



**RNAO Submission to the Canadian
Nuclear Safety Commission on the
Application to Renew the License of the
Pickering Nuclear Generating Station**

Speaking Notes

June 29, 2018



Check against delivery

Good morning President Binder and members of the commission. My name is Beatriz Jackson, and I am a board member of the Registered Nurses' Association of Ontario (RNAO). I represent RNAO's Region eight, an area that includes Durham Northumberland and the nuclear reactors at Pickering and Darlington. I have lived in Pickering for 22 years now, just 10 kilometers from the nuclear plant. With me today are Susan Munro, representing RNAO's Ontario Nurses for the Environment Interest Group, and Kim Jarvi, RNAO's Senior Economist.

We thank the Canadian Nuclear Safety Commission for this opportunity to respond to the renewal application for the Pickering Nuclear Generating Station's operating licence. The issue of nuclear power matters a great deal to nurses because of its potential health implications and because nurses would be heavily involved in any disaster responses. RNAO is here to speak to the commission's mandate to regulate the nuclear industry to prevent unreasonable risk to the environment and to human health.

We urge the commission to adopt a precautionary approach that prioritizes human health and public safety.

A precautionary approach is warranted because the Pickering nuclear plant is just five km east of Toronto.¹ If there was a major accident, evacuating an area of 20 kilometres around the Pickering plant would affect 1.3 million people.² And if you extended that evacuation zone to 30 kilometres, 2.2 million residents in the Greater Toronto Area would be affected.³

To put this into perspective, there were only 160,000 people evacuated as a result of Japan's Fukushima disaster, even though there was a 20 km evacuation order and voluntary evacuation in the area 20-30 km from the plant.⁴ To offer further perspective, the Chernobyl Exclusion Zone covers about 2,600 square kilometers – over four times the area of the city of Toronto.⁵

As the GTA population continues to grow, so too will the numbers of people at risk in the event of a nuclear accident. We know the risk of nuclear accidents is not zero: there are only about 450 operable nuclear reactors in the world,⁶ and already one blew up in Chernobyl and three reactors sustained major damage at Fukushima. There have been a number of other partial meltdowns.

The effects of an accident extend far beyond the immediate and long-term effects of exposures to radiation. The World Nuclear Association cited over 1,000 deaths directly attributable to the inadequately planned evacuation around Fukushima,⁷ particularly for vulnerable communities. Within 30 km of Pickering, there are about 22 hospitals with 7,399 beds, and 82 nursing or retirement homes with 9,368 beds.⁸ In Ontario, there are approximately 30,000 hospital beds. In area of 30 km, over 7000 beds is equal to almost one fourth or a quarter of all Ontario beds. So if we take 7000 beds out of circulation, and need then to accommodate 7000 displaced patients, up to one half of patients could need to be displaced.⁹ Where and how? Excellent disaster planning

is essential and will greatly reduce the risk of illness and death from evacuation, but it cannot eliminate it.

Furthermore, a major Pickering release could compromise the drinking water from Lake Ontario – and that is the source of drinking water for almost half of all Ontarians alone,¹⁰ not to mention for many residents of New York State.

Finally, a major release would contaminate hundreds of square kilometers of this densely populated area and would cause huge economic cost and dislocation for decades or longer. That will have enormous health consequences.

When weighing the renewal of the Pickering licence, the following must be considered:

- the risks of a disaster at an aging nuclear plant are not diminishing,
- Pickering continues to produce nuclear waste, which must be stored in perpetuity
- In 1971, the Pickering station was designed to last until 2001¹¹ and is far past its designed life span,¹²
- Ontario has surplus generation capacity which leads to curtailment of wind generation,¹³ and finally,
- as the Environmental Commissioner of Ontario noted, the province largely abandoned renewable energy options in favour of nuclear power without any apparent long-run cost advantage,¹⁴

RNAO questions whether the power from Pickering is even necessary, and if so, whether some or all of it is necessary until 2024.

