Canadian Nuclear Panel Discussion

SUMMARY REPORT

Panel Discussion Results from July 23, 2020

Cover page photo is courtesy of the Bruce Power website showing the Bruce Nuclear complex in Kincardine, Ontario containing Bruce A and Bruce B and the smaller Douglas Point Nuclear Generating Stations.

Prepared by the Lake Huron Centre for Coastal Conservation

For the International Joint Commission's Great Lakes Water Quality Board

Special thanks to Mark Burrows and John Jackson for assistance with content.

September 8, 2020

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EXECUTIVE SUMMARY

The International Joint Commission (IJC) has studied nuclear issues since the nuclear power era began in Canada and the United States in the 1950s. Its Great Lakes Water Quality Board is currently assessing the water quality impacts from closing and decommissioning nuclear plants in the Great Lakes basin.

As part of its assessment, the IJC's Great Lakes Water Quality Board (WQB) Work Group held a Canadian panel discussion. The Douglas Point Nuclear power plant near Kincardine is advancing to the final stage of decommissioning. As Canada's first nuclear power plant, it has been closed for a while and is now to be dismantled and the site released from its license by the federal regulator, the Canadian Nuclear Safety Commission (CNSC). Nuclear industry organizations, the nuclear regulator, municipalities, community advocates, and First Nations and Métis were invited to participate in a Canadian panel discussion to discuss their experiences and lessons learned from this and other nuclear decommissioning and waste projects in Canada that would assist the Working Group in considering matters associated with decommissioning nuclear plant in Canada.

On July 23, 2020, 52 individuals representing the WQB and the IJC, local First Nations, environmental non-governmental organizations, a municipalities, the nuclear regulatory agency, the nuclear industry and the IJC WQB work group participated in a Panel Discussion by teleconference using ZOOM video for the Canadian discussion. Through this discussion, the Water Quality Board Working Group heard the delegates experience in decommissioning of nuclear stations in Canada. Because some of the same proponents, and standard setting and approving agencies are involved in both decommissioning and decisions around nuclear waste, the participants were invited on the basis of their experience of having been engaged in matters concerning nuclear waste facilities, e.g., the interim radioactive waste storage at the Bruce Nuclear Site, Ontario Power Generation's (OPG) withdrawn proposal for a deep geologic repository (DGR) for low- and intermediate-level radioactive waste at the Bruce Nuclear Site, and the Nuclear Waste Management Organization (NWMO)'s site selection process for Canada's deep geologic repository for high-level radioactive waste.

In particular, the Working Group asked participants to share their experience and comments regarding 4 topic areas:

1) Public engagement process
2) Onsite, above ground storage of the spent nuclear fuel
3) Adequacy of considering possible impacts from climate change
4) Recommendations for the future use of decommissioned nuclear sites

Delegates focused their comments on the first two questions in their prepared remarks during the Zoom video. Several follow-up submissions from the delegates were also sent and are attached as Appendices. These submissions expanded on their verbal comments and covered the other questions where time constraints during the video call prevented their fulsome discussion.

Items that garnered considerable discussion throughout the video conference were:

Engagement

- Lack of transparency and closed door meetings
- A comprehensive proposal assessment by agencies is needed versus working just to get a “yes”
- Who gets to vote; how is local consensus measured (e.g. polls versus referendums)
- Impartiality of nuclear agencies to determine the best outcome

Waste Management

- Where to store the waste (above ground versus DGR)
- An appreciation that decommissioning and waste management are inextricably linked
- How best to access the waste for monitoring and mitigation
- How to limit multiple handling of the waste
- Risk of transportation accidents as waste is moved to storage facilities and impacts to water bodies (both within and outside the Great basin)
- Unclear definitions of ‘decommissioning’ or of the stages
- Long timelines to approve a DGR
- Limitations of regulatory agencies with specific mandates
- Adherence to International Atomic Energy Agency recommendations especially focused on storage and management of nuclear waste.

The Working Group will deliberate on these results and hopes to provide their recommendations to the WQB and IJC by the end of the year.

1. Great Lakes Water Quality Board

The Great Lakes Water Quality Board (WQB) is the principal advisor to the International Joint Commission (IJC) under the Great Lakes Water Quality Agreement (GLWQA). The Board assists the Commission by reviewing and assessing the progress of the governments of Canada and the United States in implementing the Agreement, identifying emerging issues and recommending strategies and approaches for preventing and resolving complex challenges facing the Great Lakes, and providing advice on the role of relevant jurisdictions to implement these strategies and approaches (Note: **Appendix A** provides a list of acronyms).

The International Joint Commission has studied nuclear issues since the nuclear power era began in the 1950s and its Great Lakes Water Quality Board is currently assessing the environmental hazards that could result from closing nuclear plants in the Great Lakes basin. Due for completion in late 2020, the Board initiated this study after significant concerns about nuclear waste and proposed permanent storage solutions were raised by the public at the IJC's 2016-2017 public meetings around the Great Lakes basin.

In January 2017, the IJC approved the Board's plan to study the decommissioning of nuclear power plants in the Great Lakes basin. For this project, the Board is assessing the environmental hazards and risks that could result during and after the decommissioning process, the regulatory regimes in Canada and the United States, and the best practices used in North America and Europe for decommissioning.

Work group members contributing to this project include:
• Frank Ettawageshik,
Executive Director, United Tribes of Michigan
• George Heartwell
Former Mayor, City of Grand Rapids, Michigan
• Glenn Miller*
Professor, University of Nevada - Department of Natural Resources and Environmental Science
• John Jackson, Project lead
• Brandon Hofmeister*
Senior Vice President, Governmental, Regulatory & Public Affairs, CMS Energy

• Mark Mattson*
Founder & President, Lake Ontario Waterkeeper
President, Swim Drink Fish
• Mark Fisher*
President & CEO, Council of the Great Lakes Region, and

Mark Wales, Ontario Federation of Agriculture, Guelph

*not in attendance for the Douglas Point panel discussion

2. Introduction to the Panel Discussion and Agenda

The COVID-19 pandemic that entered North America earlier this year created challenges to conducting a typical face-to-face Panel Discussion in a workshop setting. To overcome this challenge, the Work Group in consultation with IJC staff, determined that the Canadian Nuclear Panel Discussion would occur by Zoom video conference call on July 23, 2020. An invitation list of key participants was drafted and invitations sent out by email with a planned 2 hour conference call. Call-in and password protected instructions were provided to all registrants with the meeting agenda (**Appendix B**). Despite the challenges of arranging a conference call for this Panel Discussion, the Board Members were pleased with the results being:

- 26 people responded advising their interest in attending
- 52 people attended the call including IJC Commissioners, IJC staff, WQB and Working Group members
- 19 verbal presentations were given (summaries follow in Section 4)
- Questions were posed during the presentations using the Chat function in Zoom software and many were answered during the event. After the zoom call additional questions were sent to the meeting speakers by WQB Work Group members.
- Panelists answered Work Group questions during and after the Zoom call (**Appendix C**)
- Supplementary information was provided by follow-up email (**Appendix D**)

The letter of invitation for the Panel Discussion (**Appendix B**) asked delegates to consider assisting the Work Group by providing their thoughts on these 4 groups of questions:

• **What has been your experience with the public engagement processes just listed?** What are the desired outcomes of the engagement process? How do you define effective engagement? Which methods work well, and which do not? How satisfied have you been with the public and Indigenous engagement as well as the access to information and transparency from OPG, the Canadian Nuclear Laboratories (CNL), the Nuclear Waste Management Organization (NWMO) and the Canadian Nuclear Safety Commission (CNSC)? If satisfied, why? If unsatisfied, what do you recommend for improvement?

• Because no site has yet been approved by the Government of Canada to permanently store spent nuclear fuel (high-level radioactive waste), **the spent nuclear fuel is likely to remain stored onsite above ground** at each nuclear generation station for an undetermined amount of time after the plant has been decommissioned. **Are you satisfied with this situation?** Are there ways in which the onsite storage could be improved to make you feel more satisfied?

• **Do you think the owner/operators and the approval agencies adequately consider the possible long-term impacts of climate change on nuclear sites when deciding how to decommission nuclear generation plants?** What special provisions do you think should be considered to address the long-term possible impacts from climate change? Observed climate change impacts are likely to include increased variability of average annual temperatures, rainfall and lake levels as well as increasing frequency and severity of lake flooding from both off-shore sources and from the uplands, and increased shoreline erosion.

• **What do you recommend the decommissioned nuclear sites be used for in the future?** What needs to occur today for this future use to become reality?

Participants were allocated 5 minutes each to present their ideas and were invited to send any additional information they felt would assist the Working Group within 10 days after the panel discussion.

The Panel Discussion Zoom video call was coordinated and hosted by Mark Burrows (IJC) with back-up technical support by Allison Voglesong Zejnati (IJC). The Working Groups Project Lead, John Jackson welcomed participants and introduced Frank Ettawaageshik (Working Group) to provide an Odawa Traditional Opening. Both John and Frank facilitated the session.

The Traditional Opening – by Frank Ettawaageshik

I greeted you in the Odawa language, Sparrow hawk is the mark of my family; and I am from the land of the crooked tree; and my Indian name is 'Nuendike' and very pleased to be here. And pleased to be working with so many people with the Water Quality Board and with this Nuclear Decommissioning Work Group. It is a great thing to be doing and I appreciate everyone taking time to be with us today.

I want to thank the Creator for such a beautiful day, for all the rain that has come through and the thunder that helps keep the balance in the world. That is part of our

belief. And I am mindful of all those that are ailing in body and spirit on this day and that we keep them in mind with their care givers. We wish them well and provide good thoughts to all those that are suffering in whatever way they may be. And we ask for guidance in this meeting that we are having today and we ask for guidance in that as we do this important work of protection and stewardship of this great creation that we are part of and these water that are so important to us and as we work to protect this world for future generations as well as the current generation. So I say, Megwetch, Megwetch, Megwetch, Megwetch. Thank-you

Brief Introductory Statements by John Jackson**:**

As lead on the work team on this meeting, we want you to keep your comments focused and our topic focused primarily on the Canadian perspective and decommissioning of nuclear power plants. A previous meeting was held in Michigan for US folks to talk to the community about their experience.

We are a work group of the Water Quality Board of the IJC. Our role is to make recommendations to the Commissioners in terms of what we think they may want to say about the decommissioning issue. We are a group of volunteers but we luckily have a fine group of professional staff at the IJC offices to support us, like Mark and others who are on this call today to support us to get the work done. This is a long process with regards to doing that.

We are not looking at the issue of the siting or the operation of new nuclear power plants. We are only looking in this study at the issue of what happens after a nuclear power plant closes, which will inevitably happen, and what situation does that leave us in, what do we mean in terms of decommissioning, and what we need to do to make sure that your communities and our communities and the Great Lakes, in particular, are protected in the very long term, forever really, in terms of making sure that the decommissioning is done properly.

Another aspect important to us at the IJC is that we operate under the Great Lakes Water Quality Agreement and those objectives in regards to protecting the Great Lakes are really important. Another significant component in the Water Quality Agreement says that there must be public engagement. Therefore the IJC and this Working Group feel it is essential that we hear from people like you in terms of what you think, and what your experiences are. The views of scientists and experts are important as well, but the people living and working in those communities also have a

real expertise that we want to gain from. So we want to hear from all of you in making our decisions and recommendations.

*I will introduce the members of the Study Team just before we begin the discussion part of the meeting because they will lead by raising questions that come to them as you are talking during your presentations today and things that they want to see explored more concerning your thoughts and recommendations that you have for us. (Note: see **Appendix C** for their questions).*

The role of the IJC Commissioners on this call is to listen and learn. It is the Study Team that are the ones that need to come up with recommendations that will be provided to the Commission. But at this stage it is really us that needs to hear from you, in terms of what you recommend. There are quite a few people on our list, more than we expected which is really exciting because it really shows that people think this is an important issue that people care about. We require you to abide by your allocated 5 minutes and Mark and Allison will keep track of the time and forewarn you as you come to the end. As well, Patrick Donnelly will be preparing a report summarizing your presentations and submissions. He is with the Lake Huron Centre for Coastal Conservation. We are also recording this session, not for public circulation, but as a backup to assist Patrick in pulling this all together and to enable accuracy.

3. Panel Discussion Participant (in order of their presentations)		
Organization / Background		**Name / Title**
1.	Canadian Nuclear Laboratories (CNL)	Ian Bainbridge, Director - Douglas Point Nuclear Generating Station
2.	Saugeen Ojibway Nation (SON)	Vernon Roote, former Council Chief. Also Canadian advisor of Great Lakes Fishery Commission
3.	Municipality of Kincardine	Mayor Anne Eadie
4.	Anishinabek Nation Union of Ontario Indians (UOI)	Regional Chief James Marsden
5.	Concerned Citizens of Renfrew County & Area (CCRCA)	Ole Hendrickson
6.	Canadian Nuclear Safety Commission (CNSC)	Karine Glenn Director, Waste & Decommissioning Division,
7.	Canadian Environmental Law Association (CELA)	Theresa McClenaghan
8.	Friends of Bruce	Eugene Bourgeois
9.	Nuclear Waste Management Organization (NWMO)	Lisa Frizzell, Vice President of Stakeholder Relations
10.	SOS Great Lakes	Patrick Gibbons
11.	Atomic Energy of Canada Ltd. (AECL)	Dr. Shannon Quinn, Manager of Commercial Oversight On behalf of Mary Ann Dewey-Plante, Manager of Engagement and Communications
12.	Protect Our Water Waterways – No Nuclear Waste	William J. Noll, Vice Chair
13.	Saugeen Chippawa Tribe of Michigan	Carey Pauquette, Environmental Manager
14.	Watershed Sentinel Educational Society	Anna Tilman
15.	Northwatch	Brennain Lloyd
16.	Individual	Dodie LeGassick from northwest Ontario
17.	Individual	Frank Greening (retired Ontario Power Generation scientist)
18.	Assembly of First Nations (AFN)	Ashley Courchene - Junior Policy Analyst On behalf of Stuart Wuttke, Director, Legal
19.	Ontario Clean Air Alliance (OCAA)	Angela Bischoff

4. Participants' Comments

This section provides a brief synopsis of each speaker's remarks. Some speakers provided a transcript of their remarks which is noted and listed in the Appendices. The speakers are listed in the order they presented on the conference call.

Ian Bainbridge, Director at Canadian Nuclear Laboratories (CNL) - Douglas Point Nuclear Generating Station

Ian provided a brief summary of the Douglas Point (DP) facility including a brief history, their plans, and their communications. Additional historic information is included **(Appendix E)** from the Ontario Heritage Trust detailing the historic significance of the DP Nuclear Generating Station.

Ian's comments included these main points:

- It is a small site (5 ha) surrounded by the much larger Bruce Power site (900 ha)
- Started operating in 1968 and shut down in 1984 as was no longer needed
- Mid-1980's the reactors were defueled allowing them to cool and placed in dry storage
- "storage and surveillance" is the current management approach and is directed by a completed Environmental Risk Assessment
- After 30 years, now looking to advance to the next stage of decommissioning (Stage 3) by amending the licence to a Commissioning Licence and removal of the structures over the next 10 to 25 years
- 90 to 95% of the demolition material is recyclable, 5 to 10% will use a local landfill, spent fuel will be sent to the NMWO site (when available) or temporarily stored onsite, with the small portion of radioactive waste to be send to Chalk River lab where AECL has interim storage facility.
- Engagement has occurred directly to several municipalities and many other groups prior to COVID restrictions on gatherings and now several more are planned before the hearings on Nov 25 & 26, 2020.
- Their website has extensive, user-friendly information and will soon have a 3D virtual tour of the facility.

Vernon Roote, former Council Chief, Saugeen Ojibwa First Nation (SON)

Vernon is from the Bear Clan which looks after the community 'security' (being a rough translation). His comments are summarized below:

- His father worked as a carpenter building the foundation for the DP facility in 1962 and visited as a youth with his mother to drop off his dad.
- He and their community were involved in the consultation process concerning the DGR which they decided not to agree with due to their stewardship understanding of the land, water and air
- Decommissioning needs to consider the ancient burial sites that are located there
- Decommissioning will also require a ceremony to connect the spirit with the land and rejuvenating the land by replanting vegetation as well as addressing the canals, concrete and seepage.

Anne Eadie, Mayor of the Town of Kincardine, former Councillor of Huron Kinloss

Anne indicated that Lake Huron was in her DNA, and protecting Lake Huron has always been her passion. She is a longtime resident both in Kincardine and on a farm in the adjacent township as well as teaching elementary school and serving on several local environmental organizations including the Lake Huron Coastal Centre. Her experience with Bruce Power, NWMO and the DGR initiative has been extensive serving as Chair of the DGR Advisory Committee for 4 years. Thus her comments reflect a close working relationship with these organizations such as:

- Engagement with NWMO was extensive regarding the DGR with displays, attendance at all major events,
- Many opportunities for the public to be engaged and aware of the plans
- Information was readily available

Jim Marsden, Deputy Grand Chief, Union of Ontario Indians

Jim resides on the shores of Lake Ontario in the Anishinabek Nation, being part of the Mississaugee Nation. He was chief of Alderwere First Nation for 17 years which is 50 km east of Darlington Nuclear Power Generation Site. His recent knowledge and experience in relation to the clean-up of Eldorado fuel rod manufacturing plant in Port Hope, and visits to the Pickering NP Site and Darlington NP site helped formulate his comments, being:

- Federal government must develop policies and strategies for the longterm management of nuclear waste to protect the environment for both current and future generations
- They need to be developed transparently and based on meaningful consultation with the public and First Nations in accordance with IAEA standards
- His nation is working in co-operation with the Iroquois Caucus and have a joint declaration on nuclear waste with 5 starting points:
    - No abandonment
    - Better containment / more packaging
    - Monitored and retrievable storage
    - Storage away from water bodies
    - No imports or exports
- Policy development should be carried forward by the federal government itself, not delegated to the CNSC or NWMO.
- Public input is important in determining the ultimate policy decisions

Ole Hendrickson, Concerned Citizens of Renfrew County & Area

Ole's group is located in the Ottawa River Valley, near the Chalk River Laboratories. Note: his full speaking notes are provided in **Appendix D**. A brief summary includes:

- Concern that the IAEA requires members to establish a regulatory framework which Canada does not have despite our numerous nuclear facilities
- IAEA only accepts 2 strategies for decommissioning; immediate or deferred dismantling and further states that entombed reactors in concrete is unacceptable
- CNL is owned by 2 American companies and SCN-Lavalin in Canada, and was contracted by the federal government to manage all the Canadian sites.
- EA's led by CNSC for entombment projects on these sites are years behind schedule and CNSC has sole responsibility to judge acceptability of the EA's
- CNSC recently released a document that allows for "in-situ" confinement of "legacy reactors"
- Concern that the Chalk River site is inadequate to be shipping radioactive waste to an 'engineered trench' and multiple handling of waste increases risk to staff and the public

- They believe that Canada needs an independent, national radioactive waste management agency such as those found in Europe, and NWMO is not such an agency.
- They believe NWMO mandate is limited to waste fuel rods and the site selection process which has been flawed
- Negotiations take place behind closed doors to approve projects through flawed EA's, and CNSC documents enable substandard projects in an unprincipled manner.

Karine Glenn, Director, Waste and Decommissioning Division, Canadian Nuclear Safety Commission (CNSC)

Karine outlined the roles and responsibilities of the CNSC and process with regards to this project. Her comments are summarized as:

- CNSC is Canada's independent nuclear regulator with the mandate to regulate the safe use of nuclear energy and materials for the health and security of people and to ensure the environment is protected and to ensure they meet international obligations.
- Also a mandate to disseminate technical, scientific and regulatory info to the public.
- DP has a preliminary, high level decommissioning plan which all licensees must have throughout the life cycle of the plant; they are now moving to a more detailed plan as they move into active dismantling (clarification: they are not cancelling any existing plan)
- The plan goes before the Commission which is an administrative tribunal that make decisions on the plans in a public forum – DP public forum is scheduled for Nov 25 & 26 and will be webcast for remote viewing.
- Anyone interested in speaking at the event (i.e., intervening) can do so by submitting a request prior to October 26 to the Commission to be heard.
- A decision by the Commission will only occur after the public hearings
- A financial guarantee is required from all licensees throughout the life cycle to ensure sufficient funds exist to decommission the facility and manage wastes longterm regardless of the status of the company
- Earlier speakers are correct that Canada does not yet have a waste disposal facility; however, all wastes are handled safely and regulated by the CNSC; all

future waste disposal sites will be subject to an EA which includes ample opportunity for public, stakeholders and indigenous people's input

Theresa McClenaghan, Canadian Environmental Law Association (CELA)

Theresa spoke to policy and legislative context for dealing with radioactive waste and the Canadian decommissioning facilities. Her comments are summarized as:

- The IAEA conducted a review of Canada's radioactive waste and regulatory approaches and observed that the approach does not contain all the needed policy elements nor a strategy or the tools to prepare a strategy, for radioactive waste management and this was brought to the Federal Ministers attention in May by over 100 civil society organizations and scientists
- The Canadian response was that they would develop such a framework
- The existing radioactive waste management policy framework is 20 years old, is ¼ page in length, and contains 3 bullets; therefore inadequate.
- Canada is a long way from any kind of adequate framework to handle these activities and these materials.
- Decommissioning is not included in the new federal Impact Act (formerly EA Act) and is not included in the project list proposed; therefore a number of considerations now included in the Impact Act, would not be included such as social, economic, and alternatives considerations.
- The regulator has not waited for a policy before releasing a number of regulatory documents which are guidance and which anticipate, not stated but implied, that they may find it acceptable to allow in-situ decommissioning which is highly concerning to civil society
- CELA and Concerned Citizens of Renfrew County called on the Auditor General to review the need for a national policy on decommissioning on reactors and radioactive waste.

Eugene Bourgeois, Friends of the Bruce

Eugene spoke as an adjacent resident of Bruce Power in the community of Inverhuron. His comments explored some of the past history of the Bruce site and the limitations he saw with the DGR proposal and the process that occurred. A summary of his comments are:

- OPG historically failed with in-ground storage at its first waste storage site, called Radioactive Storage Site #1 adjacent to the Inverhuron wetlands due to a failure to maintain the grouting at the surface of the site resulting in radioactivity flow into the wetland and into the sand point wells of residents nearby.
- The DGR has no social licence despite the NWMO maintaining it is the best option.
- OPG has not provided a viable plan of how and what it is going to do with these low and intermediate level radioactive wastes that are coming to the Bruce site's Western Waste Management Facility on the shores of Lake Huron and it seems to me that that is extraordinarily irresponsible.

Lisa Frizzell, Vice President of Stakeholder Relations, Nuclear Waste Management Organization (NWMO)

Lisa was attending on behalf of Veronique Dault, Director of Government and External Relations. She provided a land acknowledgement for the area where she was and encouraged others to consider the traditional lands where they are today during this Zoom call.

She began by saying that NWMO has no role in decommissioning nuclear power operating stations. That is done by the operators under the oversight of the CNSC. Their role is to work together with public and FN to implement plans for the safe, longterm management of our country's used nuclear fuel. She then provided some history of NWMO as being a Not-for-Profit organization that formed out of requirements of the 2002 Federal Nuclear Fuel Waste Act. They helped develop a plan for nuclear fuel waste that the federal government approved in 2007 and they are now helping implement. She suggested that:

- Used nuclear fuel is managed safely on both sides of the Great Lakes, using safe approaches which are however temporary, requiring active maintenance and management.
- It is widely accepted that this temporary approach is not practical or appropriate over the longterm, the thousands of years that used nuclear fuel remains hazardous.
- The technical endpoint of Canada's plan is a DGR in a suitable rock formation and this DGR project is different than the one several presenters have referred

to that OPG unsuccessfully proposed for low and intermediate level waste at the Bruce Power site.

- Canada's plan will use a system of engineered and naturally occurring barriers to contain and isolate the used fuel in the repository indefinitely using a passive system designed without active human intervention.
- This plan is consistent with international best practices and is the approach many nuclear programs around the world are pursuing.
- The Canadian program is unique in the comprehensive site selection process launched in 2010 that has investigated and engaged with 22 communities that proactively expressed interest in participating in this process and now has been reduced down to 2 potential sites (South Bruce and Ignace area).
- It requires an informed and willing host which means the community needs to understand what it means to host a project like this and support having it located there.
- No decision has been made as there is still work to do both technical study and engagement with the public leading to a preferred site when enough study and engagement has occurred to ensure a strong safety case and strong resilient partnerships have been established with municipal, FN and Métis communities.
- Timing is a long one with the site location decision expected in 2023, then 10 years of construction and begin operations sometime in the 2040's.
- Adaptation is key as everything changes over time (e.g., best practices, technical insight, social expectations) and constant engagement is required to reflect the latest thinking and address the questions and concerns of the people.

