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Safety Commission

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sûreté nucléaire

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M. Marc Leblanc

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon commencing on Wednesday, April 12, 2017  
at 11:37 a.m. / L'audience publique débute le  
mercredi 12 avril 2017 à 11 h 37

### **Opening Remarks**

**M. LEBLANC** : Bonjour, Mesdames et Messieurs. Bienvenue à cette audience publique de la Commission canadienne de sûreté nucléaire.

The public hearing today is regarding the application by Ontario Power Generation, or OPG, for the renewal of the Waste Facility Operating Licence for the Western Waste Management Facility.

During today's business, we have simultaneous interpretation.

Des appareils de traduction sont disponibles à la réception. La version française est au poste 2 and the English version is on channel 1.

We would ask that you please keep the pace of your speech relatively slow so that the interpreters have a chance to keep up.

L'audience est enregistrée et transcrite textuellement. Les transcriptions seront disponibles sur le site Web de la Commission dès la semaine prochaine.

And to make the transcripts as meaningful as possible, we ask everyone to identify themselves before speaking and to try, inasmuch as possible, to avoid acronyms.

I would also like to note that this proceeding is being video webcast live and that the proceeding is also archived on our website for a three-month period after the close of the hearing.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, va présider cette audience publique.

Mr. President...?

**LE PRÉSIDENT** : Merci, Marc.

Good morning and welcome to the public hearing of the Canadian Nuclear Safety Commission.

Mon nom est Michael Binder, je suis le président de la Commission canadienne de sûreté nucléaire.

Je souhaite la bienvenue aux gens ici présents and welcome to all of you watching the webcast or participating via videoconferencing.

I would like to introduce the Members of the Commission that are with us today.

First of all, it's a pleasure to introduce

two of the three new Commissioners: on my right, Dr. Soliman A. Soliman, and on my left, Dr. Sandor Demeter. We have another Commissioner who cannot be with us today and that is Mr. Rob Seeley. He will join us in some other hearing in the future.

We also have with us Dr. Sandy McEwan and Ms Rumina Velshi.

We have heard from our Secretary Marc Leblanc and we also have with us here today Ms Lisa Thiele, General Counsel to the Commission.

#### **CMD 17-H4.A**

#### **Adoption of Agenda**

**THE PRESIDENT:** So I would like to start by calling for the adoption of the agenda, as outlined in Commission Member Document 17-H4.A.

Do we have concurrence on the agenda?

So for the record, the agenda is adopted.

**MR. LEBLANC:** The Notice of Public Hearing and Participant Funding 2017-H-01 was published on July 25, 2016.

The submission from Ontario Power Generation and the recommendations from CNSC staff were filed on February 10, 2017.

The public was invited to participate either by oral presentation or written submission. March 13 was the deadline set for filing by intervenors. The Commission received 19 requests for intervention.

Participant funding was available to intervenors to prepare for and participate in this public hearing. A Funding Review Committee, independent of the Commission as it is made up of external members not related to the CNSC, rendered its decision and provided funding to three applicants. The funding decision will be available on the CNSC website at a later date.

April 5th was the deadline for filing of supplementary information and presentations. We note that supplementary submissions and presentations have been filed by OPG, CNSC staff and several intervenors.

We will begin with the presentations by OPG and CNSC staff, followed by the presentations from intervenors. The Members will have the opportunity to ask questions after each intervention.

After the oral interventions, we will then proceed with the written submissions filed by the intervenors and we will end the proceeding with final rounds of questions.

All the documents that will be referred to are available at the reception desk.

Mr. President...?

**THE PRESIDENT:** Thank you, Marc.

Before beginning with the presentations, I wish to note that we have representatives from the Historic Saugeen Métis who are joining us via videoconference at the CNSC Bruce site office. So let's verify the technology.

Ms McArthur, can you hear us?

**MS MCARTHUR:** Yes, I can.

**THE PRESIDENT:** Okay, thank you.

Also joining us by teleconference are Ms Nardia Ali and Mr. Duck Kim from Environment and Climate Change Canada, and Mr. Jacques Hénault from Natural Resources Canada.

Ms Ali and Mr. Kim, can you hear us?

**MR. KIM:** Yes, I can hear you,

Mr. President.

**THE PRESIDENT:** Okay.

Monsieur Hénault, can you hear us?

**MR. LEBLANC:** I believe Monsieur Hénault will join us if there are questions related to the nuclear liability legislation, so he's on standby.

**CMD 17-H3.1/17-H3.1A/17-H3.1B**

**Oral presentation by**

**Ontario Power Generation**

**THE PRESIDENT:** Okay. So I would like to start the hearing by calling on the presentation from Ontario Power Generation, as outlined in Commission Member Document 17-H3.1, 3.1A and 3.1B.

I understand, Ms Morton, you will make the presentation. The floor is yours.

**MS MORTON:** Good morning, Chairman Binder and Members of the Commission.

For the Record, my name is Lise Morton, Vice President of Ontario Power Generation's Nuclear Waste Management. I am accountable for the safe and reliable operation of our Waste Management Facilities, including the Western Waste Management Facility.

With me today are:

- to my right, Darren Howe, the Director of Western Waste Operations;

- to my left, Allan Webster, the Director of Operations Business Support;

- behind me to my right, David Witzke, the Director of Nuclear Waste Engineering; and

- behind me to my left, Raphael McCalla,

the Director of Environment Operations Support.

We also have other OPG personnel in attendance to respond to any questions the Commission may have.

We are here today to seek approval to operate the Western Waste Management Facility for an additional 10-year period. We are also here to request approval for some planned expansions, the effects of which have been assessed and confirmed to pose no significant risk to the environment.

At OPG, we speak about the "three pillars" of Nuclear Waste Management. These are: Stewardship, Lasting Solutions and Peace of Mind.

"Stewardship" is a word that resonates with our staff as well as with the public in the communities where we operate. "Stewardship" speaks to the level of serious consideration and care with which we transport, process and store the waste.

Lasting solutions are the plans we are making to store waste in the very long term, not just in the interim, but with a sustainable and permanent solution that will protect the environment long into the future -- the right thing to do for future generations.

Peace of mind is what we provide to the public. We know the public relies on nuclear energy as a

safe, clean and reliable source of electricity. By taking care of the waste responsibly and safely, we ensure the public has no cause for worry. As a matter of accountability, we manage our operations with openness and transparency. We know that we have to maintain the trust and confidence of our regulators, our communities and the wider public.

We have a proud history at the Western Waste Management Facility of over 40 years of safe handling, processing and storage of the low- and intermediate-level radioactive waste from all of Ontario's nuclear generating stations. We also have over 14 years' history safely transferring, processing and storing used fuel from Bruce Nuclear Generating Stations.

Today, we will review our stewardship over the past 10 years and look at our program over the next 10 years.

Stewardship means safe and careful handling of the waste through its entire lifecycle.

The first step, of course, is the safe and efficient transportation of radioactive material.

In over 40 years of transporting radioactive materials, OPG has never had an accident resulting in a radioactive release or personal injury.

OPG's transportation packaging designs are

robust, meet international standards and are certified by the CNSC.

OPG uses the classifications of low-level, intermediate-level and high-level to describe radioactive waste. I will now speak to you about each of these classifications as they pertain to the Western Waste Management Facility.

Regarding low-level waste, at the Western Waste Management Facility we receive low-level waste and process it either through incineration or compaction where possible. Minimization of low-level waste has been a focus for OPG for many years through programs implemented at the stations such as requirements for removal of packaging from equipment and tools prior to entering the station through to the use of reusable personnel protective equipment.

In Nuclear Waste Management Division, we work with our station partners to find ways to prevent where possible and minimize radioactive waste generation at the source. Waste collection areas at the stations are set up such that up-front segregation can be completed. Waste bins are clearly labelled as "likely clean", indicating that the waste has come from an area of the plant or been used in a task not likely to have resulted in contamination. Each bag of likely clean waste is further verified through a comprehensive monitoring program to

ensure that any materials released from site meet the applicable regulatory requirements.

Other wastes which have originated from areas of the plant or through work tasks that may have resulted in contamination are placed into bins labelled "active" and shipped to the Western Waste Management Facility as low-level waste.

At the Western Facility, we have made significant improvements in waste minimization during this past 10-year licence period. Starting in 2014, we implemented a program to retrieve waste from storage, re-sort it and further reduce the volumes wherever possible through further compaction or incineration. To give you some idea of the success of this program, in the first two years we have recovered 1,330 m<sup>3</sup> of low-level storage space. That is equivalent to one-fifth of an entire storage building.

This is why we have proposed a project for construction of a permanent waste sorting building, which is included in the scope of this licence renewal. It demonstrates our commitment as a company to waste minimization.

Regarding the intermediate-level waste, safe handling and storage of this waste is a critical part of our operations at the Western Waste Management Facility.

Storage of intermediate-level waste in our in-ground containers requires careful planning, precision of execution and a focus on safety at all times.

During this last 10-year licence period, our highly qualified staff, which includes, in this case, provincially licensed mobile crane operators, safely placed approximately 1,000 m<sup>3</sup> of intermediate-level waste into in-ground containers without incident.

Regarding the used fuel, since beginning operation of the Western used fuel facility, we have processed and stored over 1,300 dry storage containers. We have done this while meeting all requirements for safeguards under the International Atomic Energy Agency.

To OPG, stewardship also means caring about the plant and its equipment and ensuring safe and reliable operation. We have an integrated program to ensure that our systems, structures and components are properly operated and maintained and remain fit for service at all times.

Preventive and predictive programs are developed and implemented to ensure the systems, structures and components will perform required functions when called upon. System Performance Monitoring Plans are developed to address aging and degradation of structures and components. Parts are sourced and replaced through rigorous engineering

processes to ensure the design basis of the system is maintained.

Systems, structures and components critical to plant operations and protection of the environment, such as in-ground structures for intermediate-level waste or used fuel dry storage containers have detailed Aging Management Plans. These plans identify the actions needed to detect, monitor, trend and mitigate aging effects. We also ensure that we incorporate the experience of others into the plans.

The health of our systems, structures and components is reviewed on an ongoing basis by our senior leadership team. We ensure ongoing necessary investment is made to sustain the safe and reliable operation of our plant.

I would like to specifically address the incinerator performance as a result of some comments from intervenors.

The incinerator plays a key role in achieving a high volume reduction for the low-level waste stream and therefore significantly reducing the storage volume required and hence the environmental footprint. The incinerator is licensed by both the CNSC and the Ontario Ministry of Environment and Climate Change. The incinerator is equipped with two radiological stack

monitors and a continuous emissions monitor for conventional emissions. The incinerator must meet strict requirements for these emissions and for opacity and is equipped with a 120-bag filtration system. There is also activated carbon and lime addition for flue gas treatment.

All of the stack monitors undergo routine, in some cases daily, calibration and verification. The incinerator undergoes rigorous annual stack testing for conventional emissions using external certified stack testing experts and the annual report is submitted to both the Ministry of Environment and Climate Change and the CNSC. The radiological stack monitors are also independently verified and tested on an annual basis to ensure that their operation meets all regulatory requirements. The public can rest assured that the incinerator is operated safely.

Along with reliable operation, we must verify that our Western Waste Management Facility is safe to the workers and the public.

The operation of the Western Waste Management Facility is supported by comprehensive safety analysis that has been developed using conservative bounding assumptions.

Under normal and accident conditions such as fire or extreme weather events, the safety analysis

demonstrates that releases of radioactivity are within CNSC regulatory limits. This is documented in the Safety Report.

A public summary of the Western Waste Management Facility Safety Report is available on [opg.com](http://opg.com).

During this licence period, we also completed a post-Fukushima review of nuclear waste operations. All actions were completed and accepted as closed by the CNSC as of January 2015. No significant gaps were found but improvements and enhancements were made.

During this past licensing period, Nuclear Waste Management implemented the Human Performance Management Program that is used across the OPG nuclear fleet.

The program includes placing a rigorous focus on event-free tools, including procedural use and adherence, effective communications, questioning attitude and situational awareness, as well as encouraging reporting of low-level events and then addressing and analyzing these events and applying the lessons learned.

In 2015, a Nuclear Safety Culture Assessment was performed which included a detailed survey sent to all of our personnel as well as interviews and field observations conducted by a team which included external members. The assessment team concluded that

Nuclear Waste Management Division has a healthy nuclear safety culture.

As part of our commitment to continuous improvement, we are currently designing another survey for waste management staff in 2017, looking more closely at the event-free tools, confirming which are used most often in their daily activities and any improvements they believe could be made in their usage of these tools.

OPG's health and safety objectives are to achieve and maintain continuous improvements in safety performance. As of the end of February 2017, the Western Waste Management Facility has worked over 2,000 days or approximately 6 years without a lost-time accident. We are very proud of our safety record.

Nuclear Waste Management's all-injury rate performance was better than target from 2010 through 2016 and is also better than target year-to-date in 2017.

In November 2016, OPG received the Canadian Electricity Association President's Gold Award of Excellence for Employee Safety in recognition of our company-wide all-injury rate and accident severity rate performance for 2013, 2014 and 2015.

Despite this good performance, we at OPG are still not satisfied and we believe that we can do even better. In 2016, an initiative entitled "iCare" was

launched. Across OPG and within Nuclear Waste, employees and work groups demonstrated their commitment to safety by reflecting on and documenting their individual and group commitments to care for themselves and each other. It was through these and other ensuing discussions that our employees first brought forward the idea of stewardship and how they valued their role in providing peace of mind to the public. This iCare initiative was well received by employees and continues this year.

The Western Waste Management Facility has continued to show strong performance in the area of radiation protection. In the past 10-year licence period, our worker dose has been consistently below OPG's action levels and CNSC regulatory limits.

Fundamental radiation safety practices are used through consistent anticipation of hazards, then rigorous planning and control of those hazards throughout task execution and completion. Promotion of the principle of maintaining dose as low as reasonably achievable engages our staff to continue to keep doses well below OPG's individual exposure control level and to routinely explore opportunities to modify work practices to drive doses even lower.

Environmental protection is an important element of good stewardship. Nuclear Waste Management

holds itself to a high standard, based on a commitment to the principles of sustainable development.

OPG maintains a corporate-wide Environmental Management System which is certified to the (ISO) 14001 Standard and is compliant with REGDOC-2.9.1, *Environmental Protection Policies, Programs and Procedures*. OPG's Environmental Management System requires assessment of environmental risks associated with the activities of our facilities, including the Western Waste Management Facility, and ensures that these activities are conducted such that any adverse impact on the natural environment is As Low As Reasonably Achievable. All regulatory and legal requirements are achieved through the implementation of this management system. Our program has resulted in excellent performance due to the mitigating actions we take to avoid spills.

OPG's monitoring program at the Western Waste Management Facility consists of an environmental monitoring program, an effluent monitoring program, and a groundwater monitoring program. These programs remain consistent with applicable CSA standards. OPG is continually evaluating its monitoring programs to verify assumptions and assess changing conditions to ensure they reflect our operations.

The effluent monitoring program is

designed to characterize the risk associated with the contaminants released during the operation of the facility on an ongoing basis. Our program includes evaluating emissions based on the designated discharge points as well as from other sources of emissions. Through our effluent monitoring program, OPG has demonstrated that the emissions from our operations are well understood and meet all regulatory requirements.

The environmental monitoring program is designed to verify the predictions made in the Environmental Risk Assessment, demonstrate effectiveness of containment and effluent control, and through environmental sampling and analysis support the calculation of public dose.

The radiological waterborne and airborne emissions at the Western Waste Management Facility continue to be well below one percent of the derived release limits, and well below one percent of the public dose limit of 1 millisievert. Our conventional emissions from the incinerator have been well below our regulatory limits with respect to dioxins and furans and other conventional emissions.

OPG also works with its community partners on initiatives to improve regional ecosystems, habitat protection, and environmental stewardship. On the site,

OPG has implemented biodiversity initiatives such as protecting a meadowlark breeding area and installing winter shelters for snakes. Future biodiversity initiatives will be installed in 2017.

The Western Waste Management Facility has a rigorous emergency preparedness program, which is integrated with the plans of Bruce Power and the municipalities. Under its lease agreement with OPG, Bruce Power provides comprehensive, on-site emergency response capability. We continually drill and train staff to test procedures, equipment, and people.

OPG has a transportation emergency response plan, which is tested on an annual basis to validate the effectiveness of the plan's capability and to ensure safety of the public, environment, and employees in the event of a transportation emergency.

We recognize that waste operations and the future disposal of waste are of keen interest to the public. We work hard to earn the public's trust through open and transparent communication and continuous outreach.

On a quarterly basis, we publicly post on [opg.com](http://opg.com) performance reports on nuclear waste operations along with a new quarterly report on environmental performance in an easy-to-read format. And starting in 2015, we have taken the additional step of publicly posting

the occurrence of waste-related reportable events each quarter. When approached by members of the public with requests for additional information, OPG endeavours to provide it.

We meet face to face with members of the public, the media, and local municipal councils. Over the past 10 years, we have provided hundreds of organized tours of the Western facility to interested groups, including students and teachers, journalists, elected officials, Indigenous communities, service clubs, and other members of the public.

OPG is committed to building and growing long-term, mutually beneficial working relationship with First Nations and Métis communities whose traditional territories are or may have been near our Western Waste Management Facility. The relationships continue to mature and build trust and understanding.

OPG has been collectively engaged in a respectful working relationship with both the Historic Saugeen Métis and the Métis Nation of Ontario. OPG has agreements with these Métis communities to help to frame the discussion and respond to their identified issues and concerns. OPG meets with the Historic Saugeen Métis and Métis Nation of Ontario on a regular basis in addition to providing pertinent information by email between meetings.

We value the relationships we are building with these communities and the information we receive from them.

Our supplemental submission provides more information on our work with Métis Nation of Ontario specifically, and we have committed to continue to work with Métis Nation of Ontario to explore ways in which the Métis knowledge can be incorporated into future environmental monitoring.

We also continue to have engagement and respectful dialogue with the Saugeen Ojibway Nation. We recently provided Saugeen Ojibway Nation with a further commitment letter surrounding our operations at the Western Waste Management Facility. We have committed to regular updates on our operation, including environmental management; waste volumes received, processed, and reduced; new techniques or interests in volume reduction and waste minimization; and any proposed changes to plans for future facility expansion.

We commit to making future decisions with respect to the Western Waste Management Facility with consideration given to the input received from Saugeen Ojibway Nation that respects the concerns and interests of SON and its community.

During the next licensing period, OPG has requested its planned expansion of four additional used

fuel dry storage buildings, 11 low- and/or intermediate-level storage buildings, 270 in-ground containers for storage of intermediate-level waste, 30 in-ground containers for storage of heat exchangers, a large object processing building and a waste sorting building. This is in alignment with OPG's business plan.

I would like to explain a little about the process we use to forecast our future growth requirements. Nuclear Waste Management has a comprehensive process called system planning which calculates future waste volumes for each waste stream and this is completed annually. Using system planning, we can then forecast the need for additional buildings and in-ground structures, even as assumptions change.

I do want to make it clear that we do not build additional buildings or structures unless these are needed. As explained in more detail in our supplementary submission, the need for some of the facilities we have requested is confirmed. The need for other buildings will be confirmed at a future date.

To ensure our planned expansions will protect the environment and human health and safety, in 2016 we followed the rigorous process defined in CSA Standard N288.6-12, *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*, and

performed both a baseline environmental risk assessment to document the potential environmental risk from current operations and a predictive effects assessment to assess the potential new and incremental effects of the site preparation, construction, and the operation and maintenance of the new facilities. In addition to our ongoing monitoring data to support these assessments, OPG also completed a comprehensive field sampling plan.

For the existing operations, the environmental risk assessment concluded that no human health or ecological risk effects are likely due to radiological and conventional emissions from the Western Waste Management Facility. Of note, risks to benthic invertebrate due to exposure to copper and zinc in the sediment in the South Railway ditch were assessed and no adverse effect is expected, because the metals are probably not available for uptake. No impacts are expected further downstream.

In the case of the predictive effects assessment, it was concluded that no adverse environmental effects are likely from the Western Waste Management Facility expansion project, provided appropriate mitigations to minimize environmental impact are implemented. Potential effects such a habitat loss for the little brown bat and the removal of butternut trees can be

successfully addressed through mitigation measures.

In summary, I would like to return to the pillars of Nuclear Waste Management at OPG: stewardship, lasting solutions, and peace of mind. We are proud of our accomplishments during the past 10 years: the stewardship we have provided, the care and attention to safety and the environmental, and the peace of mind we provide to the public. Grounded in these important values, we continue to look for ways to improve our performance in the next 10 years.

We will always put safety first. We continue to focus on human performance, to promote the continuing safety of our staff and the public. We will communicate our activities and operations in an open and transparent manner. We will continually explore opportunities to reduce our environmental footprint even further, by minimizing waste, monitoring site conditions, and supporting biodiversity programs.

Our results over the last 10 years and our future plans demonstrate that OPG is qualified to operate the Western Waste Management Facility, and OPG has and will continue to make provision for the protection of the environment, the health and safety of persons, and the maintenance of national security and measures required to meet Canada's international obligations.

We respectfully request that the licence renewal and expansion be approved.

Thank you. We are available to answer any questions.

**THE PRESIDENT:** Thank you. I would like now to turn to the presentation from CNSC staff, as outlined in CMD 17-H3, H3.A, and H3.B. I understand that Ms Haidy will make the presentation. The floor is yours.

**CMD 17-H3/17-H3.A/17-H3.B**

**Oral presentation by CNSC Staff**

**MS TADROS:** Thank you, sir. And bonjour. Welcome to the new Commission Members. We are pleased to be here today to present to you OPG's -- Ontario Power Generation's application for relicensing of the Western Waste Management Facility. For the record my name is Haidy Tadros. I am the director general of the Directorate of Nuclear Cycle and Facilities Regulation at the CNSC.

With me now are my colleagues Ms Karine Glenn, director of the Wastes and Decommissioning Division, as well as Ms Shirley Oue of the same division. We are also joined by other CNSC colleagues and technical specialists familiar with this file and who are available to any questions that you may have.

Our presentation identified as CMD 17-H3.B summarizes and highlights CNSC Staff's written submissions found in CMD 17-H3 and the supplementary staff submission CMD 17-H3.A.

This slide highlights what we will be covering in our presentation. We will begin by first summarizing the purpose of the hearing, followed by an overview of the Western Waste Management Facility, a summary of CNSC's regulatory oversight of the Western Waste Management Facility as well as CNSC Staff's assessment of Ontario Power Generation's performance over the current licence period. The proposed licence and draft licence conditions handbook will also be discussed, followed by CNSC Staff's conclusion and recommendations to the Commission on the licence renewal requested by Ontario Power Generation for the Western Waste Management Facility.

The next two slides identify some corrections to CNSC Staff's CMD 17-H3.

The first bullet on Table 4, page 14, CNSC Staff conducted six inspections in 2016, and not eight.

Figure 7 on page 45, the average dose in millisieverts for 2010 was 0.7, and for 2011 the dose was 0.3.

And finally, on page 34, last paragraph, the reference to licence condition 4.2 has been removed, as

the requirement for a safety analysis report is covered under the Class I Nuclear Facilities Regulation.

I will take a few moments if you need it to go through the CMD.

**THE PRESIDENT:** Please proceed. We're not going to absorb this right now on the record.

**MS TADROS:** Okay. This slide identifies two more corrections specific to the EA report.

Table 3.8 on page 34, the units for total emission is in becquerel per litre -- sorry, becquerels per cubic metre. Table 3.10 on page 35, the concentration column microgram per cubic metre of fine particulate matter, the PM<sub>10</sub> value, is 87. The respirable particulate matter, the PM<sub>2.5</sub>, concentration is 29. The nitrogen dioxide concentration is 345, and the carbon monoxide concentration is 2,096.

These corrections will be reflected for the record after these proceedings. We apologize for any confusion this may have caused.

Ontario Power Generation's licence renewal application was submitted in May of 2016. In their submission, OPG has requested that the Commission renew its operating licence for a period of 10 years, including carrying over activities that have already been approved in the current licence, authorize the construction of

additional waste structures within the Bruce Power site boundary, and authorize the consolidation of the licensed activities of import and export of nuclear substance from Ontario Power Generation's Nuclear Substance and Radiation Devices licence with the proposed licence renewal.

As a result of Staff's review of the application as well as operating performance at the Western Waste Management Facility for the current licence period, Staff recommend that the Commission issue OPG a licence for 10 years until May 31st, 2027.

I will now pass the presentation over to my colleagues, who will begin by providing an overview of the facility.

**MS GLENN:** Good morning, Mr. President, Members of the Commission. My name is Karine Glenn, and I am the director of the Wastes and Decommissioning Division at the CNSC.

The next few slides will provide an overview of the location and layout of the Western Waste Management Facility and discuss the activities carried out at the facility.

The Western Waste Management Facility is located at the site of the Bruce Nuclear Generating Station on the east shore of Lake Huron in the municipality of Kincardine, Ontario.

The Western Waste Management Facility includes both the Low and Intermediate Level Waste Storage Facility and the Used Fuel Dry Storage Facility.

At the Low and Intermediate Level Waste Storage Facility, OPG receives waste from the nuclear generating stations. The waste may be stored as-is or processed to reduce its volume through either incineration or compaction.

The Used Fuel Dry Storage Facility is contained within its own protected area, separate from the protected area of the Bruce Nuclear Generating Station but within its site boundary, and consists of one dry storage container, or DSC, processing building and four DSC storage buildings. The Used Fuel Dry Storage Facility has a capacity to store 2,000 DSCs.

The transfer of loaded DSCs from the Bruce Nuclear Generating Stations to the Western Waste Management Facility is conducted on the Bruce Power site with a security escort.

The licence for the Western Waste Management Facility authorizes the construction of an additional nine storage buildings for low- and intermediate-level waste, 128 in-ground storage containers for intermediate-level radioactive waste, and two DSC storage buildings.

OPG's current licence was issued by the Commission on June 1st, 2007, and is valid until May 31st, 2017. This licence authorizes the safe handling, management, and interim storage of radioactive waste; the transfer of the loaded DSCs from the Bruce site to the Western Waste Management Facility; and the construction of additional buildings as previously itemized. The licence also authorizes OPG to receive low and intermediate waste from the Darlington, Pickering, and Bruce nuclear generating stations.

OPG submitted its licence application on May 16th, 2016. CNSC Staff performed a technical assessment of OPG's application and undertook a review of OPG's performance over the current licence period.

OPG's performance in all safety control areas, or SCAs, has remained stable or improved over the current licence period. Through CNSC's compliance monitoring program, CNSC Staff have also verified OPG's implementation of program improvements over this period. CNSC Staff conclude that OPG is able and willing to continue to maintain safe operations at the facility.

The next six slides will cover OPG's proposed construction activities. In their application for licence renewal, OPG has requested approval for site preparation and construction of additional structures. The

proposed structures would be constructed within the Bruce Power site boundary as is shown by the pink line on the slide, adjacent to the current Western Waste Management Facility area, shown shaded in brown.

OPG's proposed construction is needed for the interim storage of used fuel as well as low- and intermediate-level waste generated from licensed activities, including the refurbishment of the Darlington Nuclear Generation Station. In this picture, the red line shows the current Western Waste Management Facility boundary, and the proposed expansion is in dark blue. The new buildings would go in the construction lay-down area shown on the left or in the woodlot area shown on the right.

As mentioned, the current licence for the Western Waste Management Facility authorizes the construction of several structures. The first column of this table lists the structures previously authorized by the Commission but not constructed during the current licensing period. OPG is requesting that the approval to construct these buildings be carried forward in the proposed licence.

In addition, as listed in the second column, OPG is requesting approval for site preparation and construction of four DSC storage buildings for used dry

fuel and structures for the interim processing of low- and intermediate-level waste, which consists of six storage buildings, 216 in-ground containers, 10 in-ground containers for heat exchangers, one large object processing building, and one waste sorting building.

The last column summarizes the total number of structures of each type that OPG has requested be authorized in the proposed licence.

For the construction requested by OPG, the proposed licence requires OPG to submit an environmental management plan, a construction verification plan, and project design requirements prior to the commencement of construction activities. There is also a hold point requiring OPG to submit commissioning reports for CNSC review and acceptance prior to the operation of additional structures.

CNSC Staff recommend that the Commission authorize the delegation of authority to CNSC Staff for acceptance of the commissioning reports only for the buildings required to support approved projects and activities, as outlined in CNSC Staff's supplementary CMD 17-H3.A.

This slide shows a list of buildings that are required to support approved projects and activities such as ongoing operation of the nuclear power plants and

the Darlington refurbishment. For these buildings, CNSC Staff recommend that the Commission delegate its authority to Staff for acceptance of the commissioning reports prior to operation of the buildings.

This second slide shows a list of buildings that are required to support future anticipated projects. These projects include the major component's replacement of the Bruce Nuclear Generation Station and OPG's Deep Geological Repository. Prior to the operation of the buildings on this list, acceptance of the commission report by the Commission would be required.

OPG is authorized to conduct the activities of import and export of nuclear substances under a separate and existing Nuclear Substances and Radiation Devices Licence. This licence allows OPG to send contaminated laundry or equipment to the United States to be cleaned and then returned to the Western Waste Management Facility. OPG is requesting the consolidation of their licence activities of import and export of nuclear substances with the proposed Waste Facility Operating Licence.

The next few slides discuss CNSC's regulatory oversight of the Western Waste Management Facility. The CNSC has a robust regulatory framework in place to ensure the continued safe operation of licensed

nuclear facilities. Regulatory oversight is provided by CNSC Staff to ensure licensees operate in a safe manner and in compliance with the requirements of the *Nuclear Safety and Control Act* and associated regulations, as well as licence conditions and applicable regulatory documents.

The CNSC verifies compliance through site inspection and also by desktop review of operational activities and licensee documents. In addition, licensees are required to report routine performance data and unusual occurrences.