We ask whether Pickering power generation can be justified on an economic basis, when one includes the costs of maintenance and repair, and of adequate nuclear emergency preparedness. There are renewable and conservation alternatives, as the Environmental Commissioner noted. Most importantly, we ask whether it makes sense to continue to operate an aging nuclear plant adjacent to a large and growing population, when the expiry of the current, much-extended licence would solve that problem. RNAO urges a precautionary, health-based approach to the commission review.

With the health of so many people at stake, and having witnessed how wrong things can go when accidents happen as they did at Chernobyl and Fukushima, a precautionary approach to emergency preparedness is also a must as long as Ontario continues to operate nuclear reactors. Nurses want to know the system is fully prepared in the event of a disaster, because we would play leading roles in any disaster response. RNAO welcomes Toronto's requests to the province of Ontario and to the commission to strengthen Ontario's nuclear emergency preparedness.^{15 16}

RNAO calls on the commission to use any tools at its disposal to ensure that, for all nuclear power plants in Canada, all emergency preparedness measures are world class and are designed to meet the need imposed by a Fukushima-scale disaster. It will be very important to include RNs and nurse practitioners in that planning process.

In summary, we are not persuaded that extending the licence is the most cost-effective way of meeting Ontario's electrical power needs, and a precautionary approach to health leads us, in the interests of preventing unreasonable risk, to advise against extending the operating licence beyond what is necessary to safely decommission the plant. As Fukushima and Chernobyl have shown, nuclear power is an unforgiving technology. But so long as any nuclear power plants continue to operate in Ontario or elsewhere Canada, we urge the commission to ensure that all nuclear emergency preparedness measures are designed to deal with major disasters. This should include imposing licence conditions on Ontario Power Generation to address inadequacies in Ontario's nuclear emergency response plans. The detailed recommendations numbers 13 through 31 to the commission on emergency preparedness from the Canadian Environmental Law Association provide the kind of precautionary approach we seek.¹⁷ Those recommendations include: comprehensive planning in greatly expand nuclear emergency zones to respond to major radiation releases; ensuring protection of vulnerable populations, which would include predistribution of KI pills to guarantee quick access; and public awareness campaigns to support the above measures.

Thank you for this opportunity to present the concerns of Ontario's RNs, NPs and nursing students. We would be pleased to answer any questions.

Appendix

The role of RNs and NPs in nuclear disasters

Health services are central to disaster mitigation and emergency response, and RNs and NPs are in the front lines when any disaster does strike. RNs and NPs play key roles in responses to nuclear incidents including: radiation exposure screening; triage; decontamination; treatment for radiation; treatment for exacerbations of existing medical conditions; assistance with evacuation; and attending to the health and psychological needs of evacuees. Problems during the Fukushima nuclear disaster demonstrated the need for authorities to ensure adequate supports are in place for nurses in the event of emergencies. That includes ongoing work to provide RNs and NPs with the necessary training and materials.¹⁸ Inadequate preparation at Fukushima also contributed to: deaths of vulnerable people due to rapid evacuation; deaths due to displacement of elderly people requiring nursing care; and adverse impacts on affected individuals' lifestyle and mental health.¹⁹ This is reminiscent of how the 2003 SARS outbreak revealed Ontario's lack of preparation for public health emergencies.²⁰

It is crucial to have comprehensive planning so that RNs and NPs can be ready for all the above roles. Furthermore, they must be involved in the detailed planning processes. Planning must identify and commit all necessary resources, including: key hospitals and other health facilities; decontamination centres; equipment; materials; and personnel. To ensure resources can be rapidly mobilized in the event of a disaster, it is essential that personnel likely to be involved receive appropriate and adequate training. For example, public health, primary care, long term care, and acute care nurses must learn to identify vulnerable populations in the shadow of nuclear plants. Nurses trained to screen for acute radiation syndrome can identify people with the highest priority for treatment. Nurses will also need to know how to best decontaminate exposure victims, how to handle contaminated clothes and water, how to treat and cover wounds, and how to protect food and water from radiation.