Patrick Gibbons, SOS Great Lakes

Patrick wanted to focus his comments on their organization's experience with Theme #1 – engagement with NWMO and CNSC. He listed several examples that suggested a poor experience and low levels of engagement (e.g., "here is the information, take it, don't ask questions, go away").

- Open House in 2012 with NWMO reported that all 100 people in attendance were supportive of the project or wanting to learn more, despite many who were opposed.

- A request to view comment cards to verity supportive results was declined
- OPG failed to comply with international obligations and treaties with regards to shared waterways and trans-boundary effects of a DGR.
- Incomplete and inaccurate data used to prove safety of their plan rather than conducting actual geologic research; modelling is a poor substitute
- OPG never considered alternative sites or alternative means for permanent storage contrary to the environmental law; no proof of sustainability for their plan as required as part of the EA
- critical public health and safety requirements were ignored including a baseline health data report which could then be compared to a future health data report.
- Several climate change events were ignored which could jeopardize the DGR and ignored learnings from accidents that were experienced in New Mexico at a similar DGR facility (called WIPP).
- Kincardine host agreement with OPG was signed after a faulty telephone poll rather than a promised referendum to garner community support; had numerous secret meeting with Bruce County mayors where they were later used to support the claim of public consultation.
- OPG ignored international prerequisites for a DGR being an underground research laboratory
- They solicited support to local charities and not-for-profits which was 'cash for support'
- Theme #2 – What to do with the waste? It should be fortified above ground storage with rolling stewardship.

Dr. Shannon Quinn, Manager of Commercial Oversight, Atomic Energy of Canada Ltd. (AECL)

AECL is a Crown Corporation and agent for the federal government who own the land and facility at DP. As indicated earlier, Shannon outlined the organizations mandate: 1) manage nuclear science and technology; and 2) manage the Government of Canada's radioactive waste and decommissioning responsibilities; item #2 being the subject matter of today. The decommissioning activities that Ian Bainbridge spoke of being proposed at DGR are the subject of the licence amendment application.

- AECL discharges the obligations of the government with regards to safe and effective decommissioning these facilities.
- Today AECL is trying to accelerate those decommissioning activities at a number of our sites to address our responsibilities today so not left to future generations.
- The activities mentioned earlier by Councillor Marsden regarding Port Hope are not decommissioning activities.
- CNL has the management of all AECL's facilities and lands and undertakes all the day to day work carrying out the plans that AECL has approved.
- Point of clarification – DP decommissioning does not contemplate in-situ disposal (also referred to as entombment)
- Current plans are still under development partially due to the need for consultation with FN, communities and a broader array of stakeholders so that they can take that input into account.

William J. Noll, Vice Chair of Protect Our Water Waterways – No Nuclear Waste

Bill lives in Teeswater, Ontario and his area is one of the 2 locations being considered for the DGR. His group of 1,600 eligible voters has, as their main concern, water pollution during construction due to runoff, floods and radioactive leaks to groundwater leading to Lake Huron. The proposed site, which they oppose, is 1,500 acres of farmland with the Teeswater River flowing through it on its way to the Saugeen River and outlets to Lake Huron at the community of Southampton. It is a farming community and they wish it to remain that way. His comments were:

- Recommend "rolling stewardship" to keep the waste above ground for the foreseeable future
- DGR concept is not new, but there is no operating facility in the world.
- Given the extreme complexity of the undertaking, it is better to have multiple years of operating experiences to assumptions and calculations about the safety of such a facility to ensure accuracy.
- Creating a DGR to house spent fuel will not eliminate the above ground waste that spent fuel rods needs for 30 to 40 years of above ground cooling; therefore extending the storage of the spent fuel above ground for another 50 years is the safe thing to do (less risk and no current problems)

- more studies are needed on the probability of reducing the radioactive life of spent fuel
- Fukushima, Japan was another farming community example that even 9 years after the nuclear incident that occurred, they cannot sell their agricultural products; a stigma exists despite studies to say it is safe.
- So in summary, communication of NWMO is inadequate, the information being promoted by the NWMO and municipality is all in favor of a DGR, with little opportunity for opposing views.

Carey Pauquette, Environmental Manager, Saugeen Chippawa Tribe of Michigan

Carey's Tribal Council met this past week and they requested her presence on the call to learn and listen despite a last minute notice of the call. She thanked Frank for making her aware of it. She is not a technical person nor had much time to prepare comments. However she appreciated the opportunity to hear the valuable information from many passionate people. Her comments were:

- They provided comments on the proposed DGR as part of the Canadian EA process and recommended they decline the proposal for multiple reasons
- They felt that they had a stake in the decision-making as they are a community in the Great Lakes basin on the shore of Lake Huron and have high regard for the fish and wildlife resources that would be impacted
- She appreciates that this is an international approach and important to hear from the indigenous peoples from both sides of Lake Huron and the Great Lakes.

Anna Tilman, Watershed Sentinel Educational Society (WSES)

Anna believed this was a discussion on decommissioning and the concern is "waste". One of the perpetual difficulties is the current and changing definitions of the various categories of "waste" and what escapes that definition and is not fully captured. There are two areas of concern that she mentioned: atmospheric emissions and the approach to classifying the waste.

- Atmospheric emissions go through filters containing radioactive particles which are not captured. What we capture are levels of waste defined as intermediate, high level or low level.

- Definitions are clear for high level waste; what is unclear are the definitions of low and intermediate level waste
- What has been instituted are clearance levels used for release into the environment and these quantities can be vast

Brennain Lloyd, Northwatch

Northwatch was founded in 1988 with founding members who have been involved in the nuclear waste debate from the 1970's. The issue of radioactive waste has been a core work area since the 1980's in part due to the repeated and ongoing efforts to relocate radioactive waste from other parts of Canada to our region and the transportation of nuclear waste through Northern Ontario.

The linkages that the Water Quality Board is making between nuclear waste and decommissioning is appreciated and despite the focus of this discussion on the latter, the two are inexplicably linked. Decommissioning generates waste and the approaching decommissioning dates, or shut down dates for Ontario reactor stations highlights the absence of any longterm management plan for high level nuclear waste / fuel waste. Canada also has an absence of a plan for low and intermediate level waste.

Regarding issue 1 of the 4 issue areas you have raised - Public Engagement

- Northwatch has been involved in several nuclear management discussions including all stages of the Bruce DGR, all 4 of AECL decommissioning processes and nuclear waste processes, the 1990 Seaborn Review, the Senate Review and now the ongoing NWMO process.
- Process is flawed as it presupposes a focus on 'how to get to yes' rather than assessing the project; the scope, the options, how to evaluate, plus there is a lack of transparency
- Inequity between the public and proponents not just in terms of funds and resources but access to decision makers.
- The selective presentation of information by these proponents and the overall ever changing presentation of the projects and descriptions (e.g., DP inaccurate description of what is happening since it has been described as <u>having been</u> decommissioned, and now it is <u>about to be</u> decommissioned.

- ACL suggested today that the plans for DP are still under development; however, the hearing (having been delayed twice now) is scheduled for Nov. with plans still under development. What kind of a review process is this?
- The public process will be limited to 10 minutes before the Commission makes its decision with no opportunity to test the evidence, nor to ask questions
- I have comments on the other 3 requested items that will be sent in writing

Dodie LeGassick from northwest Ontario (Thunder Bay)

She stated she was here to provide a perspective from Northern Ontario and has included 3 PDF documents in her submission obtained from OMNR regarding water bodies and Treaty 3 and 9. Her concern is regarding transportation and the potential contamination and impact to water bodies other than the Great Lakes.

- NW Ontario has 276,422 lakes and more water bodies if you include ponds and reservoirs (over 320,000); that constitutes over 74,000 km of rivers and lakes
- Treaty #3 alone has 28 different First Nations and all are located near water bodies
- Traffic concerns and transportation considerations are not being addressed by NWMO since they are concerned about the casking, the safe transporting of material in the cask, but have not done any study on transport truck collisions
- The 250 km of Trans-Canada Highway between Ignace (one of the possible DGR sites proposed) and Thunder Bay, experiences 42% of the traffic collisions involve transport trucks
- The Carbon Footprint of these trucks has also not been researched with trips from Southern Ontario to Northern Ontario estimated to be 2 or 3 trucks / day for 38 years
- Concern has already been expressed about the lack of transparency and lack of information from NWMO especially for the Indigenous peoples in 28 First Nations who speak primarily Ojibwa with their second language being French or English. Despite this, no documents, such as the triennial reports about nuclear waste management, has been prepared in their native language for the 25,000 people living in Treaty #3
- The issue of consent is also not clear as to who gets to vote; the council's or the people

- Regarding storage, NWMO has indicated that shallow storage option will not be used.
- Lastly, there appears to be a large amount of funding going into Ignace that is viewed as a subtle form of coercion; buying votes.

Frank Greening (retired OPG scientist)

Frank has a very extensive background in radioactive materials from OPG. He has a Ph.D in chemistry and 23 years employed by OPG at the Etobicoke Research Labs in charge of the radio analytical lab performing sample analysis for all 3 of Ontario's nuclear power plants. The samples were of different mediums (e.g., air, water, sediment, pipes). He later spent 3 years assisting OPG with their Alpha Contamination Event and working in their environmental monitoring group.

The main topics being discussed today involve OPG's decommissioning timelines and longterm radioactive material disposal plan. His comments were:

- OPG is deferring the vast majority of its decommissioning activity on any of its fleet of 18 reactors (at 3 sites) for up to 50 years since all 3 nuclear power stations are scheduled for decommissioning in the next 50 years with 'safe storage' as step 1 in the process that will take 100 years to complete
- 'Safe storage' is a recognized state for a shut- down reactor intended to allow the radiation to decay to acceptable levels.
- An associated issue with this deferred decommissioning is "How and where the associated radioactive waste will be stored and ultimately disposed of starting approximately in the year 2050
- The ill- fated DGR proposal at Kincardine was the only plan and only initiative that OPG had for the permanent disposal of its low and intermediate level waste, throwing the future of radioactive waste disposal in Ontario in great doubt.
- OPG still favors the construction of a DGR for low and intermediate level waste and is required as per CNSC regulations, to have a plan in place for the duration of the management of radioactive waste
- This situation highlights the key role that OPG's present, interim storage site being the Western Waste Management Facility which at present, is discharging radioactive waste into Lake Huron by way of Baie de Dore wetland

- Which all leaves the question, where is OPG going to be putting its radioactive waste?
- As long as this waste remains stored above ground at the Western Waste Management Facility, the future of the water quality of the Great Lakes remains in doubt.

Ashley Courchene - Junior Policy Analyst, Assembly of First Nations (AFN) on behalf of Stuart Wuttke, Legal Director

Ashley was attending on behalf of Stuart and asked to take notes and report back. He explained AFN's role to support First Nation communities who have an active role in decommissioning projects by gathering and disseminating information and performing advocacy work. He mentioned that:

- Working with NWMO to ensure Indigenous Traditional Knowledge (ITK) and intellectual property protection is implemented to prevent abuses
- Protocols are being developed for knowledge stewardship and to ensure ITK is actually being incorporated the way it was intended

Angela Bischoff, Ontario Clean Air Alliance (OCAA)

Angela described one of the campaigns they have embarked on is in the energy sector focusing on the Pickering Nuclear Generating Station located in the GTA surrounded by 2.2 million people within 30 km. That makes it the most densely populated area adjacent to a nuclear power station in North America and twice as many people than any of the other North American stations. It is also one of the oldest being in operation since 1969 with a substantial build-up of waste from the 8 reactors. The last shut down extension has the plant closing in 2024. Her comments and concerns pertained mostly to the Pickering Station are:

- There is a growing waste problem and as of 2017 there are 340,000 spent fuel rods and 400,000 spent assemblies and tools which is requiring the construction of 3 more radioactive storage buildings onsite with more planned in order to meet onsite storage demand
- Also as of 2017, there is 56,000 kg of plutonium which should not be stored in the pools and on conventional storage sites and was the subject of a petition

with 1,500 Pickering signatures requiring immediate dismantling of the site when it shuts down

- Pickering City Council unanimously passed a resolution for the immediate dismantling which is also the recommended decommissioning plan by the IAEA
- With the plant shutting down in 2024 and deferred decommissioning for at least 34 years at which point the waste could be moved to a DGR (if one is available at that time)
- As there will not be a DGR for some time, they recommend the decommissioning waste be stored in the northeast portion of the site, above ground in attack resistant, reinforced concrete vaults away from the waterfront making them safer, more easily monitored and retrieved and movable if needed, allowing the decommissioning to occur 34 years earlier
- The northeast portion of the site will be the area of least risk from climate change impacts
- They applauded when OPG allowed the SON to veto the DGR proposal and likewise, OPG should respect the local Pickering City Council's desire for immediate dismantlement and reclamation of the waterfront 30 years sooner than they would otherwise have done.

5. Discussion Summary

The nineteen delegates who attended the Panel Discussion can be grouped into three main groups;

- 4 First Nations and/or First Nation organizations (SON, Saugeen Chippawa Tribe of Michigan UOI, AFN)
- Industry and regulatory representatives (NWMO, CNL, AECL, CNSC), and
- Individuals representing themselves, municipalities, not-for-profits and community groups (Frank Greening, Dodie LeGassick, CELA, Friends of the Bruce, Renfrew Concerned Citizens, Town of Kincardine, Northwatch, Protect our Waterways, SOS Great Lakes, Watershed Sentinel Educational Society, OCAA).

Input on 4 theme areas was requested being:

a. Public engagement process
b. High level nuclear waste storage at ground surface
c. Climate change considerations on decommissioning plants
d. Post decommissioning use of the site

The primary focus of the verbal comments were on the first two theme areas being the public engagement process and concerns over the existing longterm nuclear waste management policy involving waste storage.

The comments received can perhaps be partly explained by the situation at Douglas Point being:

- Age: the plant has been closed for almost 40 years, since 1984, and there has been very little public discussion about the decommissioning.
- Consultation in Early Stages: Public consultation is about to start on the decommissioning matter with hearing dates planned for late November, 2020.
- Surrounding Site: Douglas Point has a very low profile in the community as it is dwarfed by the newer and much larger, operating, Bruce A & B nuclear power plants surrounding it.
- Controversy: There have been several controversial proposals for nuclear waste disposal facilities in the immediate area over the past couple of decades well documented in the media.

Therefore, it is perhaps to be expected that the passion heard from community participants during this panel discussion was sometimes raw and relevant pertaining

to recent engagement (including both compliments and concerns), many focused on the ill-fated DGR process and the recent decision (January 2020) not to proceed at the Bruce site. Contributing to those concerns is also the current state of nuclear waste management in Canada, as it was argued, lacks extensive and current policy as described by Teresa McClenaghan of CELA by the existing legislation being 20 years old, contained in 3 bullets on ¼ of a page (in other words 'very brief').

Some of the key points raised during the discussion were concerning:

Engagement

- Lack of transparency and closed door meetings
- A comprehensive proposal assessment by agencies versus working just to get a "yes"
- Who gets to vote?; how is local consensus measured (e.g., polls versus referendums)
- Impartiality of nuclear agencies to determine the best outcome

Waste Management

- Where to store the waste (above ground versus DGR)
- How best to access the waste for monitoring and mitigation
- How to limit multiple handling of the waste for safety reasons
- Risk of transportation accidents if waste is moved to another storage facility and impacts to water bodies (both within and outside the Great basin)
- Unclear definitions of 'decommissioning' or improved articulation of the stages
- Long timelines to approve a DGR
- Limitations of regulatory agencies with specific mandates
- Adherence to IAEA recommendations especially focused on storage and management of nuclear waste.

The Panel Discussion results revealed the substantial interest in the subject as commented by John Jackson in his introductory remarks with more presenters attending today than expected. The passionate comments of several of the community groups illustrated the concern and hope for the future that a safe,

secure, and reliable solution can be found for our nuclear waste in order to avoid leaving this as one more additional problem to be solved by the next generation.

6. Closing

WQB Work Group member George Hartwell thanked everyone for inputting into this process. He mentioned that they have already held a similar hearing in Michigan and both have given them great insight. He asked a number of questions throughout the last two hours on the chat room and many of the respondents have answered the questions (see **Appendix C**).

John suggested since time was limited, that if the members of the team can write the questions, he can ensure the questions that are specific to one of the presenters are answered and submitted to the team. We are hoping that the people who presented won't mind if we send the questions to those people. That offer, of course, is just for the members of this team not all the panel members.

The Water Quality Board plans to finish this study and provide advice and recommendations to the International Joint Commission by the end of this year.

Frank then provided closing remarks by saying

"Megwetch, for such a wide variety of thoughts and opinions that will be great to prepare our report and recommendations. We have come from all 4 directions which can be described as both in the compass directions and also in our thoughts and our wishes in protecting the lakes. I have a short song that honours those 4 directions and give thanks for those 4 directions."……(singing) …..and the meeting closed.

APPENDICES

A. Abbreviations and Acronyms
B. Invitation Letter and Agenda
C. Work Group questions to Panelists
D. Supplementary Information from Panelists
E. History of Douglas Point Nuclear Generating Station
F. Video Recording Script (with time stamps)

APPENDIX A: Abbreviations and Acronyms

AECL – Atomic Energy of Canada Ltd.

AFN – Association of First Nations

CCRCA – Concerned Citizens of Renfrew County and Area

CELA – Canadian Environmental Law Association

CNL – Canadian Nuclear Laboratories

CNSC – Canadian Nuclear Safety Commission

DGR – Deep Geologic Repository

DP and DPNGS – Douglas Point or Douglas Point Nuclear Generating Station

EA - Environmental Assessment (recent name change to 'Impact Assessment')

IAEA – International Atomic Energy Association

IJC – International Joint Commission

ITK – Indigenous Traditional Knowledge

NWMO – Nuclear Waste Management Organization

OCAA – Ontario Clean Air Alliance

OMNR – Ontario Ministry of Natural Resources

OPG – Ontario Power Generation

SON – Saugeen Ojibwa Nation

UOI – Union of Ontario Indians

WQB – Water Quality Board

APPENDIX B: Invitation Letter and Agenda

International Joint Commission
Canada and United States

Commission mixte internationale
Canada et États-Unis

Great Lakes Water Quality Board

Canadian Nuclear Panel Discussion

July 23, 2020 | 2:30 - 4:30 pm EDT | Zoom

On behalf of the International Joint Commission's (IJC) Great Lakes Water Quality Board (WQB), you are invited to participate in a panel discussion regarding lessons learned from your experience with the decommissioning of nuclear power facilities and the management of nuclear waste in Ontario.

Recognizing that many nuclear plants around the Great Lakes basin will be shut down and decommissioned in the coming years and decades, the IJC's WQB set up a work group to gather information about the decommissioning of nuclear power plants, lessons learned and the risks to Great Lakes water quality associated with the decommissioning process. The information gathered will be used to inform the board's report and recommendations to the IJC's Commissioners.

The decommissioning process includes the transition to shutdown, the dismantling of facilities, the storage or removal of spent nuclear fuel and other wastes, decontamination and remediation of the site, and license termination activities. **Our work is focused specifically on the decommissioning of nuclear generation stations, NOT the siting or operation of the nuclear generation stations.**

The work group is interested in hearing about your experience with the decommissioning of the Douglas Point nuclear plant or of other nuclear generation stations.

In addition to the WQB's concern for the protection of the Great Lakes ecosystem, we are always concerned about the Great Lakes Water Quality Agreement's (GLWQA) commitment to public engagement. Because some of the same proponents, and standard setting and approving agencies are involved in both decommissioning and decisions around nuclear waste, we have invited some of you on the basis of your experience of having been engaged in matters concerning nuclear waste facilities, e.g., the interim radioactive waste storage at the Bruce Nuclear Site, OPG's withdrawn proposal for a deep geologic repository for low- and intermediate-level radioactive waste at the Bruce Nuclear Site, and the Nuclear Waste Management Organization (NWMO)'s site selection process for Canada's deep geologic repository for high-level radioactive waste.

For your consideration, some topics of particular interest to us are:

- What has been your experience with the public engagement processes just listed? What are the desired outcomes of the engagement process? How do you define effective engagement? Which methods work well, and which do not? How satisfied have you been with the public and Indigenous engagement as well as the access to information and transparency from OPG, the Canadian Nuclear Laboratories (CNL), the NWMO and the Canadian Nuclear Safety Commission (CNSC)? If satisfied, why? If unsatisfied, what do you recommend for improvement?
- Because no site has yet been approved by the Government of Canada to permanently store spent nuclear fuel (high-level radioactive waste), the spent nuclear fuel is likely to remain stored onsite above ground at each nuclear generation station for an undetermined amount of time after the plant has been decommissioned. Are you satisfied with this situation? Are there ways in which the onsite storage could be improved to make you feel more satisfied?

- Do you think the owner/operators and the approval agencies adequately consider the possible long-term impacts of climate change on nuclear sites when deciding how to decommission nuclear generation plants? What special provisions do you think should be considered to address the long-term possible impacts from climate change? Observed climate change impacts are likely to include increased variability of average annual temperatures, rainfall and lake levels as well as increasing frequency and severity of lake flooding from both off-shore sources and from the uplands, and increased shoreline erosion.
- What do you recommend the decommissioned nuclear sites be used for in the future? What needs to occur today for this future use to become reality?

Please do not hesitate to raise other concerns about the decommissioning process that are not listed above.

Due to time restrictions, only one person from each organization will be able to present as part of the panel. Each panelist will be allotted five minutes to speak, which will be followed by a discussion led by work group members John Jackson and Frank Ettawageshik.

Obviously, you will not be able to share everything you want to say in that time and in the discussion that follows. We urge you to share additional thoughts by emailing them to us, as well as any materials that you or your organization have put together or documents you have found particularly valuable on the topic of decommissioning nuclear power plants.

Since the IJC announced the Water Quality Board's current nuclear project last June, the Commission published the board's background report and an interactive GIS StoryMap about the nuclear power facilities in the Great Lakes basin in October 2019. These informational products describe in text and photos the 38 nuclear reactors at 14 sites on the shores of the Great Lakes, definitions and amount of nuclear waste, and the processes by which these nuclear facilities are decommissioned in the United States and Canada. To inform our panel discussion, we recommend reading the sections relevant to Canada in our background report, which provides pertinent information on nuclear generating stations in Ontario, radioactive waste management and plans for its permanent storage. For the process and consideration of South Bruce as a host community, please see the NWMO website.

For more information about the Water Quality Board, please visit https://www.ijc.org/en/wqb/.

Please RSVP with your attendance, regrets or alternate at your earliest convenience but no later than Friday, July 17th to Mark Burrows at burrowsm@windsor.ijc.org.

We look forward to this virtual meeting with you and gaining from your experience, knowledge and thinking. We are confident that our report to the IJC Commissioners will be greatly improved by what we learn from you.

Sincerely,

John Jackson
Project Lead

International Joint Commission
Canada and United States

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Canada et États-Unis

Great Lakes Water Quality Board

Nuclear Decommissioning Panel

Discussion Agenda

Virtual Discussion via ZOOM link sent to participants

July 23, 2020

2:30 - 4:30 PM Eastern Time

2:30 PM	Traditional Opening – Frank Ettawageshik Welcome
2:40 PM	Work Group Greeting – John Jackson
2:45 PM	Panelist remarks – Up to 5 minutes per panelist. Only one panelist per organization.
3:30 PM	Panel discussion – Led by John Jackson & Frank Ettawageshik
4:15 PM	Next Steps – John Jackson
4:25 PM	Traditional Closing – Frank Ettawageshik
4:30 PM	Adjourn

On behalf of the Great Lakes Water Quality Board, we thank you for participating in our nuclear decommissioning panel discussion. Your knowledge and experience will greatly improve the board's report and recommendations to the IJC Commissioners on the decommissioning of nuclear power facilities in the Great Lakes basin.