CNSC Staff carry out investigations of unplanned events or accidents that occur at the licensee's site. To complement existing and ongoing compliance activities through the Independent Environmental Monitoring Program, or IEMP, CNSC Staff collect samples of environmental media and analyze them in CNSC's analytical laboratory.

CNSC's approach to compliance includes activities to encourage compliance, verification activities to assess compliance, and graduated enforcement actions in cases of non-compliance.

Over the current licence period CNSC Staff spent 1,884 person days of regulatory oversight effort for the Western Waste Management Facility. The increased licensing effort noted in 2016 on this slide is a

reflection of the effort associated with the reviews of documents submitted for this licence renewal and Staff's preparation for the current licence renewal process.

Over this same period CNSC Staff conducted 42 on-site compliance inspections as well as numerous other site visits, meetings and events involving CNSC technical specialists.

Inspections conducted by CNSC Staff during the current licence period did not identify any safety-significant findings. Findings are presented to the licensee at the end of the on-site portion of an inspection in a preliminary report of facts and findings followed by a detailed inspection report.

When a non-compliance is identified, CNSC Staff assess its significance and determine the appropriate enforcement action. The implementation of corrective actions is continually monitored through to closure under regulatory oversight and is tracked using the CNSC Regulatory Information Bank tool. All corrective actions for the Western Waste Management Facility have been closed.

OPG's required to report to the CNSC situations or events of potential safety significance. For example, events that could lead to a serious adverse effect on the environment or a serious risk to the health or safety of persons or the maintenance of security if no

action was taken by the licensee.

OPG has also implemented a public information program that includes a disclosure protocol. Under the requirements of this program, OPG provides information to the public on events and incidents of interest to its stakeholder community. OPG submits compliance and performance reports and routinely reports on the results of ongoing monitoring activities that cover a variety of safety-related topics to the CNSC.

Event reports that are significant in nature or may be of significant public interest are brought to the attention of the Commission at public meetings by CNSC Staff. OPG also publishes information about events and compliance reports as well as key licence renewal documentation placed on its website.

In addition, CNSC Staff report annually to the Commission on OPG's performance in the form of regulatory oversight reports.

I will now pass the presentation over to Ms Shirley Oue to present CNSC Staff's performance assessment of current operations at the Western Waste Management Facility.

**MS OUE:** Good afternoon, Mr. President and Members of the Commission. My name is Shirley Oue, and I'm Senior Project Officer with the Wastes and Decommissioning

Division, and also the Project Officer for the Western Waste Management Facility.

Regulatory oversight is performed in accordance with the standard set of safety and control areas, or SCAs. SCAs are technical topics used across all CNSC-regulated facilities and activities to assess, evaluate, review, verify and report on licensee regulatory requirements and performance.

The table on this slide provides the overall ratings for each safety and control area at the Western Waste Management Facility. As detailed in CNSC Staff's written submission CMD 17-H3, OPG has maintained a satisfactory rating across all SCAs during the current licence period and a fully satisfactory rating for operating performance, safety analysis, conventional health and safety, and security.

To summarize CNSC Staff's evaluation of OPG's performance for the current licence period and as detailed in CNSC Staff's CMD, the Western Waste Management Facility programs have met regulatory requirements and are effectively implemented by OPG; worker doses and environmental releases have remained well below regulatory limits; and OPG's performance has been satisfactory or fully satisfactory in all safety and control areas for the currently licence period.

CNSC Staff will continue to monitor OPG's performance through regulatory oversight activities to verify that OPG has made adequate provision of protection for workers, the public, and the environment.

The following slides will provide a summary as well as highlights from CNSC Staff's written submission. While CNSC Staff's CMD covers all 14 SCAs for the current licence period, the following matters of regulatory interest were considered to be of particular interest to stakeholders, Aboriginal groups, the public, and the Commission.

The first SCA is management system. Management system covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.

OPG has effectively implemented CSA N286-12. In 2013 OPG implemented a new organizational structure consolidating some corporate programs and updating its governing documentation. These documents describe the management system under which OPG carries out licence activities at the Western Waste Management Facility.

Further changes in the organizational

structure were made within OPG in 2016. Following a thorough review, CNSC Staff concluded that these did not result in any changes to the Western Waste Management Facility organization structure or impact the safe conduct of licensed activities. CNSC Staff verified that OPG maintained the management system at the Western Waste Management Facility and that it complies with CSA N286-12.

The human performance safety and control area covers activities that enable effective human performance through the development and implementation of processes. These processes ensure a sufficient number of licensee personnel are in all relevant job areas and the necessary knowledge, skills, procedures and tools are in place to safely carryout their duties.

OPG has a robust and documented system approach to training or a SAT-based training system and a training plan that meets regulatory requirements that are identified in CNSC REGDOC-2.2.2.

The next four slides cover the operating performance safety and control area. Operating performance includes and overall review of the conduct of licence activities and the activities that enable effective operating performance.

At OPG's Western Waste Management Facility the safety and control area comprises the conduct of

licence activity and reporting and trending. CNSC Staff verified OPG's operating performance by conducting various compliance verification activities, which included: reviewing quarterly operational reports; reviewing the reports and follow-up actions associated with events reportable under the General Nuclear Safety and Control Regulations; conducting baseline and focused inspections; and, following up on OPG's responses to inspection findings.

This safety and control area is divided into three sections: high-level waste operations; low-level waste operations and intermediate-level waste operations; and construction activities. These will be further discussed in the following slides.

High-level waste operations cover the processing of dry storage containers, or DSCs, which store used fuel. This table provides the number of DSCs stored annually over the current licence period which totals to 1,071. As of December 31<sup>st</sup>, 2016, 1,264 DSCs are stored at the Western Waste Management Facility. The current total capacity is 2,000 DSCs.

At the Western Waste Management Facility OPG processes/stores low and intermediate-level waste generated by the Darlington and Pickering Generating Stations and the Bruce Nuclear Generating Station. OPG

incinerates and compacts low and intermediate-level waste to minimize the waste storage volume. Incineration can reduce the volume by 70-fold while compaction will reduce the waste volume by five-fold. The incinerable and compactable volumes provided in this slide are before processing. The total low and intermediate-level waste stored is non-processible waste and the volume of processed waste.

Also, as provided in this table, in 2008 and 2009 there was a significant increase in low-level waste volumes waste and activity. These are related to the Bruce A refurbishment waste that was received during those years. In 2011 there was some increased volumes from the Bruce Power Generating Station.

OPG must submit commissioning reports for CNSC Staff approval prior to the operation of any new construction. During the current licence period CNSC Staff reviewed and accepted commissioning reports for four low-level storage buildings: building 11 commissioned in 2009; building 12 in 2011; and, buildings 13 and 14 in 2013.

Staff also accepted commissioning reports for two DSC storage buildings: buildings 3 and 4, both commissioned in 2012, and also an in-ground container batch 5, which was commissioned in 2013.

The current licence also authorizes OPG the construction of other buildings, which have not been constructed. OPG is requesting that these remaining buildings be carried over to the proposed licence.

The safety analysis, safety and control area covers the maintenance of the safety analysis that supports the overall safety case for the facility. Under the safety and control area the licensee is required to systematically evaluate all potential hazards associated with its operations. The licensee must also consider the effectiveness of preventative measures and strategies in reducing or eliminating the potential effects of such hazards.

CNSC Staff have reviewed and are satisfied with the safety report of the Western Waste Management Facility that was submitted in 2013. A revised safety report is expected by the end of 2017.

Over the next licence period OPG will be implementing several enhancements to their safety analysis program, which include updating the safety analysis methodology and reviewing the safety analysis as required.

The next safety and control area is physical design. This safety and control area relates to activities that impact the ability of structures, systems and components to meet and maintain their design bases,

given new information arising over time and taking changes in the external environment into account.

CNSC Staff have assessed OPG's design program and concluded that it meets regulatory requirements. CNSC Staff also verified that OPG's pressure boundary program complies with the requirements of CSA N285.0-08. OPG has a formal service agreement with the Technical Standards and Safety Authority as the authorized inspection agency.

Over the next licence period OPG has committed to implementing the requirements of CSA Standard N393-13, the National Fire Code of Canada 2010 and the National Building Code of Canada 2010.

The fitness for service safety and control area covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. A requirement of the safety and control area is for the licensee to implement programs that ensure all equipment is available to perform its intended design function. CNSC Staff verified that OPG's fitness for service program for the Western Waste Management Facility complies with the requirements of CNSC Regulatory Document RD-334. Over the next licence period OPG has committed to transition to the requirements of CNSC REGDOC 2.6.3 2014.

OPG has proposed improvements over the

next 10 years, which include replacing several roof membranes as well as using remote camera inspection techniques to assess the condition of tile holes and in-ground containers.

The next five slides cover the area of radiation protection. This safety and control area covers the implementation of a radiation protection program that is in accordance with the Radiation Protection Regulations. Radiation exposures are monitored by OPG to ensure compliance with the CNSC's regulatory dose limits and with keeping radiation doses as low as reasonably achievable.

The maximum effective dose received by a worker in the current licence period was 4.3 millisieverts, which is 8.5 per cent of the regulatory dose limit of 50 mSv. Throughout the current licence period no nuclear energy worker's radiation exposure exceeded the CNSC's regulatory dose limit.

As seen in this table, the overall maximum and average whole body dose trends have decreased over the licence period. CNSC Staff are satisfied that OPG has implemented and maintained an effective radiation protection program. Radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable.

As shown on this slide, during the licence

period there were no action level exceedances related to dose to workers and there were no contamination control events in excess of OPG's contamination control action level for the facility.

The Western Waste Management Facility is located within the site boundary of the Bruce Nuclear Generating Station. Dose to the public is estimated for the site, including both the generating station and the Waste Management Facility. The dose to the public associated with the Western Waste Management Facility accounts for a very small fraction of the site dose to the public.

As shown on this slide, environmental releases outside of the site over the licence period have resulted in low doses, well below the regulatory limit of 1 mSv per year to members of the public. CNSC Staff are satisfied that OPG has implemented and maintained an effective radiation protection program.

OPG recently conducted a comprehensive review of the current radiological action levels for workers. The review was performed to ensure that action levels remain adequately sensitive to detect the emergence of a potential loss of control of OPG's radiation protection program elements.

The results of the review, which outlined the basis and selection of action levels for the Western

Waste Management Facility, was submitted to CNSC Staff for verification. CNSC Staff concluded from the review that the two action levels proposed by OPG for surface level contamination and individual external dose are acceptable. However, CNSC Staff have requested OPG to provide further information on additional action levels.

Over the next licence period OPG is planning a number of enhancements in the radiation protection program at the Western Waste Management Facility, including implementing new body contamination monitors and adopting a wireless infrastructure for radiation protection equipment.

The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment. The table presented on this slide shows that during the 10-year licence period there was one lost time injury in 2009 and one in 2011. In 2009 a worker had an injury related to a lower back muscle spasm while sliding a box of motor parts across the floor. This resulted in 11 days of lost time. In 2011 a worker was exposed to a weld arc flash that resulted in one missed day of work.

OPG reports health and safety-related incidents to CNSC Staff and the Ontario Ministry of Labour on an ongoing basis. With respect to the two incidents,

OPG's actions were verified by CNSC staff and assessed to be appropriate. OPG has implemented an effective health and safety program during the current licence period and continues to demonstrate its ability to keep workers safe from occupational injuries.

The next safety and control area is environmental protection, which will be covered over the next six slides.

Environmental protection covers programs that identify, control and monitor all releases of nuclear and hazardous substances and their effects on the environment. This includes requirements for effluent and emissions controls, the assessments and monitoring of receiving environment, as well as the requirements related to environmental management system and environmental risk assessment.

OPG has developed and implemented an environmental management program at the Western Waste Management facility which includes activities such as establishing annual objectives and targets, and is verified through internal compliance audits. CNSC Staff have verified that OPG's environmental management system for Western has complied with the requirements of CNSC REGDOC 2.9.1.

OPG has implemented its current derived

release limits, or DRLs, in 2013, in compliance with CSA N288.1-08. As well, OPG has committed to updating the DRLs for the Western Waste Management Facility to be in compliance with the latest revision of CSA N288.1-14 by the end of 2017.

The table provided on this slide shows the annual total emissions for each radiological parameter for all stacks at the Western Waste Management Facility. Stack emissions continue to be effectively controlled and remained consistently below the respective licence limits for the current licence period.

As noted, the licence limits for tritium increased from 2012 to 2013. The minor increase in the licence limit for tritium is due to OPG updating its DRLs for the Western Waste Management Facility in 2011 to reflect new site and meteorological data, as well as updated methodology presented in the revised CSA N288.1-08.

CNSC staff have reviewed and accepted OPG's revised DRLs for the Western Waste Management Facility.

In accordance with the licence for the Western Waste Management Facility, OPG provides monitoring results to the CNSC in quarterly operations reports. The annual total liquid releases are shown on this table.

CNSC staff have reviewed the results and

conclude that there are no adverse effects on the health and safety of persons or the environment as a result of releases during the licence period.

During the current licence period, waterborne emissions were consistently below the DRLs. As part of OPG's environmental monitoring program, groundwater is monitored for tritium and gross beta at 18 monitoring wells. One well, Water Sample Hole-231, has indicated elevated tritium concentrations since the late 1990s.

In 2010, OPG investigated the issue and identified water vapour from the waste in the low-level storage buildings as the cause of the anomaly. After the implementation of corrective measures in 2011, results have indicated a declining trend at this monitoring well.

CNSC staff continue to review the results of this well, in addition to other monitoring results, to ensure the safety of operations at the Western Waste Management Facility.

The concentration of tritium levels in WSH-231 peaked in 1990 at 80,000 Bq/L. OPG implemented corrective actions and results since 2011 and have indicated a declining trend. In 2011, the tritium level at WSH-231 dropped to 75,000 Bq/L. Since then, it has been decreasing and, in 2016, the tritium level was 15,000 Bq/L.

Groundwater at the site is not used for

human consumption, therefore, the elevated levels of tritium at WSH-231 pose no unacceptable risk to humans.

Additionally, OPG submitted reports for an environmental risk assessment and a predictive effects assessment early in 2016 for the facility taking into consideration all contaminant releases, including tritium from groundwater.

CNSC staff have reviewed OPG's assessment and concluded that tritium at Water Sample Hole-231, and elsewhere around the site, are at acceptable levels.

OPG has committed to the implementation of a number of CSA Group standards.

CNSC staff have determined that the deadlines proposed for the transition and implementation plans are acceptable based on the effective implementation of OPG's current program.

CNSC staff will review all submissions related to the implementation of these standards and monitor program implementation through the conduct of compliance verification activities.

OPG is planning a number of enhancements in the environmental protection SCA over the next licence period. This includes review of environmental performance and re-evaluation of objectives and targets in key areas, and improved environmental monitoring over the next five

years.

The safety and control area emergency management and fire protection covers emergency plans and emergency preparedness programs that exist for emergencies and non-routine conditions.

The specific areas that comprise this SCA at the Western Waste Management Facility include preparedness and response to nuclear emergencies and fire emergencies.

OPG has contractual agreements with Bruce Power for the Bruce Power to provide emergency response services to OPG for all fire, medical, rescue and spill emergencies that arise at the Western Waste Management Facility.

Through Bruce Power, OPG maintains an on-site emergency response team at the Western Waste Management Facility which is capable of responding to on-site events 24 hours a day and 7 days a week.

Also, through Bruce Power, OPG has a comprehensive exercise and drill program that meets the regulatory requirements for the Western Waste Management Facility.

OPG has a fire protection program in place at the Western Facility to minimize both the probability of occurrence and the consequences of fire at the facility.

CNSC staff have verified that OPG's emergency preparedness measures met applicable CNSC regulatory and performance objectives. CNSC staff monitor OPG's implementation of this program through regular compliance verification activities.

OPG has committed to the implementation of CNSC regulatory document REGDOC-2.10.1 by the end of 2018. As well, OPG has committed to the development of implementation plans for CSA standard N393-13, the National Building Code of Canada, 2010, the National Fire Code of Canada, 2010 by September 15th, 2017.

The Waste Management safety and control area covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility.

The specific areas that comprise this safety and control area at OPG's Western Waste Management Facility are waste minimization, waste management practices and decommissioning plans.

In 2013, OPG instituted a "Likely Clean" waste segregation initiative at the Western Waste Management Facility to improve its own performance in the area of waste minimization. Specific waste collection stations are set up at the Western Waste Management

Facility. Through enhanced radioactive contamination monitoring and procedures, low-level waste that was once considered radioactive by default is now thoroughly monitored and released if clean.

Since this initiative was implemented, the volume of waste generated at the Western Waste Management Facility decreased by 40 per cent.

In 2014, OPG developed targets for the station waste generators specifically related to non-processible waste stream. This enabled focus on waste reduction at the source. These indicators continue to be used across the fleet to increase awareness and to drive improvement.

CNSC staff have verified that OPG is in compliance with CSA standards N292.2-07 and N292.3-08.

OPG has committed to implementing the requirements of three CSA waste standards by October 31st, 2017. These standards are N292.0-14, N292.2-13 and N292.3-14.

The waste management safety and control area also covers decommissioning. The objective of decommissioning is to permanently retire the Western Waste Management Facility from service in a manner that ensures the health, safety and security of workers, the public and the environment are protected.

OPG's Preliminary Decommissioning Plan, or PDP, for the Western Waste Management Facility sets out the strategy and the preliminary plan by which the facility will be decommissioned in the future.

The PDP must be kept current to reflect any changes in the facility or operations. CNSC requires OPG to revise the PDP for the Western Waste Management Facility at a minimum of every five years, or when required by the Commission. OPG will need to revise the PDP following the completion of approved construction activities.

The Western Waste Management Facility PDP was last revised and presented to the Commission in 2012. CNSC staff verified that OPG's PDP complies with the requirements of CSA N294-09 which is on decommissioning of facilities containing nuclear substances.

The figure on this slide shows the lifecycle timeline for the Western Waste Management Facility, utilizing dates from OPG's PDP for the Western Facility that was submitted to CNSC staff early in 2017.

OPG's strategy for decommissioning the Western Waste Management Facility is prompt decommissioning. OPG plans to dismantle the facilities once all waste is removed and the facility is no longer required. Since all the waste will be removed from the

facility prior to decommissioning, little residual radioactivity is expected to be present at the Western Waste Management Facility.

OPG's PDP for Western Facility states that the site will meet the release criteria for a licence to abandon. This means that all radioactive contamination and all other hazardous materials will have been removed from the site and all of the facility systems will have been dismantled and all of the buildings demolished.

OPG plans to retain ownership of the property and the site will then be available for other industrial uses.

The security safety and control area covers the programs required to implement and support security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

CNSC staff verified that OPG implemented and maintains a security program at the Western Waste Management Facility that effectively controls access to facilities, nuclear material and prescribed and classified information.

OPG has arrangements with Bruce Power to provide security services for the Western Waste Management Facility, including provisions of on-site armed nuclear

response force and nuclear security officers.

Bruce Power has established a response protocol with the Ontario Provincial Police to ensure response of armed police officers in a timely manner should a security-related incident occur at the Western Waste Management Facility.

OPG, through Bruce Power, has a comprehensive exercise and drill program that meets the regulatory requirements for the Western Waste Management Facility.

The safeguards and non-proliferation safety and control area covers programs and activities required for the successful implementation of the obligations arising from the Canada and International Atomic Energy Agency, or IAEA, safeguards agreements as well as other measures arising from the treaty on the non-proliferation of nuclear weapons and bilateral nuclear cooperation agreements.

CNSC have reviewed OPG's safeguard program and confirm that it conforms to CNSC requirements to meet Canada's international safeguards obligations and that it complies with the requirements of CNSC Regulatory Document RD-336.

OPG supported the International Atomic Energy Agency on new technology development and

application, including field trials for the laser mapping container verification as shown in this slide.

The intent is for the technology to replace the metal seals currently applied to the dry storage containers of used fuel.

The last safety and control area, packaging and transport, covers the programs for the safe packaging and transport of nuclear substances to and from the licensed activity. OPG has a packaging and transport program for on-site shipments for the Western Waste Management Facility that provides an equivalent level of safety to workers, the general public and the environment as is required for off-site transportation.

The Packaging and Transport of Nuclear Substances Regulations 2015 apply to the packaging and transport of nuclear substances. This includes the design, production, use, inspection, maintenance and repair of packages and the preparation, consigning, handling, loading, carriage and unloading of packages.

CNSC staff confirm that the Western Waste Management Facility's packaging and transport program meets all regulatory requirements.

I will now pass the presentation back to Ms. Glenn. Thank you.

**MS GLENN:** Thank you, Ms Oue.

We will now discuss other regulatory matters that may be of particular interest to stakeholders, Aboriginal communities, the public and the Commission.

CNSC staff identified four Aboriginal groups and organizations who may have an interest in the proposed licence renewal. The groups are listed on this slide.

The four Aboriginal groups were identified as the proposed activities are located within their respective treaty lands or asserted traditional territories.

CNSC staff sent letters of information in July 2016 to the four groups, providing information about the proposed licence renewal, the availability of participant funding and details on how to participate in the Commission's public hearing process. Follow-up phone calls were also conducted.

In September 2016, the CNSC staff met with the Métis Nation of Ontario's Georgian Bay Traditional Territory Consultation Committee and provided a summary of the proposal and CNSC's regulatory process.

In December 2016, staff notified each group that the CMD would be publicly available in February of 2017 and offered to organize meetings in advance. CNSC staff did meet with the SON in February 2017 and the MNO,

or Métis Nation of Ontario, and the Historic Saugeen Métis, HSM, in March 2017.

Based on the intervention received and the Aboriginal consultations conducted, CNSC staff proposed revisions to the proposed licence conditions. CNSC staff's supplemental CMD 17-H3A outlines the revised proposed licence conditions and the rationale for those changes.

The public, Aboriginal groups and other stakeholders were informed of the availability of participant funding through a series of public communications as listed on this slide. To support public participation in the public review process, participant funding of up to \$75,000 was offered to intervenors through the CNSC's participant funding program.

Based on the recommendations of the Funding Review Committee, which is independent from CNSC staff, the CNSC approved funding of up to \$59,112 in participant funding to the three groups listed on this slide.

Hearing interventions covered a broad range of topics, several of which were addressed in this presentation. The topics included the licence period of 10 years and the alignment with the planning process for a waste repository, radiological and non-radiological contaminants, the methodology for developing and applying

derived release limits, reporting of events to the public and the availability of this information, and the ecological and human risk -- health risk assessments.

Staff are prepared to respond to questions regarding these as well as all of the other interventions associated with this proceeding.

Following the Fukushima Daiichi accident, the CNSC developed an action plan which required OPG to examine the safety case for its waste management facilities. While OPG did not identify any safety significant issues that required immediate corrective measures at the Western Waste Management Facility, OPG did identify additional improvements and enhancements.

CNSC staff have reviewed and are satisfied with OPG's implementation of these improvements. And CNSC staff have also reviewed OPG's update on the Fukushima-related activities submitted in December 2014 and concluded that all Fukushima-related activities for the Western Waste Management Facility have been completed.

At the last licence renewal for the Western Waste Management Facility in 2007, the Commission directed CNSC staff to prepare interim status reports after the third and the seventh year of the licence period. These status reports were presented in 2010 and 2015 at Commission public meetings.

CNSC staff now report on these -- on this facility through regulatory oversight reports which replaced the interim status reports. The most recent regulatory oversight report for the Western Waste Management Facility was presented at a Commission public meeting in December 2016.

Beginning for the report covering 2017, the Western Waste Management Facility will be presented to the Commission as part of the regulatory oversight report for Canadian nuclear power plants.

Natural Resources Canada has confirmed that OPG has adequate nuclear reliability insurance under the *Nuclear Liability and Compensation Act*, which came into force January 1st, 2017.

Under paragraph 24(5) of the *Nuclear Safety and Control Act*, OPG is required to provide a financial guarantee in a form that is acceptable to the Commission. OPG maintains a consolidated financial guarantee for all its nuclear assets, including the Western Waste Management Facility.

In 2012, the Commission accepted the financial guarantee that is currently in place, and at the end of 2016, the total value of the guarantee was \$17.96 billion, which is higher than the decommissioning cost estimate of \$15.55 billion for all of the consolidated

assets.

CNSC staff have received -- CNSC staff conclude that OPG's financial guarantee meets the requirements for 2016, and OPG has submitted a revised preliminary decommissioning plan and financial guarantee in early 2017. The financial guarantee will be presented to the Commission by the end of 2017 for acceptance.

CNSC staff also confirmed that OPG complies with the cost recovery fee regulations and that OPG's public information and disclosure program meets regulatory requirements.

The next three slides cover the CNSC's Independent Environmental Monitoring Program, or IEMP.

The objectives of the IEMP is to verify that public health and the environment are not adversely affected by releases to the environment around facilities regulated by the CNSC, confirm that the licensee's environmental protection programs adequately protect the public and the environment and complement the CNSC's compliance program.

Sampling plans that identify all media to be sampled are developed for publicly accessible locations and are site specific.

In 2013 and 2015, CNSC staff carried out an IEMP campaign around the Bruce Nuclear Generation

Station. Air, water, soil, fish and meat samples were analyzed for a number of parameters, including tritium, organically-bound tritium, gross Alpha and gross Beta, radioactive particulates such as Cesium-137 and Cobalt-60, and radioactive iodine.

It should be noted that the public dose is estimated on the total Bruce site emissions and not only the Western Waste Management Facility.

Another sampling campaign was conducted around the Bruce site in late 2016; however, this data is not yet available.

This slide shows the air monitoring results from the IEMP. The measured radioactivity in all air samples was below the guidelines.

Overall, the IEMP results are consistent with the licensee's environmental protection program results and indicate that the public and the environment around the Bruce site, which includes the Western Waste Management Facility, are protected.

I will now turn the presentation over to Ms Tadros to present CNSC staff proposed licence and licence conditions as well as overall conclusions and recommendations.

**MS TADROS:** Thank you.

CNSC staff recommend that the Commission

issue Ontario Power Generation a licence that contains standard licence conditions plus three facility-specific licence conditions. A copy of staff's proposed licence was revised as per Ms Glenn's explanation based on the interventions and appended to CNSC staff's supplementary written submission, CMD 17-H3.A.

A draft Licence Condition Handbook provided in staff's CMD 17-H3.A provides compliance verification criteria used to verify compliance with the conditions in the licence and also includes non-mandatory recommendations and guidance on enhancing the effectiveness of the safety and control measures.

The last two slides outline staff's conclusions and recommendations for the Western Waste Management Facility licence renewal.

In conclusion, CNSC staff have found that Ontario Power Generation is qualified to carry out the activities authorized by the licence, will, in carrying out these activities, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

CNSC staff recommend that the Commission accept staff's conclusions and recommendations and

authorize OPG to operate the Western Waste Management Facility for 10 years.

CNSC staff view that a 10-year licence term would allow OPG to continue its safe operation while maintaining transparency of operation, public engagement and adequate regulatory oversight.

Thank you, and we will take any questions you may have.

**THE PRESIDENT:** Thank you.

We are running a bit late. We have some visitors here that need an hour break for lunch, so that's what we will do.

We will return at 2:15.

Thank you.

**MR. LEBLANC:** And just for clarity, at 2:15 we'll proceed with the interventions starting with the Historic Métis.

Thank you.

--- Upon recessing at 1:14 p.m. /

Suspension à 13 h 14

--- Upon resuming at 2:20 p.m. /

Reprise à 14 h 20

**MR. LEBLANC:** Thank you.

We will now move to the interventions. Before we start, I would like to remind intervenors appearing before the Commission that we have allocated 10 minutes for each oral presentation, and we would appreciate your assistance in helping us to maintain that schedule.

Your more detailed written submission has already been read and will be duly considered. There will be time for questions from the Commission after each presentation or each intervention, and no time limit has been ascribed for the question period.

So don't worry; we'll go through the key issues in the context of the question period.

Mr. President.

**THE PRESIDENT:** Thank you, Marc.

The first presentation is by the Historic Saugeen Métis as outlined in CMD 17-H3.11 and 3.11A, and I understand that Ms McArthur is coming to us via video conferencing.

We can see you. Can you hear us?

**MS McARTHUR:** Yes, we can. Thank you.

**THE PRESIDENT:** Go ahead please.

**CMD 17-H3.11/17-H.11A**

**Oral presentation by the  
Historic Saugeen Métis**

**MS MCARTHUR:** Mr. Binder and Panel, I am Patsy McArthur, secretary-treasurer of the Historic Saugeen Métis. Our delegation today includes, to my left, George Govier, HSM Lands and Resources, Gordon Wiechert from SLR Consulting. And to my right was Ross Lemont but, I'm sorry, he has had to leave for another appointment. And George will read a short statement that Ross had.

As well -- attending as well are two Councillors, Goldie Mielhaussen and Ben Indoe.

I will speak today to HSM's history and identity.

Prior to the 19th century treaties with the Crown, the HSM harvested the lands and waters bordering Lake Huron proper and the Saugeen peninsula to as far as the Port Franks area. This area included HSM places of residence, places where HSM pursued their traditional practices and pursuits, and places of cultural and spiritual significance.

Today, HSM continue their subsistence fisheries and land-based harvesting practices and assert section 35 Aboriginal rights over the lands and waters

surrounding the Bruce nuclear site.

These lands and waters provide vital support for our Métis culture and way of life as well as the economic, health and social relationships in the HSM community.

Integral to the endurance of the Métis families upon moving from the northwest to trade in the Hudson Bay-Lake Huron district where the traders' irreducible individualities as nor'westers, that is, having been former Northwest Company, their identifies had formed over decades while serving at company posts from Fort William to Red River.

Thank you. I'll turn it over to George.

**MR. GOVIER:** Good afternoon, Mr. President and Commission Members. For the record, my name is George Govier.

I want to tell you first about the HSM relationship with the nuclear industry.

Our concerns are for safe operation of the nuclear generating stations with minimal imprint on the water and lands that support our communities' asserted Aboriginal rights. These are communal Aboriginal rights affirmed by section 35 of the *Constitution Act* and relate to sustenance and harvesting on the land and in the waters surrounding the Bruce nuclear site.

