



Staff Report

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Report To:	Planning and Development Committee		
Date of Meeting:	May 17, 2021	Report Number:	PDS-030-21
Submitted By:	[REDACTED]		
Reviewed By:	[REDACTED]	Resolution#:	
File Number:	PLN 33.13	By-law Number:	
Report Subject:	Clarington Comments on Canada's Radioactive Waste Policy Framework		

Recommendations:

1. That Report PDS-030-21 be received;
2. That Report PDS-030-21 be approved as the comments of the Municipality of Clarington on Canada's Radioactive Waste Policy Framework;
3. That a copy of Council's decision and Report PDS-030-21 be forwarded to all interested parties;
4. That the Nuclear Waste Management Organization be invited to provide an educational session for the Clarington Council on the implementation of its process for the safe, long-term management of radioactive waste through containment and isolation in a deep geological repository and the timeframe for the removal of waste from the Darlington Nuclear site; and
5. That all interested parties listed in Report PDS-030-21 and any delegations be advised of Council's decision.

Report Overview

Natural Resources Canada is reviewing and updating Canada's radioactive waste policy. The existing policy is from 1996. Clarington, given our history of having low level radioactive waste from the former Eldorado operations in Port Hope and as host to the Darlington Nuclear Generation Station and the future home of a New Nuclear Build, has a significant interest in how radioactive waste is addressed in the long term.

This report outlines the Policy Framework and responsible agencies. Clarington has a long-standing commitment to nuclear power generation and supports the review and modernization of the radioactive waste policy framework.

The report also recommends that Clarington support the removal of radioactive waste from the community as part of the NWMO Adaptive Phased Management plan, which requires spent fuel to be contained and isolated in a deep geological repository.

1. Background

Review of the Policy Framework for Radioactive Waste

- 1.1 Natural Resources Canada (NRCAN) is undertaking a review of Canada's radioactive waste policy. The current radioactive waste policy framework was set out in 1996. The purpose of the review is to ensure a modernized policy is in place and is based on the best available science, meets international practices, and reflects the values and principles of Canadians. The review process began in November 2020 and comments are to be submitted by May 31, 2021. A "What We Heard Report" will be released for comment in Fall of 2021 and a modernized policy release thereafter.
- 1.2 The Municipality of Clarington has an interest in Canada's radioactive waste policy. Clarington is the host community for Ontario Power Generation's Darlington Nuclear Generating Station (DNGS) and associated Darlington Waste Management Facility, and the Darlington New Nuclear Project. In addition, Clarington is the host community to the Port Granby Low Level Radioactive Waste Facility and Project. Accordingly, we have been asked by NRCAN to share our views and perspectives on Canada's radioactive waste policy.
- 1.3 Clarington previously commented on the Draft Regulatory Guide G-320 *Assessing the Long Term Safety of Radioactive Waste Management* in June of 2005 through [PSD-073-05](#) when it was being formulated. The Regulatory Guide G-320 was updated in response to comments and approved in December 2006. The regulatory guide informs licensees about how they can meet Canadian Nuclear Safety Commission (CNSC) expectations and requirements. It provides licensees with a recommended approach for meeting particular aspects of the requirements and expectations associated with their respective licensed activities.

Responsibility for Radioactive Waste Management

- 1.4 Canada's approach to radioactive waste management is founded upon the Government of Canada's ***Policy Framework for Radioactive Waste*** (the Policy Framework), released in 1996. NRCan is the lead Department responsible for federal radioactive waste policy matters.
- 1.5 The Nuclear Waste Management Organization (NWMO) is a not-for-profit organization established in 2002 by Canada's nuclear electricity producers in accordance with the *Nuclear Fuel Waste Act*. NWMO is responsible for designing and implementing Canada's plan for the safe, long-term management of used nuclear fuel. The plan, known as Adaptive Phased Management, requires used fuel to be contained and isolated in a deep geological repository. It also calls for a comprehensive process to select a site with informed and willing hosts for the project. Planning timelines established for implementing Adaptive Phased Management are provided in **Attachment 1**.

Clarington's Radioactive Waste

- 1.6 An overview of the radioactive waste presently stored across Canada has been compiled using the [Inventory of Radioactive Waste in Canada](#). Below is an outline of the waste locations in Clarington.