RNAO's Recommendations to Ontario on its Nuclear Response Plan

As noted above, Toronto has called on the province to greatly enhance nuclear preparedness standards. In doing so, it joined other municipalities: Durham Region, Ajax, Windsor, Amherstburg, Essex County and Brockton.²¹

RNAO, as a signatory of *A Call for Public Safety: Addressing Nuclear Risks on the Great Lakes*,²² made the following recommendations to the province on its submission on the PNERP:²³

1. Base protective measures on a Fukushima-scale accident (International Nuclear Event Scale 7 (INES 7) including alerts, potassium iodide pre-distribution and preparation for evacuation zones of 20 km or greater.
2. Prepare for full health support of all displaced populations, including health practitioner staffing at evacuation centres and health teams to visit reception centres without health teams.
3. Ensure on-going emergency training of key health care providers in primary and acute care, long-term care and public health, including RNs and NPs.

4. Ensure all necessary policies, procedures and documentation are in place to support health professionals in the event of a significant nuclear incident.
5. Identify vulnerable groups within 30 km of nuclear facilities and require plans to assist those groups, whether they are evacuated or not.
6. Ensure alternate sources of drinking water are identified and available, given the possibility of contamination of Great Lakes water.
7. With respect to transparency and public participation, require the public availability of detailed information on nuclear emergency planning, and require five-year reviews and detailed public consultation on emergency response planning.
8. Require emergency response measures to meet or exceed international best practices.
9. “Regularly review and publicly report on international developments and best practices in offsite nuclear emergency planning as well as on plans to adjust and improve Ontario’s plan to meet or exceed the best practices in other OECD jurisdictions.”²⁴

In its submission to Toronto, RNAO made the following recommendation:²⁵

Urge the province to enhance its nuclear emergency response plan so that is capable of dealing with a Fukushima-level accident (International Nuclear Event Scale 7 (INES 7). That includes: preparing full health support for displaced populations; ensuring on-going emergency training of key health care providers; providing support for health professionals in the event of a disaster; and preparation for prompt delivery of potassium iodide (KI) pills beyond a 10-kilometer radius around nuclear reactors.

RNAO will support any effort for a strong precautionary approach to nuclear disaster preparedness for Toronto and Ontario, and will follow the entire process to its conclusion.

¹ Otis, D. (2016). Safety Not guaranteed near nuclear plants in Pickering and Clarington, critics say. *DurhamRegion.com*. January 26. <https://www.durhamregion.com/news-story/6218718-safety-not-guaranteed-near-nuclear-plants-in-pickering-and-clarington-critics-say/>.

² Centre for Spatial Economics. (2011). *Economic Impacts of a Nuclear Accident at the Pickering or Darlington Nuclear Stations*. Prepared for Greenpeace Canada. September. Population data for 2006. <http://www.greenpeace.org/canada/Global/canada/report/2011/09/Accident%20impact.pdf>.

³ Declan Butler. (2011), Reactors, residents and risk. *Nature News*, April 21. <http://www.nature.com/news/2011/110421/full/472400a.html>.

⁴ World Nuclear Association. (2017). *Fukushima Accident*. <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-accident.aspx>.

⁵ The Chernobyl Exclusion Zone is about 2,600 square kilometers and Toronto is about 630 square kilometers.

⁶ World Nuclear Association. (2018). *World Nuclear Reactors & Uranium Requirements*. June. <http://www.world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-and-uranium-requireme.aspx>.

⁷ World Nuclear Association. (2017). *Fukushima Accident*. <http://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-accident.aspx>.

⁸ Stensil, S. (2018). *Greenpeace Supplementary Comments to 18-H6.62*. June 12. P. 11. <http://nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/cmd18-h6/CMD18-H6-62A.pdf>.