Our local Métis community, together with all other communities in the area, Aboriginal and non-Aboriginal, have been benefited economically over the past five decades as a result of nuclear energy generation at the Bruce site. Four generations of Saugeen Métis have worked at the Bruce nuclear site and continue to benefit from its activities.

In addition to being continually informed about potential impacts of the nuclear waste, the continue involvement of HSM such as through monitoring and reporting processes and procedures also help to build positive relationships between HSM and OPG.

I want to say only briefly about the HSM-Ontario Power Generation engagement plan, and I draw your attention that document was provided in our written submission as an appendix.

I now want to turn to environmental management and mitigation measures.

HSM expects to be engaged with OPG throughout the licence period in the following environmental management programs and mitigation measures.

One, air. To implement a dust management plan.

Two, surface water. Implement a storm water management plan.

Three, soil. Implement a soil management plan.

Four, groundwater. Mitigation measures for groundwater to minimize risk during construction, operation and maintenance.

And finally, five, terrestrial environment. Develop a compact Western Waste Management Facility expansion site to limit the extent of new disturbance of natural areas, conduct active revegetation after construction through seeding and/or planting of native species as part of the progressive reclamation.

I'll now turn it to Gord Wiechert, who has a brief presentation.

**MR. WIECHERT:** Good afternoon, Mr. President and Commissioners. For the record, my name is Gord Wiechert. I work as an aquatic ecologist at SLR Consultants.

The following review was prepared by myself and two other colleagues at SLR.

My focus was the aquatic environment, Dale Leadbetter focused on the terrestrial environment, and Sam Reimer focused on the risk assessment aspects.

I'll begin with our approach to this review.

Our review addressed three main components

and associated issues listed below.

The first component was site and biological conditions, and this was the focus primarily of natural environment review and the considered appropriate model to characterize terrestrial and aquatic ecosystems, identification of ecological constraints associated with the Western Waste Management Facility study area, and appropriate sampling locations.

The second component, valued ecosystem components selection, was reviewed by both natural environment and the risk assessment perspective. Here we considered components representing key features and functions, components representing sensitivities at the site, and appropriate surrogates where information on key components was lacking.

The third component, the conceptual model, was primarily part of the risk assessment review. And here the considerations included appropriate standards and species for selected assessment and complete pathways linking potential sources and receptors.

I will now move to our conclusions.

And based on our review, the conclusions of the environmental risk assessment appear to be supported by the data, that is, the risk evaluation for ecological receptors identify the following.

Number 1, there are no adverse effects due to exposures to radiological contaminants.

Two, there are no effects from the soil and surface water due to exposure to non-radiological contaminants for terrestrial plants and invertebrates, aquatic plants and invertebrates, fish and birds and mammals.

Three, physical stressors, including noise, bird strikes and road kill pose no adverse effects to non-human biota.

Given these findings, SLR recommends that OPG continue to monitor the aquatic environment during construction and operation of the Western Waste Management Facility and that the monitoring reports are shared with HSM for their review and comment.

**MR. GOVIER:** Now, Mr. President and Commission Members, Mr. Lamont is not with our delegation, having to leave for a prior appointment commitment, but I would like to read into the record on his behalf the notes he has left us.

Mr. Lamont is an adviser to Historic Saugeen Métis, and he assists with our traditional relationships with various proponents in their traditional territory as well as with various levels of government.

The relationship between HSM and OPG with

respect to the operations of the Western Waste Management Facilities has been open, honest and respectful. HSM has expected OPG to provide appropriate information in a timely manner and respond to any questions or concerns. OPG has expected HSM to consider the information and respond responsively.

HSM values the role that CNSC plays in ensuring the safe operation of nuclear facilities and ensuring the hearing processes are open and transparent.

I thank you.

**MS MCARTHUR:** Thank you, Mr. Binder and Panel. This is our submission.

**THE PRESIDENT:** Okay. Thank you. Thank you very much.

I would like to now open the floor for questions. And what I suggest we do, each will have one question and we go as many rounds as we would like.

Who wants to start?

Ms Velshi.

**MEMBER VELSHI:** Thank you.

So I'll take the first one just as more of a statement than as a question.

Staff, in your outline in your submission, you talked about -- for Aboriginal consultation, you mentioned four Aboriginal groups that you thought could be

impacted by this application, three of whom are intervenors. The fourth one we did not hear from.

So is that because they weren't interested or is that because they probably needed additional support?

Any comments, please?

**MS TADROS:** Thank you for your question. Haidy Tadros, for the record.

You are correct, the three groups that were identified. I'd ask Ms Kim Noble to address the fourth group.

**MS NOBLE:** Hi. I'm Kim Noble. I'm team leader for Aboriginal Consultation and the Participant Funding Program.

The Union of Ontario Indians is a political organization for which many First Nation communities are members of. And in the past, the Union of Ontario Indians has asked CNSC to keep them apprised of our regulatory decisions so that -- and they know that who we've identified in case they want to participate. And to date, they have not, but we continue to send them the information.

**MEMBER VELSHI:** So would it be safe for the Commission to conclude that they don't have any concerns? If they had, they would have raised those with you?

**MS NOBLE:** Kim Noble, for the record.

So first, I just want to clarify just to make sure that they're not rights holders. They're just representatives of -- they're the leader of the -- not the leader. They're an organization for which many of the First Nations are members of.

And yes, we did do the follow-up phone call, so yes -- and they were informed of the participant funding that was available, so if they wished to participate, they had the opportunity to do so.

**MEMBER VELSHI:** Thank you.

**MEMBER MCEWAN:** Thank you, Mr. President.

Thank you for the historical background in the written submission. It was really (a) interesting and (b) very helpful to understanding the rest of the document, so thank you.

If I go -- this really reflects the last statement that you read out. If I can go to page 10 where you discuss the -- start of the oral presentation -- of the submission.

H3.11, page 10, where you're discussing the interactions between OPG. I think it would be very helpful for us just to get a sense of how confident you are that, in your conversations with both OPG and CNSC staff, there is a real two-way dialogue and that if you do have

significant issues now or moving forward into the future, that you'd have confidence that they would be appropriately addressed and that you'd have a way of pushing forward if you felt it hadn't been appropriately addressed. ...

**MR. GOVIER:** Through the President to Mr. McEwan, we appreciate your question.

There are no significant issues outstanding in our consultation or engagement with either the proponent OPG, or with the staff of the Commission. Both have been very attentive and very timely, reaching out to us by way of written correspondence and, I might add, a series of meetings, and the most recent with Commission staff being on March the 8th when many of the staff in attendance there, at the hearing today, did attend and were most helpful in briefing us and answering questions on March the 8th, recently passed, in our South Hampton office.

The engagement plan and logs submitted in the written portion we are very proud of and it has been signed by both the proponent and ourselves saying that it fairly represents the exchange of information, in whatever format, and that the purpose and objectives of the exchange of information has been very well received and satisfactory.

**MEMBER MCEWAN:** Thank you. OPG or staff,

any comments?

**THE PRESIDENT:** On the same page it says that there is a formal five-year agreement that started at September 28, 2013. I assume both parties would want to renew them? I just want to hear your views on that. OPG?

**MS MORTON:** Lise Morton, for the record. Absolutely, yes. OPG will certainly work with HSM to renew those agreements.

We acknowledge and appreciate the engagement work that's been undertaken with HSM and commit to that continued engagement with HSM.

**THE PRESIDENT:** Dr. Demeter?

**MEMBER DEMETER:** Thank you very much for your submission and presentation. I, as well, particularly appreciated the historical context.

The one comment on page 10 of the supplement of H3.11A talked about the recommendation that:

"OPG should provide rationale for not including valued -- VECs -- valued ecosystem components representing cold water habitat functions provided by stream C." (As read)

So, this is talking about rainbow trout and salmon. Is there a feeling by staff that these particular VECs are covered off otherwise, or are to be

added, or that there's no effect on these? This was the recommendation from the environmental report submitted as a supplement.

**MS TADROS:** Thank you for your question. I'll ask Mr. Andrew McAllister to take that specific detail.

**MEMBER DEMETER:** Thank you.

**MR. McALLISTER:** Thank you, Ms Tadros. Andrew McAllister, Director of the Environmental Risk Assessment Division.

I will ask Dr. Nana Kwamena to speak to your specifics, but to frame your question that you raised, is that this kind of dialogue and questions around selection of valued ecosystem components and choices of other criteria, we've seen similar kinds of comments raised in some of the interventions.

It's very useful information in that we need to recognize that the risk assessment itself is not a static document; in other words, it's one through our environmental protection framework will be undergoing regular revisions. And so, this kind of information, these findings that get brought to bear are both useful now and will likely be useful moving forward when revisions to the risk assessment is contemplated.

So, I'll ask Dr. Kwamena to add some

further precision.

**DR. KWAMENA:** Dr. Nana Kwamena, for the record.

So, I would briefly summarize how staff reviewed the environmental risk assessment for OPG's Western Waste Management Facility.

So, when staff received the ERA they reviewed the VECs, valued ecosystem components that were included and, in doing their review, staff look at previous environmental assessments and environmental risk assessments that have been conducted in the area. So, in this case such assessments that have been done for the Bruce Nuclear facility, for example, also the DGR -- proposed DGR project.

And so, staff looks at what has been previously considered as a valued ecosystem component and determined if the appropriate ones have been considered.

And as Andrew -- sorry, Mr. McAllister has indicated, this is not a static document, so some of the information that is brought to bear during these Commission hearings and in staff review can be implemented when this environmental risk assessment is reviewed in five years' time.

So, this information that's been brought to OPG and CNSC's attention can be implemented if it's

determined to be warranted in future risk assessments.

**THE PRESIDENT:** I don't think that's the issue here. The issue is, did you sit down with the local communities and talk about various VECs that should have been in the ERA; and, if you didn't, are you going to do it in the future, not in five years from now?

Because some of those intervenors, not only the Historical Saugeen Métis, but others argue that you're looking at the -- you didn't include some very important VECs.

This can only be resolved by sitting down and discussing with the local communities, the Indigenous communities, including the traditional food, traditional knowledge and factor them into your assessment.

Are you going to do it in the future?  
It's both to staff and the OPG.

**MS MORTON:** Lise Morton, for the record. Before I get a more fulsome answer from Mr. Raphael McCalla, I'll just to highlight that you're correct, Dr. Binder, we would not wait a five-year period to have those discussions.

That would be part of our ongoing engagement and discussions and part of the work plans that I referenced earlier.

I'll ask Mr. McCalla if he has any

additional detail to add.

**MR. McCALLA:** Raphael McCalla, for the record, Director of Environment Operations Support.

In terms of our engagement -- and we'll also get into this when we discuss the intervention from the Métis Nations of Ontario -- in terms of doing an environmental risk assessment, the requirement to consult is narrower than if you were doing a full-blown environmental assessment.

However, OPG has met with various Aboriginal groups and we are in the process of working with them to look at their way of life and opportunities to include their VECs into our program, where possible.

**THE PRESIDENT:** I'm not sure I accept the premise that the ERA done by CNSC is narrower than an EA done under CEAA, 2012.

So, somebody, please, clarify?

**MR. McCALLA:** Maybe I can clarify. In terms of an EA, in addition to looking at the environmental concerns there's also -- Raphael McCalla, for the record, sorry.

In addition to looking at the environmental effects, there's also socioeconomic factors as well that you need to consider in a full-blown EA; whereas, in an ERA, you would not consider those types of

parameters.

However, as I said, we are working with the Aboriginal groups to understand their way of life and to look for opportunities for inclusion, and we're currently engaged with the groups to see how quickly we can actually build that knowledge into the assessments that we conclude.

**THE PRESIDENT:** Staff?

**DR. DUCROS:** Dr. Caroline Ducros. I'm the Director of the Environmental Assessment Division at the CNSC.

So, from CNSC's perspective, an EA under the NSCA is not narrower, in fact, it considers the same science, the same project environment interactions and does a robust analysis. CEAA does not consider direct socioeconomic effects either.

But going back to your original question, in terms of the VECs that were proposed by the HSM and the MNO -- I think we'll hear from that perspective as well -- we are entering into a more concerted engagement relationship-building exercise, and in our meetings with HSM and the MNO in March, we understood of some of these VECs that were proposed.

These are documents that we didn't have at our disposal in the review of the ERA which is reviewed for

the information that's been given to us and is, as Dr. Kwamena and Mr. McAllister has said, not a stagnant, static document. So, any of that type of information that gets incorporated in it has been shared with the licensee will be given to us and assessed.

In an EA under the NSCA, another point I wanted to make was that we appended this to the CMD as it's an elaboration of the safety control area for environmental protection. The reason being is, we wanted to make as transparent as possible how we did our analysis and provide participant funding so that people can engage and review that report.

That's not the only opportunity that's available. As needed, we can go out earlier with just the EA report and, in certain situations, I think that would be very warranted.

In this situation, there were two previous environmental assessments that asked for Indigenous group input and public input into deciding which were the VECs. And so, we didn't realize at the time that probably there was more information that we might have needed in terms of gathering all this information, but moving forward, it's our intention to assure that we have this type of information in doing our reviews.

**THE PRESIDENT:** So, that's what I was

looking for, what you're going to do next to incorporate all those concerns that were shared with staff about monitoring some of those VECs that were not under the ERA.

So, there will be a commitment to pursue this? Did I get this right?

**DR. DUCROS:** Yes, you got that right.

Caroline Ducros, for the record. That is how we are hoping to move forward.

**THE PRESIDENT:** Okay, thank you.

Dr. Soliman.

**MEMBER SOLIMAN:** Thank you, Mr. President.

In section 7.2, the purpose of engagement is to respond to information requests. I would like to ask HSM to clarify this point, what exactly that means, respond to information requests. Do you ever deny a request for information?

**MR. GOVIER:** Mr. President and to Dr. Soliman -- for the record, George Govier speaking -- the response to information request is identified as one of the steps or purposes for engagement. If an information request was made by ourselves, we could assist through discussion and meetings, clarification of how that information request came about and our expectations about what we would like to see in the information that answers that request. The other dimension is that when information

requests are made by other parties that the proponent might make those available and we would show that on our engagement log and thereby not duplicate any information requests that were already advanced.

**MEMBER SOLIMAN:** Okay. But my question is do you ever deny it? You requested information and you didn't get it?

--- Pause

**MR. GOVIER:** Is that a question for HSM?

**MEMBER SOLIMAN:** Yes.

**THE PRESIDENT:** I don't know if you heard it. Did you historically get any -- you asked a question and nobody answered? Is OPG and CNSC always forthcoming with a response to your questions? This is for HSM.

**MR. GOVIER:** Is this a question for HSM, Mr. President?

**THE PRESIDENT:** Yes, it is.

**MR. GOVIER:** Yes. No, any request for information has never been denied.

**THE PRESIDENT:** We should savour that moment, I think it's the first time I -- it's the first time I hear that. It's almost like a compliment, so thank you for that.

Where were we? We will go another round.  
Ms Velshi...?

**MEMBER VELSHI:** Thank you, Mr. President.

So I will come back to the ERA, and I appreciate that this is not a static document. I'm just wondering what the process is for -- particularly for public review and when are other decision points, and given that we are now looking at a 10-year licence where this is one of the more fundamental inputs to that decision, is there significant information that's missing at the moment based on the consultations done in the recent past or expected to happen imminently?

**DR. DUCROS:** Dr. Caroline Ducros for the record.

The process -- I'm going to talk a little about the process for the EA under the NSCA. One of the chief information pieces that we use to write a report to document how we have done our environmental review is called an EA report and we draw upon the environmental risk assessment. So that environmental risk assessment, like you heard, gets reviewed at a minimum every five years. It can be more frequently if there is new scientific evidence or if there are different activities proposed from those that were assessed previously.

But the EA report doesn't restrict itself only on the ERA. It also has -- it's informed by the ongoing regulatory oversight, by monitoring data both

provided by the licensee as well as the independent environmental monitoring program, by annual regulatory oversight reviews, by any other technical documents that staff may have requested, and that EA report is what is put out with the CMD 60 days before the hearing for comment. The ERA is highlighted and the conclusions are extracted in that document. So it's the process of the EA I believe that -- like this is the process that has the public engagement.

If we need to meet with people prior to finalizing the EA report or we think that the EA report should -- we should go out with it independently on a case-by-case basis, we would use that too. And the EA report in this case also drew upon previous *Canadian Environmental Assessment Act* EAs where public engagement was also done. So it's not an ERA process of engagement.

**MEMBER VELSHI:** So I may have got -- in fact I did get the nomenclature wrong. So when you look at perhaps additional VECs, that would be impacting the EA?

**MR. RINKER:** Mike Rinker for the record. I am the Director General for the Directorate of Environmental and Radiation Protection and Assessment.

So your question really touches on both and that's why I am in the middle of answering this one, is when we engage the public, we would do so through the EA

under the NSCA and that's where we get information like we did to this intervention about certain things that they are more interested in than what were assessed. That information feeds itself into the next time OPG were to conduct their environmental risk assessment and submit that and every five years they would update that based on that information. It would also inform on a compliance perspective what fish are being monitored and impacted and which -- so even from the compliance perspective and what data we were getting through monitoring programs, it would inform multiply those different areas, but it would be documented again in the next revision of our EA under the NSCA.

**MEMBER VELSHI:** So again, tying that with the licensing process, and they may not always be in sync, this ideally would have happened prior to you folks appearing before the Commission, that we have this input from the stakeholders from the affected communities and that's reflected in the environmental assessment?

**MR. RINKER:** Mike Rinker for the record.

The CSA standard for environmental risk assessment is somewhat new, so the majority of our licences have either newly transitioned to do this or are in the process of doing this in advance of their renewal hearings. So we are seeing the first set of environmental risk

assessments now, but in the future they will be updated at least every five years. So the next -- should the Commission for example make a licensing decision for a term for this facility, their ERA would be updated in five years, it would be updated again five years after that. So we will always have a living, valid ERA, but what would come with the Commission Member Document for a staff recommendation is the EA under the NSCA that documents the findings of the latest version.

**THE PRESIDENT:** Let me try something. I'm still not entirely there. We have pretty detailed interventions here with some not only VECs but also non-radio nuclear COPCs, however you pronounce it, real detail going down to zinc and PEL and all that stuff. Why don't our staff go through each one of those things together with the indigenous communities and come to some sort of consensus as to how to deal with some of those issues going forward and find a way to report back sometime in the ROR about whether you get a consensus about what's important and what's not, because we are dealing about risk and risk assessment.

**MS GLENN:** Karine Glenn for the record.

You are very correct, we do report annually as part of the regulatory oversight report on the performance of this facility. Any review that we would

perform, whether it's in the environmental protection, SCA or any of the other SCAs when we review periodical reports, or updated reports throughout the year, we would update the Commission on the reviews that we have performed in that calendar year and bring those results. There is also an opportunity for interventions when we do report on those regulatory oversight reports to the Commission and so the intervenors are able to participate and input into that information. In addition, we offer a participant funding program for the regulatory oversight reports as well.

**THE PRESIDENT:** But we've already got this information now from the HSM. It's here. It goes line by line from human health risk to ecological risk. It tells you -- you know, if you read this stuff, you have room to sit down with the indigenous community and go through those concerns and try to resolve it one way or another. Either you are going to put it on your monitoring forward list or there is agreement that you have other proxies for determining the impact on the environment. Why don't we do that?

**MS TADROS:** Haidy Tadros for the record.

Sir, you are absolutely right and I would like to go back to what Dr. Ducros mentioned. Going forward, that is exactly the plan in terms of we have the opportunities for engagement, the commitments for

engagement. We have the dialogue started. There have been interests on this file and others, as we will see, and so going forward the plan will be to take the information that has been presented, to look at what OPG will be submitting and to determine how throughout the monitoring of this we will come back to the Commission and present the results.

**THE PRESIDENT:** Thank you.

Dr. McEwan...?

**MEMBER MCEWAN:** Thank you, Mr. President.

This may be a naïve question. So you are doing an environmental assessment of a site within a site. How do you discriminate between the effects of one site and the other site to give you confidence in the data you have for the sites you are assessing?

**MS TADROS:** Haidy Tadros for the record. I will start it and pass it to my colleagues in Environmental Assessment for the details.

So you are correct, we are dealing with a facility within a much broader facility. So I will take us through sort of the monitoring. There are specific monitoring programs that are dedicated to the Western Waste Management Facility, as there are for the Bruce site as a whole. So the opportunity to monitor what specifically is being released from the Western Waste Management Facility activities is there. The Independent Environmental

Monitoring Program looks at the site as a whole, so there is also data coming in with regards to the different materials that have been outlined that we do look at and do analyze for specific nuclides as well. I believe that our monitoring program, the environmental risk assessment that is used within the monitoring program, is a sitewide ERA as well. So I don't know if Andrew McAllister wanted to provide further details on that.

**MR. RINKER:** Mike Rinker for the record.

So it's a very good and relevant question both for -- particularly for the Western Waste Management Facility where there are monitoring programs specifically for effluent streams from that facility for example. However, if we are looking at the environment in its entirety around this entire facility, there is an assessment for, for example, the dose to members of the public, most critical members of the public. So that overall assessment is also conducted and it takes into account Bruce A nuclear power plant, Bruce B nuclear power plant, the Douglas Point partially decommissioned CANDU reactor. There are Hydro One activities. Hydro One, who is responsible for electrical distribution, has transformer facilities and switching stations onsite, as well as the Western Waste Management Facility, all within one large property. And the dose to public calculation that is

calculated, for example on the Bruce Power Environmental Monitoring Program which someone could find online, deals with all of that together in a cumulative way. So the dose to public, we know, from all those facilities combined is on the order of 2 or 3 mSv per year. But to tie it down to what exact proportion of that is from the Western Waste Management Facility and how are we precise about that, my colleagues behind me, the technical people, can help with further details as we discuss incineration and other aspects. However, it is all looked at as one issue to make sure that the public is protected. We don't slice it according to the piece of the pie.

**THE PRESIDENT:** Dr. Demeter...?

**MEMBER DEMETER:** Maybe a quick question. There is a comment that copper and zinc exceeded TRVs in the South Railway ditch but it was not related to the operations. Is there some historic operation on this site that they are elevated or is this part of the geology?

**DR. KWAMENA:** Dr. Nana Kwamena, Environmental Risk Assessment Officer, for the record.

In staff's review of the Environmental Risk Assessment for the Western Waste Management Facility, staff also noted this comment about the copper and zinc and it not being attributed to Western Waste Management Facility operations. So in staff's review, staff did pose

this question to OPG, asking for further clarification and to allow OPG to expand on that. OPG did provide staff with an explanation that staff reviewed and determined to be acceptable. So we also noted that comment and we also put that forward to OPG to justify and I will let OPG provide further details.

**MS MORTON:** Lise Morton for the record. And again, I will ask Raph McCalla to give a more fulsome answer.

But to directly answer your question, that's correct, there were some -- so the copper and zinc is not from the Western Waste Management Facility operation. There were some historical areas or work that was done in those areas. So there used to be a spent solvent treatment facility in that area for example and quite historically, back in I believe the seventies and eighties, an oil unloading area, et cetera. So there were other operations not related to the Western Waste Management Facility that occurred in that general area.

Again, Raph McCalla can probably add a bit to that.

**MR. McCALLA:** Raphael McCalla for the record.

So there were a number of different activities that were attributed to the elevated copper and

zinc that were observed through the completion of the environmental risk assessment for the Western Waste Facility. One of the errors that we looked at was the source being from the zinc -- from the corrugated culverts that were created. Most of the activity that we saw was attributed to a ditch and through that evolution we recognized that a lot of -- there is a high possibility that the source came from that culvert. Our assessment indicated that there was no adverse impact to the benthic invertebrate that are in that area. Even though we exceeded the toxicity of values, the assessment showed that the benthic invertebrate is not capable of actually uptake in the copper and zinc that we saw and hence there is no adverse effect attributed to those particular metals.

**THE PRESIDENT:** Dr. Soliman...?

**MEMBER SOLIMAN:** Noise has been identified as one of the physical stressors. Does OPG produce a reading of level of decibels and CNSC has reviewed that and they agree that the physical stressors, including noise, cause no adverse effects to humans and non-humans?

**MS TADROS:** Thank you for the question.  
Haidy Tadros.

We will start, staff will start. So I will ask Mr. Andrew McAllister to speak specifically to your question about the noise.

**MR. McALLISTER:** Andrew McAllister,  
Director of the Environmental Risk Assessment Division.

Yes, noise is one of the stressors that was identified by OPG, both in their baseline environmental risk assessment as well as in their predictive effects assessment, and so we did look at that and the increases that could result as a result of the site activities such as the construction and deemed them to be acceptable, including the mitigation measures, the sort of best practices that we find associated with these kinds of projects. So staff is satisfied with how noise was considered and the subsequent mitigation measures that were identified.

**MEMBER SOLIMAN:** As a matter of fact, in the OPG report it says they have done modelling of the noise. Are you aware of any noise modelling and did you review that and you agree also with the data that has been measured?

**MR. McALLISTER:** Andrew McAllister for the record.

We noted they had done modelling in order to generate the predictions. We did not look at the modelling specific in itself, but they have used sort of recognized industry models for the purposes of that and we noted no exceedances. So based on that information, we are

comfortable with what they have provided.

**MEMBER SOLIMAN:** What is an acceptable limit of the noise and decibel in such locations?

**MR. McALLISTER:** Andrew McAllister for the record.

We don't have that information at our fingertips. Perhaps OPG might be able to provide that given the nature of their report.

**THE PRESIDENT:** Well, I'm trying to ask, are there two kind of limits? Because this is an enclosed facility, I don't know if there's anybody living around it, so there is noise level for the public and industrial noise I suspect. I'm not sure if that's true or not, but maybe somebody can clarify.

**MS MORTON:** Lise Morton for the record.

So our staff will search for those exact limits so that they can come back with them.

**THE PRESIDENT:** Okay. Thank you.

Any more questions? Questions?

Questions?

Okay. First of all, I would like to thank the Historic Saugeen Métis for their submission. You have the last word. Anything you want to add?

**MS McARTHUR:** We just want to thank the Commission for our having the opportunity to contribute to

the process. Thank you very much.

**THE PRESIDENT:** Okay. Thank you.

**CMD 17-H3.18**

**Presentation by the**

**Métis Nation of Ontario**

**THE PRESIDENT:** I would like to move on now to the next submission, which is an oral presentation by the Métis Nation of Ontario, as outlined in CMD 17-H3.18. I understand that Mrs. Richardson will make the presentation.

--- Pause

**THE PRESIDENT:** Go ahead, please.

**MS RICHARDSON:** Thanks. Bonjour. Good afternoon. Merci. Thank you for providing an opportunity to Métis Nation of Ontario to deliver our oral presentation.

My name is Pauline Richardson. As regional councillor of Region 7 of the Métis Nation of Ontario, I serve as the chair of the Georgian Bay Traditional Territory Consultation Committee. In addition, we have here today David Dusome, president of the Georgian Bay Métis Council, Larry Duval, senator of the Moon River Métis Council. Unfortunately, Peter Coture, president of

the Great Lakes Métis Council, and Greg Garratt, Captain of the Hunt for the region, were not able to join us today.

As per our region consultation protocol, together we represent the rights and the interests and the way of life of the regional rights-bearing Métis community in the area that the Western Waste Management Facility is located.

Sitting beside me are Aly Alibhai, the director Land Resource Consultation Branch of the Métis Nation of Ontario, and Germaine Conacher, consultation manager of Caillou Group.

Métis Nation of Ontario would like to thank Ontario Power Generation for their positive relationship built over the years.

Within our limited time, we would like to address two concerns. One, the lack of Métis-specific information within Ontario Power Generation's submission to the Canadian Nuclear Safety Commission; and two, how the Commission, along with Ontario Power Generation, can improve their assessments to Métis rights in the future.

I would now like to ask Aly Alibhai to share with you the Métis Nation of Ontario in relation to Ontario Power Generation application. Aly.

**MR. ALIBHAI:** Thank you, Mr. President, Commissioners.

I'm going to keep my remarks very brief. We have our consultant with us, Ms Conacher. My intention is to very briefly, since we last appeared before you, bring to your attention some recent emerging developments in respect of the Métis Nation of Ontario in particular, and more generally Indigenous law as it relates to the Métis.

First and foremost, I should advise you that in December of 2015 the Ontario legislature passed legislation formally recognizing the Métis Nation of Ontario. And this was a watershed development in that we are now legislatively recognized provincially and in fact are the only Métis organization in the province recognized in this fashion.

I also want to draw to your attention the report that was released in 2016 of the special representative appointed by the previous federal government to look at Métis issues, Mr. Thomas Isaac. And the Isaac Report is noteworthy, and I would certainly urge you to consider it in respect of the issues pertaining to reconciliation for the Métis and the recommendations contained therein and in reference particular to the Métis Nation of Ontario. Mr. Isaac relied heavily on the Métis Nation of Ontario as an example of how a Métis government should be administered and drew on that in his analysis.

Finally, I would want to draw to your attention the decision of the Supreme Court of Canada in 2016 in the case called *Daniels*, which once and for all clarified the issue in respect of jurisdiction and the fact that the fiduciary relationship of the Crown is that of the federal Crown insofar as the Métis are concerned. They fall properly within 91(24) of the *Constitution Act*, 1867.

It's important, however, to understand and recognize that that decision did not in any way, shape, or form alter the law in respect of the assertion of Métis Indigenous rights. The law in that respect remains as it was enunciated by the court in the seminal decision of the Supreme Court of Canada in *R. v. Powley*, a case rendered in 2003, that in fact the Métis Nation of Ontario was responsible for shepherding from the Provincial Court in Ontario all the way to the Supreme Court of Canada. That is the decision that sets out the test in respect of the assertion and establishment of Métis rights, and it remains the law and the current state of the law.