Port Hope Area Initiative

- 1.7 The Port Hope Area Initiative (PHAI) is an undertaking of the federal government for the remediation of contaminated sites and safe, long-term management of historic low-level radioactive waste resulting from the operations of Eldorado Nuclear Limited. This uranium refinery operated in Port Hope from the 1930's to the 1980s.
- 1.8 The Port Granby site is at the south-eastern boundary of the Municipality of Clarington. The original waste site contained low level radioactive waste and contaminated soils deposited between 1955 and 1988. This material has been relocated from the original waste facility on the shore of Lake Ontario to a new, engineered aboveground mound approximately one kilometre north. The Port Granby Project is managed by Canadian Nuclear Laboratories (CNL). It includes a wastewater treatment facility for treatment of leachate which will subside over time.
- 1.9 The site is owned by the federal government and licensed by the CNSC. Final completion of the mound is anticipated later this year. The original waste site is to be restored to a naturalized condition, the new storage mound will be seeded and maintained as a meadow habitat. Both sites have systems in place to monitor them for hundreds of years.

Darlington Nuclear Generating Station (DNGS)

- 1.10 The DNGS currently houses spent nuclear fuel bundles in wet storage within the plant and cooled bundles in dry storage containers in a specifically designed and constructed facility on site. The dry used fuel storage facility was developed in the early 2000's following an Environmental Assessment which the Municipality fully participated in as outlined in [PSD-075-03](#). There is no risk or hazard from a safety perspective of having long term storage of the spent fuel on site. Ontario Power Generation is responsible for the temporary storage of this spent fuel, which is scheduled to be moved off-site as part of the NWMO process during the 2040-5 timeframe, as outlined in **Attachment 1**.
- 1.11 With the refurbishment presently underway, electrical generation at the site is expected to conclude in 2055. Any low and intermediate level waste resulting from the refurbishment project is also currently stored onsite and will be removed as part of the process outlined by NWMO.

Darlington New Nuclear Project (DNNP)

- 1.12 The site approved by a Federal Joint Review Panel in 2012 for the DNNP adjoins the existing DNGS site to the east and is the only site in Canada currently licensed for new nuclear development. Until a reactor technology and generation capacity is selected the amount of radioactive waste that will result from the operation and decommissioning of the reactor is unknown
- 1.13 In November 2020, Ontario Power Generation announced the resumption of planning activities for new nuclear at the DNGS, including the consideration of small modular reactors (SMRs) in place of a conventional nuclear unit. The waste from [SMRs](#) would fall under the same legislative framework as that from existing reactors. NRCan anticipates that the NWMO will work with the owners/operators of SMRs to plan for management of wastes associated with the technology.
- 1.14 Clarington Council at its meeting of May 3, 2021 approved the recommendations of Report [PDS-025-21](#) respecting the DNNP Licence Renewal Hearing scheduled for June 10-11, 2021.

Canada's Radioactive Waste Policy Framework

- 1.15 The elements of a comprehensive radioactive waste policy framework consist of a set of principles governing the institutional and financial arrangements for disposal of radioactive waste by waste producers and owners. The current framework outlines that:
- The federal government will ensure that radioactive waste disposal is carried out in a safe, environmentally sound, comprehensive, cost-effective and integrated manner.

- The federal government has the responsibility to develop policy, to regulate, and to oversee producers and owners to ensure that they comply with legal requirements and meet their funding and operational responsibilities in accordance with approved waste disposal plans.
- The waste producers and owners are responsible, in accordance with the principle of "polluter pays", for the funding, organization, management and operation of disposal and other facilities required for their wastes. This recognizes that arrangements may be different for nuclear fuel waste, low-level radioactive waste and uranium mine and mill tailings.

1.16 Canada's Radioactive Waste Policy Framework provides the overall principles for radioactive waste management and is supported by three primary pieces of legislation that govern the management of radioactive waste in Canada:

- The *Nuclear Safety and Control Act*, which sets out the Canadian Nuclear Safety Commission's mandate, responsibilities and powers;
- The *Nuclear Fuel Waste Act*, which provides the framework for progress on a long-term strategy for the management of nuclear fuel waste; and
- The *Impact Assessment Act* (and previously, the *Canadian Environmental Assessment Act, 2012*), which, while not being specific to radioactive waste management, establishes the legislative basis for the federal impact assessment process.

2. Canadian Radioactive Waste Policy

Overarching Principles

- 2.1 Under the existing policy framework, the federal government is responsible for ensuring that radioactive waste disposal is carried out in a safe, environmentally sound, comprehensive, cost effective, and integrated manner.
- 2.2 In addition to the principles stemming from the 1996 policy, core principles identified at the outset of this policy review that are important to Canadians and Indigenous people include: (1) safety of people and the environment, (2) openness, transparency and public consultation, and (3) Indigenous reconciliation.