For project updates and information about the Water Quality Board, please visit https://www.ijc.org/en/wqb

APPENDIX C: Work Group questions to panelists

Work Group Questions to Canadian Decommissioning Panelists

Questions to Ian Bainbridge, CNL:

From George Heartwell:

1. *Why does it take 30 years from the site being under "dry storage with surveillance" to the beginning of decommissioning; and why another 20-30 years from beginning to end of decommissioning?*

Q 1 Answered by Ian Bainbridge - The length of Storage With Surveillance varies due to a number of factors. The primary three are usually:

- Reduction of operator doses. When a reactor shuts down, there are a vast number of radioactive elements present, each with a different half-life. In simple generic terms, the shorter the half-life, the higher the radiation emitted and the quicker the radioactivity diminishes. By delaying the decommissioning, all of the items with short half-lives effectively disappear (they actually convert to non-radioactive elements) and the levels of radiation drop dramatically. This then presents lower risks to the decommissioning operators and/or requires less shielding and less sophisticated tooling. That said, we eventually reach a point of diminishing returns – after a decade or two, all of the short-lived elements have decayed to something non-radioactive and the radiation that remains is from elements with long half-lives. You then have to wait very long times to see any further significant reductions, which is simply not worth it.
- Reduction of radioactive wastes. In the same way that operator doses can be minimized by delaying things, the amount of radioactive waste is also reduced. By allowing all of the short-lived elements to decay, the quantities of radioactivity are dramatically reduced, or at least become a lower hazard, requiring less shielding and allowing more of the final waste packages to be actual waste rather than waste box.
- Money. The regulations require that all operators develop a fund specifically to pay for the decommissioning. Often, the fund that is built-up during the reactor's operational life is not immediately sufficient to decommission the reactor – it requires a number of years to accumulate interest. The money that is set aside and the projected growth targets must be clearly laid out and are subject to review and acceptance by the Regulator. This funding is known as the "Financial Guarantee".

Historically, these benefits (plus others – availability of waste storage/disposal, expectations of technical advancements, potential for more cost –efficient work if carried out at the same time as other co-located reactors), have led to Storage with Surveillance periods being planned for anywhere between 20 and 50 years (much longer in some other countries). There is currently a lot of reconsideration of these benefits going on. Storage with Surveillance activities do cause some (relatively low) operator doses, and do generate small volumes of radioactive wastes, and they definitely cost money. Over several decades, operator doses, waste volumes, and required dollars, accumulate and the intended benefits are diminished. As requirements continue to evolve – nearly always to a more expensive new level – most operators are reviewing the practice of long periods of Storage With Surveillance, and are instead looking at what is termed "prompt decommissioning", where the actual decommissioning work follows on almost directly (or at least far sooner) from the safe shutdown and defueling operations.

The actual period to complete the physical decommissioning does not necessarily need to take 20-30 years, although for newly closed down reactors it may be desirable to leave some of the more radioactive areas for this period (see discussion of radioactivity decay above). In the DP schedule, we have indicated that it may take up to this long for 3 primary reasons:

- We are deliberately leaving some schedule flexibility in our plans to allow us to adjust those plans based on whatever feedback we may get from our communications with indigenous groups and other stakeholders. Our communications are still at a relatively early stage, and we cannot be sure just yet on what accommodations we may be asked to make.
- Our used fuel (along with all other Canadian used fuel) will be eventually disposed of in the Nuclear Waste Management Organization's disposal facility. It is not yet clear where the recommended site will be (decision expected in 2-3 years from now), and until that decision is announced, we cannot determine whether the fuel will remain on the Douglas Point site (obvious advantages if the disposal site is to be in the local vicinity), or whether we would look to consolidate it with the rest of AECL's fuel at the Chalk River site (more beneficial if Ignace is announced as the preferred site). Given current schedule predictions, our fuel will not likely be received by the NWMO until the 2050s, and as such it is feasible that the fuel will remain at the site until then.
- Lastly, we have yet to determine exactly what "post-decommissioning" monitoring of the site will be required. Although the buildings may all be removed, we may still have to carry out monitoring of the ground for a yet-to-be-determined period of time to demonstrate that it is suitable to release.

2. *How will the transportation of nuclear waste from the Douglas site to the Chalk River storage facility be done?*

Q 2 Answered by Ian Bainbridge - Transportation

As expanded upon in [https://www.cnl.ca/en/home/environmental-stewardship/transportation.aspx], transportation of radioactive wastes is a relatively common practice and has a safety record second to none. The wastes generated by the decommissioning of Douglas Point will be transported in full accordance with the transportation program, but at this point, we have not developed the specific plans – they will be developed as we develop the individual waste management plans for each of the phases of the decommissioning. As mentioned above, we are at an early in our communication activities, and although we have very adequate and proven transport capabilities, it would be premature to have fully developed transport plans already. However, as they are developed, (along with all of the other specific plans for each of the phases), they will be included with the approval requests that we will submit to the Regulator for approval before beginning each phase. [NOTE: The first phase is intended to be decommissioning of the non-nuclear buildings, so we are not expecting any radioactive decommissioning wastes to be generated for several years yet.]

3. *What is 'storage under surveillance'?*

Q 3 Answered by Ian Bainbridge – There are three generally accepted stages involved in decommissioning (it seems we do everything in threes?):

- Stage 1 is the initial safe shutdown and defuelling of the reactor, where essentially the fuel and coolants are removed and placed into storage. Other initial steps may be taken to simplify the next stage, but this can vary by reactor.
- Stage 2 is the Storage With Surveillance period. No physical decommissioning is usually carried out during this period; the facility is just monitored to make sure everything remains in a safe state whilst we wait for the radioactivity to decay to lower levels. The duration of this period can range from almost nothing (prompt decommissioning) to many decades.
- Stage 3 is the final decommissioning and remediation of the site.

The boundaries between these stages do not require to be black and white. Subject to appropriate safety justifications and regulatory approvals, it may be appropriate to fully decommission some buildings whilst maintaining Storage With Surveillance on others.

For further information: The main link that I would like to provide is to our web-page which contains the majority of what I was presenting as well as other links to more information and suitable points of contact:

https://www.cnl.ca/en/home/environmental-stewardship/decommissioning/douglas-point

Q 3 Answered by Karine Glenn:

> Storage with surveillance is defined as a planned stage during a decommissioning program during which the remaining nuclear substances, equipment, and sites are placed and maintained in a safe condition until decontamination and dismantling actions are performed (as per CSA standard N294-19)

Question to Vernon Root, SON:

From George Heartwell:

1. *please describe the consultation process between the Saugeen Ojibway Nation and the Bruce NPP administration.*

Q 1 Answered by Vernon Root – Here is a quick summary of the process:

Saugeen Ojibway Nation (SON) Consultation and Engagement on Nuclear Files

SON Consultation Principles in general

- If a government, public or private organization, or an individual is contemplating or planning a project or activity in our Territory that has the potential to impact SON Aboriginal and Treaty rights or the environment of the SON Territory there must be an engagement and consultation process developed with SON.
- It is SON's determination of the potential impacts on Aboriginal and Treaty Rights and environment that guides the depth and breadth of the process (not a determination made by government or a proponent).
- Consultation generally includes;
    - sharing of information (early),

- reasonable capacity funding to support the process,
- opportunity to comment on and discuss information from multiple perspectives (technical, cultural, Community),
- opportunity for SON experts to complete site visits and assessments,
- revisions to project plans or assessments based on SON's comments/perspective/recommendations,
- and a common understanding (or agreement) that outlines a plan to continue to share information through the life of the project to ensure protection of People and Environment.

We developed processes and entered into agreements that would guide our engagement together. Through these processes and agreements, SON has made significant accomplishments.

Question to Regional Chief James Marsden, Union of Ontario Indians:

From George Heartwell:

> *1. I am impressed with the five standards you articulated. How have they been received by regulators and operators?*

Q 1 Answered by James Marsden – thanks for the question.. the 5 areas George has mention is all the on going work with our Alliance between the Anishinabek Nation and Iroquois.

Hope this helps we can send the declaration to him

Miigwech

DGC James Marsden

Questions to Karine Glenn, CNSC (no further response received as of 8/25/2020)

From George Heartwell:

> *1. The financial guarantee required: How is the amount to be escrowed determined when decommissioning may not occur until 90 years or more has passed?*
>
> *2. Can the sum be guaranteed by performance body?*

Question 1 Answered: Karine Glenn (during chat session 7/23) -

Financial guarantees are reviewed at a minimum every five years and are adjusted accordingly as required. They must be presented to the Commission for acceptance every five years

Comment on answer: (***Ole Hendrickson, CCRCA)***: With regard to the "guarantee" provided by the Government of Canada for decommissioning funds, the most recent guarantee is a letter signed by former federal natural resources minister Greg Rickford (in Stephen Harper's government). There is no dedicated fund.

Questions to Ole Hendrickson, CCRCA - Also provided supplemental information that was not in response to questions as well as supporting information copied at the end of this document).

Questions from John Jackson:

1. **Please give us the reference to where in the IAEA materials we can find the reference to entombment not being acceptable**.

Question 1 Answered: References to entombment not being acceptable are found in IAEA 2018, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities*. Specific Safety Guide No. SSG-47. International Atomic Energy Agency, Vienna. (paragraphs 5.2, 5.17 and 5.18). For example, paragraph 5.2 says:

> "No action (leaving the facility after operation as it is, and waiting for decay of the radioactive inventory) and entombment (encasing all or part of the facility in a structurally long lived material) are not acceptable decommissioning strategies."

2. **You stressed that the CNSC does not meet the criteria for being an independent regulatory agency. What are the criteria that are used to judge this? Are there criteria for independence in any reports or guidelines elsewhere?**

Question 2 Answered: With regard to independence of the CNSC, our May 2020 environmental petition to the Auditor General of Canada, *Reporting Relationship of the Canadian Nuclear Safety Commission*, says

"The IAEA requires the nuclear regulatory body to be independent from other government agencies that promote nuclear technologies The IAEA's General Safety Requirements, Part 1 [*Governmental, Legal and Regulatory Framework for Safety*, GSR Part 1 (Rev. 1), International Atomic Energy Agency Vienna, 2016. p. 7] state that:

> 2 2.8. To be effectively independent from undue influences on its decision making, the regulatory body… (d) Shall be free from any pressures associated with political circumstances or economic conditions, or pressures from government departments, authorized parties or other organizations;

The IAEA's General Safety Guide GSG-12 [*Organization, Management and Staffing of the Regulatory Body for Safety*. International Atomic Energy Agency, Vienna, 2018. p. 4.] says:

> 2.3 ...the credibility of the regulatory body with the general public depends on whether the regulatory body is regarded as being independent from the organizations it regulates, as well as independent from other government agencies or industry groups that promote nuclear technologies."

Our petition explains that under section 12(4) of the *Nuclear Safety and Control Act*, the CNSC's President reports to the Minister of Natural Resources, even though that Minister is responsible for producing and promoting nuclear energy under section 10(1) of the *Nuclear Energy Act*.

We further note that the CNSC's funding requests to Parliament are also channeled through the Minister of Natural Resources, even though the IAEA's General Safety Guide GSG-12 says:

> "Review and approval of the regulatory body's budget should be performed only by governmental agencies that are effectively neutral in respect of the development, promotion or operation of facilities and conduct of activities."

A 2003 IAEA report, *Independence in regulatory decision making*, provides additional details.

Of particular concern is the lack of independence of the CSNC from the nuclear industry. A January 2018 blog by Pippa Feinstein, "*The Canadian Nuclear Safety Commission: Case Study*" (January 2018), written for Voices-Voix Canada, is unfortunately no longer available on line, but a copy is attached **[Attachment 2].** It states:

> "In 2016 the federal government established an expert panel to review impact assessment legislation in Canada. In its 2017 final report, the expert panel noted pervasive concerns amongst members of the public about the "regulatory capture" of the National Energy Board (NEB) and the CNSC, and apprehensions of bias which eroded public confidence in the ability of these agencies to conduct independent assessments. While the NEB has since been subject to a federal review which has included recommendations to better ensure its neutrality, the CNSC has not been subject to any corresponding review. In fact, the CNSC has since advocated for newer Small Modular Reactors (SMRs) to be entirely exempted from independent federal impact assessments.
>
> In March 2016, 14 environmental organizations including Greenpeace Canada, Ecojustice, CELA, Lake Ontario Waterkeeper, Northwatch, MiningWatch Canada, and others wrote a letter expressing concerns over the CNSC's lack of independence and requested a federal review and subsequent reform of the NSCA. Again, despite this letter and the Expert Panel's findings, no such review of the Commission, its statutory powers, or oversight has been promised or initiated by the federal government."

3. You said that the CNSC is less independent than several other nuclear regulatory agencies in the world. Please state how these are different from the CNSC and give us references for your assessment of these agencies.

Question 3 Answered: In 2009 the OECD's Nuclear Energy Agency (NEA) updated its comparison of *The Regulatory Infrastructure in NEA Member Countries*.

As shown in this document, Canada has delegated essentially all nuclear regulatory functions to the CNSC, which has in turn delegated considerable responsibility (e.g., for cost estimation) to the nuclear industry.

As a result, while the CNSC is "independent" from the rest of government, it lacks independence from its licensees and the nuclear industry at large.

In other countries various government departments and agencies are part of the nuclear regulatory infrastructure. This creates checks and balances to ensure that no one department or agency is captured by industry. As noted in our recent petition, in Canada only the natural resources department (which promotes nuclear energy and is responsible for the CNSC) has a significant role in nuclear regulation.

Of particular concern for our group, the CNSC has no legally-binding regulations or standards governing nuclear facility decommissioning or radioactive waste management. Although the NEA comparison says that the CNSC is Canada's standard-setting body, in actuality the nuclear industry has for many decades created its own CSA Nuclear Standards, with the active encouragement and participation of CNSC staff. These CSA standards may or may not be referenced in CNSC licenses.

As a result, the CNSC applies a uniquely "flexible" and "non-prescriptive" approach to regulation of decommissioning and waste management activities, as well as to licensing of potential new nuclear facilities such as "small modular reactors". I know of no other IAEA or NEA member state with a regulatory approach that is so completely lacking in independence from the nuclear industry.

Questions to Shannon Quinn, AECL:

Question from George Heartwell:

1. would you speak to the adequacy of the process for escrow of decommission "guarantee" funds?

From Mary Ann Dewey-Plante: In response to the question for Dr. Quinn, thank you for the question. I will take it back and AECL will provide a written response.

Mary Ann Dewey-Plante later said in the chat box: "The Government of Canada is responsible for the decommissioning and provides the guarantee of these funds. As such, there is full provision for the costs."

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Good morning Mr. Burrows,

Following the July 23 IJC's Water Quality Board meeting on nuclear decommissioning, please find attached a letter from Ms. Shannon Quinn, Vice-President, Science, Technology and Commercial Oversight at Atomic Energy of Canada Limited, which provides additional information to supplement her presentation made during the meeting.

Should you have any questions or concerns, please do not hesitate to contact me.

Kind regards,

Maude

Maude-Émilie Pagé

Director | Directrice

Communications and Government Reporting | Communications et rapports gouvernementaux

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Answer and additional information provided by Dr. Quinn 7 Aug 2020

AECL Atomic Energy of Canada Limited
EACL Énergie atomique du Canada limitée

UNRESTRICTED
ILLIMITÉE

2020 August 7

Record Number: CGR-1035793287-6873

Mark Burrows
International Joint Commission
Via email

Re: Additional Information for the International Joint Commission's Great Lakes Water Quality Board

Dear Mr. Burrows,

Thank you for the invitation for Atomic Energy of Canada Limited (AECL) to participate as a panelist on the International Joint Commission's Great Lakes Water Quality Board discussion on lessons learned from experience with the decommissioning of nuclear power facilities and the management of nuclear waste in Ontario, which took place on July 23, 2020. Per your correspondence from Monday, July 27th, inviting panel participants to give the International Joint Commission additional views and information, AECL is submitting this written submission to further substantiate the comments delivered during the panel discussion.

AECL is a federal Crown corporation whose mandate is to enable nuclear science and technology and fulfill the Government of Canada's radioactive waste and decommissioning responsibilities. AECL delivers its mandate through a Government-owned, Contractor-operated model (GoCo) whereby it contracts the operation of its nuclear laboratories, including decommissioning and waste management work, to Canadian Nuclear Laboratories (CNL). Under this model, AECL continues to own the land, facilities, assets and liabilities, whereas the workforce, the licences and all other aspects of managing its sites are part of CNL's work.

As a small Crown corporation with technical expertise, AECL's role is to set priorities for CNL, oversee the contract and assess CNL's performance. AECL brings best value to Canada by exacting the highest quality services with a view to advancing its priorities in the most effective and efficient manner, while maintaining safety, security and the protection of the environment. AECL's sites as well as CNL's activities on our sites, are subject to oversight and regulatory authority of Canada's independent nuclear regulator, the Canadian Nuclear Safety Commission (CNSC).

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AECL receives funding from the Government of Canada to deliver on its mandate. From a governance perspective, all of the responsibilities for historic and legacy radioactive waste liabilities are AECL's. This includes the Douglas Point site which is relevant for the Great Lakes Water Quality Board's recent panel on nuclear decommissioning. Financial guarantees for these liabilities and the associated decommissioning and waste management work are provided by the Government of Canada. The current financial guarantee for AECL's sites, including the Douglas Point site, was provided by the Minister of Natural Resources in 2015 and it continues to be valid.

In terms of background on the Douglas Point prototype reactor, it is important to point out that the reactor has been shut down since 1984. It began generating electricity in 1967 as Canada's first full-scale prototype CANDU nuclear power plant, operating until it was safely shutdown in 1984. Today, the Douglas Point facility consists of the permanently shut-down, partially-decommissioned prototype CANDU reactor as well as associated structures and ancillaries. It is a relatively small facility located on the much larger Bruce Power site, owned by Ontario Power Generation and operated by Bruce Power, on the east shore of Lake Huron in the Province of Ontario. The Douglas Point facility represents a footprint of about 14 acres on the larger 2,300 acres Bruce Power site.

The fuel was removed from the reactor between 1984 and 1987 and transferred to onsite dry storage. Since then, the facility has been in a safe shutdown state, which is referred to as "storage with surveillance". This means that the reactor is not operating, fuel has been removed and radioactive decay continues within the reactor facility in preparation for its eventual decommissioning. Radioactive decay is an important part of the overall decommissioning of nuclear facilities. Indeed, this allows the radioactivity within the facility to diminish over time, which will render eventual decommissioning operations safer for employees. The facility continues to be regulated by the CNSC, and CNL's team working at Douglas Point ensures that the site is maintained, repaired and updated to continue to keep the facility safe and secure.

AECL and CNL are looking toward the next phase of decommissioning for the Douglas Point reactor, with a view to reducing risk and protecting the environment. This is expected to begin in 2020, and will continue with numerous regulatory decisions as well as engagement with the public and Indigenous communities along the way. Activities will include the removal of non-nuclear buildings, the removal of the waste and the eventual dismantling and removal of the reactor itself. The timelines will allow for proper planning, stakeholder and Indigenous engagement, as well as regulatory approvals. As noted above, all nuclear activities in Canada, including decommissioning, are regulated by the CNSC. Licensees and the CNSC work to ensure that any decommissioning activities do not result in any deleterious impact to the environment, including planned or unplanned discharges to waterways and lakes. It is also important to note that there are no plans for in situ decommissioning at the Douglas Point facility.

Decommissioning of the Douglas Point facility is consistent with AECL's desire to address its decommissioning responsibilities in a prudent yet timely manner to help minimize and consolidate the Government of Canada's nuclear waste liabilities and reduce risk. The objective is to address this in the coming years, so as not to leave this environmental remediation for future generations. Throughout the project, from the planning stages to the end, the primary consideration is protection of humans and the environment. AECL and CNL are committed to continuing engagement with stakeholders and Indigenous communities to ensure that voices are heard and contribute to the future of the Douglas Point site.

We thank you for this opportunity to provide additional detail. Should you require any additional information, or have questions on this submission, we remain available to assist you. You may contact me at squinn@aecl.ca. We wish you continued success in your upcoming consultations and look forward to your report and recommendations to the Commissioners of the International Joint Commission.

Yours truly,

Shannon Quinn
Vice-President, Science, Technology and Commercial Oversight
Atomic Energy of Canada Limited

Cc:
Mike Gull, CNL

Questions to Anna Tilman, Watershed Educational Society:

Question from George Heartwell:

> 1. would you please point me to some studies on atmospheric emissions and their impacts on human health?

Question from John Jackson:

1. Please explain how atmospheric emissions could become an issue during the decommissioning process.

Questions to Dodie LeGassick, Environment North:

Question from George Heartwell:

> *1. if we could assume that a suitable long-term disposal/storage site can be found, the issue of transportation is still a live one. What thoughts do you have on safe transportation?*

Answer from Dodie LeGassick –

Good morning Mark and George,

Now I have sent you copies of the MTO data I have been collecting from 2010 to 2017 re total collisions versus numbers and percentages of transport truck collisions from Pickering to Ignace. I use this data to put together the charts I have also sent you to point out the nos. and percentages once we get into Northwestern Ontario and to point out that the percentages increase significantly in NW Ontario especially in the last stretch from Thunder Bay to Ignace where you can see that 41% of all collisions are transport truck collisions. [***Attachment1***]

Now that is just data from Pickering. A study should be done re the same from each and every reactor site that this hlw might be coming from. These factors must be considered now to really to make the argument that the wastes should be stored at the nuc. reactors sites where they are now or perhaps at a future decommissioned site in Southern Ontario where 90 percent of the wastes are already in storage. There is a need to eliminate the risk factors involved in transportation. Transportation over thousands of miles at 2or3 trucks per day for 38 years poses a multitude of problems.

1.The long distances and nos. of transport truck collisions must be considered along with the numbers of communities and populations that exist along the route.

2.The number of water bodies...lakes and rivers that run parallel to the transportation routes need to be considered if and when an accident occurs especially because one of the radioactive elements in the pellets is called cesium and it is water soluble.

3.These trucks will be near maximum capacity for weight so their carbon footprint should be calculated over the 38 year period

4.Then there is always the security risks

The solution really is some version of Gordon Edwards Rolling Stewardship. Finland has its DGR quite close to the reactor site which is smart, just 5miles away?? Note that Finland needs to store 6,500 tons. NWMOs projected figures are close to 120,000 tons!!

So, those are some of my thoughts on transportation. That it is not safe to travel the long distances to the Revell Lake Site near Ignace.

I also feel quite strongly that a long term disposal/ storage site using a deep geological repository or shallow rock repositories will not work. I urge everyone to read Rock Solid produced by Gene Watch ,a UK Consultancy Report that is available on line or I could send you two copies and also look at NWMOs Seventh Safety Case which also confirms a series of problems that can happen and will happen overtime. Here we are concerned that they will use the option clause, a copy of which I have sent you ,to build shallow repositories on the central site and that a DGR may never for a number of reasons happen .

This may be more than you expected but please share with anyone that is interested. I will have more stats for 2018 and 19.

Happy to share and looking forward to your final report. I must tell you that I found the zoom meeting to be really informative and I sincerely appreciate having had some time to highlight Northwestern Ontario.