The *Daniels* decision was not a case in respect of the assertion of rights but rather was a case in respect of jurisdiction, and once and for all that pingpong going back and forth between the federal and provincial Crown, that matter has been resolved, and it is the federal Crown under 91(24) that remains responsible.

Those are my comments. I wanted to bring those new developments to your attention.

And I will now turn to our consultation from the Caillou Group to speak to you about the specific issues in respect of the applications that are before you.

Thank you, and I'm obliged.

**MS CONACHER:** Thank you.

Germaine Conacher, so consultant to the MNO.

Caillou Group reviewed the 10-year licence renewal, the environmental risk assessment, and the predictive effects assessment for the Western Waste Management Facility on behalf of the MNO.

And just as a quick background to the issues that the MNO has put before the Commission today, I'd like to provide a little bit further information.

So in 2013, the Métis Nation of Ontario, Region 7, which is the Georgian Bay Traditional Territory, presented at the Joint Review Panel hearing for the OPG deep geologic repository project. And as I'm sure the Commission and audience is aware, this is the same location and is designed to be permanent storage facility for some of the waste currently held at the WWMF. Therefore, the concerns and process that the MNO went through is relevant for these proceedings.

At the time, MNO explained to the Panel

that it was critical for OPG to collect information on and study the things that mattered to MNO citizens. These things chosen for study are referred to as valued ecosystem components, or valued components. And at the time, this hadn't happened to MNO's satisfaction.

So during the hearing, Councillor Richardson noted that many environmental assessments were conducted in this region and government decisions were made without Métis consultation, including previous decisions made around the Bruce Nuclear site.

She further said to the Panel that:

"we hope a better understanding and acceptance of Métis culture will result so that the next time the Panel convenes Métis Nation of Ontario representatives will have confidence in the conclusions presented to the Panel." (As read)

The Joint Review Panel recognized that there could be intangible effects to MNO's citizens from the DGR or other nuclear projects. These intangible effects could consist of such things as people's perceptions or fears in relation to contamination from nuclear facilities. These intangibles can affect people's behaviours and the exercise of their Métis rights, just as

tangible project effects can. For example, while fish, animals, or vegetation may not be directly affected, Métis use of that species or their attitudes towards those things may experience change.

Following the DGR hearing, MNO and OPG entered into an agreement to work towards identifying and collecting information on these intangibles from MNO citizens. In summer 2016, MNO Region 7 began the process of identifying Métis-specific valued components in relation to nuclear projects. The MNO worked to ensure that these VCs were consistent with standard environmental assessment methodology, which basically identifies a component of importance which has the potential to be affected by a project, where information can be collected, and where change can be measured. This was important to the MNO, because we wanted to ensure that the VCs could be incorporated into future OPG regulatory filings and applications on the Bruce site.

Once the VCs were identified, we developed a survey that would collect information on the VCs from MNO citizens in the region. Questions focused on people's attitudes and perceptions in relation to nuclear energy and how nuclear projects could affect the exercise of their rights such as hunting, fishing, or gathering in proximity to the Bruce site as well as people's attitudes and

perceptions on project socio-economics.

The survey is designed to be delivered on a regular -- for example, annually or biannual basis -- in order to measure change. In other words, is there a positive or negative trend in the survey results related to the MNO VCs. And now that these VCs have been identified and baseline information has been collected, OPG has committed to the MNO that they want to continue to work with MNO on incorporating this important information into future applications, filings, and the monitoring program.

Unfortunately, timing didn't allow for this to happen as part of this application. However, it is MNO's position that this can and should occur in future PEAs, ERAs, et cetera, and it is our understanding that OPG is committed to this as well.

While OPG may recognize the value of this information in order to have a robust and complete application that adequately outlines and understands potential effects of its projects and operations on the Métis Nation of Ontario, we hope that the CNSC agrees.

As indicated by the codification of current practice, the CNSC's commitment to Aboriginal consultation, the CNSC indicates that it encourages Aboriginal peoples to outline the nature and scope of their Aboriginal interest that they feel may be affected by a

proposed project. And the CNSC recognizes that the proponent's engagement activities are important to informed decision-making as well as the CNSC Staff's consultation activities. So we would encourage the CNSC to compel proponents to identify and collect information of importance to Aboriginal groups and assess the effects of projects on those interests.

**MR. ALIBHAI:** I was reminded that I omitted to mention one final thing in my remarks, and that is the very important execution of a memorandum of understanding very recently, on the 3rd of February, 2017, between the Minister of Indigenous Affairs and Northern Development Canada and the Métis Nation of Ontario in respect of the establishment of a process for entering into a framework agreement.

This is a historic achievement that advances the reconciliation agenda recommendations made by Mr. Isaac in his report. And so I wanted to also draw that to your attention, Mr. President and Commissioners, because that was a significant historic development, a very recent one, as I say, on the 3rd of February. And that is available.

And that, I should mention, is in addition to a formal consultation memorandum of understanding which was entered into with the previous federal government in

the summer of 2015.

So as the president of the Métis Nation of Ontario has said quite publicly and repeatedly, the stars are aligning for the Métis. And Canada may be celebrating its 150th anniversary this year, but it has been a long 150 years for the Métis. And it is now high time that steps are being -- concrete, meaningful steps are being taken to advance the reconciliation agenda vis-à-vis the Métis, one of the distinct -- one of the three distinct Aboriginal peoples recognized formally in the *Constitution Act* under s. 35 of the *Constitution Act*, 1982.

Thank you.

**THE PRESIDENT:** Thank you. So --

**MS RICHARDSON:** I'm just going to wrap it up. Can I just -- I have a real quick thing that I just don't --

**THE PRESIDENT:** Okay, go ahead.

**MS RICHARDSON:** Thank you, Germaine.

Thank you, Aly.

Métis Nation of Ontario has done a lot of work at identifying the Métis-specific values. However, the time required to develop these values and effectively incorporate them into OPG's application was simply not realistic. As a result of our discussion with Ontario Power Generation, the Métis Nation of Ontario was provided

a letter that committed Ontario Power Generation to addressing the many concerns raised by the Métis Nation of Ontario. We acknowledge this correspondence with gratitude.

We thank the Commission for appreciating the position that the Métis Nation is in and ask them to commit ensuring that all future submissions are inclusive of Métis rights.

Thank you for your time. Are there any questions for the Métis Nation of Ontario?

**THE PRESIDENT:** Thank you. I'm sure there are. Why don't we start with Ms Velshi.

**MEMBER VELSHI:** Thank you, Mr. President.

And thank you for your submission. So it's very gratifying to hear that you've actually found a path forward to address your issues. And you were here for the earlier part of the conversation when Staff said the environmental assessment is a dynamic process and there's going to be a review every five years. So I think you've got Staff's commitment as well that whatever you have identified as areas of concern are reflected in both OPG's plan ahead and as well as any assessment they do.

So given that, I wanted confirmation from you that you don't really have any residual concerns so long as people follow through with their commitment. Is

that correct?

**MS RICHARDSON:** That's actually correct. The Métis Nation of Ontario are working together very well with them at the grass level. But it's just in case somebody changes the game, we wanted to make sure that we had written confirmation. And the letters are there. And so we are working towards the same goal at this time. So that's a correct statement.

**MEMBER VELSHI:** Thank you. OPG, did you want to add anything?

**MS MORTON:** Lise Morton for the record.

I'll just reiterate the commitment and the commitment that we made in the letter. And as I say, we acknowledge the respectful engagement that we've had with MNO.

I agree, I think there was an issue of timing in terms of being able to integrate the Métis knowledge into the VCs, et cetera. And so we certainly have committed to do that. There's a multi-year plan in place, and we'll certainly be working very closely with MNO on that.

**THE PRESIDENT:** Dr. McEwan?

**MEMBER MCEWAN:** Thank you, Mr. President. Thank you for the presentation.

In the actual summary of the report where

the table is on page 6, and I guess the areas where I need some help -- I think I saw the beginnings of understanding it. If I look at 2.2.7, which I think is perhaps where I had the greatest difficulty:

"While this Section does describe the Métis Nation of Ontario ...

Traditional Territory in broad terms, it does not describe the land use of the Métis Nation[s] in the vicinity of the Project. Please amend."

Can you explain what that means? Because looking at the report, it's very difficult to try and understand how that request could be fitted into the broader report.

**MS CONACHER:** Yeah, absolutely.

So within the section on land use, it doesn't break out traditional land and resource use from other land uses within the project vicinity. And so it describes that it's part of the Métis Nation of Ontario's Georgian Bay Traditional Territory, but doesn't describe the exercise of Métis rights within that traditional territory. So the things that the citizens are undertaking in the exercise of their rights, such as hunting, trapping, fishing, gathering, and how those activities are carried out in that area.

**MEMBER MCEWAN:** Those activities are referred to in the document. So that's why I had some difficulty in understanding --

**MS CONACHER:** Right.

**MEMBER MCEWAN:** -- what this actually meant.

**MS CONACHER:** Yes. And just it's not specific to the Métis Nation of Ontario or the information that Métis Nation of Ontario has put together in traditional land use studies.

**THE PRESIDENT:** But how does that relate to the SON and the historical rights? I'm trying to understand if there's any overlap. Same territory, are we talking about -- we're talking about one piece of land; right?

**MS CONACHER:** Absolutely. And I imagine there is a lot of overlap. I mean, I don't -- I'm not a consultant for SON or the Historic Saugeen Métis, but the MNO has rights within that territory and exercises those rights.

**THE PRESIDENT:** Okay, finished?

**MEMBER MCEWAN:** I'll come back. Thank you.

**THE PRESIDENT:** Dr. Demeter?

**MEMBER DEMETER:** Thank you for your

presentation.

There's a fairly bold statement in page 2 of your submission that I'm going to suggest based on the discussion and your presentation how I may interpret it differently than what I'm reading.

The statement is -- based on the paragraph on standard environmental assessment methodology. And the statement is:

"The Environmental Risk Assessment and Predictive Effects Assessment do not adhere to standard environmental assessment methodology."

Which is a fairly bold statement.

From what I'm hearing from your presentation and the discussion, could that be better understood as being that the current standard of environmental assessment utilized did not adequately address your concerns? Because one makes it sound like it's an inadequate environmental assessment, and the other one is it's a standard environmental assessment but it may not have taken into account your specific concerns. They're very different things. One has called into question the scientific methodology, the other one is the interpretation of what should have went into it.

**MS CONACHER:** Yes, I'd say that's correct.

Yeah.

**MEMBER DEMETER:** Thank you very much.

**MS CONACHER:** I mean, I could elaborate slightly further in that in terms of if you looked at it through CEAA, 2012, and we're looking for an assessment of effects on current use of lands and resources, that isn't worked into those components.

**THE PRESIDENT:** Dr. Soliman?

**MEMBER SOLIMAN:** Thank you.

There is two items about land resource and water and nationhood. And the report is saying this was not taken into consideration or some of these items included in these two tables are not taken into consideration. Can you elaborate on that, and I would like to hear response from OPG and CNSC addressing these concerns.

**MS CONACHER:** Yeah, absolutely. So those two items that are in -- I believe you're probably referring to the covering letter associated with the comments. And those items are the valued components that MNO Region 7 committed to or came up with in 2016.

And the issue around the inclusion of them in this application was that one of timing that we discussed in the oral submission. So MNO has been working towards this goal since the agreement with OPG several

years ago and has recently developed those VCs and conducted a survey related to those VCs. Unfortunately the timing in this situation was that the VCs selected for study for the WWMF occurred prior to the MNO's selection of their VCs.

**THE PRESIDENT:** Ms Velshi?

**MEMBER VELSHI:** Again, wanting confirmation from you. So besides -- so move the VC portion aside, because you've got a commitment to work with OPG on that. Are there any other aspects of the application that you've got concerns or issues with?

**MS RICHARDSON:** Pauline Richardson for the record.

One of the issues that we did have is that we noted that when we did the EAs, the Métis voice was not heard in that, as we said in the last hearings. And at this hearing, because you're doing the ERA or the PEA or whatever alphabet soup they want to use today, there's a gap, because it doesn't show that the Métis have any input yet again.

So the Métis voice is not being heard and it's reoccurring that we're not having that -- even though we're actually working with the proponent, and we're working very well, there is no obligation where the proponent or the CNSC have to address that the ERA -- that

we have actually -- we're supposed to just review their monitoring, their way of doing it. It's not the holistic way that we would do our assessment.

So that would be one of the gaps that I would see that just pops out within all this whole process.

**THE PRESIDENT:** So were you in the room when we were dealing with the previous intervention?

**MS RICHARDSON:** I was in the room, yes.

**THE PRESIDENT:** And we were talking about setting up a kind of mechanism where the parties -- all the parties could get together -- I don't know why OPG doesn't do that automatically -- bring all the Indigenous communities together and try to get a consensus about what is that you're going to measure as you move forward.

**MS MORTON:** Lise Morton for the record.

Just to make sure I understand, Dr. Binder, you're asking in terms of bringing all three communities together. That's a fair challenge. We have not done that to date. We typically meet with them individually. You're correct.

It's certainly something we could look at, and if the communities were interested in that -- and I think that's what's important -- if the communities want that as well, we certainly would be willing to do that.

**THE PRESIDENT:** CNSC, I thought you would

almost provide some significant guidance on the wisdom of doing it?

**MS TADROS:** Haidy Tadros, for the record.

Yes, sir. Just to clarify a few things I'll ask Dr. Caroline Ducros to clarify the *CEA 2012*.

Just in terms of the engagement, I believe from the last intervention as well we've been clear on the engagement activities that we have conducted. We are on the phone, we are invited to meetings, we invite to meetings -- interested parties who want to discuss this file as well, and things have started picking up in the last few months after everybody's sort of trying to get together to address the issues at hand.

So I'll pass it to Dr. Caroline Ducros to clarify a comment that was made with regards to the methodology around the environmental assessment.

**DR. DUCROS:** Dr. Caroline Ducros, for the record.

Yes, there's a number of comments that are made in the table, and one was reiterated just earlier about not using standard environmental assessment methodology. I just wanted to clarify that, and I believe the intervenor just added -- she was referring to *CEA 2012*. So for this project, it wasn't a *CEA 2012* EA, it's not on the Regulations Designated Physical Activities.

The CNSC does an EA under the NSCA for projects that either have previously undergone CEA EAs or that are up for licence renewal or new licences that have activities that aren't on that list of designated physical activities.

However, there is a robust set of criteria and assessment methodology that's codified in Regulatory Document 2.9.1. That is the methodology that was used for this environmental assessment report.

Having said that, we did meet with the MNO recently. We are very committed to meeting semi-annually, if not more often if there's any issues that need to be resolved. I hear the point very well that some of the monitoring data and the continued importance of certain effects needs to be considered in our review. We're looking forward to doing that in the future, and that would be consistent with our approach to doing an EA under the NSCA as well as EA under CEA.

Also to just sort of wrap it all together, in discussions with the MNO in March and going over some of the concerns, it's still Staff's conclusion that the predictions that were stated in the environmental assessment report and our conclusions on whether the environment is going to continue to be protected remain the same.

**MR. ALIBHAI:** Mr. President, if you would oblige me. I simply want to note that whereas the Métis Nation of Ontario would be supportive of such discussions and dialogue, I think it is important to emphasize that the Métis are one of the three distinct Aboriginal peoples and their rights, interests and way of life considerations are unique from other First Nations.

So it is, I think, worth simply mentioning or noting that we -- our preference is to have these discussions with OPG independently of those with other Indigenous interests, as we see ours as being sui generis and unique, and distinct from other Indigenous interests. There may be overlap, but at the end of the day we see our interests and rights as distinct.

**THE PRESIDENT:** So is a waste management facility very unique, and we are interested in the impact on the environment that impacts everybody near it. So I'm not suggesting a solution, but I think there is more and more movement to getting a community-based consultation on the environmental impacts, which I think we're all on the same page, we want to minimize the environmental impact on water, air and land.

Last question here?

**MEMBER MCEWAN:** I have one more question. Again, it reflects trying to understand your table, which

actually was very helpful, by and large. On page 11, it's the fourth row, "While the risk evaluation for ecological receptor is identified, there were no adverse effects." There was no consideration but perceptive related effects to Métis rights.

Again, you sort of partly answered that in your presentation, but I need help in understanding whether you are talking about the generic Métis right for the population or individual perceptions of risk because of the closeness of the facility. I think that's an important difference because in my mind it actually has some bearing on how your data are interpreted the surveys you do.

**MS CONACHER:** The basis of the comment is sort of as you alluded to in the surveys and in the value components, that the Métis Nation of Ontario identified some of the trends that we're starting to see from individual citizens' responses, is that they avoid nuclear facilities because of a perception of contamination or a fear of contamination regardless of whether the contamination is there in actuality.

So this perception or this fear kind of permeates the exercise of their rights within the vicinity of the facility.

**MEMBER MCEWAN:** It would be very interesting to see the data. I hope you'll share it with us

sometime.

**MS CONACHER:** Absolutely.

**MEMBER MCEWAN:** Is that an issue related to an educational process that can be undertaken? Is there a comfort level that can be developed among the community that will perhaps help those perceptions?

**MS CONACHER:** I think I'll let Pauline.

**MS RICHARDSON:** That's a good question. I've been doing this -- I've been Métis all my life and I know that I talk to the citizens and I educate them. I had to explain how -- and I show them all the brochures, I explained the whole thing. Two minutes later, they're talking to someone else and their perception is still you can't convince me. So it's kind of like you can bring the horse to the water, but can you make him drink? That's kind of that kind of perception.

So that perception is very live. If they have a chance to go and do medicine, collect our medicine, and they have a choice of going to where the nuclear are or where there's clean fields, I can guarantee you they'll go to the clean fields. So it impacts our way of life, because they won't go close to the nuclear, especially since they have all the security and everything.

I know that I speak to a lot of the people in Owen Sound, the citizens in Owen Sound, and they say

they don't hunt around there, they try not to be close to there because of the perception.

**THE PRESIDENT:** Anybody else? Okay, final word? Do you have to add anything?

**MR. ALIBHAI:** On behalf of the Métis Nation of Ontario, we wish to express our gratitude to the Commission for having listened so patiently, Mr. President, and your colleagues, we're obliged.

I think we continue, as you see, to make advances, sometimes they're baby steps, and we have clearly on the record noted our working relationship with Ontario Power Generation. We hope, as Councillor Richardson indicated, that we will continue in the right direction. So we are obliged to you and we wish you the best in your deliberations in respect to these applications.

Thank you.

**THE PRESIDENT:** Thank you very much.

We will take a 15-minute break now and reconvene at 4:00. Thank you.

--- Upon recessing at 3:45 p.m. /

Suspension à 15 h 45

--- Upon resuming at 4:02 p.m. /

Reprise à 16 h 02

**THE PRESIDENT:** OPG, you want to clarify something?

**MS MORTON:** Lise Morton, for the record.

Yes, thank you, Dr. Binder. We just wanted to come back with the information that we had about noise that you had asked for earlier. So Allan Webster's going to provide that.

**MR. WEBSTER:** Allan Webster, for the record.

The noise limits you were asking about for Class 3 areas, which is a rural area in which we're situated, between 7:00 a.m. and 7:00 p.m. it's 45 decibels, and then at night between 7:00 p.m. and 7:00 a.m. it's 40 decibels. Those come from the Ontario Ministry of the Environment Noise Guidelines for Stationary and Transportation Sources.

**THE PRESIDENT:** So they are the same for industrial and residential or is it for this particular site?

**MR. WEBSTER:** It's for our particular area, so it's because of the background noise and in our kind of area, where there's a class of area. So the amount of noise that we have is what would be disturbing given our background noise.

**THE PRESIDENT:** Thank you. So we now will

move to the next submission. I'd like to thank two intervenors I believe for accommodating -- different type of accommodation I think --

--- Laughter / Rires

The presentation by the Saugeen Ojibway Nation as outlined in CMD 17-H3.12. I understand that Mr. Monem will make the presentation. Over to you.

**CMD 17-H3.12**

**Oral presentation by**

**Saugeen Ojibway Nation**

**MR. MONEM:** Thank you, President Binder, Members of the Commission. My name is Alex Monem, I'm legal counsel to the Saugeen Ojibway Nation, or SON. I'm here today with my colleague Mr. Randall Kahgee. We will both take a small portion -- or the complete portion, but we'll keep it very brief of our presentation.

I'd like to ask Mr. Kahgee to begin.

Thank you.

**MR. KAHGEE:** (Speaking Native Language). First of all, I'd like acknowledge the Creator for giving us this day, our elders, our youth, and the members of the leadership who are in the audience today.

Randall Kahgee, for the record. I'd also

like to acknowledge the Algonquin Nation and say miigwetch for allowing us to meet on their traditional territory today.

I'm going to provide just a very short overview of the history, not so much get too far into the history of the Saugeen Ojibway Nation, because we'll have to be here much much longer, but really to give some context and to understand where we've come in terms of our relationship with OPG and the work that we continue to do with CNSC and other members of the federal ministries and the Crown in general.

So I want to start first with the Saugeen Ojibway Nation. We are comprised of two very proud communities; the Chippewas of Nawash Unceded First Nation and the Chippewas of Saugeen First Nation.

Historically, we have worked collectively through many challenges throughout our history to essentially protect what matters most to our people, and that's fundamentally our relationship to the lands and the waters and the territory, because that's what sustains us as a people, as a community, and indeed as a nation. Our culture, our language, our very identity is very much inextricably linked to that relationship.

Through the course of time we have made great strides and efforts to protect that relationship,

even through the treaty process. We typically take a very impoverished view of treaties in this country and forget that they are living breathing documents that have the full force of law today and represent a very simple understanding; that our people would agree to share the territory on the understanding of what mattered most to us, that relationship I spoke of would remain in tact and protected for many generations to come.

One of my colleagues here earlier referenced the 150<sup>th</sup> anniversary of Canada and I'm sometimes conflicted of how Indigenous people should celebrate that. We talk a lot about reconciling the relationship with the Crown and First Nations and Indigenous peoples, but indeed that's a responsibility of each and every Canadian to try and achieve that reconciliation.

So over the course of history I've taken great strides both politically and through mechanisms available to us even through the courts and through different regulatory processes to try to not only assert our rights, but to make sure that those rights are protected, and we do so in a very good way and in a way that will honour the legacy of our ancestors.

I want to talk a little bit about the history of the site. As many of you are aware, this site is the largest nuclear site in the world. It has the largest

operating nuclear facility and the largest waste management facility all co-located on the same site.

The decision to site a facility in our territory in the 1960s, that was a decision made absent our people. Subsequent decisions to where we are today have been largely at the exclusion of our people. What that has left is a long list of concerns and fears that our people have; concerns about how the industry has interacted with the environment in terms of impacts on our water, impacts on the land and, more importantly, that fundamental relationship that we strive to maintain and understanding that our rights and our interests are allowed to evolve over time and take a natural expression as we see fit, consistent with that relationship.

Over the course of the past decade we have worked tirelessly with OPG to try and set the stage for that very important reconciliation that needs to happen with the nuclear industry in our territory. In 2013 the parties are successful in reaching an understanding that the deep geological repository for low and intermediate-level waste would not move forward without the support of our communities.

A second part of that commitment I think perhaps may be even the most important part of that commitment, is that OPG would work with our communities to

reconcile those longstanding legacy issues that I spoke of in terms of the historical and ongoing impacts of that facility on our rights and our interests.

The Nuclear Waste Management Organization has also given a similar commitment, that it will not site a deep geological repository for spent fuel in our territory without the consent of our communities.

What that gives us now is a very powerful set of tools to start beginning that very important work that I spoke of, that reconciliation on these issues. These are very deeply complex issues, by no means are they easy. We have a tremendous amount of work to do to build that trust and gain that confidence of our people so we can work towards these issues. We did not ask for these problems, we did not create them, they are not of our own design, but as my predecessor, the late Chief Ralph Akiwenzie said, "Gone are the days when we're left on the outside looking in on our own territory."

We must be part of shaping the solution and a part of the solution of these facilities so that they're done in a way that not only reconciles those issues I spoke of, but are done in a way that's consistent with our vision for the land, the waters, and the territory as a whole, so that we've done our part to sustain that relationship for future generations.

It's been a long road. We still have much more work to do with OPG, but I commend them on their efforts. When I compare where we were 10 years ago to where we are now, it's like day and night, and they should be commended because I think they are real leaders in the industry on this.

We continue to engage with CNSC, and there's been a really positive I think evolution in that relationship over time and we'll continue to cultivate that relationship, as well as with other agencies at the federal level as well as the provincial level.

Our communities are now beginning to embark on a journey where we will reconcile these issues and that very difficult work that's so important to us. I've said it many times, at different hearings, you've heard me say it before, our people do not have the luxury of what ifs. This is who we are. This is our home, and it's very important to us. And we will do what's necessary to protect our interests.

So chi-miigwetch for allowing me some time to share that and provide some context. I'm going to turn it over to my colleague and good friend, Alex Monem, and he'll talk about our submissions a bit further.

Miigwetch.

**MR. MONEM:** Thank you. Alex Monem, for

the record.

You have our written submissions, and I do not propose to go through those in great detail. Rather, I'd like to focus on the conclusion of those submissions, which is a request for a hold point mechanism in the licence that OPG is now seeking for the Western Waste Management Facility which, if it's okay, I'll just refer to it as the Western Facility.

I'd like to briefly explain the concerns that give rise to our request for a hold point and a little bit about the direct engagement between SON and OPG and SON and CNSC staff on this matter.

I'm very happy to report that I believe a workable solution has now been proposed by CNSC staff for a licence condition that satisfies our concerns and we believe is workable, so maybe this is another moment we can pause and savour.

As explained by Mr. Kahgee, the Saugeen Ojibway Nations are the Aboriginal peoples of the greater Bruce area. Its members have Aboriginal treaty rights throughout the territory and continue to rely on the territory today as they have for countless generations. And as Mr. Kahgee has stated, within the SON territory is the Bruce site which houses the Douglas Point reactor, the Bruce nuclear generating station, the Western Facility and,

together, this comprises a very large, maybe the largest, nuclear facility in the world.

In addition, the Bruce Power site is also the location of OPG's proposed DGR project for the permanent disposal of all of OPG's low and intermediate level nuclear wastes.

Finally, three municipalities within SON territory are engaged in NWMO's adaptive phase management process to identify a location for a Deep Geological Repository for all of Canada's used nuclear fuel.

SON is currently engaged in critically important processes with OPG and NWMO as well as provincial and federal Crown representatives in an attempt to work through or resolve many of the historical ongoing issues relating to the history of nuclear development in SON territory as well as finding a path forward in light of these projects, or these proposed projects.

For SON, the Western Facility represents a very significant aspect of these discussions and is closely tied to the issues that SON and its partners are attempting to address.

The continued operation of that facility results in a growing amount of low and intermediate level wastes being transported into the territory for storage, and while SON understands that the facility is currently

necessary, SON does not view the long-term operation of that facility as an acceptable solution -- final solution for the nuclear waste challenges facing the territory.

OPG is now seeking a renewal of its operating licence for the Western Facility for a 10-year period. OPG also seeks authorization to construct a number of new storage structures.

OPG acknowledges that the need for some of these structures at the Western Facility is linked with and dependent on decisions beyond those relating to the facility itself and, in fact, dependent on decisions that will come in the future.

Briefly, in its application, OPG states that during the 10-year period that is being requested, several activities will affect the operations at the WWMF. OPG would be pursuing the refurbishment of Darlington nuclear generating station and the extended operation of the Pickering nuclear generating station.

These will result in ongoing shipments of low and intermediate level waste to the WWMF in similar or potentially greater quantities than occurred today.

Relating to Bruce Power's major component replacement program, which I'll refer to as refurbishment, OPG explains in its application that it will use existing structures to store waste that the program gives rise to,

but that it will likely require additional buildings. It states:

"Similarly, Bruce Power will commence the major component replacement program which will result in sustained levels of low and intermediate level waste, including additional steam generators and retube wastes. This will extend the life of the Bruce Power reactors, resulting in an increased number of used fuel bundles produced that requires interim storage in dry storage containers at WWMF."

(As read)

Lastly, the application suggests that the DGR project will also have an impact on operations at Western and, in particular, the need for a large object processing building. The application reads:

"The primary function of the large object processing building would be to safely process the steam generators and other large components into segments and to be able to eventually place these segments in

the low and intermediate level waste  
Deep Geological Repository."

(As read)

In our written submissions, we raise three main concerns with the application and the licence sought which I'll summarize very briefly.

The first concern relates to the duration of the licence period. The 10-year licence period for which OPG is seeking a licence will see many critical decisions made respecting nuclear development and waste management within the SON territory which will have significant implications for the operations and needs at the Western Facility. These include decisions by the SON communities.

As Mr. Kahgee has indicated, in 2013 OPG and the SON entered into a mutual commitment that that facility would not be constructed until the SON communities are supportive of that project. And so the decision to proceed with the DGR includes decisions that will be made by the SON communities.

Decisions will also have to be made by OPG during that period with respect to that project as well as regulatory and licensing decisions with respect to that project. Each will determine whether the DGR project will proceed or whether OPG will need to develop an alternative

plan for the long-term management of its low and intermediate level waste.

The licensing period will also see decisions made respecting the Bruce Power refurbishment program.

Ontario and Bruce Power have, by way of agreement, committed themselves to the project. However, whether and when that project will proceed is dependent on future decisions, including future licensing decisions by the Commission and, quite likely, an environmental assessment.

Under the terms of a protocol agreement between Bruce Power and SON, they have committed to addressing issues like this proposal and have now begun their engagement on the proposal.

Obviously, the refurbishment of the facility is of the highest concern and significance to SON, as it will continue the production of nuclear power in the territory for another 40 or more years.

The licences originally proposed includes no mechanisms to ensure the licence -- am I already over time?

**THE PRESIDENT:** You don't want to know by how much.

Nevertheless, we have read -- we really

need to get going into some of those issues.

**MR. MONEM:** Okay, great.

So the licences originally proposed does not include a mechanism that would allow decisions respecting that facility or the licence to be responsive to those decisions.

I'm going to go through the other two concerns very rapidly.