Roles and Responsibilities

- 2.3 Under the existing policy framework, the roles and responsibilities of government and waste producers and owners are identified as follows:
- The role of government is to develop policy, to regulate, and to oversee waste producers and owners to ensure they meet legal and financial requirements.

- Waste producers and owners, as per the “polluter pays” principle, are responsible for funding, organization, management and operation of disposal and other facilities required for their wastes.

Waste Minimization

- 2.4 A goal for waste minimization is to reduce the impact to the environment from nuclear energy or applications by reducing the final volumes and activity of waste that requires storage, and ultimately, long-term disposal.
- 2.5 The CNSC requires that waste owners in Canada minimize the generation of radioactive waste to the extent practicable.
- 2.6 Canada has adopted a set of guiding principles, referred to as the waste hierarchy, for minimizing waste, particularly from decommissioning activities.

Waste Storage Facilities

- 2.7 Radioactive waste requires interim storage until solutions for permanent disposal are in place.
- 2.8 While storage can be long-term, it is not considered a permanent solution.
- 2.9 In Canada, waste owners are responsible for the funding, organization, management and operation of disposal and other facilities required for their radioactive wastes.
- 2.10 The key considerations when determining the type and location of storage facility for an operator’s waste are based on domestic and international guidance, protection of human and environmental health, safety and security, and implementation of Canada’s international commitments.

Decommissioning

- 2.11 Many nuclear reactors constructed prior to the 1980s throughout the world will be coming to the end of their useful life in the coming decades.
- 2.12 Nuclear decommissioning refers to the actions taken to retire a nuclear facility, location, or site permanently from service in a manner that provides for the health and safety of people and protects the environment. Decommissioning activities are subject to national policy requirements as well as a regulatory framework for safety.
- 2.13 National policies on waste management and decommissioning often include decommissioning aspects that may influence the choice of a possible decommissioning strategy (immediate decommissioning, deferred decommissioning, and in-situ decommissioning) as well as timing, infrastructure, environmental, and socioeconomic impacts.

- 2.14 In Canada, waste owners are responsible for the funding and organization for the decommissioning of their facilities, and for all applicable steps of waste management.

Waste Disposal

- 2.15 In Canada, waste owners are responsible for the funding, organization, management and operation of disposal facilities, locations or sites, as well as all applicable steps of waste management, required for their radioactive waste.
- 2.16 Disposal is the final step in the management of radioactive waste, and refers to the placement of radioactive waste without intention of retrieval. Waste management and disposal activities are subject to national policy requirements as well as a regulatory framework for safety.
- 2.17 Decisions on disposal approaches may vary from country to country, depending on factors such as national policy, geography, waste types, volume, Indigenous and public engagement, environmental and socioeconomic factors.

3. Comments

- 3.1 In 2010, the Province of Ontario undertook a review of the Provinces Long Term Energy Plan (LTEP). Report [CAO-009-13](#) set out Clarington's commitment to nuclear. This report and the comments submitted to Ministry of Energy outline the

- Importance of Nuclear to Clarington;
- The Nuclear Advantage; and
- Community Support in Clarington for Nuclear.

- 3.2 The Report provided a summary and conclusion as follows:

“The dialogue to date with the Ministry [of Energy] is appreciated and helps to build a strong future for Clarington and Ontario. It has assisted us to see the alignment of our shared interests around conservation and the benefits of nuclear. And it has helped us to better understand the supply and demand scenarios, confirming for us that the plans for nuclear refurbishments and nuclear replacement build in the 2010 Long Term Energy Plan were well founded and should continue to be implemented. We owe it to future generations to take this long-term perspective.

Dialogue with a wide range of people makes clear that **nuclear is the cheaper, cleaner, jobs creating choice for Ontario**. Clarington is the place where this choice can be optimized. There is wide and deep community support for nuclear. It is woven into the fabric of our community. This contrasts sharply with what the government has experienced in many parts of Ontario with other energy supply choices.

Clarington and Ontario would be well served by sticking with the 2010 plans for nuclear at Darlington.”