Respectfully

Ms. Dodie Legassick

[Images provided by Ms. LeGassick are attached below]

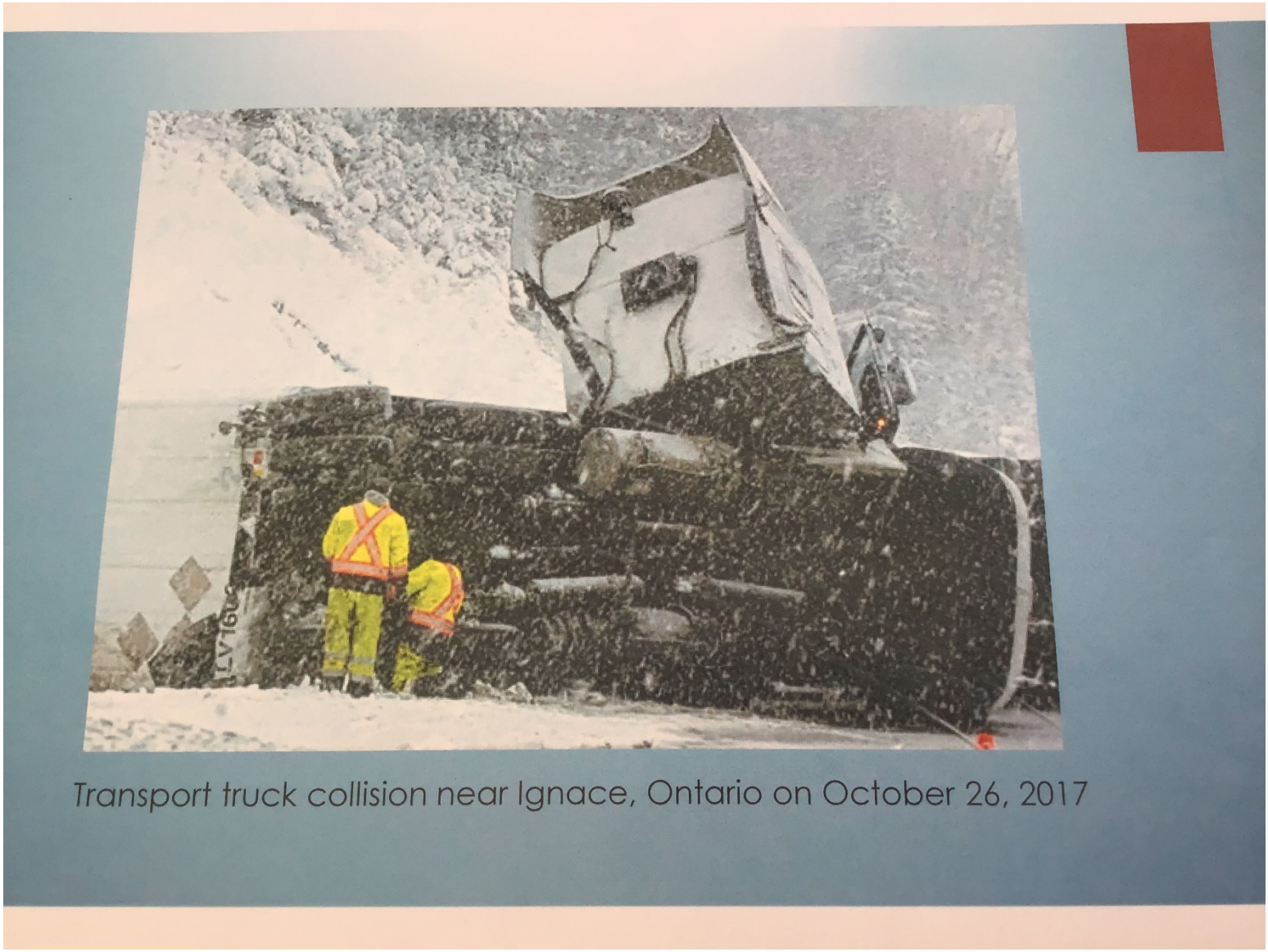
Questions to Angela Bischoff, Ontario Clean Air Alliance:

Question from George Heartwell:

> *1. an earlier speaker raised concern over atmospheric emissions from stored waste, does the Ontario Clean Air Alliance have a position on this?*

Answered from Angela Bischoff: Here is a report with references to Pickering's tritium problem: https://www.cleanairalliance.org/wp-content/uploads/2016/12/tritium.pdf

Attachment 1- Images and comments provided by Ms. LeGassick



Transport truck collision near Ignace, Ontario on October 26, 2017

MTO data collected re collisions from Pickering to Ignace:

Note: 1) 2014 to 2015 collisions were not 'Final" and may have some ommisions.
2) 2011 to 2015 were mapped to 2010 Provincial highway Network and may have some omissions based on changes to the Provincial Highway Network.
3) Collision Source: AIS2010
4) Updated Nov 24, 2017 to include Hwy 102 to Ignace Route

Hwy No:	From Location Description	To Location Description	All Collisions 2011	Truck Collisions 2011	% Truck Collsions 2011	All Collisions 2010	Truck Collisions 2010	% Truck Collsions 2010
Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING	HWY 400 IC-359-NORTH YORK	813	104	12.8%	698	95	13.6%
Hwy 400	HWY 401-M/C FRWY IC-21-NORTH YORK (Hwy 401-400 RAMP)	END OF HWY 400	426	40	9.4%	396	42	10.6%
Hwy 69	END OF HWY 400	HWY 17 IC	49	6	12.2%	36	5	13.9%
1 Hwy 17	HWY 69 IC OP (E & WBL)	HWY 11 (E JCT) - NIPIGON	167	37	22.2%	165	31	18.8%
2 Hwy 11/ Hwy 17 Overlap	HWY 11 (E JCT) - NIPIGON	HWY 61 (THUNDER BAY)	23	4	17.4%	37	15	40.5%
3 Hwy 11/ Hwy 17 Overlap	HWY 61 (THUNDER BAY)	HWY 11 (W JCT) (S) (End of Overlap)	16	3	18.8%	14	1	7.1%
4 Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)	EAST ST (N&S) – IGNACE	22	9	40.9%	16	6	37.5%
		Totals by Year:	1516	203	13.4%	1362	195	14.3%

Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING	HWYS 8/401 IC	1495	245	16.4%	1426	236	16.5%
Hwy 8	HWYS 8/401 IC	E JCT HWY 7 IC	41	7	17.1%	43	6	14.0%
Hwy 7	HWY 85 - CONESTOGA PKWY OP IC-KITCHENER	E JCT HWY 8 IC-KING ST	32	4	12.5%	17	3	17.6%
Hwy 85	HWY 7 IC-VICTORIA ST-KITCHENER	END OF HWY 85, START OF REG RD 85	0	0	0.0%	26	1	3.8%
Regional Rd 85 to Regional Rd 86 is Non Provincial Roadway, cannot provide any Collision Statistics.			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Regional Rd 86 to Amberly is Non Provincial Roadway, cannot provide any Collision Statistics.			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Totals by Year:	1568	256	16.3%	1512	246	16.3%

Hwy 102 THUNDER BAY TO Hwy 17 IGNACE								
Hwy 102	Hwy 11/17 (START OF HWY 102)	Hwy 11/17 SISTONENS CORNERS (END OF HWY 102)	2	0	0.0%	5	1	20.0%
Hwy 11/ Hwy 17 Overlap	HWY 102(N) - SISTONEN'S CORNER	Hwy 11/17 - SHABAQUA (end of Overlap)	6	2	33.3%	1	0	0.0%
Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)	EAST ST (N&S) – IGNACE	22	9	40.9%	16	6	37.5%
		Totals by Year:	30	11	36.7%	22	7	31.8%

Note: 1) 2014 to 2015 collisions were not "Final" and
2) 2011 to 2015 were mapped to 2010 Provincial
omissions based on changes to the Provincial
3) Collision Source: AIS2010
4) Updated Nov 24, 2017 to include Hwy 102 to

Hwy No:	From Location Description
Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING
Hwy 400	HWY 401-M/C FRWY IC-21-NORTH YORK (Hwy 4
Hwy 69	END OF HWY 400
Hwy 17	HWY 69 IC OP (E & WBL)
Hwy 11/ Hwy 17 Overlap	HWY 11 (E JCT) - NIPIGON
Hwy 11/ Hwy 17 Overlap	HWY 61 (THUNDER BAY)
Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)

Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING
Hwy 8	HWYS 8/401 IC
Hwy 7	HWY 85 - CONESTOGA PKWY OP IC-KITCHENER
Hwy 85	HWY 7 IC-VICTORIA ST-KITCHENER
Regional Rd 85 to Regional Rd 86 is Non Provincial Roadway, cannot provide	
Regional Rd 86 to Amberly is Non Provincial Roadway, cannot provide any C	

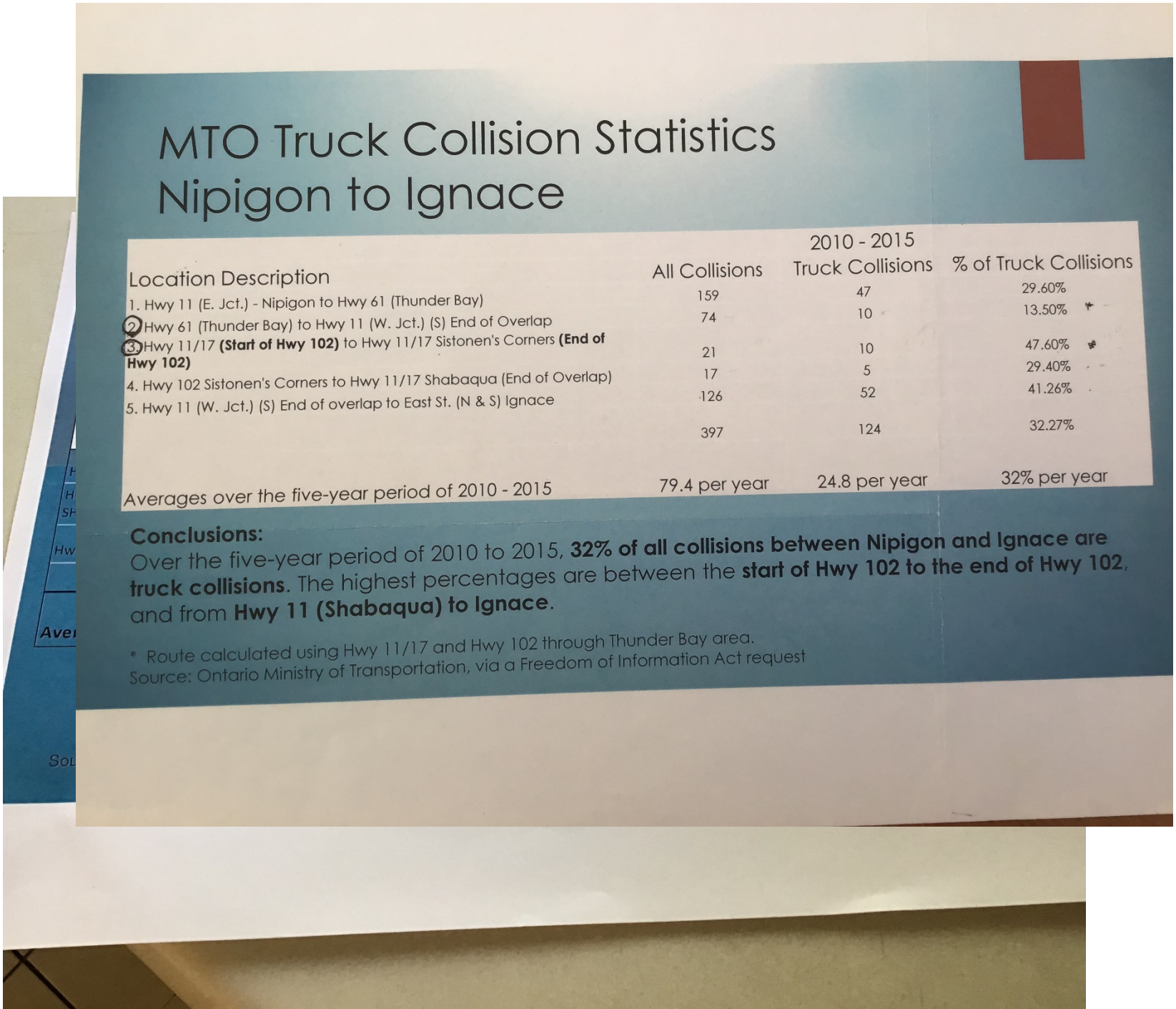
Hwy 102 THUNDER BAY TO Hwy 17 IGNACE	
Hwy 102	Hwy 11/17 (START OF HWY 102)
Hwy 11/ Hwy 17 Overlap	HWY 102(N) - SISTONEN'S CORNER
Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)

Note: 1) 2014 to 2015 collisions were not "Final" and may have some ommisions.
2) 2011 to 2015 were mapped to 2010 Provincial highway Network and may have some omissions based on changes to the Provincial Highway Network.
3) Collision Source: AIS2010
4) Updated Nov 24, 2017 to include Hwy 102 to Ignace Route

Hwy No:	From Location Description	To Location Description	All Collisions	Truck Collisions	% Truck Collsions	All Collisions	Truck Collisions	% Truck Collsions
			2013	2013	2013	2012	2012	2012
Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING	HWY 400 IC-359-NORTH YORK	799	92	11.5%	719	81	11.3%
Hwy 400	HWY 401-M/C FRWY IC-21-NORTH YORK (Hwy 401-400 RAMP)	END OF HWY 400	368	39	10.6%	332	32	9.6%
Hwy 69	END OF HWY 400	HWY 17 IC	32	0	0.0%	41	4	9.8%
Hwy 17	HWY 69 IC OP (E & WBL)	HWY 11 (E JCT) - NIPIGON	148	39	26.4%	150	35	23.3%
Hwy 11/ Hwy 17 Overlap	HWY 11 (E JCT) - NIPIGON	HWY 61 (THUNDER BAY)	26	9	34.6%	24	6	25.0%
Hwy 11/ Hwy 17 Overlap	HWY 61 (THUNDER BAY)	HWY 11 (W JCT) (S) (End of Overlap)	12	1	8.3%	10	1	10.0%
Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)	EAST ST (N&S) – IGNACE	25	16	64.0%	17	3	17.6%
		Totals by Year:	1410	196	13.9%	1293	162	12.5%

Hwy 401	BROCK RD IC-399-REG RD 1-PICKERING	HWYS 8/401 IC	1613	243	15.1%	1365	219	16.0%
Hwy 8	HWYS 8/401 IC	E JCT HWY 7 IC	37	4	10.8%	38	3	7.9%
Hwy 7	HWY 85 - CONESTOGA PKWY OP IC-KITCHENER	E JCT HWY 8 IC-KING ST	14	0	0.0%	15	0	0.0%
Hwy 85	HWY 7 IC-VICTORIA ST-KITCHENER	END OF HWY 85, START OF REG RD 85	28	1	3.6%	24	0	0.0%
Regional Rd 85 to Regional Rd 86 is Non Provincial Roadway, cannot provide any Collision Statistics.			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Regional Rd 86 to Amberly is Non Provincial Roadway, cannot provide any Collision Statistics.			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Totals by Year:	1692	248	14.7%	1442	222	15.4%

Hwy 102 THUNDER BAY TO Hwy 17 IGNACE								
Hwy 102	Hwy 11/17 (START OF HWY 102)	Hwy 11/17 SISTONENS CORNERS (END OF HWY 102)	3	2	66.7%	2	1	50.0%
Hwy 11/ Hwy 17 Overlap	HWY 102(N) - SISTONEN'S CORNER	Hwy 11/17 - SHABAQUA (end of Overlap)	5	1	20.0%	1	0	0.0%
Hwy 17	HWY 11 (W JCT) (S) (End of Overlap)	EAST ST (N&S) – IGNACE	25	16	64.0%	17	3	17.6%
		Totals by Year:	33	19	57.6%	20	4	20.0%



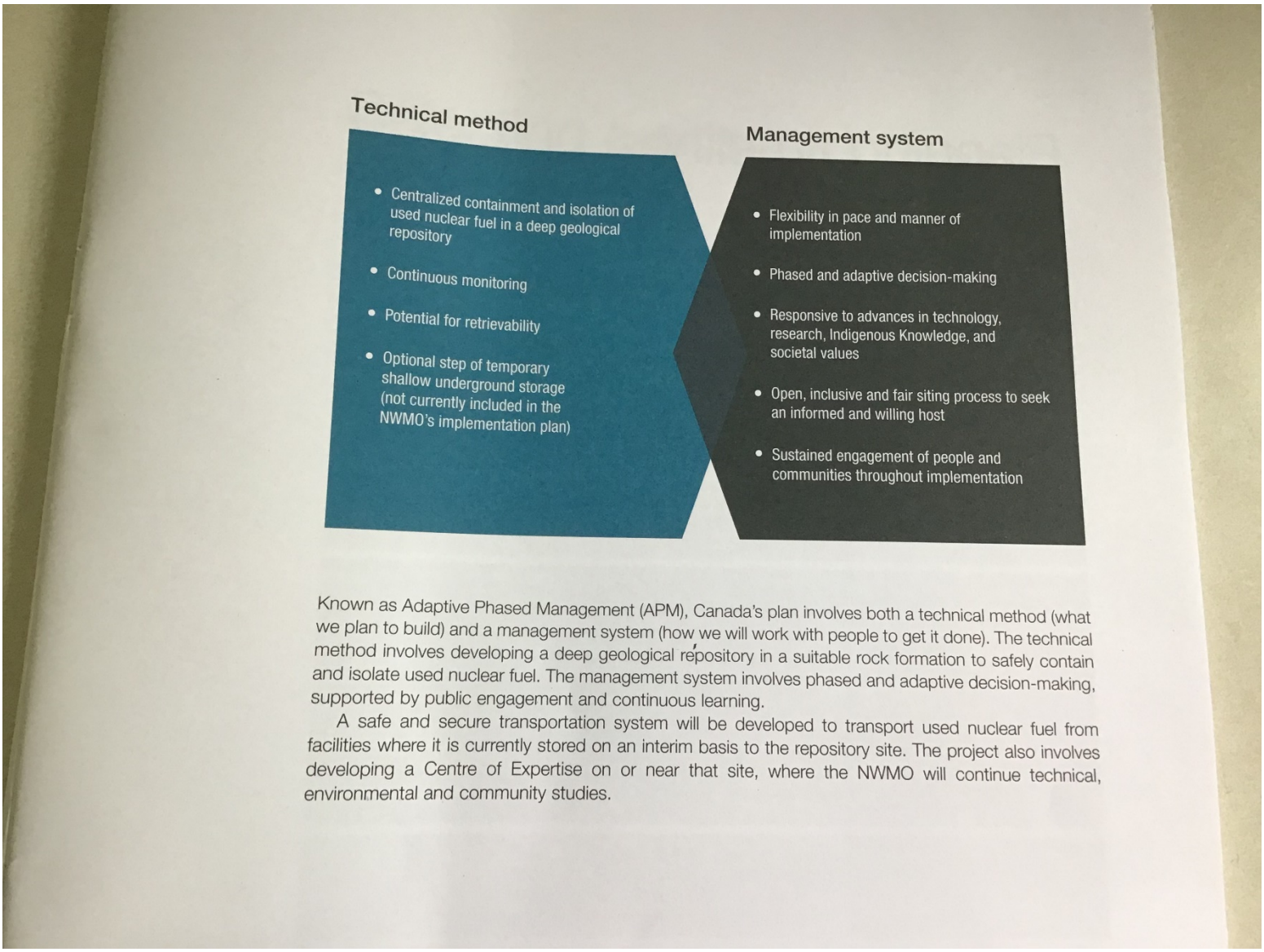
MTO Truck Collision Statistics
Nipigon to Ignace

Location Description	All Collisions	2010 - 2015 Truck Collisions	% of Truck Collisions
1. Hwy 11 (E. Jct.) - Nipigon to Hwy 61 (Thunder Bay)	159	47	29.60%
2. Hwy 61 (Thunder Bay) to Hwy 11 (W. Jct.) (S) End of Overlap	74	10	13.50% *
3. Hwy 11/17 **(Start of Hwy 102)** to Hwy 11/17 Sistonen's Corners **(End of Hwy 102)**	21	10	47.60% *
4. Hwy 102 Sistonen's Corners to Hwy 11/17 Shabaqua (End of Overlap)	17	5	29.40%
5. Hwy 11 (W. Jct.) (S) End of overlap to East St. (N & S) Ignace	126	52	41.26%
	397	124	32.27%
Averages over the five-year period of 2010 - 2015	79.4 per year	24.8 per year	32% per year

Conclusions:
Over the five-year period of 2010 to 2015, **32% of all collisions between Nipigon and Ignace are truck collisions**. The highest percentages are between the **start of Hwy 102 to the end of Hwy 102**, and from **Hwy 11 (Shabaqua) to Ignace**.

* Route calculated using Hwy 11/17 and Hwy 102 through Thunder Bay area.
Source: Ontario Ministry of Transportation, via a Freedom of Information Act request

This is the red flag in this entire project. Look at the bottom left under technical method to find what I call the option clause.



Known as Adaptive Phased Management (APM), Canada's plan involves both a technical method (what we plan to build) and a management system (how we will work with people to get it done). The technical method involves developing a deep geological repository in a suitable rock formation to safely contain and isolate used nuclear fuel. The management system involves phased and adaptive decision-making, supported by public engagement and continuous learning.

A safe and secure transportation system will be developed to transport used nuclear fuel from facilities where it is currently stored on an interim basis to the repository site. The project also involves developing a Centre of Expertise on or near that site, where the NWMO will continue technical, environmental and community studies.

Attachment 2 - Supplemental Information provided by Ole Hendrickson in response to Questions from John Jackson:

January 2018 blog by Pippa Feinstein, "*The Canadian Nuclear Safety Commission: Case Study*" (January 2018), written for Voices-Voix Canada

Pippa Feinstein, "The Canadian Nuclear Safety Commission: Case Study" (January 2019). Written for Voices-Voix Canada.

Canadian Nuclear Safety Commission

What Happened

Members of the public have long been concerned over the independence, transparency, and accountability of the CNSC. In 2008, the Commission's President Linda Keen was fired for refusing to permit a licensed nuclear facility to operate, on the grounds that it could failed to comply with the safety conditions specified in its licence. Since then, the CNSC and its new president Michael Binder, have systematically discredited critics of the Commission and nuclear industry, silenced the Commission's own scientific staff, and actively sought to stifle public debate concerning potential health and environmental hazards of nuclear facilities and radioactive substances.

Background

The Canadian Nuclear Safety Commission (CNSC) was established between 1997 and 2000. Its predecessor, the Atomic Energy Control Board (AECB), had been established in 1945, declaring nuclear energy to be essential to the Canadian national interest and falling under exclusive federal jurisdiction. The AECB it was given the exclusive authority to control and supervise the development, application, and use of atomic energy. The history and development of the AECB from 1945 through the 1960s and 1970s illustrates its unusual role as a proponent and supporter of nuclear energy and an expanded nuclear energy sector – rather than merely serving as an independent, arms-length regulatory body. Several criticsduring this early period had concerns over the limited mandate of the AECB, its close relationship with the federal government and nuclear industry, as well as its lack of public transparency and accountability.

The CNSC's new enabling legislation (the Nuclear Safety Control Act (NSCA)) emphasized the Commission's duty to protect the public and environment in exercising its regulatory authority – something that was not as explicit in the former Atomic Energy Control Act. The NSCA requires the Commission to regulate the nuclear industry via the provision of licences to operate nuclear facilities. These licences must include specific conditions to ensure the safe operation of these nuclear facilities. While the CNSC grew in size and responsibility (compared to the smaller AECB), it retained many of the same staff, and public concern over its lack of independence, transparency, and accountability have persisted.

Many of these concerns gained prominence in 2008 when the CNSC's president Linda Keen

was fired for exercising her statutory duty to protect the public safety and enforce CNSC licence requirements for a medical isotope producing facility. The Atomic Energy Canada Ltd (AECL) produced 30-40% of the world's medical isotopes, however it was one of the oldest nuclear facilities in the world, and built on a fault line experiencing seismic activity. When the CNSC learned that the AECL facility was not complying with important safety conditions of its licence, it closed the facility until the non-compliance could be satisfactorily remedied. The closure of the facility sparked indignation from the federal government, which pressured Keen to reverse the Commission's decision. When she refused (on the grounds that to do so would be inconsistent with her position and the NSCA), the government passed special legislation to permit the facility to operate without complying with its CNSC licence.

Ms. Keen was ultimately fired one day prior to when she was scheduled to appear before a parliamentary committee investigating the incident – effectively preventing her from giving testimony in the investigation. Since then, strong evidence has come to light indicating that the incident was used as an excuse to fire Keen, who was intent on making CNSC regulations more stringent – against the interests, and lobbying of the nuclear industry. A legal report from the Nuclear Energy Agency has since highlighted conflicts within the CNSC presidents' mandate and the position's susceptibility to conflicting interests.

Since 2008 there have been repeated instances in which the Commission and its new president, Michael Binder, have shown considerable support for, and deference to, the nuclear industry. Significantly, in one of his first activities as CNSC president in 2009, Binder licensed a new AECL reactor, requiring approximately half a billion dollars in federal funds. Further, the CNSC and its president have attempted to systematically silence expressions of public concern over the unclear industry and nuclear regulation in Canada in several ways, discussed below.

Promoting nuclear power and the nuclear industry

In 2009, shortly after replacing Keen, President Binder attended a series of secret meetingswith the Bruce County Council to discuss a proposed Deep Geological Repository (DGR): a facility designed to permanently store 200,000 m3 of low and intermediate level radioactive waste 690 m underground next to Lake Huron. Notes from that meeting (taken by the DGR's proponent Ontario Power Generation (OPG) – a CNSC-regulatee) record Binder as saying he "hoped their next meeting would be at the ribbon cutting ceremony for the [DGR]".

In 2013-4, a Joint Review Panel (JRP) of the CNSC and federal Ministry of Environment provided a preliminary approval of OPG's DGR. Since being proposed, the DGR and its initial approval have raised serious concerns amongst members of the public who believe the project was subject to an insufficient review and who a perceived lack of independence and accountability of the JRP decision-makers. Concerns over the project review's shortcomings led the new Minister of the Environment, Catherine McKenna, to reject the DGR's preliminary approval in February 2016. She warned OPG that it needed to provide more information about the environmental impacts of the DGR and alternative locations of the project before she would consider any approval. Many have since found OPG's responses to the Minister's questions to be inadequate and obfuscating, exacerbating existing concerns about the project.