One is related, and that is about the danger that could occur if a decision that is made today by the Commission includes approvals for projects that have not yet received regulatory approval.

There's a danger that that -- this early decision could be seen as pre-judging the outcomes of those future regulatory processes, and that's a mischief in its own.

Most importantly, though, is the third concern, which is the potential damage that could be done to the SON community process, process with OPG, and the community's confidence in the commitments made to it by OPG and its confidence in the regulatory processes.

This would cause incalculable harm to the work that has been undertaken over the last few years and the confidence and trust that's been slowly and painstakingly built through the very good work of OPG and

SON and federal agencies like CNSC.

This process is really now just starting to get rolling, and a decision that pre-judges the outcomes of things like the DGR project really does have potential to cause harm to those processes.

It's for these reasons and in light of the history that Mr. Kahgee has relayed to you that we made the submission that it would not be appropriate at this point to issue a licence that pre-supposes the outcome of future regulatory, licensing and community decisions and that does not include mechanisms to ensure that the licence is responsive to those decisions as they are made and, therefore, we suggested that the Commission could easily remedy these concerns by requiring hold points on the licence issued to OPG and to include only authorization for those buildings that would be needed regardless of future licensing, regulatory and community decisions at this time.

In this way, the Commission could safeguard the integrity of its decision-making process and ensure that its licensing processes support rather than ignore or harm important consultation and accommodation processes and the broader goal of reconciliation between SON and the Crown.

Over the last months, we have raised these issues directly through very constructive conversations

with both OPG and CNSC staff, and in supplementary submissions by both OPG and the CNSC staff, these conversations and these ideas and these concerns are reflected.

And getting now to the point, the CNSC staff submissions specifically address and make recommendations respecting SON's hold point request.

Briefly, OPG in its supplementary submissions acknowledges the concerns of SON and the licence sought, and it has, in the submissions and in its presentation today, indicated that it has made new significant commitments to SON respecting the continued operations at the facility and to continue working with SON to keep it informed and involved.

OPG has also committed to SON to develop acceptable long-term management plans for its low and intermediate level waste should the DGR project not proceed.

Finally, OPG very helpfully articulated quite clearly its authorization requests for additional structures into two categories; one, those structures for which necessary approvals have already been issued, and those that are contingent on future decisions. And those two categories are found at Table 2 and 3 of its supplementary submissions at page 8.

In CNSC's supplementary submissions --

**THE PRESIDENT:** Look, we have read all of the documents plus the proposal plus the supplementary. We are very eager to engage in what the meaning of those, so please. Please.

**MR. MONEM:** Thank you.

So we'll tell you what SON believes about those submissions, or those proposals.

First, we see the licence will clearly give -- it will address SON concerns because the licence will clearly differentiate between the structures that are required and authorized today and those that are dependent on future decisions. And two, it will -- there will be Commission consideration and approval required for those structures that are contingent on future decisions.

SON submits that if the Commission accepts these recommendations, it will ensure that its process is sensitive and responsive to the decisions on the ground respecting the major nuclear projects at the Bruce site and protective of the integrity and future regulatory processes and decisions in regards to those projects.

And finally, the Commission will have taken a significant step towards ensuring that its processes are aligned with the very important work being carried out by SON, OPG and Bruce Power, and others,

respecting nuclear waste management issues within the territory.

I apologize for running late, and I thank you for your time.

**THE PRESIDENT:** Thank you.

And I'd like to start with a question by Ms Velshi.

**MEMBER VELSHI:** Thank you, Mr. President.

So you actually started off by saying "We accept staff's proposal on making a change", so the rest was just again reviewing what you had said there.

So my question to you, and then I'll ask staff and OPG on this, is the proposal to the licence condition, as you said, is requiring Commission approval prior to these additional facilities going operational. Do you see any distinction between requiring that before they go into operation or before they get constructed?

**MR. MONEM:** Alex Monem, for the record.

This is not a technical response, but a process response. I think it would be optimal if Commission approval was required prior to the commencement of construction activities.

Again, part of this is a public perception issue. Once buildings are constructed, there is institutional momentum that may militate towards their

approval.

I say this, however, without a very good understanding of the operational requirements that OPG faces in this regard, as well as CNSC.

**MEMBER VELSHI:** Thank you.

And it was because -- and I appreciated you explaining why your hold point proposal was important to you and the factors in there, and so the perception around buildings potentially going up before there's confirmation that there is a need for them. And there may be some other drivers, and I'm sure OPG will want to add to that, but I did want to get your perspective on that.

So again, staff, confirm my understanding. What's being proposed is acceptance of the commissioning reports by the Commission before it goes operational, not the design and all the preliminary stuff that would still be happening at the -- delegated to the staff level.

So my question to staff is actually twofold. One is, even in your original proposal, when it came to staff -- when the licensee came to staff with the design and environment plan and all those, it doesn't say what's expected of the staff. It doesn't say staff has to accept it. It's just says it's submitted.

So you know, I don't know what authority staff has to say, "No, this doesn't meet requirements" and

do they really have to approve.

The commissioning one is very clear staff has to approve, so if you can help identify what the distinction there is or what the nuance there is.

And then I'll get OPG to talk about why -- I mean, your track record is that you haven't built buildings that you don't need. I mean, you've already shown that. But if the requirement was that you don't even start construction until you've got approval, all the necessary approvals and agreements to proceed with that, does that pose a hardship in your readiness to get these buildings available when needed?

So staff first, and then OPG, please.

I'm sorry. Since I'm only allowed one question, I tried to combine a whole bunch.

**MS TADROS:** Thank you for your questions. Haidy Tadros, for the record.

So I'll start and I'll call on my colleague, Karine Glenn, to give the details.

So you are correct. Staff's submission originally as well as the supplemental submission that was later provided to the Commission clearly explains that staff is in a position to recommend the hold point be put on the commissioning, the acceptance of the commissioning reports. And the rationale behind why that is the case is,

from a safety perspective, the construction of the buildings have been looked at, the environmental protection has been looked at so, again, from a business plan that was originally submitted, the information was looked at as a whole and the safety relevance to the decision was found that it's at the point of operation that we need to be specific with regards to what has been built, what codes have been used, do they meet the designs from an environmental management plan, are the predictive analysis where they need to be from the point of operation.

**MS GLENN:** Karine Glenn, for the record.

As Ms Tadros stated, there is a -- the designs of the building, most of them are very similar to what has already been constructed, especially when we're talking the low level storage buildings or the used fuel storage buildings, the in-ground containers. None of these designs are new.

What we do expect from OPG is to implement the latest revision of the codes to those designs, and that would be what we would be verifying.

There is a section in the Licence Condition Handbook that explains exactly the criteria that CNSC staff look at for those documents that are submitted prior to construction, and should CNSC staff have any questions or concerns with respect to safety at that point,

they would be raised and we would have to -- OPG would then need to answer and respond to our concerns before they could proceed.

But the safety case throughout the construction has been demonstrated through material that has already been provided. And the driver for the construction and then the driver for the hold point which has always been in the licence, it was in the previous licence for the commissioning approval, is when those buildings get ready to become active, if you'd like, or to receive radioactive material or nuclear substances.

And so at that point, it is another verification point to make sure that everything was built as per the plans and that all of the testing has been completed from a safety perspective.

**MEMBER VELSHI:** Thank you.

OPG?

**MS MORTON:** Lise Morton, for the record.

As we indicated in our supplemental submission, we proposed an addition to the Licence Condition Handbook at the construction stage, so we did propose a condition that would occur prior to the commencement of construction activities.

You asked whether that would pose a hardship for us. We did not believe that that would pose a

hardship for us, and we proposed it in that way because we believed that it more appropriately addressed the concerns that SON had raised with respect to need to tie to future licensing decisions.

Of course, we do need regulatory certainty, and we will respect the Commission's decision on this. But again, that was the reason as to why we put the proposal as such in our supplemental.

**MEMBER VELSHI:** Thank you.

So I'll come back to SON, then. When you said you found what staff had recommended as a licence condition was acceptable, do you still feel that way, given that you've very clearly said one of the reasons why you wanted a hold point was this whole perception on the validity and legitimacy of the different approval processes, and is that being undermined in any way by buildings going up without having received approval?

So, any further thoughts on that?

**MR. MONEM:** Alex Monem, for the record. To repeat my previous response, I think it is certainly better and addresses more fully the concerns we've raised.

If the submission of a report and the acceptance of that report by the Commission is done at the construction phase, that is better.

But we are mindful of the operational

complexities facing OPG and if OPG does not believe it would cause any undue hardship, it would be our preference to have this at the construction phase.

**MEMBER VELSHI:** Thank you. So, OPG has said it won't cause hardship, though they'd prefer to get greater regulatory certainty up front, but staff has said that they don't approve the design stuff before it goes for construction, so you know, the Commission wouldn't.

I'm just wondering if there is another vehicle of saying, OPG will not construct anything until the need for these additional facilities, the appropriate approvals have been obtained, whether it's the regulator, whether it's other stakeholders, whether it's the Aboriginal groups or whatever it is, that's appropriate; I'm just wondering, is this the right solution?

**THE PRESIDENT:** Before you answer that, they can do all the planning, the design, show you the codes and all this between all the preparatory planning work and the actual construction and commissioning.

The construction phase itself is what, probably less than a year, I would argue, in some of those buildings? Maybe I'm totally out to lunch here, but I didn't think if you do all the preparatory and you have experience, you know where you're going to do it, et cetera, the construction phase itself -- so, I think we are

talking about whether it be before construction and decommissioning, I thought we're talking maybe about a year difference. Am I wrong?

**MS MORTON:** Lise Morton, for the record. So, a typical planning cycle for construction of one of our buildings -- and, as Ms Glenn indicated, a lot of them are very similar buildings to each other -- but a typical planning cycle would be approximately five years. That would encompass, obviously, a part for planning, project planning, contract management, et cetera, the design phase and then construction.

But the actual construction part typically is approximately 18 months to two years at the most, I would say.

Now again, that depends if we have to do site preparation, that's more extensive than on the current site or something, but for the most part, you're right, construction is likely about 18 months to two years.

**THE PRESIDENT:** So, you can do all the planning, that's not what we're talking about. I'm talking about whether the condition -- the hold point should be on the construction or the decommissioning, and if you're okay with the construction why wouldn't staff go along with that?

**MS GLENN:** Karine Glenn, for the record.

There are some slight differences between the proposal that OPG has put forward and the proposal that CNSC staff have put forward.

The proposal that OPG put forward does include the need for OPG to submit a justification that the building is actually needed at this point in time, that they have the approvals for the project for which it supports. It doesn't involve the Commission decision and it doesn't involve interventions or an opportunity for the public to intervene.

The proposal that the CNSC staff have put forward would provide an opportunity for the Métis for the SON to participate in that acceptance decision.

**THE PRESIDENT:** But that's once the building is already up and everybody knows it's up. It doesn't make sense.

**MEMBER VELSHI:** So, maybe what you need is both, you know, no construction until you've got approval and then, no operation until there is an opportunity for intervention and engagement.

**THE PRESIDENT:** Something doesn't compute. OPG proposes to come to you for approval. So, what is it I'm missing here, you say yes or no?

**MS TADROS:** So, again, I'll go back to sort of the current licence period indicates that the

safety case has been established, approval has been -- authorization for construction has been given. So, from a safety perspective --

**THE PRESIDENT:** No, no, we're talking about a perception here and we've been talking about -- we don't like the presumption that something will be approved later. I'm with the SON on this, I'm not particularly keen about making any visible construction on the camp, so you've got to find a different mechanism here to make sure it's not happening.

And one other thing, I would like to remind everybody that you are now coming in front of the Commission on an annual basis, annual basis, you can give us the latest update about all the other things that's going and then you can adjust the licence condition depending on what decisions are made, if ever, on DGR, Bruce and Pickering.

I just don't like the idea that there's a presumption of what we're going to do built into this process.

I see Mr. Jammal, welcome back.

**MR. JAMMAL:** Ramzi Jammal, for the record. Thank you.

Two things. I'm causing grief for staff with respect to the words, "the hold point we'll set." As

was mentioned before, the environmental assessment under the existing licence and the safety case for the proposed building has already been approved by the Commission. So, now you have a licence renewal that is before you.

If we accept the fact that the Commission did recommend -- two recommendations are before you, so the Commission will make the decision, do you want a hold point at the construction level or do you want a hold point at the commissioning level. It's not an issue for staff, it's an issue with respect to the regulatory process that will be put in place.

So, what I'm trying to say here is, you will have to make that decision, the proposal based on the already existing approval and the EA, and there was mention of a site preparation and so on and so forth, all these have been evaluated and from regulatory certainty perspective was, they will not operate until they come with a hold point and the proceedings will be public proceedings allowing engagement.

At the end, if the Commission wishes to put the construction hold point, we will accept it.

**THE PRESIDENT:** Thank you. Dr. McEwan?

**MEMBER MCEWAN:** Thank you. Thank you for the submission, clear, helpful, thank you.

I think both of you mentioned during your

oral presentation that as you had got the process moving relatively well of building and evolving relationship with which you felt more comfortable, you didn't want to see damage occurring to that almost as a law of unintended consequences, though, of things happening.

If we move forward with this type of -- so, I'm going to reverse it, if I may. As we move forward with this type of suggestion that there is some mechanism of construction hold point and operational hold point, do you see a decision like that actually being a positive factor in helping you to continue to grow that evolving relationship and to give confidence that there is actually a path forward?

And I think Mr. Kahgee used the term, sort of an alternate solution to resolving some of these long-standing issues. So, would you see this as a very positive step and something that would help you build that?

**MR. MONEM:** Alex Monem, for the record. I believe it would be not only the perception of the SON communities, but the SON teams and the OPG and SON team that support in the form of an alignment between federal regulatory processes and the mechanisms that OPG, SON and SON's communities have been building would be a tremendous benefit.

To the credit of all the parties, these

are very new processes that are being established and it is the case that at times the regulatory regimes don't keep pace with these and can have unintended consequences.

So now, not only do we negate or diminish the possibility of those unintended consequences, we can now report back to the communities, for instance, that the regulatory process now has been revised to be sensitive to the changes on the ground that result from decisions you may be making.

And I believe this will be tremendously empowering and that's very, very important for two First Nations that have been quite disenfranchised from the development and regulation of the nuclear industry within their territory historically.

Now, that's changing, but they look twice still to ensure that things are going the way they predict they ought to and I think this would be a milestone event if the Commission were to accept the proposal, with necessary modifications as necessary.

**THE PRESIDENT:** Dr. Demeter?

**MEMBER DEMETER:** Thank you for the presentation. I think it helped put things in perspective.

My question has been answered, but I wanted to assure you that this discussion has sensitized me to the -- trying to avoid the presupposition or the

pre-judgment that decisions we make today are based on speculative decisions made in the future which may or may not be made, so that has grounded me into the decisions you make today are based on today's and immediate needs and not to presuppose or pre-judge future decisions.

Thank you.

**THE PRESIDENT:** Just to reinforce what Dr. Demeter just said, there's a perception because it's a 10-year licence opportunity disappears for 10 years.

Isn't going to happen anymore. They come in front of us annually on performance where I invite the SON and anybody else who has an interest in performance on how things evolve to intervene. And we, the staff and the Commission has the power to change the licence condition any time, depending on the circumstance and the environment.

So, it's not like we're making kind of a decision now that never can be changed. I just wanted to make a point on that.

Dr. Soliman?

**MEMBER SOLIMAN:** I understand that you have brought some conditions, licence conditions, and is there any discussion between you and OPG to get the same ground about these licence conditions?

**MS TADROS:** Haidy Tadros for the record.

With regards to the ongoing discussions that have been occurring, part of the regulatory process once OPG had submitted their licence application, we started ongoing conversations to get clarity and when we needed more information we would ask for more information, OPG would submit that more information.

So specific to the licence conditions and as has been mentioned by the SON, staff have engaged with OPG on discussions with regards to their current request and their current licence application. We have also engaged with the SON on their interests, their concerns, their issues with regards to this file. So when we came to document the licence conditions, from staff's perspective, as has been mentioned, we looked at it with regards to the safety element, what decisions have been made by the Commission, what decisions need to be made in future, and we have discussed them both with OPG and with the SON and we stand behind our recommendation that for the purposes of the Act the hold point is more relevant when looked at at the commissioning report but do respect the fact that if the Commission sees that another hold point needs to be put in place, we will take that into consideration and see how that can be worked.

**MEMBER SOLIMAN:** Thank you.

**MEMBER VELSHI:** Thank you.

Staff, a question for you on your slide at page 60 on aboriginal consultation where you -- this is with follow-up consultations. There were a couple of changes, one you just talked about, which is this addressing SON's hold point issue. The second one was changes with respect to import and export of nuclear substances. Elaborate on that. I didn't know who had raised concerns, what those concerns were and how this is addressing that, please.

**MS TADROS:** Haidy Tadros for the record.

Thank you very much for that question. I think it was very relevant to bring that information to the forefront because the concern as per staff's supplementary CMD was raised to us through ongoing dialogue with the Métis Nation of Ontario where there was a concern that there were certain activities being conducted by OPG, the import and export of nuclear material off of the property and back into the property, that they were unaware of. So through those ongoing conversations we had with the Métis Nation of Ontario there was -- again, my colleague Karine Glenn can clarify -- we found that to provide extra clarity on specifically what kind of material was being imported and exported that we would bring that language, that text into the current licence. And there was also the matter of integrating a licence that they are currently using, a

Nuclear Substance Radiation Licence that had that import/export activity.

**MS GLENN:** Karine Glenn for the record.

The change to the licence condition that we propose as a result of the discussions with the Métis Nation of Ontario was to clarify the form in which the nuclear substances that could be imported and exported would occur. So previously the text of the licence conditions said would allow the import and export of nuclear substances and then the quantities of which were in an appendix, and we added the text -- or we are proposing to add the text, I should say, of occurring -- nuclear substances occurring as contaminants in laundry, equipment shielding or packaging. That is just to make it very clear that the import and export is not authorized for them to take a vial of I'm going to say iodine for example, which I don't even know if it's on the list or not, and just ship this vial offsite for whatever purpose. It is clearly for them to be able to take the reusable PPE and have it laundered at a facility that may not be within Canada and have that laundry returned to them or, similarly, a piece of equipment that could be shipped to the United States, cleaned or decontaminated and that may still have some residual contamination but can be reused.

**MEMBER VELSHI:** Thank you. That's very

helpful. It's too bad I didn't think of asking this when they were here and we could have got their confirmation that they are happy with what's being proposed. Thank you.

**THE PRESIDENT:** But I really would like a comment from the SON. So why is it not a good idea, given that we have one piece of land here with one environment, why can't we get all the indigenous parties together to discuss common impacts on their environment, et cetera, et cetera? It's a leading question really because I didn't get any warm, fuzzy kind of reception from the Métis Nation on this.

--- Laughter / Rires

**MR. KAHGEE:** Randall Kahgee for the record. I'm not sure, Mr. President, you will get a warm and fuzzy reception here either.

--- Laughter / Rires

**MR. KAHGEE:** I think my colleague said it well earlier. Yes, the Constitution recognizes three distinct indigenous groups: Inuit, Métis and First Nations. While we have similar struggles, our rights and our interests and our relationship and how those were aligned with the territory are fundamentally unique and in many cases different. So to say that we can just all get in a room may not necessarily be conducive to getting a good result. There is that individual autonomy that has to

be respected. I am certainly not the one to speak to that, that's not my role any longer, but I would say that SON is very comfortable in its understanding and knowledge of its history and its relationship to the territory and the sacrifices our ancestors have made to protect the integrity in that relationship and the struggles we have endured and the continued hard work we continue to do to strengthen those rights and assure that the future generations, when I look at my four-year-old son, that I know that his children will have a relationship with the territory. Understanding that those rights are allowed to evolve over time and take an expression, a natural expression, the promise first and foremost was always to be able to allow that territory to sustain us and there are many different ways that happens. It's just not about hunting, it's just not about trapping, it's just not about fishing. So very unique interests, certainly respect the work that others are doing, but I think I will leave it at that. Miigwetch.

**THE PRESIDENT:** Thank you.

Other questions anybody?

Go ahead.

**MEMBER MCEWAN:** I just have one more.

This is I think primarily for SON, if you will allow me. I mean this has been a very helpful conversation and it has really been about process and sort of for strategy of

building relationships. What you didn't really bring up was your level of comfort with the environmental assessments that have been presented. Do you see where we are with those at the moment as satisfactory, not unsatisfactory, something that you can live with and hope to work with going forward?

**MR. MONEM:** Alex Monem for the record.

Thank you for the question. It's a good one. The submission that SON has made in response to this application is I think uncharacteristically concise and the reason for this is because with respect to this project, with respect to this application, really we triaged the issues and recognized I believe that the process issues were the most critical ones. SON has a very, very long history of addressing the environmental impact issues of that facility as it evolves, as it is evolving. Our participation in the environmental assessment of the DGR report had more of a focus on environmental impacts. We have ongoing engagement in regulatory process respecting the operation of the Bruce facility itself, in particular with a focus particularly on its impact with the aquatic environment. But in addition to that, we have a mechanism, we have a forum with OPG now where we believe we have a direct ability to understand, learn and influence the way that facility is managed and will be developed in the

future. I think this was largely understood, but it was affirmed in a further commitment made by OPG to SON that that process is indeed a durable one and we will keep working to make it an effective one. So this was not -- the environmental impacts of this facility were not the most pressing in our minds right now and not necessarily best addressed through this regulatory process.

**THE PRESIDENT:** Okay. Thank you. You have the final word. Anything else you want to add?

**MR. MONEM:** One last thing. Alex Monem for the record.

We just do want to again acknowledge the very -- the significant effort that CNSC staff made in a short time to understand the position of SON and to very quickly come up with a solution that we believe is quite good. I don't mean to suggest for a moment that what they are proposing isn't the right solution, we just don't have the understanding of the regulatory framework to do that. And also, OPG very quickly came to very important concessions that really reaffirmed the strong commitment between SON and OPG. Thank you.

**THE PRESIDENT:** Thank you. Thank you very much.

So I would like to move to the next submission, which is an oral presentation by Mr. Eugene

Bourgeois, accompanied by Ms Anna Tilman, as outlined in CMD 17-H3.20 and 3.20A.

Please go ahead anytime you're ready.

**CMD 17-H3.20/17-H3.20A**

**Oral presentation by Eugene Bourgeois**

**MR. BOURGEOIS:** Okay. Thank you. I guess you're not going to get warm and fuzzy's from me I'm afraid.

I would like to start by saying that OPG's relicensing and expansion application for the Western Waste Management Facility fails the community of Inverhuron where the project will reside. It's almost as if we are the Local Sacrifice Area rather than the Local Study Area. The potential for adverse effects are summarily dismissed on the basis of scant or misleading information. We highlight any number of such instances in our assessment and analysis, but let me bring forward one that is particularly egregious.

Airborne tritium was measured using passive air samplers at the BF14 location almost from the inception of the Radiological Environmental Monitoring Program at the Bruce site. Without notice or explanation, this practice was abandoned in 2011. Bruce Power's

explanation for this now -- and without providing any data or evidence to support the claim -- is that the active samplers provide more reliable data and that the measurements at active sampler site B7 will describe more conservatively the dose rates at BF14 than the passive sampler it used before because it is in the same air flow pattern and closer to the site.

I have lost my place, I'm sorry.

Anyway, the REMP, the 2011 REMP refers to a paper written by CNSC staff as an explanation as to why the samplers are no longer being used, the passive samplers. However, this paper demonstrates that the passive samplers actually recorded substantially higher concentrations of tritium than do the active samplers on occasion. Since the passive sampler relies on direct physical data rather than modeled data, it is entirely false to make the claim, as Bruce Power does, that the results at B7 are more conservative than the results at BF14 taken with the passive sampler. This is especially deceptive because Bruce Power, and presumably CNSC staff, have the precise data logs and records taken from the passive samplers at BF14 but fails to cite this evidence in its explanation. Since the passive sampler was at the BF14 site when OPG managed the REMP program at the Bruce site, it too would have had direct, evidence-based data available

to it that could have and should have been cited to support the claim. Both failed to do so and CNSC staff allows each to avoid their responsibilities to the public and especially to the residents of the LSA.

This deception is then further compounded by OPG in its report when it states, again without explanation, that the critical group for its analysis no longer resides at BF14 but is now at a dairy farm some 10 kilometres east. Its reason for doing so is simply that the data measured at BF14 has been lower since 2011. It is surely no coincidence that the data received at BF14 no longer reflects the high dose rates it receives simply because these are no longer measured there.

For an agency whose fundamental mandate is to ensure the safety of residents from harm relating to nuclear power operations, discarding or ignoring relevant information about known toxins will handicap those efforts entirely.

There is grave uncertainty about the impacts of radiation to human health. Dose rates once considered to be safe are now known not to be safe. There have been numerous times when authorities, acting with the best of intentions, nonetheless permitted the burial of nuclear wastes that have come back to haunt communities such as Cold Water Creek in Missouri. In spite of the

paucity of health records there, the residents of Cold Water Creek have been able to link the extraordinary disease and morbidity its residents suffered from buried nuclear wastes that percolated through groundwater to the creek while they were children and played in it.

OPG and Bruce Power have resisted creating the health database of the Inverhuron community that would allow for a science-based and evidence-based evaluation of the claims each makes about the relative safety of their operations on human populations. It is essential that an up-to-date health database be created of the Inverhuron community so that predictions made about the potential for adverse health effects can be quantified in a scientifically verifiable way.

Casual disregard of human safety in the local study area appears to be a hallmark of OPG and Bruce Power's analysis of the impacts that its operations and project plans can and will have on area residents. This is entirely unacceptable and a Commission that does accept such report at face value fails entirely in its mandate to promote the safe use of nuclear power in Canada.

Of the chemical contaminants considered by OPG in the Environmental Assessment Report, each was considered as an agent in its own right and in absentia from combining with any others. Synergistic and cumulative

effects analysis is nowhere to be found. Activities that are known to be ongoing at the Bruce site are simply ignored as if they do not exist and have no potential to add to impacts on human health.

Particulate matter represents a grave concern. Inverhuron is a retirement and resort community. The World Health Organization warns, in contrast to OPG, that small particulate matter can stay in the atmosphere for an extensive period of time to migrate as conditions dictate. The WHO states that there are no safe dose rates of these, much as the U.S. Academy of Sciences states that there are no known safe rates of exposure to ionizing radiation.

From the beginnings of nuclear power operations at the Bruce site, and especially once wastes were brought to it for handling and interim storage, OPG has maintained, with the tacit approval of CNSC staff, that these are simply short-term temporary storage solutions. Facilities have been built and maintained with this short-term mentality, with the inevitable results that adverse impacts began happening early in the program and continue to this day.

Legacy wastes at RWOS 1, the first "interim" storage and in-ground waste site at the Bruce, are in "caretaker" or abandoned state after it was

discovered in the 1990s that radioactivity had escaped from this site into the Inverhuron Park wetlands. Some of these wastes were moved to RWOS 2, now called WWMF. Almost immediately, the WSH 231 monitoring well began showing elevated concentrations of tritium that continue to be extraordinarily elevated to this day. OPG and CNSC staff deceive us all by stating that this is really nothing to worry about because this well water is not potable. But the water from the Middle Sand Aquifer empties into Baie du Doré and these are the spawning grounds for both whitefish and smallmouth bass.

On site, Baie du Doré is sometimes derisively referred to as the sewer of the Bruce. Nonetheless, Baie du Doré is an important source of food and habitat for these fish species, who are, in turn, important sources of food for humans. Since many of the contaminants of potential concern, the COPCs released by the WWMF migrate to the watershed that feeds into Baie du Doré, it ought to be of utmost concern that concentrations of these COPCs remain unquantified. A detailed and vigorous evidence-based assessment of the sediment and feed stock must be undertaken.

I would now like to turn this over to Anna so that she can outline our four slides of recommendations which we hope you will fully accept as action items and are

supported by the earlier slides that we don't have time to show you. Thank you.

**MS TILMAN:** Thank you very much.

So I have skipped over all these slides to go directly to the recommendations. The material in these slides was contained in our written report and you could have them there.

So very quickly -- sorry for the timing -- we recommend regarding the incinerator, based on our findings strongly recommend it must be shut down and dismantled and super compaction be used. The groundwater tritium contamination issue must be addressed, it continues to today. The legacy waste, as has been spoken about, OPG must clean it up and otherwise the so-called static state is not acceptable.

Another aspect we found missing is inventories of the waste activity and strongly recommend that OPG prepare complete up to date inventories of historic waste, not just use volume as an indicator, but the actual activity for each type of facility. And we can go on.

The storage buildings. Packaging must be designed for long-term storage. Short term does not operate for this kind of waste. The radiation fields should be identified for each type of storage unit.

Our other recommendation is rather than shipping all the waste up to WWMF, this kind of waste that's generated at each station should be repackaged and stored at that station.

There are a number of data quality issues that have been referred to from ground level sediment, fugitive emissions and limitations of relying on small samples. Baseline health data is an imperative to develop this data for the Inverhuron community. This has been spoken about.

Finally, it is essential to plan for the long-term certainty of the storage and safe containment of ILW. This speaks to some of the issues that were previously raised, not relying on the potential for that DGR or so.

Therefore, we are recommending that CNSC only grant OPG's licence, 10-year licence with the proviso that there be public review periods to discuss any issues that may arise, changes to the proposed additional structures, the volume and type of waste to be shipped and stored, and any operational concerns, containment issues, contamination, et cetera, that arise. Thank you.

**THE PRESIDENT:** Thank you.

So let's get into the question period and I'm picking on you, Ms Velshi.

--- Laughter / Rires

**MEMBER VELSHI:** Thank you, Mr. President.

So why don't I start with the recommendation around inventories and I will ask OPG about that, as to exactly what information do you have. Do you have information on, besides volumes, what the radionuclides are, what the half-lives are, what the activity is? And I guess more importantly, I suspect the intervenor asked you for that information because they have gone through a whole lot of modelling to come up with what they think is in there. So I would like to hear from you on the detailed information that you have around the inventories.