- 3.3 Clarington has been and is supportive of the guidance provided by the Policy Framework developed through Regulatory Guide G-320. NWMO are working through the site selection process for a deep geological repository. Once a host community is agreed upon, and a construction licence is granted, an underground demonstration facility will be built. The purpose of this facility is to confirm the characteristics of the site before construction of the deep geological repository begins. The NWMO provides updates to Durham Region Council on how it is progressing towards the milestones of its process.
- 3.4 Clarington’s involvement for almost 50 years with OPG, the CNSC, Atomic Energy Canada Limited, and the Port Hope Area Initiative, has demonstrated that the Federal Government and NRCan as the responsible agency have taken responsibility for radioactive waste and the necessary steps to address legacy waste. The signing of the legal agreement between Clarington, the Municipality of Port Hope and Federal Government and its implementation over the past 20 years is our primary example of how through successive governments the project has continued to proceed and at Port Granby is near completion.
- 3.5 The NWMO as an industry led complementary agency continues to work on Adaptive Phased Management with an anticipated implementation beginning in 2026. An educational brief and update for Clarington Council by NWMO, much like it does for Durham Region Council would help Council members and the community to be more informed of the long-term plans for radioactive waste.

4. Concurrence

Not Applicable.

5. Conclusion

- 5.1 Some members of Council and the community have expressed displeasure in the storage of radioactive waste within Clarington. Prior to the Federal government taking action on the clean-up of low level radioactive waste at Port Granby and during the early 2000’s as the project moved through its initial planning, assessment and design stages, the residents, represented by the SouthEast Clarington Ratepayers Association (SECRA), had little faith the project would come to fruition. Now that we are at the final stages, some 20 years later there is general community acknowledgement that the process is coming to a successful conclusion.

- 5.2 Clarington has worked with OPG, and other stakeholders on the development of transportation improvements, emergency management plans and licencing requirements. Clarington understands the stringent requirements an applicant must address in order to obtain a license from the CNSC. NRCan has drawn heavily on international experience and best practices to modernize the robust policy framework for radioactive waste and ensure safety of nuclear energy.
- 5.3 Clarington supports the removal of radioactive waste from the community as part of the NWMO Adaptive Phased Management plan, which requires spent fuel to be contained and isolated in a deep geological repository.
- 5.4 It is respectfully recommended that this report be accepted as Clarington's comments for the radioactive waste policy engagement.
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Staff Contact: [REDACTED]

Attachments:

Attachment 1 – Adaptive Phased Management Implementation Timelines

Interested Parties:

The following interested parties will be notified of Council's decision:

Ontario Power Generation
Canadian Nuclear Safety Commission
Nuclear Waste Management Organization
Atomic Energy Canada Limited
Canadian Nuclear Laboratories
Port Hope Area Initiative
Regional Municipality of Durham
City of Pickering
Canadian Association of Nuclear Host Communities
Durham Region Members of Parliament

Adaptive Phased Management Timelines

Source: Implementing Adaptive Phased Management 2021 to 2021 (Nuclear Waste Management Association, March 2021)

Developing Canada's plan	2002	The NWMO is created.
	2005	The NWMO completes three-year study with interested individuals, including specialists, Indigenous peoples and the Canadian public.
	2007	Government of Canada selects Adaptive Phased Management (APM) and mandates the NWMO to begin implementation.
Developing the siting process	2008 to 2009	Work takes place with citizens to design a process for selecting a central, preferred site for the deep geological repository and Centre of Expertise.
Identifying a site using the siting process	2010	The siting process is initiated, with a program to provide information, answer questions and build awareness.
	2010 to 2015	Twenty-two communities initially express interest. In collaboration with interested communities, the NWMO conducts initial screenings, followed by preliminary assessment desktop studies and community engagement. Areas with less potential to meet project requirements are eliminated from further consideration.
	2015 to 2023	The NWMO expands assessment to include field investigations. Areas with less potential are eliminated from further consideration as the narrowing down process continues.
	2023	A single, preferred site is identified. The transportation planning framework is finalized.
Towards construction	2024	Detailed site characterization begins. The project description is submitted, triggering the federal impact assessment. The Licence to Prepare Site application is submitted to the Canadian Nuclear Safety Commission (CNSC).
	2026	Impact assessment studies are submitted as part of the regulatory process.
	2027	The grand opening of the Centre of Expertise is held.
	2028	The impact assessment is approved (estimate). The Licence to Prepare Site is granted (estimate).
	2029	The Licence to Construct application is submitted to the CNSC.
	2032	The Licence to Construct is granted (estimate).
	2033	Design and construction begin.
Beginning operations	2040 to 2045	Operations of the deep geological repository begin. Transportation of used nuclear fuel to the repository begins.