Discrediting critics

In 2015, Quebec's Bureau d'audiences publiques sur l'environment (BAPE) released a report which expressed concerns over the safety of uranium mining operations in the province – the mines are regulated by the CNSC as uranium is a radioactive substance. Unlike the CNSC, the BAPE has a mandate that requires it to assist with Quebec's transition to a more sustainable development. In response to the BAPE report, President Binder wrote to the Quebec Minister of Environment, David Heurtel condemning the report's conclusions. In his letter, Mr. Binder asserted, "the decision of the BAPE to continue questioning the scientific principles and the proven safety record of modern uranium extraction boils down to misleading the people of Québec and Canadians". Despite Binder's assertions, there are several environmental organizations that still believe there is merit to persisting concerns with old mines and their remediation, and that this requires more proactive CNSC regulation and public transparency.

In addition to lashing out against Ministers and government agencies, the CNSC has actively refuted the concerns of individual independent experts. In January 2018, Frank Greening, a retired nuclear scientist and expert in radioactive chemistry, launched a suit against the CNSC alleging defamation, breach of confidence, and breach of privacy. Mr. Greening had intervened in licence hearings and other opportunities for public input by the Commission, and expressed concerns over the safety of these facilities and their oversight by the Commission. In his suit, Greening asserted the CNSC and its Vice-President Ramzi Jammal attacked his personal integrity and damaged his professional reputation in a release it posted to the CNSC website as well as an email listserv to approximately 2000 email addresses. The release included Mr. Greening's home address and personal email information, which were later removed from the CNSC website due to the subsequent involvement of the Office of the Privacy Commissioner of Canada.

Silencing public debate

In 2011, President Binder appeared before a House of Commons Committee. At that session, he was asked to respond to concerns raised by members of the public about the shipment of radioactive steam generators through the Great lakes. Mr. Binder responded by discrediting these concerns asserting "This is not about safety… this is about anti-nuclear." And accusing those expressing concerns as "professional" anti-nuclear activists spreading "misinformation and scaring the hell out of people". Those who had been expressing concerns over the shipments included Michael Deslile, Grand Chief of Kahnawake, as well as the Sierra Club, Canadian Environmental Law Association (CELA) (which had brought a court action against the CNSC over environmental concerns with the shipments and approval process), the Bloc Quebecois, NDP, and several citizen's organizations representing affected communities.

The CNSC has also developed a troubling pattern of dismissing other public expressions of concern over nuclear facilities via public statements posted to its website or published in newspapers. Between March and June 2018 alone, at least five such statements were published publicly refuting opinion letters or news articles expressing concerns over nuclear facilities.

In 2009, the Sierra Club released a report in which it issued a warning to the public concerning high levels of tritium (a radioactive contaminant from nuclear power reactors) measured in Lake Ontario and drinking water intakes. The CNSC issued a public statement in which it asserted elevated tritium concentrations were not a health hazard, and that the Sierra Club report was "junk science" and fundamentally flawed as it chose to "ignore the important benefits of nuclear

technology". Others have also noted their concerns over former CNSC President Binder's classification of government agencies' reports as "junk science" if they included critiques of aspects of nuclear energy in North America – even CNSC co-sponsored reports.

Another example of a more recent CNSC statement concerned a scientific report released in March 2018, and reported on by the CBC, describing thousands of litres of contaminated water from the nuclear power demonstration (NPD) reactor in Rolphton, ON. Environmental groups, Indigenous nations, and concerned citizens living close to the Canadian Nuclear Laboratories (CNL) facility, expressed their worries over potential impacts to aquatic ecosystems, which it appeared were not being effectively protected. The Commission published a response to the article in which it asserted that the CNL facility did not have a significant impact on the environment – a finding that had not yet been established in a hearing for the facility which had yet to take place.

Surveillance and intimidation of the public

In 2013, several local residents of Kincardine received house visits from the Ontario Provincial Police (OPP). Police made visits to all houses in which people had scheduled to present at an upcoming CNSC public hearing to consider OPG's proposal to build the DGR. At these visits, police officers asked inhabitants whether they planned to stage any protests or demonstrations in advance of or during the hearings. Residents reported these visits were confusing and intimidating. While OPG initially claimed the CNSC and local municipalities had engaged the OPP to conduct these visits, CNSC representatives denied this.

CNSC staff expressing concerns about the Commission's ability to protect public safety

In 2016, an anonymous letter that claimed to be written by specialist staff at the CNSC was sent to President Binder and two environmental groups. The letter discussed five separate cases in which Commission staff did not share information about regulated facilities' non-compliance or risk of non-compliance – information which might have called the safety of these facilities into question. The letter's authors explained they wished to remain anonymous as they did not have confidence in available whistleblower protections.

The letter continued, "Our primary concern is that CNSC commissioners do not receive sufficient information to make balanced judgments," and that "because insufficient information is made available, other branches of government cannot make informed decisions."

Theresa McClenaghan, Executive Director of CELA, which received a copy of this anonymous letter from its authors, said she had no doubt it was written by CNSC staff and explained, "We are often very concerned that commissioners are not getting the full story from the proponents or the regulatory staff," and that "In the hearings, we really do see a frustrating amount of apologetics for the industry going on by staff." Shawn-Patrick Stensil, Senior Energy Analyst with Greenpeace Canada, the second organization to have received the letter, noted it illustrated how the culture at the CNSC was more conducive to supporting the nuclear industry rather than merely being an independent regulator of it.

President Binder's attitude toward the letter was dismissive and he ridiculed its contents and belittled the authors by doubting their competency. While an internal investigation was ultimately

conducted by the CNSC (despite the letter's request for an independent investigation), it found there were insufficient grounds to support concerns made in the letter. No public comments were accepted by the Commission relating to their investigation. At least two expert nuclear safety engineers subsequently spoke out against the Commission's handling of the concerns contained in the anonymous letter, calling the lack of an independent investigation 'distressing', and noting that the findings of the internal investigation 'display an ignorance of basic safety principles". The Professional Institute of the Public Service of Canada also released a statement in which it expressed concerns held by its members over President Binder's attitude towards the letter as well as the CNSC's investigation of its contents.

No external review of CNSC on the horizon

In 2016 the federal government established an expert panel to review impact assessment legislation in Canada. In its 2017 final report, the expert panel noted pervasive concerns amongst members of the public about the "regulatory capture" of the National Energy Board (NEB) and the CNSC, and apprehensions of bias which eroded public confidence in the ability of these agencies to conduct independent assessments. While the NEB has since been subject to a federal review which has included recommendations to better ensure its neutrality, the CNSC has not been subject to any corresponding review. In fact, the CNSC has since advocated for newer Small Modular Reactors (SMRs) to be entirely exempted from independent federal impact assessments.

In March 2016, 14 environmental organizations including Greenpeace Canada, Ecojustice, CELA, Lake Ontario Waterkeeper, Northwatch, MiningWatch Canada, and others wrote a letter, expressing concerns over the CNSC's lack of independence and requested a federal review and subsequent reform of the NSCA. Again, despite this letter and the Expert Panel's findings, no such review of the Commission, its statutory powers, or oversight has been promised or initiated by the federal government.

Relevant Dates

- **2008**: Linda Keen fired from the CNSC for exercising her statutory duty to protect the public safety and enforce CNSC licence requirements for a medical isotope producing facility. Since then, strong evidence has come to light indicating that the incident was used an excuse to fire Keen, who was intent on making CNSC regulations more stringent – against the interests and lobbying of the nuclear industry.
- **2009**: The CNSC's new president Michael Binder is appointed to replace Keen. He immediately licences a new AECL reactor, requiring approximately half a billion dollars in federal funds.
- **2009**: President Binder attends a series of secret meetings with Bruce County Council and OPG and is recorded saying he "hoped their next meeting would be at the ribbon cutting ceremony for the [DGR]".
- **2009**: The Sierra Club releases a report in which it issues a warning to the public concerning high levels of tritium in Lake Ontario. CNSC asserts the report is a product of "junk science" and that it is fundamentally flawed as it chose to "ignore the important benefits of nuclear technology".
- **2011**: President Binder belittles and dismisses widespread concern about the shipment of radioactive steam generators through the Great lakes before a House of Commons Committee, asserting: "This is not about safety… this is about anti-nuclear." And accusing

those expressing concerns as “professional” anti-nuclear activists spreading “misinformation and scaring the hell out of people”.

- **2013**: Local residents of Kincardine receive confusing and intimidating visits from police asking about their intentions to participate in a public hearing for the DGR. OPG states the police were engaged by the CNSC, the CNSC refutes this.
- **2013**: The new Minister for the Environment Catherine McKenna refuses the JRP recommendation to approve the DGR and requires a more thorough review of the proposed project.
- **2015**: President Binder writes to the Quebec Minister of Environment, David Heurtel condemning a report by the BAPE that discussed environmental concerns over uranium mining. In his letter, he asserts, “the decision of the BAPE to continue questioning the scientific principles and the proven safety record of modern uranium extraction boils down to misleading the people of Québec and Canadians”.
- **2016**: An anonymous letter is sent to President Binder and other stakeholders claiming to be from CNSC expert staff. The letter discusses cases in which Commission staff did not share information which might have called the safety of these facilities into question and asked for an independent investigation into their concerns. The CNSC conducts an internal investigation into the letter, finding it baseless.
- **2016**: 14 environmental organizations write a letter to the federal government expressing concerns over the CNSC’s lack of independence and request a federal review and subsequent reform of the NSCA. To date, no such review of the Commission, its statutory powers, or oversight has been promised or initiated by the federal government.
- **2018**: CNSC public statements and letter against critics reaches a peak - between March and June 2018 alone, at least five such statements were published publicly refuting opinion letters or news articles expressing concerns over nuclear facilities.

Role or Position

Members of the public have long been concerned over the independence, transparency, and accountability of the CNSC. In 2008, the Commission’s President Linda Keen was fired for refusing to permit a licensed nuclear facility to operate, on the grounds that it failed to comply with the safety conditions specified in its licence. Since then, the CNSC and its new president Michael Binder, have systematically discredited critics of the Commission and nuclear industry, silenced the Commission’s own scientific staff, and actively sought to stifle public debate concerning potential health and environmental hazards of nuclear facilities and radioactive substances.

Implications and Consequences

- **Freedom of expression**: When environmental organizations, Indigenous leadership, governmental agencies, concerned citizens’ groups, and others express concerns over the potential environmental and health impacts of nuclear facilities and radioactive substances, they are systematically discredited, vilified, and silenced. The CNSC’s restrictions on public debate concerning nuclear energy effectively weakens Canadian democracy.

- **Transparency**: The CNSC decision-making process contains impediments to public participation, including access to information and mechanisms to test evidence. These impediments in turn limit the transparency of the CNSC’s decision-making process. Given the context surrounding the firing of Linda Keen, and subsequent actions by Michael Binder and the CNSC, there is cause to fear that private interests (namely the nuclear industry) have a considerable and disproportionate influence on the CNSC’s review of project

applications, as well as their attitude towards any public criticisms of the industry or its regulator.

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APPENDIX D: Supplementary Information from Panelists (as of Aug 25/20)

From: Ian Bainbridge, CNL, Director, DP & G1 Decommissioning

Good morning Mark

Thank you for the opportunity to participate on Thursday. Always good to get a refresher on what everybody's opinions are, and for the need for continued dialogue and information sharing.

The main link that I would like to provide is to our web-page which contains the majority of what I was presenting as well as other links to more information and suitable points of contact:

https://www.cnl.ca/en/home/environmental-stewardship/decommissioning/douglas-point

If there is anything further that I can do to help, please don't hesitate to reach out.

All the best

Ian

From: Véronique Dault, Director, Government and External Relations, Nuclear Waste Management Organization

Good afternoon Mark,

Thank you for including the Nuclear Waste Management Organization (NWMO) on the IJC WQB's Nuclear Panel Discussion on decommissioning nuclear facilities. We remain available should you have further questions and are pleased to continue our work with the IJC and contribute to the forthcoming report.

To further support the development of the report, please find additional information below:

NWMO's creation, structure and reporting:

> The Nuclear Waste Management Organization (NWMO) was established as a not-for-profit organization in 2002 in accordance with the Nuclear Fuel Waste Act (NFWA) to work collaboratively with Canadians to develop and implement a plan to manage all of Canada's used nuclear fuel. The organization is entrusted to ensure used nuclear fuel is safely managed in the very long term, in a manner that protects people and the environment. *It is important to note that the NWMO has no direct role in decommissioning nuclear power stations.*
>
> The NWMO is subject to the requirements of the *NFWA* and oversight by the Minister of Natural Resources Canada. The *NFWA* requires the NWMO to issue annual reports and triennial reports to demonstrate in an open and transparent manner that we are moving forward in implementing Canada's plan in a manner that is consistent with the Act. These reports are submitted to the Minister of Natural Resources Canada and to the public at the same time. The Minister must table the reports in Parliament and issue a statement on each report.

Canada's Plan and deep geological repositories

The *NFWA* required the NWMO to study approaches for the management of used nuclear fuel, and recommend to the Government of Canada a preferred approach. The study was initiated in 2002. In 2005, after a three-year dialogue with Canadians from coast to coast, we submitted the approach that emerged to the Minister of Natural Resources. In June 2007, the Government of Canada selected the plan known as Adaptive Phased Management (APM) as Canada's plan.

The plan reflects the values and priorities citizens identified as important. It involves developing a deep geological repository in a suitable rock formation to safely contain and isolate used nuclear fuel, an approach that aligns with international best practice. It also involves a process of phased and adaptive decision-making, supported by public engagement and continuous learning.

There is international consensus that deep geological repositories represent best practice for long term management of used nuclear fuel. This consensus is supported by groups like the Nuclear Energy Agency of the Organization for Economic Co-operation and Development, European Commission, the Blue Ribbon Commission on America's Nuclear Future, and the International Atomic Energy Agency, which includes Canada and the US among its 171 member states.

Used nuclear fuel is safely managed today at licensed facilities at reactor sites – that's true on both sides of the Great Lakes. This is a perfectly safe approach, but it's temporary. It requires active maintenance and management, and it is widely accepted this is not a practical or appropriate approach over the thousands of years the used nuclear fuel remains hazardous.

There are repositories for radioactive waste operating safely in other countries right now, including Sweden, Finland, South Korea, and the United States. International repositories differ from NWMO's proposed facility because they are built specifically for their purpose and location.

Collaborative decision making and community willingness

Canada's plan will be implemented over many decades, and a fundamental tenet is incorporating new knowledge. The NWMO is committed to proceeding in stages in an open, transparent, and inclusive manner. The NWMO will adapt plans in response to advances in technical learning and international best practices, ongoing public input, Indigenous Knowledge, changes in public policy and evolving societal expectations and values.

One unique aspect of the Canadian program is the comprehensive site selection process the NWMO launched in 2010. The NWMO site selection process is community-driven, and underpinned by safety, fairness, collaboration, and shared decision-making.

Fundamental to the process is the understanding that the project will only proceed with the involvement of the interested community, First Nation and Métis communities in the area, and surrounding communities, working together to implement it.

When the NWMO initiated the site selection process in 2010, 22 municipalities and Indigenous communities proactively expressed interest in learning more and exploring their potential to host the project. As of January 2020, the NWMO is engaging with two potential siting areas, including First Nation and Métis communities in the area, interested in learning more about Canada's plan. The Township of Ignace in northwestern Ontario, and the Municipality of South Bruce in southern Ontario are considered potential host areas for the project.

A key part of the site selection process is studying and identifying a site that can safely house the underground repository and its surface-level facilities. Part of that work requires us to complete studies, which could include borehole drilling, environmental monitoring and other site investigation work such as Indigenous cultural verification.

In the Ignace siting area, geoscientific studies conducted to date have involved desktop studies, airborne geophysical surveys, observing general geological features, detailed geological mapping, and beginning to drill boreholes in a potential repository location. Through discussion with people in the area about a number of potentially geologically suitable areas, the NWMO identified location for initial borehole studies. It is located in a rock formation known as the Revell Batholith. Selecting locations for these boreholes provided an opportunity for the NWMO, the interested community, and First Nation and Métis communities in the area to work together to consider where the project might best fit.

In the South Bruce siting area, geoscientific studies conducted to date involved desktop studies, which make use of publicly available information about the geology of the area. The NWMO is now planning to begin to drill boreholes at the potential repository location. In order to conduct this work, the NWMO signed agreements with landowners who volunteered to participate through an open and transparent process. The agreements allow sufficient access to land for studies at a potential repository site northwest of Teeswater, Ontario. The NWMO will work together with people in the area to plan the next set of activities.

Ultimately, the preferred site will need to meet robust technical requirements focused on safety. The implementation of the project must also foster the well-being of the area as defined by people who live there and will need to be supported by strong partnerships.

Dialogue with communities and a range of interested individuals and organizations is central to the work the NWMO does to advance Canada's plan. As the siting process advances, the NWMO has broadened and deepened engagement activities with municipal, First Nation and Métis communities, as well as surrounding communities in each area. The NWMO has also maintained relationships with national and provincial Indigenous organizations, as well as municipal associations.

Current status and next steps

There's still work to do – both technical study and engagement with the public – before a preferred site can be identified. The NWMO will only confirm a preferred site only once enough study and engagement is done to be confident we can develop a strong safety case and establish strong resilient partnerships with municipal, First Nation and Metis communities. The NWMO expects this work will take until about 2023.

After that, the project will be subject to open, transparent and thorough regulatory processes – with more opportunities for public input – over a period of about 8 to 10 years. And then, following about 10 years of construction, operations at the facility would begin in the 2040s.

The process is a long one – it is being implemented over generations. We continually review, strengthen, and adjust the plan in the face of new information, direction and guidance from communities, advances in science and technology, input from the public, insight from Indigenous Knowledge, changes in societal values, and evolving public policy. That means public input is critical to our work and helps us continuously adapt and refine our next steps and engagement activities to ensure our work reflects the latest thinking and responds to the real questions and concerns people have.

In our experience, there is no one-size-fits-all approach to how that engagement needs to work. We work with a diverse range of audiences, and not surprisingly, they have diverse needs and preferences for engaging.

Indigenous Knowledge and inclusion

As the site selection process continues, the NWMO has been involved in a multi-year program to incorporate local traditional knowledge and land use into assessment and decision-making processes.

These knowledge systems recognize that people are part of and are one with Mother Earth, emphasizing the interrelationships among all components of the environment. Indigenous Knowledge includes important knowledge about the land and ecology, and about developing and maintaining effective and meaningful relationships between generations and within and between communities.

In recognition of the important role of Indigenous Knowledge in implementing Adaptive Phased Management, we have created an Indigenous Knowledge Policy to help guide our work. The Policy was created to ensure we are guided by a clear set of principles as we work with communities and Indigenous Knowledge keepers.

Reconciliation

On July 18, 2018, the NWMO issued a Reconciliation Statement and on Oct. 17, 2019, through ceremony, the NWMO issued a Reconciliation Policy that sets out how the organization will contribute to Reconciliation. Under the policy, the NWMO commits to respectful and meaningful engagement with Indigenous peoples and communities, providing cultural awareness and Reconciliation training to staff and contractors, and annually publishing a Reconciliation implementation plan.

Transportation

Once a facility is operational, the NWMO will begin transporting used fuel from interim storage facilities to the repository. Informing this work is the knowledge that our transportation solutions are technically sound and that we can do this safely -- radioactive material is transported often in Canada and around the world with an excellent safety record.

Although transportation of used fuel won't begin until the 2040s, the NWMO recognizes the need to build confidence that a socially acceptable plan can be developed.

To date, the NWMO has engaged thousands of Canadians to understand their perspectives, suggestions, questions and concerns – through this dialogue, a socially acceptable framework for future transportation planning is emerging.

The outcomes of our research and engagement so far have helped inform a draft Transportation Planning Framework that we'll publish later this year. It outlines a shared vision for the transportation program based on the common ground we identified so far through dialogue with individuals, organizations and municipal, First Nation and Métis communities.

By releasing this framework, we can invite further input to identify how we might continue to enhance it to ensure we are able to collaboratively develop a socially acceptable framework for our used fuel transportation program.

Advanced fuel cycles

Like many countries with nuclear power programs, Canada's nuclear generating stations use a "once-through" fuel cycle. A small number of countries partly recycle their used fuel in existing reactors. Some are conducting research on advanced reactors that could also recycle used nuclear fuel.

If Canada chooses to reprocess nuclear fuel in the future, it would be a joint decision by the nuclear energy producers, the associated provincial governments and the federal government.

If such a decision was taken, the NWMO would work with utilities and government to safely manage whatever high-level waste that would result from this process. If some used fuel is identified for reprocessing, it could be diverted for that purpose rather than being placed in the repository. Scientific studies around the world have confirmed high level waste from reprocessing should also be contained and isolated in a deep geological repository.

To help anticipate any changes in fuel cycles used in Canada, and the types of waste that may need to be managed, the NWMO maintains a watching brief on new developments and updates it annually.

I trust the information provided will be of use to the board as they develop the associated report. If you require any additional materials, please do not hesitate to reach out and I will be sure connect you with the appropriate subject matter expert.

Best,

Véronique

Véronique Dault

Director, Government and External Relations | Directrice, relations gouvernementales et externes

nwmo

Nuclear Waste Management Organization | Société de gestion des déchets nucléaires

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From: Ole Hendrickson, PhD, Concerned Citizens of Renfrew County and Area –

Dear Mr. Burrows,

With regard to your invitation to e-mail "written comments or other material that you would like the work group to receive as part of the record," the [text copied below] contains extracts from three International Atomic Energy Agency (IAEA) publications relevant to decommissioning and disposal of decommissioning wastes:

- Decommissioning of Facilities - IAEA General Safety Requirements Part 6 No. GSR Part 6
- Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities - IAEA Specific Safety Guide No. SSG-47
- Geological Disposal Facilities for Radioactive Waste - IAEA Specific Safety Guide No. SSG-14

These IAEA publications should, of course, be read in their entirety. The selected extracts have been chosen to highlight possible gaps or inconsistencies in current governmental, legal and regulatory frameworks for decommissioning.

Extracts from three International Atomic Energy Agency (IAEA) publications -

Decommissioning of Facilities - IAEA General Safety Requirements Part 6 No. GSR Part 6

Requirement 4: Responsibilities of the government for decommissioning

The government shall establish and maintain a governmental, legal and regulatory framework within which all aspects of decommissioning, including management of the resulting radioactive waste, can be planned and carried out safely. This framework shall include a clear allocation of responsibilities, provision of independent regulatory functions, and requirements in respect of financial assurance for decommissioning.

3.2. The responsibilities of the government shall include:

> — Establishing a national policy for the management of radioactive waste, including radioactive waste generated during decommissioning;
>
> — Establishing a mechanism to ensure that adequate financial resources are available when necessary for safe decommissioning and for the management of the resulting radioactive waste.

Requirement 9: Financing of decommissioning

Responsibilities in respect of financial provisions for decommissioning shall be set out in national legislation. These provisions shall include establishing a mechanism to provide adequate financial resources and to ensure that they are available when necessary, for ensuring safe decommissioning.

Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities - IAEA Specific Safety Guide No. SSG-47

5. DECOMMISSIONING STRATEGY

Requirement 8 of GSR Part 6 [1]: Selecting a decommissioning strategy "The licensee shall select a decommissioning strategy that will form the basis for the planning for decommissioning. The strategy shall be consistent with the national policy on the management of radioactive waste."

5.1. The overall purpose of a decommissioning strategy is to serve as a basis for the decommissioning plan, and, in turn, to facilitate achieving the end state of the decommissioning project.

5.2. In principle, two possible decommissioning strategies are applicable: immediate dismantling and deferred dismantling. These strategies are defined in GSR Part 6 [1]. Generally, immediate dismantling is the preferred strategy, as it avoids transferring the burden of decommissioning to future generations. The immediate dismantling strategy should be understood as immediate and complete dismantling in a timely manner, with no delay in decommissioning. There might be situations in which immediate dismantling is not a practicable strategy when all relevant factors are considered and the deferred dismantling option would be the most suitable option. An example might be when one unit at a multiunit plant ceases operation and decommissioning of this first unit has to wait for operations to cease at another unit, because of common systems used by multiple units.

Release from regulatory control without restrictions should be the preferred end state and ultimate objective of decommissioning. No action (leaving the facility after operation as it is, and waiting for decay of the radioactive inventory) and entombment (encasing all or part of the facility in a structurally long lived material) are not acceptable decommissioning strategies.

5.12. A licensee in charge of several decommissioning projects for different facilities at different sites in the same State could develop an overall decommissioning strategy (a corporate strategy) in order to optimize the decommissioning projects of individual facilities and related solutions for the management of radioactive waste.

5.22. When selecting a decommissioning strategy where more than one facility is located on a site, it might be beneficial to define an overall decommissioning strategy for the site. This might involve deferring dismantling of facilities already permanently shut down until the remaining facilities are permanently shut down. Then the decommissioning of all facilities could be performed in a single campaign, thereby avoiding any negative impact on the operating facilities and allowing for better utilization of personnel.