**MS MORTON:** Lise Morton for the record. I will ask Dave Witzke in a moment to provide a bit more information with respect to the information that we do have.

I will say that yes, absolutely, prior to the hearing and really prior to the supplemental submissions we did receive many, many requests from the intervenors with respect to a lot of this information. We endeavour to provide as much information as we can. In total we received -- from all intervenors, not just the two here today, we received 25 requests to answer 149 questions over a three-month timeframe and we provided answers to 136

of these questions and the only reason we couldn't complete all those was because some of them were not straightforward and involved a lot of data searching and gathering data. But we certainly did endeavour to provide as much of that information and what we do know in terms of waste volumes and radionuclides, et cetera.

So again, I will ask Dave Witzke to answer to that.

**MR. WITZKE:** Dave Witzke, Director of Nuclear Waste Engineering, for the record.

We do track all of our inventories. We have an accurate accounting of what we have in stores. We have an integrated waste tracking system. As we receive the waste from the nuclear stations, we input all the results for volumes into that. We track where it is stored in each of our storage structures or each of our storage buildings and we also track and account for the radioactive inventory that comes with that waste.

**MEMBER VELSHI:** So can you elaborate on that second half. The volume part, I understand it's -- what other detail do you have? Do you have the activity at whatever point in time and what kind of radionuclides are in those containers?

**MR. WITZKE:** Dave Witzke for the record.

Yes, we do input the radioactive inventory

based on the characterization that is done at the nuclear station before it is shipped to us and that information is stored in IWITS(ph) as well.

**MEMBER VELSHI:** So I will get the intervenor. That was one of your recommendations. You have heard from them that they actually do have that information. I guess was your question it would have been nice if you had access to that information?

**MS TILMAN:** Definitely. I had asked the question a number of times, partly because we were involved of course in the DGRs and the inventories there were a big issue and I ended up using DGR information to develop an inventory to say am I right, am I wrong? The only inventory we did get eventually, and that was in CNSC's submission that was there, was for the last licence period, and that was in one of the slides today from 2007 to 2015, what the stored activity was per year, but that did not include the radionuclides. Also, this is -- we are talking about cumulative amounts of activity, the activity doesn't disappear from year to year. So what I thought would be -- I understand the difficulty in obtaining that kind of precision of inventory and there is a fair amount of supposition that may have to be made, but I would have expected for any waste facility to have a proper inventory. It's not just whether it goes to a DGR or not, but they

must know and why isn't that information publicly available? I think that is critical. It is also critical in terms of the kind of storage facility. You have to know what is in that storage facility. If you are using low-level storage buildings and storing refurbished waste, what activity is there so that you can track if there is a problem what is there, but I didn't really get the kind of answer -- I know we asked a number of questions. That would help to get that level of detail.

**MEMBER VELSHI:** Staff, do you want to comment on that, please? And also let me know kind of internationally what's best practice as to what is kept and tracked.

**MS GLENN:** Karine Glenn for the record.

We do -- in the course of our inspections, CNSC staff will verify, like spot-check inventories of various containers and say please tell me what's in this container and pull up the records through that system. So we do do that on occasion -- well, actually every time we go and do an inspection at the Waste Management Facility, we will do a number of spot-checks and verify that the inventory does actually match what is in there. We will take confirmatory readings to make sure that the levels on the outside of the containers do match what is actually marked.

It is important to note also that OPG contributes to the Joint Convention Reporting which is compiled every three years. The last inventory which is compiled by Natural Resources Canada is up to December 31st of 2016. It will be incorporated in the next Joint Convention Report that Canada will put together, which will be tabled next year in 2018. That provides the total volume and the total activities stored by waste type, so how much low-level waste, how much intermediate-level waste and how much activity. It's not broken down by isotope, that's just not feasible, that level of reporting. And that's what every country does report on through their contribution to the Joint Convention.

**MEMBER VELSHI:** So you would have had access to the end of 2013 I guess inventory that would have been -- it's publicly available?

**MS GLENN:** Yes. The 2015 Joint Convention Report, national report, is posted on the website, on the CNSC website and it's available to the public.

**MS TILMAN:** I did not receive that information, okay. Sorry about that, but I didn't. But also, that is a different kind of inventory. I mean if OPG can produce that inventory for the DGR which showed radionuclides and I think for this one that is very -- I don't see why that specificity couldn't have been done in

this case for storing exactly the same type of waste.

**THE PRESIDENT:** OPG...?

**MS MORTON:** Lise Morton for the record.

So yes, I believe the intervenor is asking for radionuclide-specific inventory. So we do have the DGR Reference Waste Inventory Report which is a public document that was part of the DGR hearing submissions, et cetera. So it certainly is available on CEAA's website and other things. We have an ongoing waste characterization program, so we continue to do waste characterization of different waste streams based on an annual program and using opportunistic sampling. So in other words, if we are going into buildings and we are moving waste around, we will pull out some legacy waste, it gives us the opportunity to further characterize that waste. So we do have a comprehensive inventory but we continue to update it and we continue to do waste characterization so that we can continue to expand the dataset that we have with respect to that inventory. When you combine that then with what Mr. Witzke was saying with respect to as new wastes come into the facility they are tracked as well, I believe that gives you a comprehensive view of what the waste inventory is.

**THE PRESIDENT:** But is it accessible and is it available on an annual basis? Like for example the

next time there is regulatory oversight, will we have some sort of mechanism to see what the inventory looks like, not only in terms of low and high but maybe in some characterization of the main component? Will it be available? Staff...? OPG...?

**MS TADROS:** Haidy Tadros for the record.

So you are correct, sir, we do have an opportunity annually to show what information is relevant that is needed. We currently do not have the inventories in our Regulatory Oversight Report, but if that's what is intended then we can take that into consideration and look at that for the next one.

**THE PRESIDENT:** Dr. McEwan...?

**MEMBER MCEWAN:** Thank you, Mr. President.

I find your slides very helpful because they provided a nice sort of summary of the submission itself. If I look at your slide 2, the structural issues, you actually brought up a couple of the questions that I had and I don't understand one of the comments at the end. So I guess the simple question from your first bullet on that slide, is this type of storage, low-level storage buildings, appropriate for containing steam generator and retube waste or mixed liquid wastes? That seemed a reasonable question.

The second, in both the OPG and the staff

CMD there was a comment about corrosion being found in some of the trenches. How significant was that? Was it an easy issue to resolve or is it something that we should be concerned about?

And I'm not sure I actually understand your comment in the third bullet, "allowing free release of radioactive material."

So relatively simple questions I think. We will start with free release.

**MS TILMAN:** Okay. It's this new building that has been proposed, the LOPB. I'm not sure if it is a definite construction or not and earlier on it was mentioned that its use is to take the large metallic components and be able to store it potentially in the -- possibly in the DGR. However, while doing this, I was unclear -- we were unclear as to when it's put into segments some of the material isn't sent off for recycling, that doesn't mean that it didn't have any radioactivity in it, so it would have to meet clearance levels to be sent off for recycling. So I've tried to figure -- find out where is it sent and does it have radioactivity. So this is what is considered to be free release, free release if it meets clearance levels under the *Nuclear Safety Act*. So I wasn't sure if that was part of that large building's operations to minimize waste. The whole thing, this comes

under "minimizing waste". Does that help you --

**MEMBER MCEWAN:** Yes. Actually, yes, it does, because I --

**MS TILMAN:** -- or have I muddied it up?

**MEMBER MCEWAN:** No, no, it helps. What I had before was muddied. OPG...?

**MS MORTON:** Lise Morton for the record. I believe, just to clarify, you want me to address the large objects processing building? Okay. Because there were quite a few questions there. Okay.

**MEMBER MCEWAN:** Take that one.

**MS MORTON:** Okay. So in terms of the base -- and we address this in our supplemental CMD to some extent. The base reference plan for the large objects processing building is to segment the steam generator and large metal components into pieces that could then fit into a shaft and go into a DGR. That's the base reference case. That does not presume future regulatory decisions as we were discussing earlier. And the base reference case currently does not plan to then try to decontaminate and free release segments of those steam generators or large metal components. That is certainly not the base reference plan. If we were to ever undertake that, trying to decontaminate and free release, we absolutely understand the need to make sure that we don't ever release anything

into the public domain. And I believe we have addressed in our supplemental CMD the processes that we follow for clearance levels. But I do just want to reemphasize the base reference planning case currently is not to try to do segmentation -- or, sorry, decontamination and free release of those components, it's just simply segmentation at this point.

**MEMBER MCEWAN:** Okay. Thank you.

**THE PRESIDENT:** Dr. Soliman...?

**MEMBER SOLIMAN:** Thank you.

In these 13 recommendations, groundwater tritium contamination, is this true and is it from above ground storage? I would like to address that, the groundwater tritium contamination, is it true and is it from the above ground storage?

**MS MORTON:** Lise Morton for the record.

So the issue around water sample hole 231 I believe is a very longstanding issue that has been discussed many times at various public meetings and I believe the CNSC staff presentation earlier this morning spoke to it as well. So in terms of understanding the mechanism for where the tritium is coming from that's being detected at water sample hole 231, we have undergone many studies over the years and most recently in 2011 and we have a very good understanding now of the mechanism by

which that tritium is making its way to water -- and being detected at water sample hole 231. And Dave Witzke I know could certainly explain it much more eloquently than I can, he was a very much involved in those discussions. It is from offgassing of tritium within the buildings and then migration through the electrical penetrations that go down through the floors of those buildings. We have put in place various mitigation measures to mitigate that and I believe, as CNSC staff pointed out in their presentation, you can see that trending in a downwards direction. I hope that answers your question.

**MEMBER SOLIMAN:** So the problem has been mitigated already?

**MS MORTON:** No.

**MS TILMAN:** Can I just point out, while the so-called levels have been decreased, recent concentration levels in 2015 were 27,000 Bq per litre. The average when I looked at -- we looked at the average of the other WSHs and some of them were around 20 Bq per litre. So we are talking about magnitudes of difference at this one location and so while it might be a little bit less than it was before, it certainly is outstanding still.

**THE PRESIDENT:** CNSC, do you want to add anything to that?

**MR. McALLISTER:** Yes. It's Andrew

McAllister, Director of the Environmental Risk Assessment Division.

Just to reaffirm what OPG said, CNSC staff is satisfied with the measures that OPG put in and the environmental -- the groundwater monitoring is confirming that they are being successful. That being said, that well continues to be monitored and it has an enhanced monitoring around it for that very reason. As well, when we look at the environmental risk assessment, that aspect, the contribution of groundwater, that pathway was considered in the environmental risk assessment and no adverse effects were identified. So we have -- again, we are back to our environmental framework where we have monitoring which is telling us some information and it's then helping feed into the environmental risk assessment to give us an idea of what risk that may be posing to humans and to biota. And again, in this case no adverse effects were predicted and CNSC staff confirms that conclusion.

**THE PRESIDENT:** Thank you.

Dr. Demeter...?

**MEMBER DEMETER:** I have to speak again to that same well monitoring. So on page 63 of staff's presentation is the graph that shows up a number of times relative to tritium concentrations and groundwater monitoring well WSH-231. So I saw this graph in the

absence of this discussion and with just the paragraph that preceded it, it said that the elevated tritium levels were noted in the late 1990s and then they talk about finding a solution in 2010, which is a decade later. This is with the understanding of the orders of magnitude below the licence limits. But when I first saw that graph and saw that immediate spike, I would like to know what was done in that spike to -- actually what happened there because that's quite a spike even though it's low level and what was done in those 10 years to try to help find the source? I think the decay down the other and, if I fit a line to it, it probably fits the gamma constant for physical decay of what was there given a 12-year half-life. But that spike, if I looked at that and said, oh, that would cause an immediate reaction of what is going on and it seemed to -- the next sentence says we found a solution in 2010 and I couldn't square that circle.

**MS MORTON:** Lise Morton for the record.

I would like to just clarify. I know there was a comment made that it spiked, it peaked in 1990, but that's actually not the peak and as per the graph that you see it was in the 2000's. So I just wanted to correct that.

And I am going to ask Dave Witzke to speak to this in a moment. So again, we do -- there have been

many efforts made over the years and much work done and study done to make sure we could understand the mechanism and to try to address this and we understood there was a spike that happened in around 02-03. We know that that is due to the installation of a Stormceptor at that time that cut into the middle sand aquifer and therefore, if you will, drew that tritium towards 231 and was detected there. So we do understand those mechanisms and we have a very good understanding of the groundwater monitoring well -- or, sorry, network under the site.

I'm going to ask Dave Witzke if he has anything to add.

**MR. WITZKE:** Dave Witzke for the record.

To reinforce what Ms Morton has just said, we did notice in 2002 the immediate spike caused by the Stormceptor. Between 2002 and 2010 there were a number of studies undertaken to further our understanding of what was happening with well water sample 231. In 2010 we undertook a fairly significant major study with a number of additional groundwater monitoring wells around that area to really track down the root cause of what was causing this issue. We were successful in locating the problem and, as has been already identified, it was condensation running down into the electrical ductwork from the waste stored in the LSPs.

Since 2010 we have undertaken another significant groundwater study at site to really make sure that we truly understood all the groundwater at the site. That study has just been completed and it has really reaffirmed what we learned from the earlier studies and it has confirmed our understanding of the groundwater at the site. The results of that study have also indicated that there is not expected to be any offsite impact from the groundwater underneath the site.

**MS TADROS:** Haidy Tadros for the record.

Just to clarify from a licensing perspective, as you rightly noted, the levels have been below the derived release limits, so there is no impediment to safety. The Environmental Protection Program in place with the monitoring and the programs that are used to ensure that predictive measures are used are working as has been discussed right here. So from a licensing perspective there are mitigation measures in place should anything peak, but from a licensing perspective safety is maintained.

**MEMBER DEMETER:** I do understand that usually with these monitoring programs, this is like the canary in the coal cage -- in the coal mine, so you see a spike and even though it's way below action or limits it causes a reaction.

It was just a bit disconcerting reading it as it was stated that the definitive study to find the source was 10 years. That was disconcerting, I have to say, because this is sort of a micro issue of potentially other issues. And the time course was a bit concerning to find a solution. That was my main point.

**THE PRESIDENT:** But you have never detected any corresponding spike in the lake itself. So what I'm always looking at outside the site, on the impact on the environment. Is there any correspondence spiking of tritium anywhere in the history of the measurement?

**MR. WITZKE:** Dave Witzke for the record.

The recent groundwater monitoring study that we've undertaken has installed some deep wells. And to further understand the path of the water from water sample 231 down to the bedrock and then out towards the lake, all of those deep bedrock wells have confirmed there is no impact, no significant impact from tritium from water sample 231 progressing towards the lake.

**THE PRESIDENT:** So maybe this is the time -- and you'll get a chance -- this is the time to maybe clarify -- and I don't know if I'm mixing apples and oranges here, this -- all the intervenor made a big statement about the active versus passive kind of measurement on BF14 versus BF7. Can somebody explain what

are we talking about here and is there any substance of this -- to this comment.

**MR. McCALLA:** Raphael McCalla for the record.

So I'll start by saying that there's been several studies done with respect to passive and active samplers. And one was done back in 2008, an industry study. And that study showed that there was a lot of variability with respect to passive samplers. The study included the placement of both active and passive samplers at several locations around the Pickering site. And when the data was analyzed, it showed a lot of variability in the passive samplers. And as a result of that study, OPG removed passive samplers from use shortly after.

With respect to the issue with respect to the two different areas in terms of the receptors BF7 and BF14, while the intervenor is correct in some of the assumptions that were made, one would expect that the closer a receptor is to a source, you would have a higher dose. But that's not always the case. There's a number of factors that you have to take into account, one of which is the lifestyle traits that's being attributed to that particular receptor.

In the case of BF14, what was done in terms of a removal, if you will, of the sampler that was

there, he's correct in the assumption that you could put -- you could actually measure closer to the source, as long as you're in the same wing sector, and capture the dose attributed to that area. So you don't necessarily need a monitor in place in order to capture the data that you're seeking in order to help in your prediction of dose.

**THE PRESIDENT:** Staff, I notice that you wanted to say something about that.

**MR. RINKER:** Mike Rinker for the record.

So I wanted to start with you're asking whether we saw any peak over the last 10 years or so. And often we discuss results that are provided by licensees in terms of what is the dose to public, and we verify that. In the last few years we have our own independent environmental monitoring program to do verification.

But today I want to introduce the work that is done by Labour Ontario, who often -- who also has surveillance programs around each of the nuclear power plants in Ontario. And they monitor for gamma emitters such as iodine, cesium. They also monitor specifically for tritium. And there's a network of active samplers they have for tritium around the Bruce nuclear site. So it would capture tritium from any of the operations, including the Western Waste Management Facility.

So their data is published on the Labour

Ontario website, and it provides a 10-year summary. From that 10-year summary you can see drinking water tritium concentrations around the Bruce site at municipal drinking water intakes have been very low and stable over the last -- the report -- last report is 2012, so that 2002 to 2012 period, which would capture the period where tritium in groundwater was the highest, have been steady.

In addition, tritium in air and in moisture around the facility. There also has not been any trends that would indicate spikes of any sort were in that facility.

They also take this data and independently determine the public dose of somebody who would be living at their sampling stations for the course of a year, breathing tritium in air moisture, drinking tritium in water, exposure to other gamma emitters, and eating a portion of food that would be grown in that area. And then they calculate a dose to public independently even of us. And their numbers are very comparable, maybe a bit less than what is produced in the Bruce Power and OPG reports of around a microsievert per annum for a member of the public that's living there.

**THE PRESIDENT:** So that's a bit of a surprise. So where does this data reside and is OPG and CNSC uplinking to this data? Is anybody else? What about

the Ministry of Environment? I thought they also have some data on this.

**MR. RINKER:** Mike Rinker for the record.

So the radiation surveillance program for the Province of Ontario resides with Labour Ontario. It's not with the Ministry of Environment. They have the lab and they're responsible for regulating X-rays in Ontario, for example, that are not within our mandate. So they have the radiation program.

It's also backed up by Health Canada, who has a national surveillance program. Their program is not as detailed as Ontario because Labour Ontario is so active, but Health Canada does all of this same work around, say, G-2 in Quebec and around Point Lepreau in New Brunswick.

It's reported on the Labour Ontario website. It has the data perfectly downloadable. And there is a Bruce environmental monitoring program posted on the Labour Ontario website that shows the results of all facilities at Bruce. There's also an OPG environmental monitoring program posted on this website it has for their facilities. So it's a very comprehensive set of data.

**THE PRESIDENT:** Okay, thank you.

**MS TILMAN:** Are these my last words or my non-last words? They're not last words? Okay.

I was just going to comment. I wanted to

go back to the groundwater monitoring issue for a moment and address the sampling. This is not the only well. That one was the worst, the WSH at 231. There's been another one too that has been elevated in tritium concentrations.

The problem is if OPG is looking to plan more of these buildings or keep them maintained, what is the most important thing one wants is safe containment. Am I not right? We don't want any of this waste to be released beyond the containment. So I think it's got to be a huge -- a concern in planning for the future what kind of waste is going into these buildings. Are these kind of LLSBs suitable for the material that's being proposed, particular if it gets into ILW? Is there something structurally that has to be done to avoid this condensation problem that is -- supposedly has led to the migration of tritium into groundwater?

So this to me is a planning concern for the next licence period. That's why we keep addressing it, to get not just to the bottom of it, but to prevent it from happening so it doesn't happen.

Now, wherever it goes, groundwater will flow. It will go to Lake Huron over time. This has been going on for years. You can't definitively say that there's no adverse effects. We simply don't know what those adverse effects might be.

Did you want to say anything about the passive samplers to -- yeah.

**MR. BOURGEOIS:** Yes, and I'd like to add with respect not so much with the monitoring wells but with the passive samplers. The passive samplers had membranes that actually collected tritium. The active samplers don't. How is it that when a passive sampler has more tritium in it than an active sampler measures, how is it that the active sampler is a better measure of the impacts when the physical data shows higher levels? And that's what we don't know.

**THE PRESIDENT:** Okay. Well, that's a very technical question. Anybody has the answer to that?

**MR. RINKER:** Mike Rinker for the record.

So back around seven or eight years ago, the CNSC launched a number of research projects related to tritium in the environment, cycling in the environment, how to best optimize certain tritium processing facilities, but also how to monitoring tritium in the environment. And work was done comparing where some licensees had active samplers for tritium, some licensees had passive samplers for tritium across the country.

And what we found is the results did not necessarily agree. There were many instances where the active sampler had higher tritium results than the passive

sampler. And there were some instances where the passive sampler was a bit higher than the active sampler. There is general agreement that -- and I'll have to think a little bit harder about what the rationale was -- but the recommendation at the time was that the active samplers were the more reliable sampler.

Nevertheless, I think one would look at the differences in the dose consequences of the results from either sampler. The dose consequences are both extremely low. We're really talking about the difference between one and a half microsieverts or two and a half microsieverts, like that or even a smaller difference. So I think -- so that's what I know about the difference between the two samplers.

**THE PRESIDENT:** Thank you.

We got to move on. Questions?

**MEMBER VELSHI:** I'll start with OPG around the incinerator. These intervenors have raised issues, as have others. And you in your presentation talked about how the incinerator meets all these very strict requirements. The concerns that I really wanted to see you address are things like concerns raised around the reliability of the incinerator, the higher emissions as a result of that, how do you trade off ALARA versus a smaller footprint with having less waste. And then there's a recommendation about

super compaction instead. If you can tell us, you know, what your going forward plan is around addressing those concerns, please.

**MS MORTON:** Lise Morton for the record.

So a couple things. With respect to the incinerator, again, I want to reiterate that from an emissions perspective it is regulated by both the CNSC and the Ministry of Environment under an environmental compliance approval and has very strict requirements with respect to emissions monitoring and is well below the release limits approved for both radiological and conventional contaminants.

So when you ask or when it says that we're trading off higher emissions for volume reduction, I want to emphasize that we're meeting emission requirements. The intent here is not to emit more therefore to volume reduce. We do not believe we're doing that trade-off. We are meeting requirements for emissions. And it does achieve a very high volume reduction.

With respect to super compaction, we have looked at that in the past. And various publications -- I believe even on the World Nuclear Association's website there are some -- will typically give a volume reduction on a super compactor anywhere from 10 to 1 to 15 to 1. So it'll be slightly higher than the compactor we have now,

but you still will not achieve the volume reduction that you're talking about with incineration with the super compactor.

I think I've addressed everything --

**THE PRESIDENT:** Is that an international practice? Because you know those -- again, I'm using layman language here, but burning garbage went out of fashion long, long time ago. So is it now practice in other jurisdiction internationally?

**MS MORTON:** Lise Morton for the record.

So there are various volume reduction techniques used internationally. And our staff routinely participate in consultancies and technical meetings with the IAEA to make sure that we are kept abreast and we understand what's being done internationally.

There are other radioactive waste incinerators operating internationally. There is one in Tennessee. There is one in Belgium. And there are others. So there are other jurisdictions that are operating radioactive waste incinerators. There are some jurisdictions also using super compaction. And again, it really depends on waste volumes, waste types, and what works best for that particular jurisdiction. But there are absolutely radioactive waste incinerators internationally, in fact several of them.

**MEMBER VELSHI:** Thank you. I think the one that you may not have answered was what are your plans for improving the reliability of the incinerator going forward.

**MS MORTON:** Lise Morton for the record.

Thank you for the question. I apologize that I missed that one.

So in terms of the incinerator, it's been in service since 2002. So we have completed -- actually maybe I'll ask Dave Witzke to speak to this in a moment as well -- but we did complete a comprehensive condition assessment of the incinerator. And this is where Dave Witzke will be able to provide the date. I'm losing track of the date. And he can speak to some of the plans we have in place to improve the reliability.

**MR. WITZKE:** Davie Witzke for the record.

In 2013 we undertook an extensive study of the incinerator to determine how we were going to improve the reliability to our target of about 75 percent. That study identified 14 major modifications that we needed to make in order to achieve what we wanted to achieve with the incinerator. The design work is well underway for those now. Two of them have been implemented already. A number will be implemented in the outage coming up in May this year. And the remainder of them will be implemented in

2018.

We believe that by implementing those modifications we'll modernize the incinerator, we'll make it achieve its target availability, and achieve a long service for -- long, reliable service for OPG.

**THE PRESIDENT:** We need to take a break. We'll come back at 6:00.

--- Discussion off record / Discussion officieuse

--- Upon recessing at 5:53 p.m. /  
Suspension à 17 h 53

--- Upon resuming at 6:07 p.m. /  
Reprise à 18 h 07

**THE PRESIDENT:** Okay, we are back. And I think on the lineup I have Dr. McEwan.

**MEMBER MCEWAN:** I have a question related to slide 16. And I just want to do this to clarify my memory. And I think I'll be asking Staff to help me with this.

You're asking for baseline health data. I thought we had epidemiological studies from -- related to the Bruce site going back many, many years, and there was no evidence of a cluster of anything developing. Is my memory correct or am I flawed?

**MS TADROS:** So Haidy Tadros for the record. I'd ask Dr. Rachel Lane to take those questions.

**THE PRESIDENT:** Congratulation, Dr. Rachel.

**DR. LANE:** Thank you.

--- Laughter / Rires

**DR. LANE:** Rachel Lane for the record. Yes, you are correct. There have been many studies conducted around nuclear power plants.

First of all, I want to comment that there are -- we certainly conducted a study of the RADICON study, which was radiation and cancer incidents around the nuclear power stations in Ontario. And perhaps the most important finding from that was that there was no evidence of childhood leukemia, which is a very important outcome, at ages zero to four and zero to 14. When we looked at all other types of cancer, there was nothing within 25 kilometres of the Bruce site to show any evidence of concern.

We have also conducted studies of the workers who would have -- would not only live in the area but work at the nuclear facilities. And they had no evidence of increased risk of cancers.

Also the public health unit has presented in front of the Commission on several occasions, and they

have community health studies that they conduct in the area. And once again they assess the health of their community. So there is a wealth of information available.

Thank you.

**MR. BOURGEOIS:** May I add --

**THE PRESIDENT:** Go ahead, yes.

**MR. BOURGEOIS:** During the DGR hearings, it states explicitly that the Bruce site is too small to conduct an appropriate epidemiological study. So the data that is referred to is the Regional London Health Study. That's a broad region.

Inverhuron is a community that is trapped below the escarpment. We are covered by a thermal internal boundary layer for much of the year. Under those circumstances, toxins just circulate.

There has been -- we proposed during the Bruce Power -- I don't know if you remember -- during the Bruce Power relicensing hearing that there be a community health survey. It will give data. It will give health-based data. It will create a health database. I guess that's the way I want to say it. I'm sorry, it's late in the day.

And in order to determine whether the claims are right -- because we have at the Bruce site unique to all the other sites, we've got all the waste

management stuff; we've got the stuff being thrown up through the incinerator; we've got all the radioactivity; we've got all these wastes with all of their radioactivity coming.

I can tell you that as a member of the Inverhuron community and an active member in the organizations that are concerned, we are all concerned about this. And there is no health database of the Inverhuron community.

It would be a perfect test to demonstrate the safety of nuclear power to have a health database, a community health database that would -- or community health survey that would create that database, that would show either -- that would show if there are impacts. And if there are impacts, then it would allow for the Commission, for the industry -- because I am certain, I am absolutely certain that there is not a person in this room that wants to see harm come to anybody.

**THE PRESIDENT:** Remember the proposal?

**MR. BOURGEOIS:** Yes.

**THE PRESIDENT:** I don't remember what happened since. I think there was a counter argument from the medical authorities and the Ministry. So please, staff?

**DR. LANE:** Rachel Lane, for the record.

There have been community health surveys done in the area.

May I -- I'd like to backtrack a little bit, because I understand what the intervenor is saying, it is very difficult to study every person in a community.

First of all, the RADICON Study did include within 25 kilometres of nuclear power stations, it had nothing to do with London, it was the Grey-Bruce community.

Now, in Canada we have many databases on health information. We have the National Cancer Incidence database, we have the National Cancer Mortality database, as well as, we have information on the environmental assessment which provides information on environmental exposures, we have information on National Dose Registry, which provides information on doses.

When you are looking at a risk factor, radiation, we have good information on exposures to radiation. If cancer is an important outcome, we have excellent Canadian level population-based data on outcomes.

One does not have to follow people from birth to death in what's called a cohort study to assess risk. There are different types of studies that can be done.

What we have done, have looked at disease surveillance to see if there's anything to suggest that

there are problems. We have not found any problems.

If one were to find problems, then one could follow up with more detailed types of studies, however, the doses and the outcomes do not justify that within the community.

**THE PRESIDENT:** Thank you.

Dr. Soliman?

Dr. Demeter?

**MEMBER DEMETER:** This will be a question to the intervenor and I'll preface it. The question is related to a statement you made that I want you to provide your evidence and background for.

So, the preface is, in Canada our chronic background radiation dose varies by 1.5 to 2 times, depending on where you live, how high you live, whether you live in your basement or upstairs in the house based on radon and terrestrial.

Internationally natural background radiation levels change 10 to 20 times if you go to India, Iran and China which have areas of very high background rate.

To date, given those huge magnitudes of difference in natural background radiation, there's not been any good studies with large populations that have shown a commensurate increase in cancer incidence amongst

those populations compared, in the same country, the population that had lower natural background rates.

So, we're talking up to 20 times differences in natural background rates. What was reported here for the background -- additional background radiation here is miniscule compared to natural background.

And you have a comment on page 40 at the top under No. 5 that says:

"Background radiation gives us background levels of cancer and hereditary disease." (As read)

To what extent -- what is your evidence for that statement and how causal is it, given the evidence about natural background rates internationally and nationally and similar cancer rates?

**MS TILMAN:** If I can go back to that issue. Very often background is used in precisely that way to indicate, well, we're all exposed. Yes, we're all exposed to all kinds of stuff, as well as radiation that could be considered background level we're exposed to, that's natural, there's natural elements too.

