refurbish, as was the experience of Darlington. But we will also save time by applying lessons learned from the refurbishments at Darlington and Bruce.
- *Any thought about recycling used nuclear fuel?*
Jon: Everything is on the table, but a design for re-using spent fuel does not yet exist. OPG has invested money to assist development of a reactor in New Brunswick that will recycle radioactive waste into fresh fuel. This project is still in the very early stages.
- *Given that CANDU reactors currently use only about one percent of their uranium fuel, we are going to run out of uranium in the ground in Canada at current rates of usage. So, there is an urgent need to change reactor technology now to use more recycled nuclear fuel.*
Jon: In a uranium fuel rod, you need a certain concentration of U235 (about five percent of total uranium in the rod) to create the chain reaction that produces energy in the form of heat. Reconcenrating U235 in spent fuel is very expensive. At the project in New Brunswick I mentioned, they are developing a reactor for used fuel that is conducive to a chain reaction. This development is going to take some time.

- *Is OPG designating future locations for nuclear reactors.*
Tracy: Our considerations are at a high level. We would first have to engage with potential site communities.
- *What is OPG doing here to develop recycling technology for nuclear fuel?*
Tracy: We are doing feasibility studies.

Topic #7: Community / Public Affairs Update

Analiene St. Aubin, Manager Stakeholder Relations, Corporate Affairs, presented an update on OPG involvement in community activities:

- To date in 2023, the Pickering Nuclear stakeholder relations team has led 46 site, station and mock-up tours and visits.
- On Nov. 10, Councillors from a number of cities across Ontario toured the station and the Pickering Waste Management Facility. There was great feedback. One of the Councillors asked: How do we get a nuclear plant in our community? Something you don't hear that often.
- On Nov. 1, 150 Grade 9 students participated in the station's Take Our Kids to Work Day. The students got a behind-the-scenes look at the work their parents do and the diverse career choices available at OPG. The station's robot dog was a big hit.
- On Oct. 11, high school volunteers lent a helping hand with cleaning up the path along Alex Robertson Park and the beach. The clean-up was organized by the Toronto and Region Conservation Authority (TRCA) and other community organizations, and was sponsored by OPG.
- Oct. 13: Mayor Ashe and other members of Pickering Council, PNGS Deputy Site Vice President Emily Tarle, artist Dorsey James and members of the Pine Ridge Arts Council attended an unveiling of the restored Kijimba Kind (spirits that hail from a variety of cultures) sculptures at Alex Robertson Park.
- Oct. 27: OPG welcomed Royal Canadian Legion members to the site to collect poppy donations.
- Each year, both the Pickering and Darlington stations participate in the Durham Regional Police Service (DRPS) Food and Toy Drive. This year, over \$20,000 was raised from employees, the most successful campaign to date.

- OPG is proud to support the Winter Wonders event coming up on Dec. 9. TRCA, the Pine Ridge Arts Council and other partners will provide an opportunity for kids and families to learn how wildlife survives the winter season and learn how to paint a winter woodland critter.

A member suggested a CAC tour of the simulator at the Pickering Learning Centre. Analiese liked this suggestion, noting that there has not been a Council tour in a long time.

Topic #8: Concluding Remarks

Dave and Jon wished everyone the best of the season.

Jon thanked members for giving their valuable time and energies to the CAC.

Next Meeting

Pickering Nuclear Information Centre
Tuesday, Jan 23, 2024
4 pm – 7 pm