5.31. Depending on the activation and contamination levels within a facility and the related composition of radionuclides, the selection of the decommissioning strategy might have an impact on the radiation exposure of workers and the public and on the environment. High radiation levels might make deferred

dismantling a more appropriate strategy by allowing radiation levels to decrease over time. When no benefit from radioactive decay is expected in a reasonable time, immediate dismantling is the preferred strategy.

Availability of infrastructure for radioactive waste management

5.39. Aspects of waste generation and waste management can have an impact on the selection of a decommissioning strategy. Some of the most important aspects are: (a) The national policy for radioactive waste management (e.g. a policy in which release of material and waste from regulatory control is the preferred approach); (b) The types, categories and amount of waste at the facility (including remaining waste from operation); (c) The availability of waste processing facilities or infrastructure for all types of radioactive waste; (d) Arrangements for the transport of radioactive waste; (e) The availability of storage capacity for the waste; (f) The availability of a disposal option.

5.40. If on-site or external waste processing facilities and storage facilities are available, then either immediate dismantling or deferred dismantling is a viable decommissioning strategy. If the waste management infrastructure is available, including for waste disposal, then immediate dismantling is the preferred strategy. In the absence of facilities and infrastructure for processing radioactive waste, or when storage or disposal capacities are not available, the preferred decommissioning strategy could include a period of safe enclosure until the necessary waste management infrastructure is available.

5.41. If the waste management infrastructure is not available when decommissioning is anticipated, efforts should be made to synchronize the timing of the development of the waste management infrastructure with the anticipated timing of decommissioning. Where this is not possible, the licensee should consider alternative options in order to facilitate implementation of the preferred decommissioning strategy.

6. FINANCING OF DECOMMISSIONING

Requirement 9 of GSR Part 6 [1]: Financing of decommissioning “Responsibilities in respect of financial provisions for decommissioning shall be set out in national legislation. These provisions shall include establishing a mechanism to provide adequate financial resources and to ensure that they are available when necessary, for ensuring safe decommissioning.”

Geological Disposal Facilities for Radioactive Waste - IAEA Specific Safety Guide No. SSG-14

Appendix I SITING OF GEOLOGICAL DISPOSAL FACILITIES

I.1. Siting is a fundamentally important activity in the geological disposal of radioactive waste. In the siting process for a radioactive waste disposal facility, four stages may be recognized: (i) a conceptual and planning stage; (ii) an area survey stage, leading to the selection of one or more sites for more detailed consideration; (iii) a site investigation stage of detailed site specific studies and site characterization and (iv) a site confirmation stage. In site selection, one or more preferred candidate sites are selected after the investigation of a large region, the rejection of unsuitable sites and the screening and comparison of the remaining sites. From several, possibly many, prospective sites identified at the start of a siting process, a selection is made of one or more preferred sites on the basis of geological setting and with account taken of other factors. Sociopolitical factors are an important consideration in any site selection process (e.g. demographic conditions, transport infrastructure, existing land use). Decision making in the site selection process may involve various levels of involvement of the public and local communities, including the use of veto and volunteerism. The national preferences expressed will vary from State to State and hence cannot be addressed within international guidance for the safety of geological disposal facilities. During the initial

stages of site selection, geological and hydrogeological site specific information may be sparse or lacking. Nevertheless, such data that are available and expert judgement should be used in support of a decision to select one or more locations as a prospective underground disposal site. A promising site should display evidence of favourable natural containment and isolation characteristics for the waste types under consideration and should provide indications that all necessary engineered barriers to prevent or retard the movement of radionuclides from the disposal system to the accessible environment can be implemented. This evidence needs to be tested in subsequent detailed site investigation, characterization and associated safety assessment modelling.

Conceptual and planning stage

I.3. As the first stage of siting relates to concept design and planning in advance of site selection, it is necessarily undertaken early in the disposal facility development process. The purpose of the conceptual design and planning stage is to develop an overall plan for the site selection process and identify, using available data, the types of rock and geological formation, which can be used as a basis for the area survey stage.

Area survey stage

I.6. The purpose of an area survey stage is to identify regions and progressively target areas that may contain suitable sites, after the relevant siting factors identified in the previous stage have been considered. This process of site selection may be accomplished by the stepwise screening of a region of interest, which results in the identification of suitable small areas. If some small areas have already been designated as possible locations, studies can be conducted at this stage to gather the regional scale information necessary to determine better the boundary conditions.

I.7. The area survey stage generally involves two phases: (1) A regional mapping or investigation phase to identify areas with potentially suitable sites; (2) Screening to select one or more potential sites for further and more detailed evaluation.

Site investigation stage

I.11. The site investigation stage involves the detailed study of one or several of the potential sites identified in the area survey stage, to determine whether they are acceptable in various respects, and in particular from the safety point of view. The information necessary to develop a preliminary site specific design should be obtained at this stage.

I.12. The site investigation stage requires more detailed studies than in the regional mapping stage, in order to obtain site specific information to establish the characteristics and the ranges of the parameters of a site with respect to the location of the intended disposal facility. This will require site reconnaissance and investigations to obtain evidence on actual geological, hydrogeological and environmental conditions at the site. This would involve on-site surface and possibly subsurface (e.g. borehole) investigations supplemented by laboratory work.

I'm Ole Hendrickson with Concerned Citizens of Renfrew County and Area, a citizens' group in the upper Ottawa Valley where the Chalk River Laboratories are located.

The International Atomic Energy Agency's General Safety Requirements for Decommissioning of Facilities require IAEA member states to "establish and maintain a governmental, legal and regulatory framework within which all aspects of decommissioning, including management of the resulting radioactive waste, can be planned and carried out safely." The Government of Canada has no such framework, despite owning two closed research reactors at the Chalk River Laboratories in Ontario, and four closed "prototype" power reactors in Ontario, Manitoba and Quebec, including the Douglas Point reactor on Lake Huron.

The IAEA recognizes only two acceptable strategies for reactor decommissioning - immediate or deferred dismantling. Immediate dismantling is preferred as "it avoids transferring the burden of decommissioning to future generations." But decommissioning of Canada's prototype reactors has been deferred for over 30 years.

The IAEA says entombing reactors in long-lived materials such as concrete is unacceptable. But in 2016 Canadian Nuclear Laboratories, or CNL, announced projects to entomb the NPD and WR-1 prototype reactors in Ontario and Manitoba. CNL is owned by a consortium of two U.S. companies (Fluor and Jacobs) and SNC-Lavalin that was contracted by the federal government in 2015 to manage all its nuclear sites.

Environmental assessments of these reactor entombment projects -- led by the Canadian Nuclear Safety Commission, CNSC -- are years behind schedule. Under legislation superseded last year CNSC has sole authority to determine their acceptability. It recently tipped its hand by issuing a regulatory document that specifically allows "in-situ confinement" of "legacy reactors".

For the Douglas Point reactor at the Bruce Site, CNL wants to cancel the current decommissioning plan and amend the current licence that expires in 2034 to allow active decommissioning. CNL's proposed new "overview" decommissioning plan lacks many of the details contained in the current decommissioning plan, but says "Reactor Building Clear-Out" and shipping of wastes to Chalk River could begin in 2029. Actual reactor decommissioning would only begin after 2050 through unspecified means. A CNSC hearing is scheduled for November.

CNL also wants to cancel the current decommissioning plan for Chalk River. Much reactor decommissioning waste is long-lived, or intermediate-level. This includes metal and concrete reactor components that were non-radioactive before a reactor was started but that became increasingly radioactive during operation.

CNL's new plan omits siting, design and construction of a facility for intermediate-level decommissioning wastes. Siting of such a facility was to have begun in 2013. Together with withdrawal of OPG's proposal for a deep geologic repository at the Bruce Site, this creates a massive void for management of Canada's reactor decommissioning wastes.

Under CNL's 2019 "Integrated Waste Strategy", released without public consultation, radioactive structures at Chalk River and Manitoba's Whiteshell Labs are being dismantled and the wastes put in shipping containers stacked three-high at Chalk River.

This Strategy also calls for shipping used fuel rods from Whiteshell's WR-1 reactor (and possibly other federal reactors such as Douglas Point) to Chalk River prior to creation of a NWMO repository. Double handling of fuel wastes would increase radiation exposures to workers and the public, and increase risks of transportation accidents.

The proposed centerpiece of CNL's Strategy is a giant waste mound at Chalk River. Federal decommissioning wastes not entombed in reactors would go into the mound. Shipping containers would be driven into the mound, covered with dirt, and abandoned.

CNL misleadingly terms this a "near surface disposal facility", but the IAEA describes such a facility as "engineered trenches or vaults constructed on the ground surface or up to a few tens of metres below ground level."

In response to public concerns, CNL announced that only low-level wastes would go in the mound, but later it tautologically redefined "low-level" as waste suitable for placement in a near-surface disposal facility. This redefinition has created uncertainty about the nature of the decommissioning wastes that CNL intends to put in the mound, some of which would remain radioactive for periods of thousands to millions of years.

CNSC recently released a new regulatory document allowing licensees to create their own waste definitions. Before releasing this regulatory document CNSC also removed language that licensees should ensure that development of a disposal facility "allows opportunities for independent technical review, regulatory review, decision making and public involvement."

Our group believes Canada needs an independent national radioactive waste management agency such as ANDRA in France, ONDRAF in Belgium, ENRESA in Spain, or COVRA in the Netherlands. NWMO is not such an agency. It is controlled by industry, its mandate is limited to waste fuel rods, and its site selection process has been flawed.

Our group is not necessarily opposed to a geological waste repository if it is developed through a credible process and is designed to allow waste retrieval if necessary.

The public and Indigenous engagement processes of CNL and CNSC are inadequate in our view. CNL's entombment and mound projects are being carried out through a "decide, announce, defend" approach. CNL and CNSC are negotiating behind closed doors to approve these projects through flawed environmental assessments. New CNSC regulatory documents to enable these sub-standard projects were developed in a non-transparent and unprincipled manner.

The absence of federal policy and strategies for decommissioning and radioactive waste management compounds these problems. However, the government recently accepted an IAEA recommendation to fill this gap. Our group looks forward to participating in a robust public consultation this fall.

Best regards,

OIe Hendrickson,Ph.D.

Researcher

Concerned Citizens of Renfrew County and Area www.concernedcitizens.net

From: William J. Noll, Vice Chair - Protect Our Waterways No Nuclear Waste

Copy of Notes from 23 July 2020 meeting –

July 23rd, 2020 International Joint Commission

Great Lakes Water Quality Board

Bill Noll Vice Chair - Protect Our Waterways No Nuclear Waste

Protect Our Waterways No Nuclear Waste is a concern group of South Bruce residents united in a common cause to prevent the establishment of a high level radioactive storage facility known as a Deep Geological Repository ("DGR") in our community. South Bruce is one of 2 locations the NWMO is considering creating a DGR, Ignace is the other location.

1600 eligible voters in South Bruce, out of a total population of 5639 residents, have signed a petition opposing the establishment of a DGR in our community. Our on-line petition has a total of 11,800 signatures.

Our preferred solution is the" ROLLING STEWARDSHIP" method of managing radioactive spent fuel for the foreseeable future. We are convinced that continuing to maintain spent fuel above ground in a monitored and retrievable state is the right approach. Continual improvements to packing, such as the vitrification, and environmental protection are occurring. Ontario Power Corporation has stated that storage above ground in Kincardine is satisfactory and can continue for decades.

Our rational for recommending this approach is the following:

- Nowhere in the world is there an operating DGR for irradiated fuel(World Nuclear Report 2019) .Yet the Nuclear Waste Management Organization (NWMO) continues to propose such a facility in South Bruce , in an area that is within the Great Lakes Basin. Even after the creation of a DGR, spent fuel from the reactor must be stored above ground in pools and dry storage for 30 plus years before being place in a DGR. My question is what problem have we solved?
- The site chosen by the NWMO, is a 1500 acre of prime farmland with the Teeswater River running through the middle of the site. The Teeswater River flows into the Saugeen River which ultimately flows into Georgian Bay which is part of the Great Lakes.
- One of our major concerns is the possibility of water pollution to our drinking water and the Teeswater River during the construction period from runoffs or flooding as well as radioactive leaks from the DGR or the repackaging facility on site. This area is known to have numerous aquifers and artesian wells exists in the surrounding area.

The stigma of becoming a nuclear waste site will potentially affect customer confidence in products produced in the area. Customers have choices and may decide to fill their purchases elsewhere. Local farmers may decide to shift their investments to distant communities. Experience by the local farmers in the Fukushima area highlights this issue. Where even after nine years, farmers are still having difficulty selling their products because of the stigma associated with Daiichi nuclear disaster in 2011.The stigma has existed

even though numerous studies have been conducted and extensive testing of their products have proven there is no evidence of radioactive contamination of their products.

South Bruce residents have expressed the need for a referendum on the decision to host a DGR. This request is being ignored by the NWMO and the local municipality.

In my opinion, NWMO serves the interests of the nuclear industry – not the public. The NWMO funds local municipalities with the hope that this will put them in good light with both the local residents and the local municipality. The common theme from both the NWMO and the local municipal officials is first you must be educated and now is that you must be informed. All the information that has been provided to the residents and the local Council and Community Liaison Committee has been pro DGR and has originated with the NWMO. Up to this point, no outside experts opposed to the project have been sought out by the local municipality.

However, common sense tells you a DGR is not a good decision for the residents of the community or the municipality.

I like the quote from the Nuclear Waste article -the situation today. " All the way through the nuclear chain, local populations are subjected to increase health risks and yet more often than not they have not been asked if they are willing to put up with the increase risks" This has been the exact situation we in South Bruce have been subjected to by both the NWMO and our local Council.

Thanks for inviting me and listening to our situation in South Bruce.

From Dodie LeGassick

I did contact MMNR locally and was able to get some information together about lakes in the Northwestern Region of Ontario.

I am sending you the three items I was able to get from MMNR. There are two maps and quite an interesting chart that reveals the bodies of waters in the Northwest Region. What I want others to take from the information is an understanding that we have an enormous number of lakes and ponds and rivers in this Region that we and our environment are dependent on. Transporting nuclear wastes from such great distances into this Region is a serious concern of ours because of the large numbers of transport truck collisions and the very real potential of water issues in a shallow or deep repository.

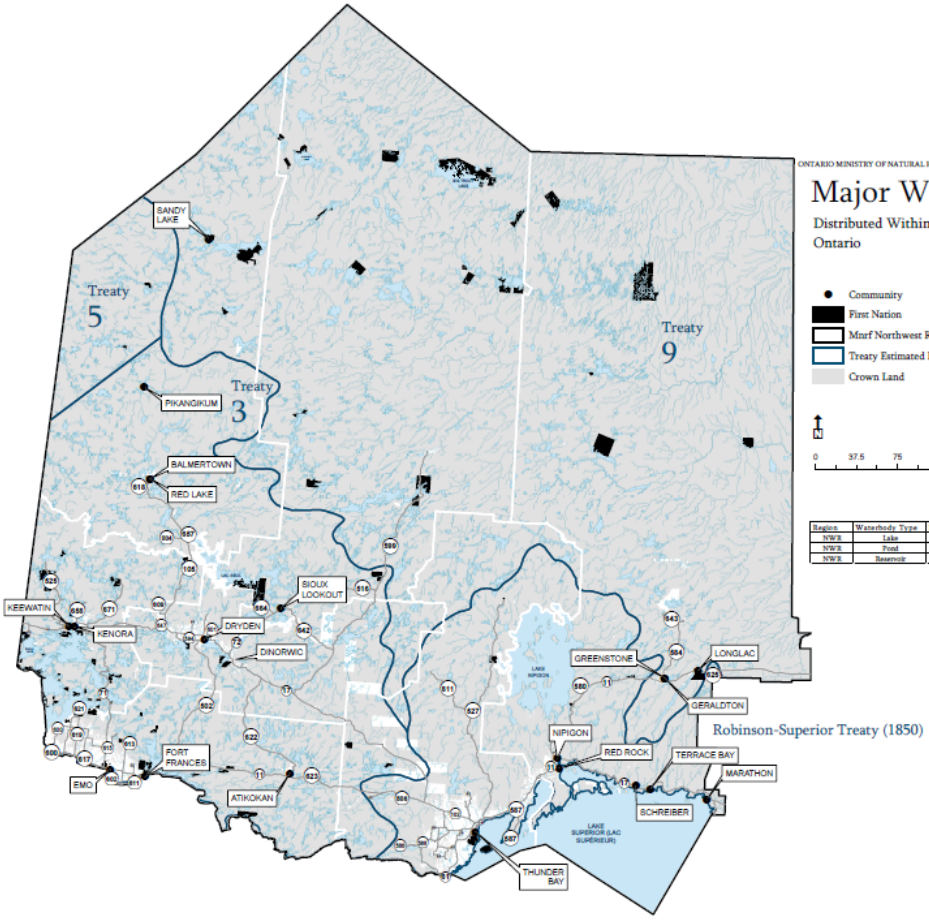
I would like to make those points and more and I would especially like to hear others speaking.

Region	Waterbody Type	Number	Total Approximate Surface Area (ha)
NWR	Lake	276,462	7,144,983
NWR	Pond	44,968	13,366
NWR	Reservoir	16	7

Treaty	Waterbody Type	Number	Total Approximate Surface Area (ha)
Treaty #3 (1873)	Lake	65051	1952884
Treaty #3 (1873)	Pond	27661	8260
Treaty #3 (1873)	Reservoir	12	4

Region	Estimated Area of Crown Land (Hectares)	Estimated Area of Crown Land (Square Km)
Northeast	43,558,582	435,586
Northwest	41,756,637	417,566
Southern	7,239,363	72,394

Treaty	Estimated Area of Crown Land (Hectares)	Estimated Area of Crown Land (Square Km)
Robinson-Huron Treaty (1850)	5,169,026	51,690
Robinson-Superior Treaty (1850)	7,320,067	73,201
Southern Ontario Treaties (1764-18	579,459	5,795
Treaty #3 (1873)	10,474,064	104,741
Treaty #5 (1875)	1,356,079	13,561
Treaty #9 (1905-1906)	56,463,426	564,634
Williams Treaties (1923)	2,442,388	24,424



ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY

Major Waterbodies

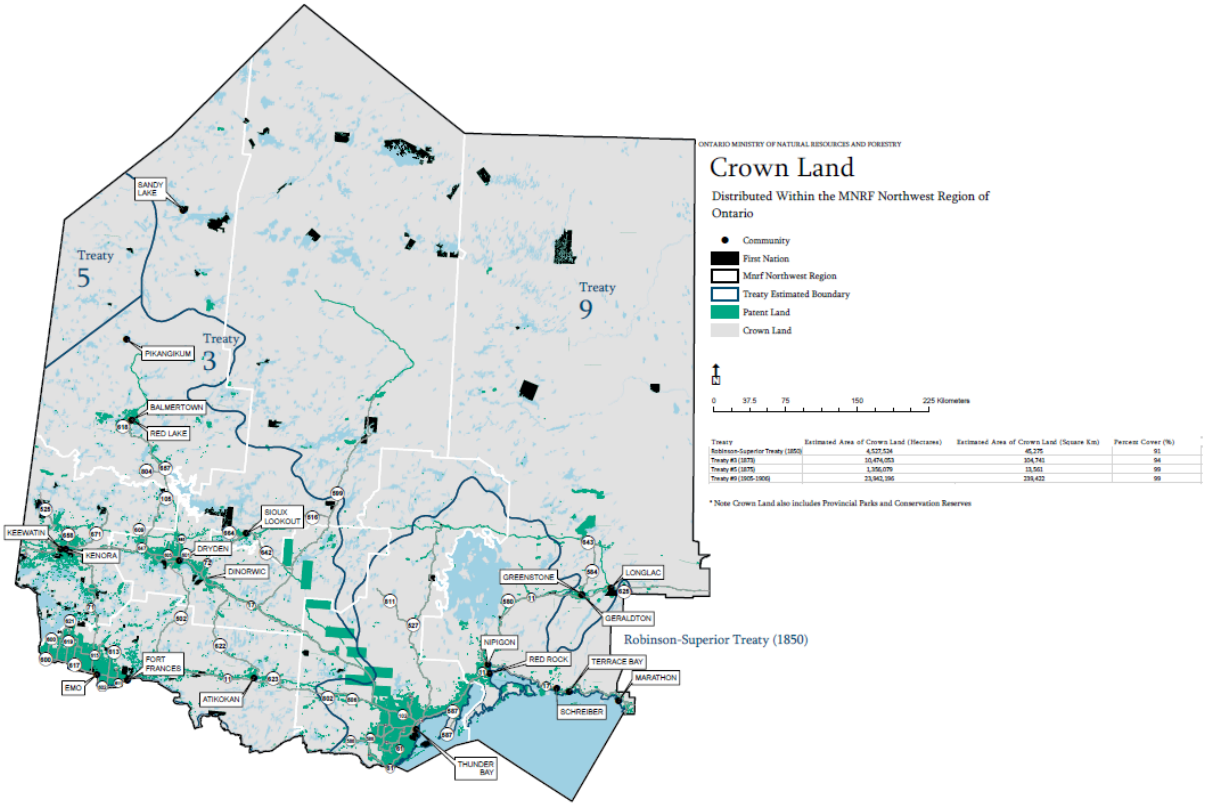
Distributed Within the MNRF Northwest Region of Ontario

- Community
- First Nation
- Mnrf Northwest Region
- Treaty Estimated Boundary
- Crown Land

N

0 37.5 75 150 225 Kilometers

Region	Waterbody Type	Number	Total Approximate Surface Area (ha)	Total Approximate Surface Area (Square Km)
NWR	Lake	276,462	7,144,983	71,450
NWR	Pond	44,968	13,366	134
NWR	Reservoir	16	7	0



From: Susan Noe, Bruce Power, 21 Aug 2020

Good morning,

The attached correspondence has been issued by Bruce Power and is being provided electronically to you.

Please accept this electronic communication as your official copy as *no paper correspondence will be sent*.

Thank you,

Susan

Susan Noe | Business Support Representative | Licensing I B10-02E | **Bruce Power** | T: 519.361.2673 ext.11625

August 21, 2020

BP-CORR-00531-00802

Mr. Mark J. Burrows

Project Manager, International Joint Commission Great Lakes Regional Office

100 Ouellette Ave., 8th Floor Windsor, ON

N9A 6T3

Dear Mr. Burrows:

Additional Information regarding the

International Joint Commission Water Quality Board July 23, 2020 Meeting

The purpose of this letter is to offer additional information and context in support of the panel

discussion held July 23, 2020, regarding lessons learned from the decommissioning of nuclear power facilities and the management of nuclear waste in Ontario.

Bruce Power leases the Bruce site and two nuclear generating stations from Ontario Power Generation (OPG). According to that lease, Bruce Power is to defuel and dewater the eight reactor units once they reach of life, and then transfer the units back to OPG. OPG is responsible for the decommissioning of the Bruce site reactors.

OPG is also the owner and licence holder for the on-site Western Waste Management Facility (WWMF), which provides storage for low- and intermediate-level waste. Additionally, the used nuclear fuel produced by the Bruce reactors is retained in dry storage at the WWMF until a facility for its safe, long-term management is designed and implemented by Canada's Nuclear Waste Management Organization (NWMO).

Bruce Power has refurbished two reactors and is refurbishing the remaining six of its eight reactor units. Therefore, the Bruce site is decades away from decommissioning. Nevertheless, Bruce Power, and the broader nuclear power industry, have experience with the cleanup and waste management activities that are undertaken as part of decommissioning.

The regulatory framework for decommissioning, implemented by Natural Resources Canada (NRCan) and the Canadian Nuclear Safety Commission (CNSC) to guide the safe execution of these activities, is part of the facility life-cycle for the Bruce site units. This life-cycle approach is inherent to Environmental Management Systems at Bruce Power including both the ISO:14001 framework and the CSA N288 suite of standards for environmental protection.

Key elements of the regulatory framework are highlighted in the following paragraphs.

To proceed with the decommissioning of Canada's nuclear reactors, a license must be obtained pursuant to the *Nuclear Safety and Control Act* (NSCA) and *Class I Nuclear Facilities Regulation*s. An impact assessment must also be conducted to identify and mitigate any potential adverse environmental effects of decommissioning, pursuant to Canada's *Impact Assessment Act* (IAA) and the *Physical Activities Regulations*. The impact assessment would include cumulative effects, such as those related to climate change, as directed by the IAA.