In Kerala, India, which is one of the places you're probably thinking of, where the background levels are enormous, there were other diseases that were found, especially in children, and from the higher levels.

A lot of this may not become as commonly known.

So, one cannot ever say that, no, there is no effect even from background radiation. You can have an effect, it may be small, it may not be cancer, it may be some immunity, there's others, but to assume that it is benign is wrong. It doesn't mean that we cannot live with it because we need to, it is part of our natural environment.

What happens when you add on to it, all populations are different. There are different diseases. Cancer is the one which the focus is placed on, but there are other issues dealing with exposure to radiation, concomitant exposure to other pollutants.

I want to get back to, it's been a while since the RADICON Study's been out and there's been critiques, there's been the pros and cons, this is typical of these critiques too, and CNSC is well aware of that when that came out.

So, there are various opinions, but cancer is the end point is not the only end point and there are other factors for exposure to radiation and other issues. So, you can't just take it in isolation.

When we say -- when it said there's no safe level of exposure to radiation, that's with the assumption that -- yes, that background can cause adverse

effects.

So, I think it's hard to try to -- to assume that background does nothing, you know, and that was why that comment is, background levels can create some problems. We cannot ignore that. If we are saying there's no safe level, according to whether it's REIRS or other reports, then wouldn't that be a logical deduction?

**THE PRESIDENT:** Okay. Thank you.

**MS TILMAN:** And I think, too, when we're talking about --

**MR. BOURGEOIS:** Talking about the assumption.

**MS TILMAN:** Yeah.

**MR. BOURGEOIS:** That's with sunscreen.

**MS TILMAN:** Yeah, that's right. When we're talking about sunscreen, all these things that we're exposed to, that's what Eugene was reminding me of, we're exposed to that, but we have to take precautions. So, there we go.

When we're talking about a community health survey, we're talking about a much more detailed survey of individuals' lives over a period of time and different outputs.

So, it's not just a cancer study, so, and it's also very, very localized in a community where there

could be a different population base; there are more seniors living there, are they more susceptible? We don't know.

So, it's a matter of, can we find out something to start with as that kind of a simple base and go from there? That's what we mean by this -- by calling for a community health survey. And if we find that, well, to the people there that have been asking that, that we don't see any or we do see some effects, that would be a further analysis.

We're not asking for -- you can't do an epi study on a small population, you know, of this kind.

So, I don't know if I helped at all.

**THE PRESIDENT:** Any other questions? Question? Question?

I have one. And you make, again, a very strong comment about the role of particulates in the environment. Can somebody clue me in about particulates in the environment?

**MS TADROS:** It's Haidy Tadros, for the record. Thank you for the question, sir. I'll pass it to Dr. Nana Kwamena for the detailed examples of the particulates.

**DR. KWAMENA:** Dr. Nana Kwamena, for the record, an Environmental Risk Assessment Officer.

So, the intervenor raises a number of concerns about particulate matter, particulate effluent, from what I understand, from the proposed activities for the construction of these additional buildings.

So, in a predictive effects assessment, which is basically an environmental risk assessment that was conducted focusing on the -- looking at the environmental effects of these additional activities at the site, particulate matter was considered for the air quality part of the assessment.

And so, there was an exceedance for particulate matter that was predicted, but that was at the site boundary and mitigation measures and best practices were proposed by OPG to be included as part to mitigate against that.

But when you look at the actual critical receptors, the concentrations of particulate matter were predicted to be well below the ambient air quality criteria and, as such, OPG concluded that there'd be no adverse impacts to people living near the Bruce site as a result of these proposed activities.

So, when staff reviewed the predictive environmental assessment, we looked at the assumption that OPG made and staff found them to be acceptable and also conclude that people living around the site would be

protected from exposure from the particulate matter from these proposed activities because the predicted concentrations would be low and that OPG has committed to putting in these mitigation measures to mitigate against that.

**THE PRESIDENT:** So, those particulates, by and large, come from incineration? Is the source incineration, or all activities?

**DR. KWAMENA:** So, I can start off, but I think it would be best if OPG provided additional context.

So, in a predictive effects assessment, OPG did outline those activities that would lead to possible releases of particulate matter. So, this included the ongoing operation, so incineration would be included in that, but it also did include those activities related to site construction -- site preparation, sorry, construction and operation of the facilities.

And so, I will pass it along to OPG to provide further details on that, but staff did review what was proposed in terms of where the potential emissions were coming from and if they were viewed to be reasonable. And from staff's perspective, the particulate concentrations that are estimated as a result of the proposed activities are within the bounds of an industrial facility, it's nothing greater than one would expect for the activities

that are being proposed.

And, as I mentioned previously, the measures that have been put in place to attempt to mitigate against these are appropriate and consistent with industry best practices.

I'll leave it to OPG to provide further details.

**MR. McCALLA:** Raphael McCalla, for the record.

So the ambient air quality criteria have conservative levels. The assessment performed is a conservative assessment designed to somewhat overestimate the emissions. An exceedance of less than 1 per cent of the time was assessed during the construction activities. So we're not talking about the normal station operation, we're talking about the expansion work, and the duration of the effects are considered to be short and the frequency low.

So the mitigations measures that will be applied and monitoring will ensure that there's no effects to off-site receptors.

As was mentioned earlier, the closest receptor is the Bruce station itself, so there are no off-site impacts.

**THE PRESIDENT:** Okay. Anything else? Now is your final words.

**MS TILMAN:** Okay, final.

**THE PRESIDENT:** Yes.

**MS TILMAN:** Okay. So there'll be burning, but I'll start with particulate matter. I beg to differ, particulate matter travels long distances, and we're talking super fine particles to very...

Okay. The incinerator, somebody asked before the break about the incinerator. I have a question here because it's considered to be efficient and so on, and yet -- and this could be a failure on my part -- as far as I understand, incinerators generally talk about weight, the capacity to burn in kilograms.

The big concern in the WWF is reducing volume. So, accordingly, the daily capacity of this incinerator is 2,270 kilograms. So I asked OPG to convert the cubic metres to kilograms, and they gave me a density factor of 100. So I've produced a table, which is in the PowerPoint.

When I looked at how many days the incinerator was actually operating per year and the capacity, I'm not getting very good -- the results, in terms of the efficiency, in terms of the capacity, was very low. It was particularly low in 2013 and 2014 when there was a major event at the incinerator. MOE didn't even bother taking measurements that year of emissions because

it was hardly working.

So I'm questioning -- I might have this wrong -- when you have a stated capacity of 2,270 kilograms per day at the incinerator, but you tend to burn about between 263 to 476 kilograms, that's a small fraction of the capacity. So I would like an explanation from OPG why they find that there's this great efficiency in reduction? Am I missing some point here? Is something wrong? That's the burning issue.

**THE PRESIDENT:** Okay. OPG, I think we are talking about the table on Slide 4, if memory serves?

**MS TILMAN:** Yes, the efficiency one, yes.

**THE PRESIDENT:** Efficiency one?

**MS TILMAN:** Yes.

**THE PRESIDENT:** Okay.

**MS MORTON:** Lise Morton, for the record.

So the number of 2,270 kilograms per day is the maximum permitted level under the ECA, that is correct. We don't plan on incinerating to that level, and we don't need to incinerate to that level on a daily basis to keep up with the waste volumes that we receive.

So to compare the availability to what the maximum permitted is gives this impression of very very low capacity, whereas we don't operate it that way. So we intentionally operate it at a lower capacity to manage the

waste volumes that we have coming in. Plus, it allows for better combustion efficiency from what we learned through operating experience.

So we don't load it up to a maximum of 2,270 kilograms per day. I think that's where some of the discrepancy is here.

**MS TILMAN:** If I may say so, I mean, that was just based on what I could figure out and that was my question to OPG.

Also, in terms of looking at the actual per cent in terms of volume processed, often it's stated it's 70 to 1 reduction, and I haven't been able to find out any evidence of that kind of reduction. So if you want to comment on that please?

**THE PRESIDENT:** Anybody want to comment on this? Go ahead.

**MS MORTON:** Lise Morton. I apologize, I was just waiting for the Commission to direct me.

So I'm going to ask Dave Witzke actually to speak about how we calculate volume reduction, but it also takes into consideration the ash that's produced out of end, et cetera. There's a few considerations in terms of that.

**MR. WITZKE:** Dave Witzke, for the record. We do calculate volume reduction based on

the total amount and all the waste, bottom ash and fly ash, out of the incinerator. It also accounts for waste storage inefficiencies in the low-level storage buildings where we don't take credit for all of the waste volume there.

Thirty-seven to 1 is our historical numbers, since we did the modifications to resolve some combustion issues in the primary chamber. The 70 to 1 is the nameplate reading of the incinerator, but that very much depends on the type of waste that you're feeding it.

So the type of waste that we feed it results in a 37 to 1 volume reduction ratio. If we fed it a different type of waste with higher metal content, for example, we would achieve a lower volume reduction ratio. So that is very specific to the waste that we're incinerating at this time.

**THE PRESIDENT:** Okay. Now the final words, please.

**MR. BOURGEOIS:** Yes. I would like to go back to the noise issue that -- was it Dr. Soliman raised? I'm not sure who raised the noise issue. OPG, during the DGR hearings, had a noise monitor on our property for three different times, because the first two times didn't give reliable results. On the third time they did get reliable results, and the technician who came to pick it up I asked him what the numbers were, and he said, "It is as quiet at

our farm as it is in a conference room, at approximately 28.5 decibels."

OPG is using 40 decibels for night time noise. In its ERA or the PEA, I forget which one, it claims that a noise difference of 10 decibels is disturbing to health. If, on our farm, noise levels are at 28.5, a noise level of 40 at night time is going to be disturbing to health, it's a health effect. OPG has said, there are no adverse health effects to any resident in the LSA.

**THE PRESIDENT:** Okay. OPG, what's the right answer?

**MS MORTON:** Lise Morton, for the record.

I believe one of the mitigating measures is that we do not construct at night. So I believe that's the mitigating measure.

**THE PRESIDENT:** But is 40 the limit during the day? Is that the one you just gave us before?

**MR. WEBSTER:** Allan Webster, for the record.

Yes, the limits from the Ontario Ministry of the Environment are 45 during the day and 40 during the night, that's the limits to which we have to be below. Those are the limits that they've established as being where they're going to have health effects.

**THE PRESIDENT:** So, say 40 at night?

**MR. WEBSTER:** Forty at night.

**THE PRESIDENT:** But you're not planning to construct at night, is that kind of understood?

**MR. WEBSTER:** Yes, that's correct. We do not construct at night.

**THE PRESIDENT:** Okay. Thank you very much.

I would like to move now to the next submission, which is an oral presentation by the Canadian Nuclear Association as outlined in CMD 17-H3.16. I understand that Dr. Barrett will make the presentation. Dr. Barrett, the floor is yours.

**CMD 17-H3.16**

**Oral presentation by the  
Canadian Nuclear Association**

**DR. BARRETT:** Thank you. I was going to say good afternoon, I guess it's good evening, Mr. President and Commissioners. My name is John Barrett and I'm President and CEO of the Canadian Nuclear Association.

With me is Steve Copeland, who is the Director of Environmental and Regulatory Affairs at the CNA.

We appreciate the opportunity to say a few words, I promise a few words, in support of Ontario Power

Generation's application for a 10-year operating licence for the Western Waste Management Facility.

You will already have received written comments on behalf of the CNA and its members, so I would like, for the record, to briefly expand on some of the key points addressed in the letter. In particular, OPG's record and diligence in the areas of safety and the environment.

Like all members of the Canadian nuclear industry, OPG is committed to the safe, clean and reliable operation of its facilities. This means not accepting the status quo, but constantly working towards improvement and safety programs and environmental stewardship.

The best indicator of future performance is past performance, and in this regard OPG has an outstanding safety record, it is rooted in a strong nuclear safety culture. Effective safety communication, clear accountabilities, an continuous learning approach, as well as the use of audits conducted by the Canadian Nuclear Safety Commission, these are just some of the means whereby OPG ensures its safety performance continues to improve.

It is also important to note that there were no significant findings identified in the audits during the current licence period.

This strong safety culture is evident in all OPG nuclear-related operations, including the Western

Waste Management Facility, which we are examining today. Safety is the number one priority and the WWMF maintains an excellent conventional and radiological safety record ever since it opened in 1974.

The licence application supporting documentation before the Commission testify to that safety commitment and performance record, whether in the handling of low and intermediate-level waste or in the processing and interim storage of used fuel.

This achievement has been recognized by others. OPG received the Canadian Electricity Association's President's Gold Award for employee safety. Its leadership in employee engagement and safety and risk mitigation has helped to make OPG a top 50 corporate citizen in Canada for five consecutive years.

In short, OPG has safely stored nuclear waste and used fuel at its three waste management facilities for more than 40 years and it has safely transported radioactive materials for decades without accident, without radioactive release, without serious personal injury.

Due to the strong safety culture and commitment through all aspects of safety throughout the organization, the Canadian public can have high confidence that this record will continue.

Turning briefly to environmental stewardship, I would like to draw your attention to improvements made by OPG in the most recent licence period in emissions reductions, environmental protection, and operational reliability.

The WWMF meets both the International Standards Organization's ISO 14001 standards as well as OPG's own stringent requirements. The environmental protection program identifies all air and water emissions as well as impacts on land, and programs are in place to monitor all releases and ensure that they are well below the applicable limits. They identify, control, and monitor all releases of pollutants, including radioactive and hazardous substances.

Through such attention to impact and to detail, OPG ensures that all systems and equipment at the WWMF operate on the ALARA principle to minimize radiological impact on employees and the environment. This extends to the facility's planned expansion. In 2006, as has been mentioned, OPG conducted a predictive effects assessment for the proposed WWMF expansion to determine the impact on human health and on the surrounding ecosystem.

OPG's fact-based engineering approach to environmental impact mitigation will result in the reduction of pollutants as well as the enhancement of its

own monitoring mechanisms. Environmental assessments confirm there will be no significant adverse effects from the proposed new buildings.

In summary, OPG's commitment to excellence in safety and environmental protection, as well as its actual operational performance at the Western Waste Management Facility over the course of the current licence period demonstrate that OPG's qualified to implement the activities outlined in the application.

The application and supporting documentation reaffirm OPG's commitment to protect employees, the Canadian public, and the environment. Canadian Nuclear Association supports this application for a 10-year licence for the continued operation and expansion of the Western Waste Management facility.

I would like to close by thanking the Commission for this opportunity to provide our views on this licence application.

**THE PRESIDENT:** Thank you.

Questions? Ms Velshi? Dr. McEwan?

**MEMBER MCEWAN:** Thank you. Just a question. I mean, you heard the last conversation about incineration. You obviously understand the whole lifecycle of the nuclear cycle. Do you have any opinions on incineration? Do you see or perceive any significant risks

associated with it or do you think that this is an appropriate way of moving forward?

**DR. BARRETT:** One of the approaches that I've taken, and it's more personal than as a member of the public I guess as well as head of the association, is to what extent that the waste that comes from this particular energy system is being either recycled, reduced in its hazards, brought to a smaller volume in ways that are understandable, reasonable in costs, but also effective.

In that regard, when I tour the sites I look to that aspect. I've been always interested in the extent to which some of the low and intermediate waste, and I'm not the technical specialist, can be recycled or parts of the materials brought back into productive life. So there's that kind of I think fairly common, most people would share that, that common recycle, reduce and control the hazardous materials at whatever level, it's very low, et cetera, well then maybe incineration is the right way.

On the actual fine details of the particulates and the like, then I would defer to the experts here whether incineration...

As a complete aside, when I was living in Vienna, we were right beside the main incinerator that is there in the city. If you've been through it, you'll have seen it. It is functioning extremely well to provide clean

air for Vienna. So I got used to the idea of an incinerator being right next door.

**MEMBER DEMETER:** Thank you for your presentation. Acknowledging your support for the application, you've got a broad perspective on this. There's always room for improvement, understanding we're going to see them year by year.

Would you have any recommendations particular issues that we should pay attention to over the term of the licence? I mean, sort of guidance on -- this is a 10-year process, although it's looked at every year, what would you suggest that are the sort of major issues that we should pay attention to?

**DR. BARRETT:** I'll give the floor to Steve, once I offer a view right off the top of my head on that one. What I find important, and I don't have the right solution to it, but the work of the Commission and engaging with the public is one way, and the experts is a way of finding it, is where is the area which the risk is fully accounted for and taken into account, because we know that we will never ever reduce a risk wherever it may be in our lives to the final final zero level.

So when I look at the environmental monitoring, when I look at the reduction of the waste products we're doing a study on the lifecycle GHG emissions

of energy systems, including nuclear, right from the uranium mining right through to the very disposition or the waste management we're talking about now, so A to Z. That those are being understood in the common public understanding that the striving towards absolute zero will not necessarily be effective; it will cost a lot and one will never be satisfied. The question is, is that necessary?

There are points along the way in the management of the waste or the environmental impacts that I think we can, as a society, find the right sort of area where we say that is the best that we can do given these other factors that we have to balance, and people's health will be preserved and not affected adversely.

Steve?

**MR. COUPLAND:** Well, the only thing I was going to speak to, and John touched on it, was simply if I was I suppose in your shoes and what I would be looking for is the yearly monitoring and just looking for any potential spikes or anything that you might see within the monitoring that might give cause for concern. I mean, all the nuclear facilities spend an extensive amount -- have extensive monitoring, it's there for a reason. It's sort of the, to use your expression, you used this earlier, sort of the canary in the coal mine. If I was going to suggest one

thing to track, that would be it.

**MEMBER DEMETER:** Thank you very much.

**THE PRESIDENT:** Just piggybacking on this. So as industry association, are you concerned? I mean, waste now is -- is there challenge? Providing some advice to government about what is the final solution, what if some of the processes that are now on the way don't come up with the results? So now what?

**DR. BARRETT:** Well, I guess I would start with the observation that we have very important and substantial safety in the management of, if we're talking about the used fuel now, the more hazardous materials, in the form of the dry storage. We've talked about that and it's in the application, when you read through it it's there. In our knowledge of the last years when we'd be storing that kind of waste, the dry storage option has provided safety and security.

I've had the possibility of seeing the manufacturing of the casks, et cetera, and when you have that opportunity, they way it's monitored, et cetera, with the electronic leads that go right back to Vienna and the International Atomic Energy Agency you get a very strong impression that these are extremely solid and have been done to a great engineering degree, a great solid degree. So we have that.

What happens in the future? Personally, what I do is I actually steal from other energy systems, because I go to a number of discussions on what is the right -- what are some of the different energy systems we need as a society in the future? Many people will talk about different types of renewable energy, solar panels, there's wind, decarbonisation of the economy, et cetera.

I see in many presentations, a great belief in technological -- quick technological improvements, that in the next generation or even less storage issues will be solved, other types of impediments will be overcome. So there's this great belief in technology.

Yet, when you turn to our industry, you don't see that same way, that same understanding. They say, well, if you have waste now will you be able to develop reactors that can actually use the waste and consume it and therefore reduce the hazardous materials? Some of the experts here, and I'm not one, as I say, but you do read about the fact that there are such technologies available. They haven't been commercially proven, but they've been around for sometime.

Recently, a vendor for a small modular reactor came to us and talked about the kind of fuel that they would use for this small reactor that they're

developing, and it was used CANDU energy bundles, fuel bundles.

So then you begin to see that there are these elements of actually reducing that waste and controlling it in a different way. So that's my personal view of it, is that the technological changes in the next say one to two generations, and we may not be -- we'll be thinking more about how that spent fuel becomes the fuel of the future.

**THE PRESIDENT:** Okay. Thank you very much.

I'd like to move now to the next submission which is an oral presentation by Bruce Power as outlined in 17-H3.10.

I understand that Mr. Scongack will make the presentation.

Over to you.

**CMD 17-H3.10**

**Oral presentation by Bruce Power**

**MR. SCONGACK:** Yes. Thank you very much for having me. For the record, my name is James Scongack. I'm the Vice-President of Corporate Affairs and Environment at Bruce Power, and one of my responsibilities at Bruce Power is for our waste management and reduction programs.

I'm thrilled to be here today. I had the opportunity to watch the proceedings throughout the day starting with OPG and CNSC staff, so you have our written cover letter.

I recognize it's been a long day for people, so I won't repeat a lot of the items that were said, but there's a few very important points I think that, from a Bruce Power perspective as a member of the nuclear industry, that I'd like to raise before the Commission today in support of this licence application.

So first, by way of background, 60 percent of Ontario's electricity in 2016 came from nuclear power, 40 -- this power was generated at 40 percent below the average cost, contributed to clean air in Ontario, contributed to a coal-free province.

Why is this important? Well, we recognize all these benefits of nuclear energy, but we also recognize we have a responsibility to the production of electricity to not only meet safety from an operational perspective, but we also have an obligation as an industry and as an operator to manage the waste by-products that come from our operation.

And one of the things that it's very important for us to continue to remind the public is really three important elements as it comes to the issue of

nuclear waste and, Dr. Binder, it really ties to the previous question that you asked in the last presentation of Dr. Barrett.

Waste in Canada has been safely managed for over 40 years. It's fully funded, and it's a relatively small volume. And one of the things we like to say to people -- because people have a real tough time quantifying when we generate electricity whether it's from the Bruce site, whether it's from Darlington, whether it's from Pickering, how much waste is actually produced compared to the volume of energy.

And one of the best examples I like to give is an example that actually came out of the U.S. a number of years ago from the American Nuclear Society where they say if you got 100 percent of your entire lifetime energy needs -- and that's not just electricity; that's transportation, every form of energy you use -- your waste would fit in a Coke can.

And so you know, when we're setting energy policy, I know it's not the mandate of the Commission to set energy policy, but it's really important to put these things in perspective.

All of your energy needs for your entire life would fit in a Coke can. We safely manage it today.

You know, Dr. Barrett talked earlier about

technological advancements. We have the technology today to safely manage -- to safely manage this waste as proven through OPG's track record, and I think that's a very important perspective.

As a nuclear operator on the Bruce site -- Bruce and OPG share a site -- we really have two -- really three relationships with OPG as a nuclear operator.

The first relationship is a close industry partner, which I'll talk about in a few minutes. They're our landlord. We lease our site from Ontario Power Generation. They're the ultimate owners of the site but, very importantly and as it relates to this hearing here today, they're a very important service provider to our organization.

They take all of our spent fuel, they take all of our low level waste, all of our intermediate level waste and, of course, and you're aware also that Darlington facility is a detritiation facility, so OPG is a very important service provider for us.

So as we work together on all of those fronts, their performance is very important to us, and vice versa.

As Dr. Barrett mentioned, you know, one of the best ways of predicting future performance is to look at the past track record. And as CNSC staff and OPG

articulated earlier, there's a 40-year track record at the Western Waste Management Facility.

But one of the things that's very consistent across the nuclear industry, and it's very clear, you just have to tour the Western Waste Management Facility to see they pretty much treat this like a nuclear facility.

You know, the rigour that goes into it, which I'll talk about in a few more minutes, it's not a facility that ever rests on its laurels.

And as you look through their licence application, it's very clear that we believe and we support the licence application because it really provisions for three important things; for the protection of the environment, for the provision of the health and safety of peoples impacted by the operations, and, of course, to maintain national security and various safeguard requirements consistent with Canada's international obligations. And those are all very important considerations.

I know the public has had the opportunity to review and, as have we, the safety summary report which OPG released online in late 2016. It was a summary of their safety report. And what that safety report confirms is that not only the safety from the operations, but the

overall facility.

You know, one of the statistics that I like the most is when you look at their industrial safety record. OPG has operated six years without a lost time injury. And I certainly don't want to put CNSC staff in a difficult position, but one of the things I always recall CNSC staff do is when the nuclear power operators come every August before the Commission as part of the annual ratings, CNSC staff always compare the operators' performance to other benchmarks.

And I would hazard -- I don't actually have to hazard a guess that, actually, OPG's industrial safety record at the Western Waste Management Facility would even beat the kind of record that you would see here in your CNSC office. It's a phenomenal safety record in terms of lost time injuries, and it just goes to show you the rigour in which they take safety.

Dr. Barrett talked previously about radiation safety. Obviously, the ALARA principle, As Low As Reasonably Achievable, is absolutely important. And we see OPG engaged in that not only from a waste perspective, but across the fleet. And there's a tremendous amount of work that goes on with the CANDU owners group, with the international nuclear community around the ALARA principle, and that's a very important component as well.

There's been a lot of conversation this afternoon also on the environmental front. You know, all nuclear operators in Ontario, including Bruce Power, were ISO 14001 certified. It's an international standard. And we'd also note that OPG's Western Waste Management Facility also has that distinction, and that's a very important standard.

It was already noted from an environmental perspective the improvements that they've made from an emissions perspective and, you know -- and a lot of these indicators you can see very quickly and clearly through their environmental risk assessment report which was released in August 2016.

A really important point. Obviously, one of the things the Commission values and certainly we, as a nuclear industry, value it is public and indigenous engagement. And I think this is something that all of those of us who are involved with nuclear industry on the Bruce site, whether you're Bruce Power, whether you're OPG, whether you're NWMO, engaging the public is a really important component.

It's very clear to me as somebody who's lived in the community my -- pretty much my entire life that OPG plays a very important role in the community. They're open, they're transparent, they're active in the

community.

And you saw from the presentations earlier from the -- both the SON, the MNO and the HSM their commitment to indigenous engagement. And that's actually an area of important collaboration between us and OPG as we work to, you know, increase key elements like employment from the local indigenous peoples on the site.

I'd also like to wrap up to talk a little bit about waste volume reduction, which is something I'm very passionate about. It's a focus of Bruce Power. I know it's also a focus of OPG.

But it's important to note that over the last couple of years, all the nuclear power plants in Ontario, Bruce, Pickering and Darlington, all have received fully satisfactory ratings from the Commission in the area of waste management.

And one of the things that's embedded in that fully satisfactory rating is very clearly outlined in the report, is a commitment to volume reduction. And that's really important.

I know there's been a lot of -- a lot of conversations on technologies, and I certainly won't repeat that, but a shared commitment to volume reduction is really important.

And the principle we like to adopt at

Bruce Power, and I know there's a lot of collaboration between Bruce and OPG on this, is, you know, the reduce, reuse, recycle component.

You know, as we, you know -- although OPG operates facilities and waste management facilities that we believe have a, you know, better than *de minimis* impact on the environment, for lack of a better way of characterizing it, we're very thoughtful about any volumes of waste we produce. So that starts with, before we send any materials in our plant, minimizing any materials that come into the nuclear plant, when materials are used in the nuclear plant, can those materials be reused, is it two of them that can be reused over and over and how do our employees throughout the plant effectively sort waste.

And so even though we support and recognize there's a need to manage this waste long term and even though we recognize that, over the life cycle, it's a very small volume of waste, it's important to recognize that we're all committed to reducing those volumes.

And I think that's more of a social responsibility than anything else.

So Mr. President, Members of the Commission, those are my comments. I'm pleased to share. I appreciate the opportunity.

In summary, we're strongly supportive of

this 10-year licence renewal, and I'd be delighted to take any questions you or members of the Commission may have.

**THE PRESIDENT:** Thank you.

So let me start with Dr. McEwan.

Ms Velshi?

**MEMBER VELSHI:** Thank you, Mr. President, and thank you for your submission.

And probably a good time to commend the industry for your excellent efforts in reducing waste volume.

You said you've been here listening on the hearings, and you know that the President asked the Aboriginal groups about a joint meeting with OPG and talk about opportunities. And you talked about collaboration between Bruce Power and OPG when it comes to public Aboriginal group -- certainly around employment side.

Are there other opportunities for you to collaborate, meet jointly with them to talk about addressing some of their concerns?

There is one site, one environment, and address what are issues that no one really knows where it's coming from. It could be anywhere on the site. And do you do any of that right now?

**MR. SCONGACK:** Yeah. James Scongack, for the record.

It's an excellent question and, in fact, I remember appearing before the Commission at our last five-year licence renewal in Kincardine and Dr. Binder raised that issue or challenged us, however you'd like to characterize it, about -- and I really think, Commissioner Velshi, there's really two elements to that.

I think the first element was the suggestion made today about is there an opportunity to essentially have a workshop and get all of these various -- in particular, in this case, the HSM and the MNO and the SON, really, in the same room and talk about alignment on these things.

And you know, I have to say that that has proven to be an incredibly difficult proposition, and the reason for that -- and I don't want to, you know, sound negative on the suggestion, but the reason for it is, as an operator and as a proponent in the community, the approach that Bruce Power takes is when we engage with any of these indigenous communities, we don't -- we don't make any -- we don't take a perspective on various rights, various elements that are really Crown decisions.

And so there can be, in many cases, some conflict between various indigenous groups as to where do these rights overlap, does -- you know, is there a consistent view of rights between the three groups.

So Commissioner Velshi, what we found has been most constructive is by having protocol agreements in place with all three of these groups. We have -- we provide capacity to the groups and engagement opportunities to the groups and do that.

You know, one of the things I think they're -- and it goes, I think, beyond indigenous communities. It goes more to the general public, which is sometimes people don't very clearly delineate between, you know, the OPG component of the site and the Bruce Power component of the site.

And that's where, you know, you may have seen a lot of recent dialogue where Bruce Power has been more proactive as an example in talking about, for example, the DGR project, which is not, I know, a purpose of the hearing today.

And really, what that is, is to demonstrate to the community there's really an aligned industry position that shows a -- you know, a life cycle component here.

But what I would say is we find most of the conversations that we have with each of these communities very specific to the issues they're concerned about on the site, and there's also -- you know, some of these projects are at various different stages. There's

different commitments that have been made and different requirements.

So you know, I take your point, and it's something we're very attuned to, which is we need to do a more effective job of that broader picture, but I think that the formula that will be most successful is by committing to deal with the groups in the way we have been.