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- ⁹ On the assumption that a given number of evacuees will displace the same number of patients in recipient hospitals.
- ¹⁰ Wolf-Wylie, W. (2012). *Where does Ontario's drinking water come from, and how safe is it?* <http://o.canada.com/news/hey-ontario-where-does-your-drinking-water-come-from>.
- ¹¹ Ontario Clean Air Alliance. (2016). *Closing the Pickering Nuclear Station in 2018*. p. 1. Citing Ontario Power Generation, Annual Information Form For The Year Ended December 31, 2000 , (April 30, 2001), Page 36.
- ¹² Ontario Clean Air Alliance. (2016). *Closing the Pickering Nuclear Station in 2018*. p. 3. <http://www.cleanairalliance.org/wp-content/uploads/2016/06/pickering-fs.pdf>. Citing Ontario Energy Board Docket No. EB-2013-0321, Exhibit JT1.14 (Refiled: 2014-06-03). and www.ieso.ca/Pages/Power-Data/price.aspx.
- ¹³ Environmental Commissioner of Ontario. (2017). *Surplus Baseload Electricity Generation in Ontario*. Jan. 20. <https://eco.on.ca/blog/surplus-baseload-electricity-generation-in-ontario/>.
- ¹⁴ Environmental Commissioner of Ontario. (2018). *Making Connections: Straight Talk about Electricity in Ontario*. p. 9. <http://docs.assets.eco.on.ca/reports/energy/2018/Making-Connections.pdf>.
- ¹⁵ Toronto City Council. (2017). EX28.13. *Toronto, Emergency Management Program and Revisions to the Toronto Municipal Code*. November 7-9. <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.EX28.13>.
- ¹⁶ Toronto City Council. (2018). EX33.6. *Emergency Management Program Update -- 2017*. April 24. <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2018.EX33.6>.
- ¹⁷ Canadian Environmental Law Association. (2018). *Submission from the Canadian Environmental Law Association In the Matter of Ontario Power Generation Inc., Pickering Nuclear Generating Station*. June 2018. <http://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/cmd18-h6/CMD18-H6-57.pdf>.
- ¹⁸ Yoshida, K., Orita, M., Goto, A., Kumagai, A., Yasui, K. et al. (2016). Radiation-related anxiety among public health nurses in the Fukushima Prefecture after the accident at the Fukushima Daiichi Nuclear Power Station: a cross-sectional study. *BMJ Open* 2016;6: e013564. doi:10.1136/bmjopen-2016-013564.
- ¹⁹ Hasegawa, A., Ohira, T., Maeda, M., Yasumura, S, and Tanigawa, K. (2016). Emergency Responses and Health Consequences after the Fukushima Accident; Evacuation and Relocation. *Clinical Oncology*. 28 (2016), pp. 237-244. <http://www.sciencedirect.com/science/article/pii/S0936655516000054>.
- ²⁰ Registered Nurses' Association of Ontario. (2003). *SARS Unmasked: A Report on the Nursing Experience with SARS in Ontario*. September 29. http://rnao.ca/sites/rnao-ca/files/SARS_Unmasked.pdf.
- ²¹ Canadian Environmental Law Association. (2017). *Comments on EX28.13: Toronto's Emergency Management Program and Revisions to the Toronto Municipal Code*. <http://www.toronto.ca/legdocs/mmis/2017/ex/comm/communicationfile-72979.pdf>.
- ²² Canadian Environmental Law Association et al. (2017). Op. cit.
- ²³ Registered Nurses' Association of Ontario. (2017). *RNAO Submission on the Provincial Nuclear Emergency Response Plan (PNERP)*. July 28. http://rnao.ca/sites/rnao-ca/files/RNAO_PNERP_submission_final.pdf.
- ²⁴ Canadian Environmental Law Association et al. (2017). Op. cit. p. 7.
- ²⁵ Registered Nurses' Association of Ontario. (2017). *RNAO Submission on Toronto's Emergency Management Program and Revisions to Toronto Municipal Code*. October 23. http://rnao.ca/sites/rnao-ca/files/RNAO_Submission_on_Toronto_Emergency_Management_Program_-_Oct_23_2017.pdf.