Canada also has a wealth of legislation, regulatory guidance, and standards for the management of low-, intermediate-, and high-level radioactive waste. The requirements for site selection and duration for storage and/or disposal depend on the risk associated with the radioactive waste, including the longevity of that risk. Predictions are made regarding how long the waste will remain onsite and provisions are made for their eventual storage or disposal under the *Nuclear Fuel Waste Act*. NRCan administers the Act and associated Radioactive Waste Policy Framework while the CNSC administers the waste management framework.

Similarly exhaustive legislation, regulatory guidance, and standards apply to the cleanup of contaminated sites. Legislation and guidance under the IAA and NSCA (environmental assessment), as well as the *Nuclear Substances and Radioactive Devices Regulations* (exemption and clearance levels), are supported by regulatory guidance developed by the Impact Assessment Agency of Canada and the CNSC. The CSA Group has also developed standards in the areas of waste management, cleanup, and decommissioning, including the N292 series of standards (waste management and release) and N294 standard (decommissioning of facilities containing nuclear substances).

The waste management requirements and guidance apply both on- and off-site. Follow-up monitoring is carried out as dictated by the outcome of the impact assessment and as directed by the licence. Monitoring is also undertaken by the CNSC as part of their independent environmental monitoring program under the NSCA. Monitoring requirements are proportionate to the potential impacts identified in the impact assessment and are adaptive (e.g., vary depending on the data) over time.

Transportation of radioactive waste is also subject to the licensing requirements of the NSCA. Such transportation may be subject to an impact assessment under the IAA and/or the NSCA. In addition, Transport Canada provides oversight of the transport of radioactive waste under the *Transportation of Dangerous Goods Act*.

The licensing and impact assessment processes involve extensive public consultation, often resulting in the formation of a community liaison group. Indigenous communities are also consulted by the licence applicant as well as the Government of Canada. The Government of Canada has a duty to consult, and where appropriate, accommodate Indigenous groups when considering decisions that may adversely impact potential or established Aboriginal or treaty rights. Socio-economic considerations also fall within the scope of the impact assessment.

One of the most valuable roles fulfilled by the International Joint Commission (IJC) is the promotion of regulatory cooperation while preventing regulatory duplication. Bruce Power therefore recommends that the IJC examine any inconsistencies or gaps between the Canadian and US regulatory frameworks and that the IJC focus their policy development in those areas.

Canadian and US nuclear power plants maintain large operating experience and lessons-learned databases, and there would be value in highlighting any unique learnings from each of our respective countries.

If you require further information or have any questions regarding this submission, please contact Heather Kleb, Department Manager, Operations Regulatory Affairs, at 519-386-1671, or Heather.Kleb@brucepower.com.

Yours truly,

Maury Burton

Digitally signed by Steve Cannon

DN: cn=Steve Cannon, o=Bruce Power, ou=Regulatory Affairs, email=steve.cannon@brucepowe =CA

Date: 2020.08.21 09:04:19 -04'00'

Senior Director, Regulatory Affairs

Bruce Power

cc: CNSC Bruce Site Office

Mr. L. Sigouin, CNSC - Ottawa
Ms. N.Greencorn, CNSC –

Ottawa

BP-CORR-00531-00802

APPENDIX E: HISTORY OF DOUGLAS POINT NUCLEAR GENERATING STATION

(NOTE: The excerpt below is taken from the Ontario Heritage Trust website)

Douglas Point Nuclear Generating Station (DPNGS) is located on the east shore of Lake Huron in the municipality of Kincardine, Bruce County, Ontario. The Douglas Point facility, which was built by and is owned by Atomic Energy of Canada Limited (AECL), was Canada's first full-scale nuclear power plant and the second CANDU pressurized heavy water reactor.

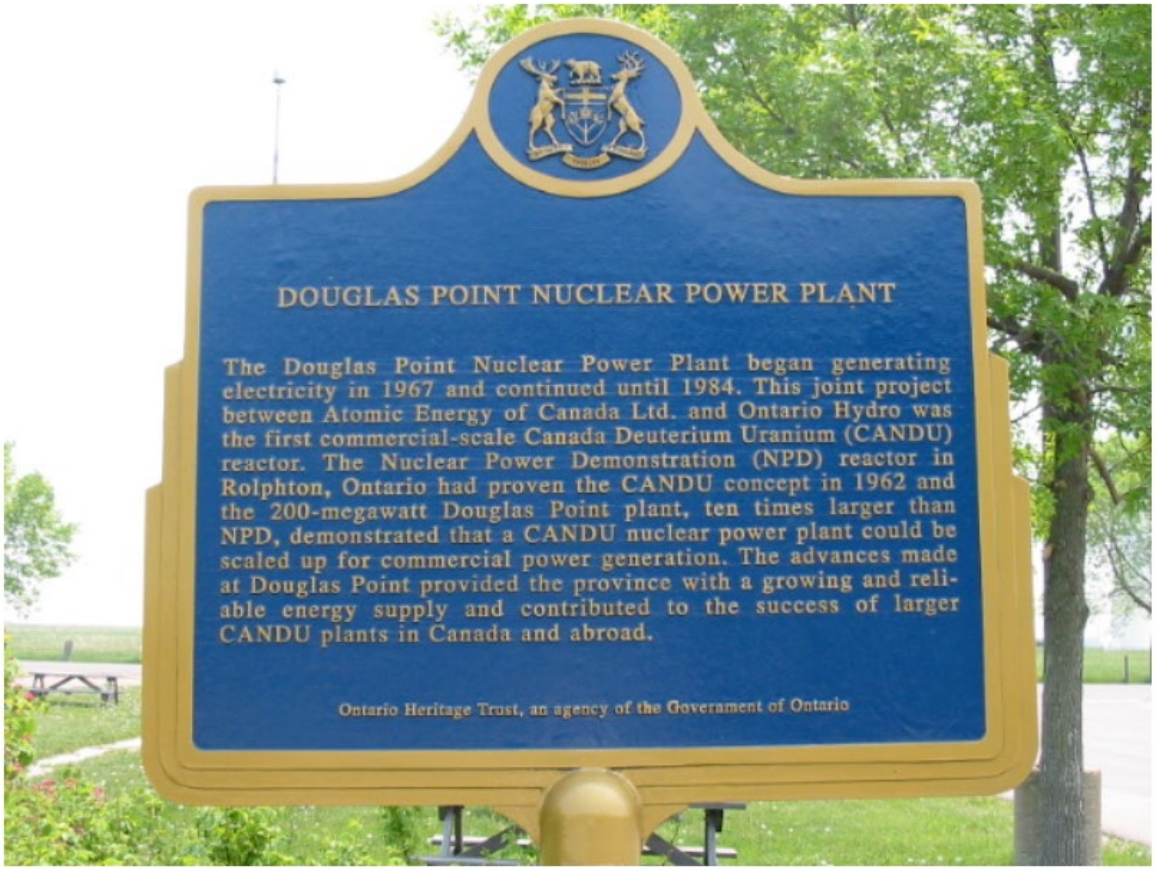


Photo by Alan L Brown - Posted May, 2007

Construction of the single 704 MW thermal (206 MW electric) prototype CANDU reactor began February 1, 1960, and initial criticality was achieved November 15, 1966. DPNGS began supplying electricity to the grid on January 7, 1967, and officially began commercial operations on September 26, 1968.

Ontario Hydro operated Douglas Point for AECL from September 26, 1968, until the reactor was permanently shut down on May 4, 1984. Over its 17 years of commercial service, Douglas Point supplied an average of 950 GWh of electricity annually for a lifetime total of 15.63 TWh, corresponding to a capacity factor of 55.6 percent.

Decommissioning Activities

On May 4, 1984, Douglas Point was the second rector in the Great Lakes basin to be permanently shut down. Decommissioning of the reactor began in 1986, and the transfer of spent fuel from wet storage in the reactor pool to a dedicated dry storage facility was completed in 1988. Douglas Point has been maintained in Phase 2 – the Storage-with-Surveillance phase – of a Deferred Decommissioning program.

On November 3, 2014, AECL launched Canadian Nuclear Laboratories (CNL), a wholly owned subsidiary. CNL is now responsible for the Canadian Nuclear Safety Commission (CNSC) licence for the Douglas Point facility and decommissioning. The CNSC issued CNL the licence for the DPWMF on October 22, 2014 and will expire on December 31, 2034. As of April 1, 2018, CNL anticipates beginning final decommissioning in 2059. The proposed end-state of the site is a brownfield restored for industrial use consistent with the rest of the Bruce Nuclear Site.

As of December 2016, Natural Resources Canada reported the HLW inventory stored onsite at Douglas Point was 22,256 fuel bundles, which had an estimated volume of 89 cubic meters (3,143 cubic feet) and contained 300 metric tons (330 US tons) of uranium.

Historical Significance

The facility, which operated for almost 18 years from 1966 to 1984 and is now dwarfed by the surrounding Bruce Power complex, was the prototype commercial-scale CANDU nuclear power plant. While the smaller “Nuclear Power Demonstration” (NPD) facility near Rolphton, Ont represented the “test-of-concept” prototype that demonstrated technical feasibility, Douglas Point, ten times the power and a serious contributor to the Ontario electricity grid, demonstrated commercial operation and established the CANDU product. (Douglas Point was, in fact, the facility for which the name “CANDU” was coined, although this term was later applied generically to the product and the original CANDU became known simply by its geographic location, Douglas Point.) Douglas Point’s historical significance lies in the launching of not only Ontario’s (and Canada’s) large-scale nuclear power program, but also (and, remarkably, simultaneously) Canada’s nuclear power export industry. During its career Douglas Point also achieved a number of technological “firsts” that made the designer, Atomic Energy of Canada Ltd. (AECL), and the provincial electrical utility, Ontario Hydro (now Ontario Power Generation), world leaders in power reactor development and operation.

During its brief but important career Douglas Point contributed to the learning curve of the Canadian nuclear industry, and to that of operators who went on to fill the control rooms at the Pickering, Bruce, Darlington, Gentilly, and Pt. Lepreau stations elsewhere in Canada. There were many “firsts” during Douglas Point’s operation, one of the most significant being the

world's first use of a digital computer program to control a power reactor. A pioneer in this application of computers, Canada used experience gained at Douglas Point to implement full computer control at Pickering (another world first), and at all CANDUs since.

Pictured above: The containment building of the Douglas Point Nuclear Generating Station. This nuclear generating station was permanently shut down in May 1984. *Photo courtesy AECL (2018).*

Douglas Point Panel Discussion Zoom Video Recording Script:

	Name(s)	Comments:	Organization / Background
1	Ian Bainbridge, Director	Speaker #1 (at Video time stamp 20:00) By phone….history, our plans and communications. Director at the facility 2 minutes on history; 2 minutes on our plan; and 1 minute on the communications that we are involved in at this moment Shut down 200 MegaWatt reactor on east shore of Lake Huron; a small site (5 ha surrounded by the Bruce Power site which is 900 ha). Designed and built by Atomic Energy of Canada Ltd. (ACL) and run by Ontario Hydro. 1968 started operation and was the first full scale version of the CanDu reactor. 1984 closed down as there were much larger reactors (Bruce, Darlingford, Pickering = 600 MegaWatt) in operation at that time and the decision was made. Mid 1980's they defueled the reactor taking the fuel out of the reactors out & allowed it to cool and then put it into dry storage on the Douglas Point site. That was the initial decommissioning taking it down to fully shut down. Then it has been what we call "storage and surveillance" ever since. Operated in that mode by ACL until 4 years ago when there was a management rearrangement so now ACL own the site and Canadian Nuclear Laboratories was formed and we operate the site on their behalf. They are our clients operating the site. Regarding the storage and surveillance they have done an Environmental Risk Assessment – no significant environmental effects on the lake or surrounding area. That phase has been going for over 30 years and are now looking to advance the decommissioning and he is expecting a Commission Licence hearing by mid November seeking approval to move into phase 3 decommissioning stage where we will remove the structure (planned to go on for 10 to 25 years process) assuming they are granted permission. Demolition will break the structures into 5 sections; removing the non-radioactive structures first, straightforward industrial demolition, clear that, then remove the more contaminated buildings, clear out the reactor building, and the later stages will be transferring the fuel to the NWM site whenever that is built or into another temporary storage, perhaps storage on the site, followed by the reactor itself will be decommissioned…. waste will be generated and some recycled with 5 to 10 % to local	Canadian Nuclear Laboratories Douglas Point Nuclear Generating Station

		landfill and 90 to 95% is recyclable (e.g. concrete, steel). Radioactive waste (a very small portion of the overall waste) will be shipped to Chalk River lab where ACL has larger interim storage. Now they are in a licencing process; currently waste facility license and requesting a decommissioning facility licence. Currently they are engaging with: Historic Saugeen Metis, Metis Nation of Ontario, Saugeen Ojibwa Nation, Bruce County Council, Kincardine municipal council, planned for Saugeen municipal council pensioners groups are all in limbo due to COVID, webinar hosted earlier this month. Web site available, soon a 3D tour of the facility will be available. (Video = 26:32)	
2	Vernon Roote, former Council Chief. Also Canadian advisor of GLFC	Speaker #2 at 2:47 (Video 26:40) Hello to Frank (long time buddy working for our communities). Traditional FN name is black blue heron, spirit part of life is the bear; from the bear clan. Which looks after the community and do the best they can in terms of security. 1962 first involvement with DP as I used to go down with my mother to drop off my father working as a carpenter building the foundation for DP back in 1962. So my involvement was for a number of years. 1968 started operation. My involvement – consultation exercise for DGR and our community did not go for that; they are a stewardship understanding of the land; stewardship role is looking after the land and we should not dirty our land, air, or water (3 principles of our existence on Mother Earth). That stewardship thinking was on the minds of our people. Decommissioning exercise should go beyond the removal of the items on the land; replanting or changing the landscape as to what it was; what plants were removed; what kind of plants were there; there are burial sites in that area. Due to this and ancient campsites of our people, we need to take that into consideration. Rejuvenating the land somehow, we would start with a ceremony to connect the spirit with the land; scientists may not understand that process. That is our belief system. With that the ceremony is something that would do that; there are canals in that area, lots of cement, unknown depth of nuclear seepage; so it will take a lot of work. Hope that our community and consultation will be involved with us. That is the jest of it. Video 33:33	Saugeen Ojibway Nation
3	Mayor Anne Eadie, Town of Kincardine	Speaker #3 at time 2:55 (Video at 33:50) (James mentioned encouraged people to use the Chat function). Hello everybody. Exciting as mayor to be involved. 6th year as mayor of Kincardine. Pronunciation of name. Sunsets, tourism,	Municipality of Kincardine

		vibrant agriculture, seasonal residents, and we became the host of the nuclear power industry in 1960's. As a child the plant was a mystery. A friend would come visit our farm but not mention why he was visiting. Consulting with the public did not happen back then. Canada's first full scale power plant, now a multi-cultural community; now a host community to Bruce Power and OPG's Western Waste Management Facility. 2004 to the present she has been actively involved in the processes and learning about spent fuel and nuclear waste (not a scientist but a former teacher). We have had on presentation to Council by Ian Brainbridge. Lake Huron is in my DNA; always lived close to Lake Huron. After retiring from teaching, was a board member of the LH3C and founding member for the Pine River Watershed Network and Penatangore Watershed Group. Management of nuclear waste, never gave much thought about it with her farming and teaching background; more interested in the production not the waste. Then Western Waste Management site next to Bruce Power and a member of an advisory committee for the DGR in 2004 and became Chair from 2006 to 2010. Engaged bi-monthly to many presentations of DGR. Protecting Lake Huron was my main goal. OPG and Kincardine Council began a survey of residents about the DGR concept in early 2000 and the concept was well accepted as the thing to do. Become deputy mayor, witnessed OPG displays and a trailer. Her experience in DGR process, there were many opportunities for the public to be informed; they attended every fair, every beach association meeting with lots of information to provide. In Summary – With her experience with low and intermediate waste and the whole DGR process, there were many opportunities for the public to be informed. OPG provided a range of venues and presentations for the public on a regular basis and information was readily available at all public events. Video 41:12	
4	Deputy Grand Chief James Marsden	Speaker #4 at 3:02 (Video 41:40) Megwetch for elder Frank and elder Vernon Roote; Deputy Grand Chief where I reside in Alderwere First Nation, about 20 miles off the shore of Lake Ontario. I was chief of Alderwere for about 17 years. We are of the Mississaugee Nation – translated to mean "those at the central river mouth". Have had a few time visited the Pickering Nuclear Station and Darlington NPP . You may recall that there is a big project for low level radiation waste at small town of Port Hope which is hosting a 8 year project of the clean-up of the Eldarado manufacturing plant that manufactured fuel rods. Involved in that site quite a bit because last year when they started there was open water needing to be cleaned up. The Canadian National Laboratory is	Anishinabek Nation (Union of Ontario Indians)

		handling that work. Regarding policies and strategies for the longterm management of nuclear waste in Canada, must be developed at the federal level to protect the environment for current and future generations of Canadians. We urge that policies and strategies be made transparently and be based on meaningful consultations with the public and First Nations and in accordance with the International Atomic Energy Agency Standards. The Canadian Nuclear Safety Commission (CNSC) has recently dismissed public comments that were consistent with the IAEA standards. Our nation has working in co-operation with the Iroquois Caucus and we have formed a joint declaration on nuclear waste. The 5 starting points that we all agreed on are: 1) no abandonment, 2) better containment/more packaging 3) monitored and retrievable storage, 4) any storage should be away from major water bodies, 5) no imports or exports. The Anneshkebec Nation calls for a commitment for meaningful consultation with indigenous peoples and strong public engagement from the outset, and a commitment that development occurred with regards to nuclear waste policies be carried forward by the federal government itself, not delegated to the CNSC or NWM. And designed in such a way that the public input is important in determining the ultimate policy decisions as deemed by the nuclear industry. In closing up, I will be touring the Port Hope site, these are all very important issues that we are bringing up for the A. nations. We extend from Thunder Bay to Chalk Lake. He has been involved in both the Darlington and Pickering sites. Darlington is only 50 km west from our communities here in almadville. Thanks GEE megwitch (Video 46:29)	
5	Ole Hendrickson	Speaker #5 at 3:08 (Video 47:00) Note: this is an abridged account of his comments; full speaking notes are attached His group is from Upper Ottawa Valley near Chalk River Laboratory. The IAEA requires members to establish a regulatory framework but the Federal Government has no framework despite all the facilities Canada has. IAEA accepts only 2 strategies; immediate or deferred dismantling. IAEA mentioned that entombed reactors in long-lived materials (e.g. concrete) is unacceptable. Canadian Nuclear Laboratories (CNL) is owned by a consortium of two US companies and SNC-Lavalin who was contracted by the federal government to manage all the Canadian sites. EA's for these entombment projects led by Canadian Nuclear Safety Commission (CNSC) are years behind schedule. CNSC has sole responsibility of these EA's to determine their acceptability. It recently released a document that allows for "in-situ confinement" of "legacy reactors".	Concerned Citizens of Renfrew County & Area

		For Douglas Point, CNL wants to cancel the current decommissioning plan and amend the current licence (expires in 2034) to allow active decommissioning. CNL's proposed new "overview" decommissioning plan lacks many details but says "reactor building clear-out, and shipping wastes to Chalk River could begin in 2029. Actual reactor decommissioning would only being after 2050 through unspecified means. A CNSC hearing is scheduled for November. CNL's new plan omits sighting, design and construction of a facility for intermediate-low level waste. Siting was to begin 2013 and together with the recent withdrawal of the OPG proposal for DGR site at Bruce site, leaves a massive void for management of Canada's reactor decommissioning wastes. Under CNL's 2019 Integrated Waste Strategy" released without public consultation, structures at Chalk River and in Manitoba are being dismantled and the wastes put in shipping containers and stacked 3 high at Chalk River. Without repository, multiply handling of waste is increasing risk to staff and public. The proposed centrepiece of CNL's Strategy is a giant waste mound at Chalk River. CNL is misleading when describing the facility as a "near surface disposal facility" when the IAEA describes it as an "engineered trench" design. Our group believes Canada needs an independent national radioactive waste management agency such as those found in many European countries. NWMO is not such an agency; it's controlled by industry; its' mandate is limited to waste fuel rods and the site selection process has been flawed. CNL and CNSC are negotiating behind closed doors to approve projects through flawed EA's. Documents produced by CNSC enable these substandard projects (e.g. entombment and mound projects) and were developed in a non-transparent and unprincipled manner. Look forward to being actively involved in a robust public consultation this fall. (Video 53:00)	
6	Karine Glenn Director, Waste & Decommissioning Division,	Speaker #6 at 3:14 – (Video 53:27) CNSC is Canada's independent nuclear regulator with the mandate to regulate the safe use of nuclear energy and materials for the health and security of people and to ensure the environment is protected and to ensure they meet international obligations. They also have the mandate to disseminate technical, scientific and regulatory info to the public. Lifecycle regulator from creation to decommissioning. Looks at the environmental impact of the entire process, right from the start, siting the facility, building it, right to end of state. Throughout the life of the facility, the licensee is required to have licence which includes a prelim decommissioning plan to illustrate that the process considers the decommissioning	Canadian Nuclear Safety Commission (CNSC)

		implications throughout the life cycle, not just when it is shut down. The plans are high level but provide an overview of the big picture plan. Regarding DP, they have a preliminary decommissioning plan which they are now moving to a more detailed plan as they are now moving into active dismantling. Not cancelling existing plans, but enhancing them with more detailed information. However they are not authorized to carry out any of the steps in the preliminary decommissioning without further approval from the Commission to proceed. In order to do that, they need to submit a Safety Assessment which will have to ID the hazards to workers, the public and the environment; determine the safety functions needed, demonstrate there is adequate measures to prevent accidents and consequences. Prior to being authorized for decommission, the licensee needs to submit to the CNSC for review where the technical staff will review from a safety perspective and make recommendations to the Commission. The Commission is an administrative tribunal to make decisions in a public forum. They hold public hearings and DP hearings are scheduled for Nov 25 and 26. They are public events and are webcasted for anyone (in the world) to listen. There are also opportunities for stakeholders to intervene. Anyone interested in speaking has until Oct 26 to submit a request for the commission to be heard on the DP matter. With respect to DP, no decision has been taken by the Commission and will only occur after the public hearings. Throughout the life cycle, require a financial guarantee from the licensee, in case no longer available to complete the work regardless of the status of the company. This is to ensure there are sufficient funds at any point in time, to decommission the facility and manage the wastes longterm. Regarding waste management – earlier speakers are correct in stating that there is no disposal facility yet in Canada and all waste are currently handled safely and regulated by the CNCS and any facility for future waste disposal will be subject to EA which will include ample opportunities for input from the public, stakeholders and Indigenous groups. (Video 58:45)	
7	Theresa McClenaghan	Speaker #7 at 3:19 (Video 58:55) – on phone – I want to speak about the policy and legislative context for dealing with radioactive waste and decommissioning facilities in Canada and in the Great Lakes Region. Will provide some of these materials to be added to the written record as you had offered in your invitation. One of the items from earlier speakers, over 100 civil society organizations and scientists wrote to the relevant Federal Environmental Minister in May about the fact that last fall the IAEA conducted a review of Canada's radioactive waste and regulatory approaches and observed that the Canadian approach	Canadian Environmental Law Association

		does not contain “all the needed policy elements nor a strategy or the corresponding arrangements to prepare a strategy for radioactive waste management in Canada”. They recommended that same needs to be established and Canada responded saying that they would develop such a framework. The current radioactive waste policy framework (which she will send, as well) dated 20 years ago, and currently used , is 3 bullets long (1/4 of a page long) so inadequate. In any event, Canada not living up to this framework since the first bullet says “that Canada will ensure that radioactive waste disposal is carried out in a safe, environmentally sound, comprehensive, cost effective and integrated manner; and the second bullet indicates that they have the responsibility to establish policy and so on. So we are a long way from any kind of adequate framework to handle these activities and these materials. In addition, we have a context where decommissioning (being our subject matter) is not included in the new federal impact Act and is not included in the project list proposed and would only be triggered by way of Ministerial discretion to designate these facilities that they would be subject to the EA or impact assessment (new term). And this is significant as it means that a number of considerations that are included in impact assessments would not be included such as social impacts, economic impacts, alternatives, etc. would not be included for consideration. Rather all that would be included is the licencing decision of the regulator. However, as Ole mentioned, the regulator has not waited for a policy before releasing a number of regulatory documents which are guidance, which anticipate, not stated but implied that they may find it acceptable to allow in-situ decommissioning and civil society is highly concerned over allowing for that kind of permanent ‘disposal’ (as opposed to decommissioning) of nuclear reactors. Finally, our organization provided a petition from CELA and Ole’s group which called on the Auditor General to review the need for a national policy on decommissioning on reactors and radioactive waste. I will send those documents along to you for the Record. Video = 1:04:20	
8	Eugene Bourgeois	Speaker #8 at 3:25 (Video 1:04:28) – on phone. I live in Inverhuron near BNPP – so far what we have heard previously from OPG is their intent to store all decommissioning waste in a DGR and applied to do so in 2008 / 09 and there were hearings following that. What we learned is there is no social licence for a DGR. OPG learned that lesson when SON bravely voted to reject that offer and gave up $150 million. OPG analysis provided incomplete scientific information supporting a DGR. It did not engage in an underground research laboratory which is a gold standard that Ontario Hydro with ACL developed at the	Friends of the Bruce

		Whiteshell site. The scientific enquiry for the DGR were going to be done co-temporainisly with the placement of wastes. The containment vessels were not going to be pressurized which means they would be very difficult to retrieve if the chamber fills with water. And it ignored its own earlier research that was conducted in the year 2000 at Whiteshell that demonstrated that once a cavern fills with water, and radioactivity is released to that water, instead of only moving laterally, the consideration OPG gave was that it would move due to ionic diffusion, in all directions at a rate of 2 to 7 m / day. That means that a DGR that is 680 metres deep would have radioactive waste back on the surface within 100 to 365 days. OPG provided no protocol for remediation in the event of a DGR failure. OPG did fail with some in-ground storage at its first waste storage site, called Radioactive Storage Site #1 which was right beside the Inverhuron wetlands. And if failed to maintain the grouting at the surface of the site resulting in radioactivity flowed from that waste site into the wetland and into the sand point wells of residence there. OPG remediation involved the moving that waste to what is now called the Western Waste Management Facility. But it simply abandoned the waste in the wetland and did nothing to remove those wastes. Now OPG plan is to bring all the low and intermediate level waste and all the decommissioning waste to the Bruce site at the WWMF. It has proposed building a large object processing building that will dismantle turbines and the like which are very large pieces of machinery so that they will fit into an elevator shaft to be moved into a DGR which has no social licence. Ultimately, OPG has not provided a viable plan of how and what it is going to do with these wastes that are coming to the Bruce site which is right on the shores of Lake Huron and it seems to me that that is extraordinarily irresponsible. Thank-you Video = 1:09:48	
9	Lisa Frizzell, Vice President of Stakeholder Relations, (alternates - Véronique Dault, Director, Government and External Relations	Speaker #9 at 3:31 (Video = 1:10:05) Lisa was speaking as an alternate for Veronique Acknowledge that we are all in different places today. FN land acknowledgement where I am located today (Toronto – Aneshwabec, Herdonoshownee, Huron Wandat and the Missassaugas of New Credit) and perhaps we can take a moment to reflect on the traditional lands where we are gathered today. I oversee communications at the NWMO. Given the focus of today's discussion, let me start by saying that NWMO has no role in decommissioning power operating stations. That is done by the operators under the oversight of the CNSC. What we do is work together with public and FN to implement plans for the safe longterm management of our country's used nuclear fuel. Am happy that today's discussion has	Nuclear Waste Management Organization

		such a focus on engagement because without a lot of input from people, we wouldn't be where we are today which is moving ahead this really important environmental infrastructure project. Canada has a long history of producing electricity from nuclear power; 2002 federal gov't recognizing the need for a longterm plan passed the Nuclear Fuel Waste Act and it required the establishment of the NWMO. We are a not for profit organization driven by community input, longterm engagement and rigorous scientific and technical acumen. The plan we are implementing itself is a project of engagement; it emerged from dialogue with Canadians and Indigenous peoples and was designed to align with the values and priorities that they identified as NB. The federal Gov't adopted the plan 2007 and directed the NWMO to start implementing it. As we have heard, used nuclear fuel is managed safely today at licenced facilities at the reactor sites, and is true on both sides of the Great Lakes using a perfectly safe approach. But it is temporary requiring active maintenance and management and is widely accepted that it is not a practical or appropriate approach over the longterm, the thousands of years that used nuclear fuel remains hazardous. And that is where we come in. So the technical endpoint of Canada's plan is a DGR in a suitable rock formation and this project is different than the one you people are referring to that OPG advanced for low and intermediate level waste. Canada's plan will use a system of engineered and naturally occurring barriers to contain and isolate the used fuel in the repository indefinitely. Unlike the surface facilities where it is stored today, this is a passive system designed without active human intervention. There is broad scientific concensus that DGR is the safest way to project the environment including our shared water resources. It is consistent with international best practices. It is the approach many nuclear programs around the world are persuing. One unique aspect of the Canadian program is the comprehensive site selection process launched in 2010. Since that time, through intensive investigation and a lot of engagement, we gradually narrowed from 22 communities that proactively expressed interest in participating in this process, down to 2 potential sites (South Bruce and Ignace area). The process is designed to ensure that above all, the location that is selected is safe and secure protecting people and the environment, now and in the future and only proceed with an informed, willing host. That means the people in the area need to understand what it means to host a project like this and support having it located there. Still work to do both technical study and engagement with the public. No decision has been taken. We will only confirm a preferred site when we have done enough study and engagement to be confident that we can develop a strong safety case and establish strong resilient partnerships with	

		municipal, FN and Metis communities. They expect to be decided in 2023 with regulatory process to follow which are open, transparent and provide more opportunity for the public input. Then following about 10 years of construction we expect in the 2040's to begin operating the facility. So the process is a long one. Sum up – We need to adaptive over time as everything does change (best practise, technical insight, social expectations). Engagement we do constantly ensures that it reflects the latest thinking and address the questions and concerns on people's minds as we continue to adapt and move forward. Video = 1:16:06	
10	Patrick Gibbons	Speaker #10 at 3:37 (Video = 1:16:35) Here to speak briefly about topic 1 and our combined experience with public engagement and levels of engagement with NWMO and a little bit about CNSC as well. He finds the levels of engagement and participation to be at the lowest possible level (e.g. here is information, take it, go away, don't ask questions). His first exposure to NWMO was at an open house held in Saugeen Shores in 2012 with about 100 people many of who were opposed to the proposal. Yet the report created by NWMO stated that all present were supportive of the project or wanting to learn more. Because of these skewed results I requested to see actual comment cards. I was told that wasn't possible so again a lack of transparency on their part. OPG failed their international obligations with regards to shared waterways by not considering possible trans-boundary effects of the Kincardine DGR and ignored numerous treaties between Canada and the USA. During the joint review panels hearings we learned that OPG relied on incomplete and inaccurate data when attempting to prove the safety of their plan rather than conducting actual geological research; modelling was used which is a poor substitute for actual science. OPG never considered alternative sites for the project or alternative means for permanent storage which is contrary to the Environmental law. No proof of sustainability for their plan as required as part of the EA; modelled their plan after the waste isolation pilot plant in New Mexico (called WIPP) that was closed for more than a year and had to modify their plans in 2014 after a fire and radiation breach affecting several workers on the surface. E 2004 OPG signed a host agreement with Kincardine and no public acceptance and after promising a referendum to garner community support, the mayor used a faulty telephone poll in January 2005. OPG ignored international prerequisites for DGR (which Eugene mentioned) being an underground research	SOS Great Lakes

		laboratory. OPG and NWMO executives and staff used 14 secret meetings with Bruce County mayors between 2005 and 2013 and the meetings were revealed just prior to the joint review hearings where OPG attempted to label them as consulting with the public. These secret meetings were unlawful as per provincial investigator and had nothing to do with community consultation. OPG announced at the Joint Panel Hearings that they would double the size of the DGR and that they solicited support to local charities and Not for Profits. This was cash for support. Question 2 – What to do with this waste? It has to be in fortified above ground storage with rolling stewardship. Video = 1:22:07	
11	Dr. Shannon Quinn, Commercial Oversight for AECL	11th Speaker (Video = 1:22:10) Our mandate is twofold: 1) Managing nuclear science and technology; 2) managing the government of Canada radioactive waste and decommissioning responsibilities (#2 being the subject matter of today) AECL has land and facilities in 2 locations related to the Great Lakes. Councillor Marsden mentioned the activities in the Port Hope area which are not decommissioning activities. The decommissioning activities associated with AECL are the ones that Ian Bainbridge spoke about earlier, at Douglas Point facility and decommissioning activities that are being proposed to embark on and are the subject of the licence amendment application. AECL is a Federal Crown Corporation and agent of the federal gov't. We own the land and facilities at DP and it is the role of the AECL on behalf of the gov't of Canada to look out for and discharge the obligations of the government with regards to safe and effective decommissioning these facilities. Today AECL is trying to accelerate those decommissioning activities at a number of our sites to address our responsibilities today so they are not left to future generations. The process required is going through the appropriate licencing processes of the CNSC who are charged as Canada's independent regulator to ensure the plans are safe and protective of the environment. As Ian Bainbridge described earlier, AECL owns the land and facilities and holds the obligations and responsibilities, but it is CNL that has the management of all AECL's facilities and lands and undertakes all the day to day work. So it really is CNL that is there on a day to day basis carrying out all of the plans that AECL has approved. Point of clarification – DP decommissioning does not contemplate in-situ disposal (also referred to as entombment). Current plans are still under development partially due to the need for	Atomic Energy of Canada Ltd. (AECL)

		consultation with FN, communities and a broader array of stakeholders. Therefore, the plans under development are developed in a staged type process as they mature in their development so that they can take into account that input. Video = 1:27:09	
12	William J. Noll,	Speaker #12 at 3:48 (Video = 1:27:17) Thanks for considering our views. I live in Teeswater Ontario in South Bruce and vice chair of this group. Our area South Bruce is one of the locations for the DGR that is being contemplated. Our major concerns is regarding water pollution during construction, runoff and floods and radioactive leaks to the groundwater and ultimately leading to the Great Lakes. The site that has been chosen is a 1,500 acre piece of farmland with the Teeswater River running through the middle of it, flowing into the Saugeen River. There are numerous artesian wells and many aquifers and water sources. We are a group of 1,600 eligible votes of a community of 5,600 who have signed a petition to oppose the proposed site for the DGR – prefer Dr. Roland Andrews recommendation of rolling stewardship that is keep it above ground for the foreseeable future. We are not opposed to the suggestion by Ellizza but suggesting that decade's longer would be a good option. DGR concept is not new, but the issue we have is that there is no operating facility in the world. DGR is an extremely complex undertaking and better to have multiple years of operating experiences to assumptions and calculations about the safety of such a facility is actually accurate. Another concern we have is creating a DGR for housing spent fuel will not eliminate the above ground waste that spent fuel rods needs 30 to 40 years of above ground cooling according to the NWMO reports. So we think extending the storage above ground of the spent fuel is the safe thing to do, less risk and no problem at this point in time and should be used for another 50 years as far as we are concerned. Another thought is that to eliminate the need for above ground storage for pools and ponds is not going to happen with a DGR approach. Are a farming community, and prefer to stay that way. Like to see more studies are the probability of reducing the radioactive life of spent fuel – wish to see more focus on that area. Fukashima, Japan example was also a farming community and even after 9 years from the incident that occurred, they cannot sell their products – stigma exists despite studies to say it is safe. So the bottom line is that Communication of NWMO is inadequate. Also the information being promoted by the NWMO and municipality is all in favor of a DGR , they want a DGR and there is no opposing views. We also find that they have been very unsuccessful in the 10 years they have been in operation, of informing the public. We have been given very little information	Protect Our Water Waterways – No Nuclear Waste

		on the alternatives. Video = 1:32:51	
13	Carey Pauquette, Environmental Manager	Speaker #13 at 3:54 (Video = 1:32:58) Meegwitch to Frank for making me aware of today's call. There is a lot of valuable information and a lot of passionate people on the call today. We learned about this call a little late so I am not a technical expert nor am I extremely well prepared for this discussion, but did talk to tribal council this week and they requested my presence on the call. Learn and Listen. Some background on what the Tribe has done – in the past when they were made aware of the DGR project at the Bruce facility, we provided comments to the Canadian EA agency. We asked them to decline of project for multiple reasons. We believe we have a stake in that decision not only are we a community in the Great Lakes basin and on the shore of Lake Huron. Interested in protecting our community and resources. Members have higher regard and higher use of fish and wildlife resources which can also be impacted. There is a lot that we have to say however, I did not have a long time to prepare. However if I were to give some insight and advice on engagement – I appreciate the fact that this is an international approach. So hearing from the indigenous peoples of Michigan and all of the Great Lakes is really essential. Video = 1:36:17	Saginaw Chippewa Tribe of Michigan
14	Anna Tilman	Speaker #14 at 3:57 (Video = 1:36:30) Thought this was a decommissioning call and the concern is Waste, And one of the perpetual difficulties is the current and changing definitions of the various categories of waste. One of the troubling aspects and what escapes from that definition what is not captured in the definition – 2 areas I want to mention; Atmospheric emissions that goes on through filters and conditions and contain radioactive particles which are not captured. What we capture are levels of waste defined as intermediate, high level or low level Definitions are clear for high level waste; what is unclear are the definitions of low and intermediate level waste What has been instituted are clearance levels which are used for release into the environment. Huge loophole and problem as these quantities can be vast. This has been ignored. Secondly, waste is classified as the concentration of radioactivity activity and not the impact on human health or the biosphere. So we have a serious problem when it comes to what we are trying to capsulate when it comes to the decommissioning of these reactors.	Watershed Sentinel Educational Society

		Any repository has to be safe and people are talking about rolling stewardship which has to go on, be it underground and it must be stable. This is the dilemma. So we start with the decommissioning and shut it down and let it be, don't touch it because everything is contaminated. It must be held frozen. However the DGRs to date, as has been mentioned, have had problems world-wide (e.g. Germany, WIPP). There is a lot of flooding that goes on. We really don't know what we are handling. So my concern is that when we talk about decommissioning, what do we really mean? I have not heard a solid definition as to what decommissioning is. Ensuring whatever process is done must ensure this does not escape into the biosphere. Is that even possible? I don't think you can prevent the escape of radioactive gases. (Video = 1:40:15)	
15	Brennain Lloyd	Speaker #15 at 4:01 (Video = 1:40:24) (Note: declined offer to show video) Our founding members were involved in the nuclear waste debate back in the 1970's prior to our founding in 1988. The issue of radioactive waste has been a core work area for us since the 1980's. That is in part, because of the repeated and ongoing efforts to relocate radioactive waste from other parts of Canada to our region and the now transportation of nuclear waste through our region of Northern Ontario. Appreciate the linkages the Water Quality Board has made between nuclear waste and decommissioning. And I also appreciate the focus of this session is on decommissioning, however the 2 are inexplicably linked. Most notably, decommissioning generates waste and the approaching decommissioning dates, or shut down dates for reactor stations in Ontario highlights the absence of any longterm management plan for high level nuclear waste / fuel waste and we also have an absence of a plan for low and intermediate level waste. I will attempt to address the 4 issue areas you have raised. 1. Experience of public engagement – Northwatch has been involved in all stages of OPG now failed DGR project to bury low and so called, intermediate level waste beside Lake Huron. We are involved in the 3 now 4 AECL decommissioning processes and nuclear waste processes, and the Seaborne Commission review back as early as 1990's and the Senate review and now where possible in the ongoing NWMO process, but I will say that the NWMO process excludes those outside their involved municipalities. And interesting to note that all the areas are outside those municipalities. These municipalities have no jurisdiction on areas that are 40 or 60 km outside their boundaries; have no social licence on the position In summary these processes have been flawed in a number of ways: largely the process is focused on "How to get to 'yes'"	Northwatch is a regional organization in Northeastern Ontario

		rather than assessing the project. They don't ID the problem; scope the problem, look for options, evaluate the problem. They are about getting to Yes for approval. Some of the things most dissatisfying is lack of transparency. Example: OPG will not release the groundwater quality at Pickering which is fundamental to being able to assess their decommissioning plan. Inequity between the public and proponents not just in terms of $ and resources but access to decision makers. The selective presentation of information by these proponents and the overall ever changing presentation of the projects and descriptions. As an example, DP inaccurate description of what is happening; have been described as having been decommissioned, and now it is about to be decommissioned. The public process will be limited to 10 minutes before the Commission makes its decision with no opportunity to test the evidence, nor to ask questions. And now we heard today from ACL that the plans for DP are still under development. The hearing has been delayed twice now scheduled for Nov. but the plans are still under development. What kind of a review process is this? I have points on the other 3 items but I will convey those in writing. Video = 1:45:45	
16	Dodie LeGassick	Speaker #16 at 4:10 (Video = 1:49:05) Note: we will circle back to Frank & Ken having video technical issues A perspective from NW Ontario. Have sent to Mark 3 pdf's she obtained from MNR. About water bodies and Treaty 3 and Treaty 9. And her question to MNR if they could put together a chart that shows the number of lakes, rivers and the amount of water and water bodies that we have up here in this area of NW Ontario. We have huge amounts of water 276,422 lakes in NW Ontario (chart sent to Mark). If you include ponds and reservoirs then there are over 320,000 water bodies. Sfc area is 7 million of water. Point to make – the 74,000 km of mapped river, we have an incredible amount of water up here. I know the concern about nuclear waste in Great Lakes, but we are also concerned about the contamination of our water bodies in NW Ontario. In Treaty 3 alone, we have 28 different nations in the area and each one of those nations, just like non-indigenous people, all live near water bodies. In Thunder Bay which is close to where she lives, is on Lake Superior. So when the decommissioning takes place and NWMO puts pressure on Ignace to accept the waste, traffic concerns and transportation factor is not being addressed by NWMO. NWMO is	

		concerned about the casting, the safe transporting of material in the cast, but have not done any study on transport truck collisions which work out to be about 42% traffic collisions been Thunder Bay to the Ignace area, are transport truck collisions. The Carbon Footprint of these trucks has also not been looked into for these trucks from Southern Ontario up to Northern Ontario being 2 or 3 trucks / day for 38 years. When I asked the response was that will be looked at after the site has been found. To me it is unconscionable and needs to be looked at first by NWMO because of the cost and risk factor. Transportation is a big concern. When there are accidents there are always water bodies commonly cause pollution issues to the Great lakes. Secondly, the intro materials captured the question about feedback with the NWMO and the common concern has already been expressed about the real lack of transparency and lack of information for the Indigenous peoples in 28 nations. They speak primarily Ojibwa with a second language often is French or English. No documents, such as the triennial reports about nuclear waste management, is in language of choice. NWMO has indicated that they do have translators but it is very difficult to get them in. NWMO has the money so they should get them translated for the 25,000 Indigenous peoples who live in Treaty 3. When asking NWMO about consent and she is not sure why Ignace got the vote, they cannot define consent; who gets to vote – councils or the people. When asked about the option of shallow storage, they deny that they will not use the option for shallow storage. Lastly, she would like to say that there is a huge about of $, millions of dollars going to the Ignace area which is being viewed as a subtle form of coercion, a way of buying a vote. Those are my main points, please keep us in mind as we are a small population but have very strong feelings about what is happening. Mark advised that he will attach the documents submitted to the record. Video = 1:56:10	
17	Frank Greening	Speaker #17 at 4:06 (Video started at 1:45:50) – Trouble with A/V…skipped -- now working (Video = 1:56:22 Background on me as he seems to be the only organization that is a single person. PhD in chemistry from McMaster and 23 years employed by OPG at the research labs in Etobicoke and in charge of the radio analytical lab doing sample analysis for Bruce, Pickering and Darlington. (samples were water, air, sediment deposits, pipes) Wrote 85 reports; later on spent 3 years helping OPG with their Alpha contamination event in 2009 and wound up in their	Retired OPG employee

		environmental monitoring group. Looking at things like DRL's limits and so on. So he has a very extensive background in radioactive materials from OPG. Main topics here are OPG decommissioning timeline and OPG's longterm radioactive material disposal plan. Ontario has 3 nuclear power stations all located on the shores of the Great Lakes– all are scheduled for decommissioning in the next approx. 50 years. The plans he has seen for these 3 stations generally recommend so called 'safe storage' as step #1 in a site remediation process that will take 100 years to complete. Safe storage is a recognized state for a shut down reactor that is intended to allow the radiation to decay to acceptable levels. What this means in practise, OPG is deferring the vast majority of its decommissioning activity on any of its fleet of 18 reactors for up to 50 years. An associated issue with this deferred decommissioning is "How and where the associated radioactive waste will be stored and ultimately disposed of starting approx. in the year 2050. The only plan that OPG has and the only initiative is planning and seeking approval for construction of the DGR designed for the permanent disposal of its low and intermediate level radioactive waste 680 m below ground and storage capacity of 150,000 cubic metres of assorted waste. The process was stymied by recent events. In January 2020, SON voted against the construction and May 2020 OPG announced abandoned plans throwing the future of radioactive waste disposal in Ontario into great doubt. Never-the-less, OPG still seems to favour the construction of a DGR for low and intermediate level radioactive waste. But has not ID'ed the location for the waste despite the need to do this according to Canada's regulator, the CNSC requires such a plan to be in place for the duration of the management of radioactive waste (quotes Section #). This situation highlights the key role that OPG's present, interim storage site being the Western Waste Management Facility which at present, is discharging the radioactive waste into Lake Huron by way of Baie de Dore wetland We are left with the question, where is OPG going to be putting its radioactive waste. As long as this waste remains stored above ground at the Western Waste management Facility, The future of the water quality of the Great Lakes remains in doubt. (Video = 2:02:16)	
18	Ashley Courchene on behalf of Stuart Wuttke, Director, Legal Assembly of First	Speaker # 18 at 4:24 (Video = 2:03:02) Ashley Courchene on behalf of Stuart. – Junior Policy Analyst in the legal section of AFN I am here to take notes. AFN's role is to support FN communities who have an active role in decommissioning projects. They do	Assembly of First Nations

	Nations, Ottawa, ON,	that by gathering information, disseminating it, doing advocacy work on behalf of FN communities. And presently we are now working with NWMO to ensure Indigenous Traditional Knowledge (ITK) is included and FN communities are properly consulted in regards to nuclear waste and decommissioning. They are working on tools to assist NWMO with ITK and intellectual property protection. They examine other things as to where things could go wrong with the gathering of TIK and abuses have occurred in the past so developing protocols for the use of it. No definition of incorporating TEK and using it properly and documenting it. AFN wants to ensure that when organization make the claim of using ITK, they are actually incorporating that knowledge in a way that it was intended to be used. Knowledge stewardship is a big theme here and they want to ensure that those principles are followed by those organizations that do make that claim. Any questions for AFN or Stuart, he can relay them. (Video = 2:06:23)	
19	Angela Bishop	Speaker #19 at 4:27 (Video = 2:06:55) One of the campaigns we are working on is on the electricity sector and the Pickering Nuclear Station which is in the GTA surrounded by 2.2 million people within 30 km, more people than any other nuclear station in North America (and twice as many people as any other station on the continent). It is one of the world's oldest and largest nuclear stations with 8 reactors and waste built up since 1969. Slated to close in the latest extension, in 2024. There is a growing waste problem at the station and as of 2017, there is 340,000 spent fuel assemblies in dry storage and 400,000 spent assemblies and tools; and OPG is building 3 more radioactive storage buildings onsite. They plan to expand in order to meet onsite storage demand. As of 2017 Pickering waste includes 56,000 kg of plutonium, and by 2024 there will be more plutonium waste onsite more than all nuclear war heads on the planet. Should not be stored onsite in the pools and on the conventional storage sites. We started a petition (with 1,500 signatures, mostly Pickering residents) requiring immediate dismantling of the site when it shuts down. 2024 is planned shutdown by OPG and deferred decommissioning for at least 34 years at which point the waste could be moved to a DGR (which could take much longer than 34 years). So the petition calls for immediate decommissioning of the station which is the rec'd decommissioning plan by the IAEA. They recommend decommissioning as the safest method and because we won't have a DGR for some time, we propose that the decommissioning waste be pushed back away from the waterfront (being vulnerable to climate impacts) and locate at NE part of the site and stored in above ground, attack resistant,	Ontario Clean Air Alliance, a small environmental, civil society organization.

		reinforced concrete vaults which would be much safer, more easily monitored and retrieved and moved if needed. That way the site can be decommissioned 34 years sooner, In January, Pickering city council voted on this plan for immediate dismantling and they requested the site be immediately dismantled which received unanimous approval. We applauded when OPG allowed the SON to veto the DGR proposal and likewise, OPG should respect the local Pickering City Council's desire for immediate dismantlement and reclamation of the waterfront 30 years sooner than they would otherwise have done. Will send their report. (Video = 2:12:07)	
		Closing remarks Video = 2:13:21	
		Video Ended = 2:21:21	

24 people joined the video conference early at 2:28

31 joined the video call at 2:29

52 people were on the video conference call at 3:30

The Lake Huron Centre for Coastal Conservation
is a registered charity founded in 1998 with the goals of protecting and restoring Lake Huron's coastal environment

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