**MEMBER VELSHI:** Thank you.

I think it just needs probably a little further reflection. We had a fairly extensive discussion today around value ecosystem --

**MR. SCONGACK:** VECs.

**MEMBER VELSHI:** VECs, right. It doesn't matter whether it's coming from the nuclear power operations or from the waste. That's what's important, having a joint meeting around that. And maybe with members of the public, we heard about concerns with radiation that presenting a common front for the industry may be of value. But anyway, something for you to think about.

**MR. SCONGACK:** Just on that point, if you don't mind, I mean, the issue of Valued Ecosystem Components, I think, is a really good example where, actually, I believe the progress we've made in particular since the last hearing in 2015 in Kincardine we've made so, you know, we have an active dialogue with the SON through

previous environmental assessments. We're very clear on the Valued Ecosystem Components, and especially lake fish, whitefish that are important to the SON, so that is a Valued Ecosystem Component we're working on.

We actually have work under way with both Métis groups where they're going to be identifying traditional plants and providing us traditional knowledge so we can expand that work and, actually, there's a co-funded study under way right now between the Bruce Power and OPG with NMO on that very issue.

So sometimes you have a -- you know, sometimes you have cumulative effect through these discussions where you may end up covering more VECs than you need to but, at the end of the day, if there's a particular indigenous community that feels a VEC is -- needs to be assessed and needs to be considered, we're certainly open to having that conversation. And that's something we're working to reflect and, actually, our environmental risk assessment will be tabling before the Commission later this year.

**THE PRESIDENT:** So just to piggyback on that, you know -- and I don't -- I understand the politics here between the three groups, but I could see a vehicle if Bruce Power and OPG have to come in front of us annually on performance and you invite the -- those groups to comment

on this performance and some of the environmental impacts, that would be a very good incentive for everybody to get together and say whether they agree with some of the measurement results, et cetera because I think there's a lot of commonality with fish and traditional food, et cetera between the three groups, I would argue.

**MR. SCONGACK:** James Scongack, for the record.

I think that's an excellent point. One of the -- one of the areas where I think it works well -- and it goes to the previous conversation without revisiting that whole issue is actually how we look at our radiological emissions monitoring program.

That's a case where, you know, radio nuclide doesn't say, hey, this is on leased site and this is over here on the Bruce site, so if you look at it from a radio nuclide point of view, you just have total emissions from the site and what is the total dose to the public.

So there's a really good case in point where there's really good commonality between Bruce Power and OPG where we will have areas where we do measurements on site and off site, OPG will have monitoring capability within their leased -- within their premises on the site, and we will come together to essentially release a radiological emissions monitoring program which gives a

view of the site.

And to your point, Dr. Binder, that's the kind of document that I know both parties share with those various indigenous groups so they're getting a complete picture.

Now, can that be expanded to other areas? I think that's a good suggestion.

At the end of the day, some of the -- you know, one of the things that indigenous communities continue to tell us is that, especially in the age of very extensive consultation from a range of proponents, that the more we can simplify, the more we can consolidate, the better.

So that's something that we're very attuned to. And from our perspective, the more that could work, the better, as well. So there's a shared need to get there as well.

We're trying to do it in a way that also respects the various considerations between the communities.

**THE PRESIDENT:** Dr. Demeter? Dr. Soliman?

**MEMBER SOLIMAN:** ...about interaction between Bruce Power and OPG on the dry storage process. You are doing something and they are doing something else. And these are two organizations -- two different

organizations, and how this -- how the interaction is being done, is there a procedure for that and what is the division of responsibility between the two organizations with respect to this?

**MR. SCONGACK:** James Scongack, for the record.

I'll answer part of that and then happy to provide the opportunity for OPG to weigh in if that's okay. But I can maybe -- so firstly, what I would say is there is no -- there is no conflicting responsibilities, if I can call it that. There's very clear delineation of who does what, so maybe I can take you through the process in a very straightforward way.

So essentially, the way our agreement with OPG works is that when we load a new fuel bundle in the reactor, on the other side of the reactor an old fuel bundle comes out the other end. At that point, we pay them for that fuel bundle, okay. And that's a cost that is reset every five years.

That fuel bundle goes into our primary bay and then our secondary bay, and it is stored for a period of time.

We, at that point, have care of that fuel bundle while it is in those fuel bays, so that's Bruce Power's responsibility from there.

We have an agreement with OPG where they manage our used fuel, so essentially, what we do is we have a close working relationship with OPG where they have a schedule every year that's pre-set -- we track it monthly between the two organizations -- where they carry out a certain number of DSC shipments from both Bruce A and Bruce B. So the DSC shipments are carried out by OPG, and I don't need to go into that whole process.

So from a cost perspective, the way you can look at it is, when a new bundle goes in, an old one goes out, we pay for it at that point, okay.

From an operational perspective, we will store the fuel bundles in the fuel bay. They will move into OPG's control when they do a shipment.

And so there's obviously a lot of work that goes on between Bruce Power and OPG to coordinate that shipment because obviously, from an operational point of view, we all have goals in terms of the fuel bay capacity in each of our plants.

The one area I would say there's also a lot of collaboration between Bruce Power and OPG and, frankly, between the industry is that entire fuel route process through the plant, fuel handling. There's a lot of equipment in a CANDU nuclear plant. It's a multi-unit station, so there's a lot of operational experience that

gets shared between Bruce Power and OPG, both on fuel handling equipment, managing the fuel bay and that.

So it's actually, I think, a very well -- good joined-up piece of work. I know, for example, our new manager of waste management who just started with me who actually comes from fuel handling and which is actually a very helpful background as we're working at OPG on isotope development and those kind of things. There's really good sharing back and forth.

So it's very clear responsibility, if nothing else because the liability needs to transfer at a certain point for that fuel bundle.

I don't know if OPG has anything to offer, anything else to add on to that.

**MS MORTON:** So last year -- Lise Morton, for the record.

I'll ask Darren Howe to speak to this because it's actually under his area of responsibility.

**MR. HOWE:** Darren Howe, Director of Western Waste Operations, for the record.

So OPG goes to Bruce Power to the secondary bays to pick up the fuel. As was mentioned, we take accountability once we ensure that it meets the waste acceptance criteria, so when those criteria is 10 years old, no damaged fuel and so forth, take it back to the

Western Waste Management Facility to the used fuel storage facility and we bring it in there and it goes through a series of stages where it's processed, so unloaded and a DSC is put into well bays.

There's a lid closure weld to weld the base to the body -- to the lid, pardon me. Then it goes through a phase ultrasonic inspection process to ensure that the weld meets standards. And then it is vacuum dried and back filled with helium, and then it is touched up with paint for anything that's required there and it's put out into a staging area for the IAEA to come and apply seals to it before it would ever go to storage.

Once the seals are applied and the IAEA is satisfied, then it would end up going to the storage.

So the storage -- or the processing and storage schedule is up to 130 dry storage containers a year to maintain fuel space at Bruce Power, and that varies a little bit year over year, depending on the needs. Currently, the rate is 115 dry storage containers this year.

**MEMBER SOLIMAN:** Is there any procedure to identify interaction between the two organizations?

**MR. HOWE:** Darren Howe, for the record.

So there's procedures within Bruce Power for loading a dry storage container and getting it ready

for release, including radiation protection procedures.

Once OPG is in a position to pick it up, we have procedures for utilizing what we call transporters to bring it across site into the Western used fuel dry storage facility for processing and storage and there's, of course, operating procedures in place for that.

**MEMBER SOLIMAN:** How do you make sure that the other side has done its job perfectly in terms of safety, in terms of loading the bundles and so on?

**MR. HOWE:** Darren Howe, for the record.

So there are a number of pieces of documentation that are reviewed when our operations staff show up for acceptance of the fuel. It includes a detailed description of the material, radiation protection documentation, transfer permits, and so forth, to ensure that there is no contamination on the outside of the dry storage container, the number of bundles it contains and that it has been put together in a proper manner.

**THE PRESIDENT:** So far you have been talking about fuel. What about regular low and intermediate waste? Particularly maybe this is an opportunity to get an update about the famous steam generators. Where are they now? Are they within the OPG or are they still with Bruce?

**MS MORTON:** Lise Morton for the record.

So I will address the steam generators first. The steam generators remain in storage at the Western Waste Management Facility in a special steam generator storage building and they remain there. And as I mentioned earlier today, the base case -- the reference case is still that they would be segmented and then placed in a deep geologic repository if that gets approved.

**THE PRESIDENT:** So they are no longer at the -- they used to be under Bruce authority, wasn't it? I mean you got a licence at one time to transport them. So what happened since then? Pass it on to OPG.

**MS MORTON:** So Lise Morton for the record.

For the period of time when Bruce was contemplating -- and certainly Mr. Scongack can add to this if he wishes, but for the period of time when Bruce was contemplating shipping those steam generators, we did turn over that building, under a construction island essentially, to Bruce Power to do that work. When that work was stopped, we then went through a process to return that building to operations control under Ontario Power Generation.

**THE PRESIDENT:** Thank you.

Ms Velshi...?

**MEMBER VELSHI:** I'm sorry, I can't get my fingers on this right now, but is there a need for Bruce

Power and OPG to coordinate your activities when you build all these additional facilities? I'm just trying to figure out the number of additional facilities that you may be building, how that compares to what your existing number is and you may be in the midst of your major component replacement at perhaps the same time. Is there -- does that pose any unique challenges and do you want to comment on that?

**MR. SCONGACK:** James Scongack for the record.

So that's an excellent point. There are really I think two key items when we talk about coordination on that front for long-term planning.

The first is that given the fact that we lease the site from OPG -- and Ms Morton is part of this organization as well -- we have an OPG/Bruce Power Site Liaison Committee that meets several times a year and essentially through that Liaison Committee we track the progress not only against the lease but all those service agreements we talked about and through that forum we provide a regular update on site infrastructure needs, you know, what are we investing in the site, how are we preparing for MCR. We actually also have services that we provide to OPG, what's needed from a security perspective right down to, you know, how do we provide water to the

facility, how do we provide electricity to the facility. So there is a tremendous amount of coordination on those kinds of day-to-day operational items.

I think the second point of your question, and Ms Morton may want to add some further colour to this, but in terms of the long-term plan one of the things that we also talk to OPG about is our long-term projections, because one of the key activities that OPG has to undertake is a process called ONFA, it's a provincial government process called the Ontario Nuclear Funds Agreement, and essentially what that is it's really a financial process, but it's really to determine what is the cost they should charge us and set aside on their own account for the long-term management of this waste.

The reason why I'm telling you this, I know that it's not the purview of the Commission for economic matters, but through that process we have to provide OPG a long-term outlook, all of our MCR waste, all of our operational waste, all of our intermediate-level waste. So OPG every five years, from Bruce Power, gets a waste outlook. Of course it is subject to adjustment depending on business decisions, Commission decisions, all sorts of things, but they have a waste forecast from our site that could go out to 2064 and we update that every five years.

So as OPG is considering building infrastructure to support not only our waste but their own, they have that view. And of course that's important to us because we want them to have the information to be able to prepare for the facilities which we will inevitably pay for in our waste agreements. It is also an arrangement between the two utilities which is no cross-subsidization, which means they don't make money on it, we don't make money on it, so it's very collaborative. It's open book, share all the information and from our perspective it works very well.

**MS MORTON:** Lise Morton for the record.

I will just echo some of the comments that Mr. Scongack has made as well and he touched on a few things that I will further touch on.

So he is absolutely right, the collaboration between the two companies is essential because, you know, it is very important that we get waste forecasts from them, that we understand their planning assumptions so that we can then feed that into our planning assumptions. I spoke earlier about our system planning process and Bruce Power was a big contributor to that system planning process because their waste volumes are integral to our future plans. So that's one area for sure.

The only other thing I wanted to mention

as well is that, you know, we are also very actively engaged with Bruce Power on several areas of collaboration. So, you know, we have mentioned waste minimization. That is a collaborative effort between the two companies as well because obviously the waste types are very similar that are being generated from the various stations. So we are certainly working on collaboration with waste minimization and different technologies that may be available and then we are also doing a lot of collaboration when it comes to the lessons learned from Darlington refurbishment and what can be gained from that for Bruce MCR purposes as well. And waste is a big component of that of course, so a lot of collaboration as well in terms of integrating those two projects and making sure that people are sharing lessons learned.

**THE PRESIDENT:** Okay. Thank you.

Any final words?

**MR. SCONGACK:** No. Thank you very much for the opportunity.

**THE PRESIDENT:** All right. Thank you.

**CMD 17-H3.2/17-H3.2A**

**Oral presentation by Frank Greening**

**THE PRESIDENT:** I would like to move now

to the next submission, which is an oral presentation by Dr. Greening, as outlined in CMD 17-H3.2 and H3.2A.

--- Pause

**THE PRESIDENT:** Anytime you are ready, Dr. Greening.

--- Pause

**DR. GREENING:** Thank you, President Binder and Members of the Commission, for giving me this opportunity to speak here today.

I think I will be on a slightly different track than what we have heard over the last seven hours because I am going to suggest that the Western Waste Management Facility should simply be shut down.

So the topic is radioactive waste, which I call OPG's problem child. In dealing with radioactive materials, the International Commission on Radiological Protection has proposed three basic principles should be followed. They are justification, optimization and application of dose limits. And the important one here is justification and what the ICRP says is:

"the benefit to the exposed individuals or society from an activity using radiation must offset the harm it causes."

Now, when it comes to radioactive waste it

is very difficult to adhere to any of these principles but particularly the justification because radioactive waste offers no benefit to society. It's a menace. Nevertheless, it is a problem that has to be solved.

So how much radioactive waste does OPG have at the present time? Well, let's look at one year. In one year a CANDU reactor produces vast quantities of radioactive isotopes that are all destined to become radioactive waste: 150 million Ci of fission products, 1.5 million Ci of tritium, 500 Ci of Carbon-14 and substantial quantities of radioactive products such as Cobalt-16, Niobium-94, et cetera. And it's interesting to note that after 40 years of reactor operations only about 100,000 Ci of radioactive waste has been collected and is stored at the WWMF.

Now, let's consider how much radioactive waste OPG will have in the future. Well, once all Canadian nuclear reactor operations stop, the total accumulated radioactive waste produced up to that time -- and this is what has to be dealt with -- is as follows: 1 million Ci of refurbishment waste per reactor, 100,000 Ci of iron exchange resins and filter wastes, 100,000 Ci of so-called non-processable waste. Now, short-lived radionuclides do decay, but the long-lived radionuclides like plutonium, americium, et cetera, et cetera, Niobium-94 is a good one,

they don't decay.

And this brings up the topic of inventories which was discussed earlier, and, as I pointed out in 2014, OPG has failed to demonstrate the validity of any of its estimates of the Western Waste Management radionuclide inventory.

Now, the other thing we have heard a lot about today is DRLs. They are derived release limits and in this table I have -- there are arguments about what the inventory is, but these are figures I think from various sources and we have the inventory of tritium and Carbon-14, Iodine-131, beta particulate. If you look, the DRLs for airborne and waterborne emissions are larger than the inventory. That's crazy. How can you have a limit that is larger than the inventory? What they are saying is OPG can take all of its waste and dump it in the lake, no problem, or they can burn all of it and put it into the atmosphere, no harm to anybody. That's what this is saying. This is crazy.

So let's look at waste management practices. The ultimate goal of any radioactive waste management program is to ensure the safekeeping of the waste. Now, the dictionary defines safekeeping as preservation in a safe place. Now, this means -- other definitions: to seal up, to contain, to secure, to hold

tight, to preserve, to protect, to prevent loss, leakage.

This is an interesting book I bought when I first got into the nuclear business. It's called, "The Nuclear Challenge", from 1978 -- yes, I'm that old -- and in this book -- by the way, the author is from the Canadian Nuclear Association and he said this:

"In nuclear waste management the goal is to achieve literally as near as possible zero release of fission products and actinides into either air or water" -- "as near as possible zero release"

So it follows that any responsible nuclear utility would do its best to prevent any releases of radioactivity from waste storage facilities. And indeed, this is the basis of the much touted ALARA principle, which is as low as reasonably achievable, which also means there should be no unnecessary emissions or releases.

So is OPG following good waste management practices? Based on the ALARA principle, one would expect that a nuclear reactor owner/operator such as OPG would never deliberately release radioactivity in the environment -- never. Well, as it turns out, OPG is in fact deliberately -- deliberately -- releasing large amounts of radioactivity into the local environment on a

regular basis. Why? Because it incinerates about 20 percent of the low-level waste it receives and OPG knows that by doing this, unwanted radioactivity goes up in smoke. This leads to the release of about 1000 Ci of tritium per year, deliberately. Let's just put it into the environment. Who cares? And similarly, large amounts of Carbon-14, Iodine-131, Cesium-137 and unknown amounts of Plutonium-239, Americium-241, Curium-244, et cetera, et cetera. So is OPG following the ALARA principle? Absolutely not.

So let's ask, why is OPG incinerating any radioactive waste? Well, I won't go through this slide, but I heard someone just recently talking about the three R's of waste management: reduce, reuse and recycle. OPG claim they are following the 3Rs. Well, I can only count one R, that is, reduce. Where are they reusing radioactive waste? Where are they recycling radioactive waste? They are not following the 3Rs. So don't believe them when they tell you they are following the 3Rs, that's nonsense. And I go through here the real reason, and the real reason is that burning waste is to save money. They don't care about the health and safety of the people in the local environment, they care about money and let's be clear on that.

There are more problems. Besides the

senseless and unwarranted dispersal of radioactivity into the environment by incineration, we have some other problems.

For example, monitoring. We have heard a lot today about monitoring. I just heard Dr. Barrett claim that OPG monitors all of its releases. Not true, because I have to bring up the "F" word, and that is fugitive, fugitive emissions. Look it up. OPG is pumping out a ton of fugitive emissions and they don't want to talk about it. We haven't heard any mention of fugitive emissions all day. They don't exist. Well, let's have a look at fugitive emissions.

Well, just first, sorry, I would like to just point out about active and passive samplers, which has already been addressed by previous intervenors. These are actual data of active samplers and passive samplers recorded at Pickering in 2008. You will notice that the passive sampler is about twice the active sampler. Which is the sampler they do away with? The passive sampler, the one that's reading higher. How can you do away with a monitor that's reading higher than another monitor? That's absurd.

So I'm going to have to -- this is more about these discrepancies. Here is Carbon-14. Basically I'm sorry to say that OPG is misleading the public about

its Carbon-14 emissions. This is from one of their reports. It shows the monitored emissions which it claims are the total emissions for Carbon-14 are in the range of 4 times 10 to the 9 Bq per year, but I would direct and ask the Commission to read this report, the Deep Geologic Repository Report on the pre-closure safety assessment put out in 2009.

--- Timer beeps

**DR. GREENING:** I guess I'm done unless you will give me more time.

**THE PRESIDENT:** Go ahead.

**DR. GREENING:** Thank you.

**THE PRESIDENT:** Continue.

**DR. GREENING:** I will be brief.

**THE PRESIDENT:** Brief finish.

**DR. GREENING:** I will.

Table 3.11 of this report shows that the real numbers, the real emissions are more like 4 times 10 to the 11, not 4 times 10 to the 9. Why? Because of fugitive emissions. And what are these fugitive emissions? This is Carbon-14 coming off packages, and in particular it's coming from the resins. And it turns out that further studies have shown this number is more like 10 to the 12 Bq. So these numbers back here are nonsense. Yet, that's what is fed to the public.

And I would also like to point out about Carbon-14 dosimetry. I would like to know if workers on the site are -- how are they doing the dosimetry for Carbon-14? The only way they can do it reliably is by bioassays and I do not believe they are doing bioassay sampling of workers and I do believe that the workers on the site are getting excessive doses from Carbon-14 that is not being monitored.

Here is more on tritium emissions, the reported versus the off-gassing. We have heard about the off-gassing.

Just quickly, the atmospheric dilution factors that are used to calculate doses are the wrong factors. This is called Chi over Q to give you -- that "X" is a Chi actually, Greek letter Chi, and it's important because it defines the inhalation dose. And they are using the wrong dispersion factors, there is no question about that, because they are dealing with short-term emissions, not long-term emissions.

The other thing that hasn't been mentioned is toxic heavy metals such as arsenic, mercury, selenium, chlorine and bromine that are coming out of the stacks in the incinerator. And, by the way, I have data on Mercury-203. That is detected. That's proof there is mercury going up that stack. I will skip that.

Just quickly on alphas. I hear the nuclear industry like to talk about looking after radioactivity from cradle to grave. Well, here is the cradle for alphas. It's inside the plant, alphas are everywhere. Here's data from the waste incinerator for alphas. When they check for alphas they find alphas, but they don't want to talk about that and they don't monitor them on a routine basis.

So finally, my conclusion is there should be no licence for the Western Waste Management Facility until the waste incinerator is shut down. Thank you.

**THE PRESIDENT:** Thank you.

So let's jump into the question period and I would like to start with Dr. McEwan -- sorry, I have lost my spot here -- Ms Velshi.

**MEMBER VELSHI:** Thank you.

Thank you. You have raised so many, many issues that others have not, some that we have tried to address earlier on, and I want to make sure I give OPG and staff ample opportunity to respond.

But let me start off with derived release limits first, and others have raised that, and see if I can direct OPG and staff to slide number 5 of Dr. Greening's presentation. At previous hearings too we have heard extensive concerns about DRLs and the purpose they serve

and what's being done about it and I know there is some stuff happening on that. And earlier today we saw that OPG is actually going to be revisiting the DRLs and their action limits against the new CSA standard.

So maybe I will ask staff to go first. You know, give us this bigger picture on DRLs, their limitations, and particularly address the concerns that Dr. Greening has raised that even if you released all the inventory you would not be exceeding the DRLs, which in itself sounds very alarming.

**MR. RINKER:** Mike Rinker for the record.

So for every facility there are three sets -- three different levels of limits that we would -- that we impose our levels, I should say.

First of all, there's the derived release limit. And the purpose of the derived release limit is not to set a control on the facility but, rather, to demonstrate whether that facility would be compliant with the Radiation Protection Regulations so that we would know whether a dose would be below 1 milliSievert per year.

And there's two aspects of a derived release limit. First of all, there is the quantity in Becquerels per year of a radionuclide that would be released that would end up cycling through the environment and posing a dose to the member of the public of below 1

milliSieverts per annum. And so that's put forward in a radioisotope basis. Each radioisotope would have a limit like that.

However, there's another aspect to the DRLs that is called the "Summation Rule" and that is in addition to each individual radioisotope needing to be below 1 milliSievert per annum, all of them must also sum up to 1 milliSievert per annum or less. So that's a rule that's put in place. It's not a specific number because it depends on what level the radioisotope is. But that's a rule that's put into the licence condition handbook.

So that isn't --

**MEMBER VELSHI:** Sorry, before you move to the next one, so is there any time that all the emissions get aggregated and get compared to what that dose would be associated with that?

**MR. RINKER:** Mike Rinker for the record.

The annual dose to the public that is a calculated dose based on what the real measurements are is something that is monitored by the licensees, also monitored by Labour Ontario. So it's the same calculation but it comes out with not a total -- there's known totals of releases but it's the actual dose percent year that are the most critical number --

**MEMBER VELSHI:** Right. I know the

environment monitoring. I meant based on the emissions.

**MR. RINKER:** If it was based on real emissions then that leads to that dose to the -- like, there's a total emission of how much tritium would be released, say from the incinerator. That's known. And it's also known how much tritium ends up in the ambient air in the environment from those emissions and it's compared to the DRL.

**MEMBER VELSHI:** I'm not asking the question properly. So I know about the environment monitoring and you know checking what levels are in the water, in the air and the food and so on, and coming up with a dose estimate based on that. But is there a dose estimate based on the actual emissions so how much is going out of the stack and with whatever modelling what would that dose look like? And you aggregate it for all the radionuclides so you don't -- you can't compare it against the DRL because it's not -- it's for the aggregate amount.

**MR. RINKER:** Mike Rinker for the record.

So I think we're actually saying the same thing. If you consider what is going up the stack and what that would impact on people, the standard, the CSA standard N288.1 for establishing DRLs is the same standard for determining what's the impact of what goes up the stack. So it is a model about what goes up to the stack. It takes

into account how those radionuclides would cycle through the environment end up in water and fish and in the ground and gets verified through the actual monitoring and you end up with that annual dose to a member of the public.

**THE PRESIDENT:** If I understand what you're saying, it would be a fraction, a very small fraction of the 1 milliSievert because, you know, if I understood what's going on, in terms of how you calculate the DRL is to result in the 1 milliSievert in the receiving communities; is that not right?

**MR. RINKER:** Mike Rinker for the record.

So that is correct. It's the same model and it's done completely for the entire Bruce site, taking into account all releases. The DRL would be calculated for the amount of tritium that would be released. It would end up with 1 milliSievert per annum. That's the DRL. And also, based on measurements of the real stack emissions and how it gets dispersed to the environment and other types of model, it's then determined what is the actual dose and compare that as a percentage of the DRL.

And in general the numbers in total are around 2 to 2.5 microSieverts per annum compared to 1 milliSievert per annum and about one-one thousandths of that is from the WWMF, Western Waste Management Facility, so a much smaller number.

**THE PRESIDENT:** Still, is it true what Dr. Greening is saying in this table here that -- pick up carbon-14. Your whole inventory is bigger than the DRL.

**DR. GREENING:** For carbon-14 it's slightly less but the tritium one for sure.

**THE PRESIDENT:** Okay. The tritium one, pick up the tritium one. So is it right that this is the total inventory here? You'll never ever go over the DRL. You'll never ever go over the DRL, tritium?

**MR. RINKER:** Mike Rinker for the record.

I'll ask OPG to verify but by our records that's a correct statement. And so what our view is -- what that indicates is it would be -- if a catastrophic event happened at that facility it still would not exceed the public dose limit. But there's a number of many, many other controls that are in place from design, maintenance, other types of ALARA prevention. So how to mitigate that sort of situation is not based on the DRL number. The DRL is not the control to avoid that.

But if you were to decide that if the facility were to have a catastrophic event tritium still would not expose a member greater than 1 milliSievert per annum. It would be less.

**MEMBER VELSHI:** So what would -- the licensee would use, as you say, the action level to

control. And I just pick a random one, say tritium airborne. The action level is 10 percent of the DRL. So you'd still have to -- still all your tritium inventory could get released and you won't hit your action level either and, yet, the action level is to give you an indication that you've lost control. It just seems -- I'm just trying to reconcile that.

**MR. MCCALLA:** Raphael McCalla for the record.

Let me try and see if I can put this in perspective for you. So I just want to go back and first comment on something that was stated earlier.

So in terms of the calculation of the dose, it takes into account every single radionuclide. So it's a summation of the contribution from each one that arrives at a calculation of the actual dose impact to the closest receptor. So that's how that dose is arrived.

With respect to the framework that's in place to ensure that a dose or emissions are kept ALARA or are kept to as low as reasonably achievable, there is a framework in place to manage that.

So you have ALARA. So you're trying to release as small a quantity as you possibly can from the operations and then you have something called an internal investigation limit. And that internal investigation limit

is set slightly above your normal emission rate. And what happens if you exceed that value then internally OPG would investigate to determine the cause of that and put in mitigations.

Beyond that you have action levels which are set at 10 percent of the derived release limits. So again, if you exceed an action level then we're required by our licence to inform the CNSC of that event as well as the actions that we've taken to ensure that we don't exceed that going forward. And then you have the DRLs on top of that. So the scenario of you ever really releasing all of your inventory is not really possible because of the framework that's in place to control your emissions from your facility.

**MEMBER VELSHI:** Thank you. That's really good. But what it's telling me is that I could release -- you could release all your tritium inventory and you still wouldn't have to report it to the CNSC because you haven't exceeded your action limit if it was just based on the action limit as the triggering item. So what good is the action limit?

**MR. RINKER:** Mike Rinker for the record.

I think -- it can't be understated that levels, the DRL and the action level, are not our only means for compliance. And so if you're only relying on the

action level and that was the only tool, that statement would be correct. But you're not. You're relying on many, many other compliance tools.

And I think -- so I think we need to talk about action levels. For this facility they are set at 10 percent of the DRL and it was set that way in accordance with CNSC guidance as provided where the purpose of an action level is set to ensure that release limits do not get -- do not get exceeded.

So that's a very different goal than where the CNSC is moving to and there is -- and so we recognize the point that Dr. Greening is making in his intervention and, in fact, we set process for improvement in place several years ago that resulted in a CSA standard that was published about six weeks ago for setting action levels. And that is more to -- instead of ensuring release limits are not exceeded, the role of an action level is to ensure the facility and the programs are performing as intended.

And those are action levels that are performance-based. So they are based on what is the normal and expected operation in releases and if you're outside of that you would trigger an action level. And that is where OPG is moving to.

**MEMBER VELSHI:** Dr. Greening, do you have a comment on that?

**DR. GREENING:** I would just like to point out that I wrote the report on action limits and levels for Bruce Power that was submitted to the CNSC. I know all about action limits, internal investigation levels.

The point that's been missed here is that the way DRLs are calculated is incorrect. As this shows, you've got to use the right atmospheric dispersion factors and these are short term releases. They are not long term average releases. DRLs are calculated for long term average releases.

The incinerator runs intermittently and the station emissions as well are intermittent. They're spiked. They are using the wrong atmospheric dispersion factors. So it's not CSA N288.1 that they should be using. It's N288.2 and that changes everything.

**THE PRESIDENT:** How would it change? What would be then the DRL for tritium? If, according to you, they have done it correctly what would be order of magnitude here?

**DR. GREENING:** We're talking about factors of about 100 and then we get into some kind of reasonable territory.

The other point as well that we need to consider is that the monitoring is -- with the whole debate about active and passive monitors, the passive monitors

often read higher than the active and, yet, they dump the passive monitors. If you look at active monitors you realize that they sample about 20 m<sup>3</sup> a month. A human being breathes 600 m<sup>3</sup> a month.

Those passive monitors are also -- or, sorry, active monitors are also highly questionable and even the calculated numbers for the concentrations of tritium say at BF14, the calculated numbers would be about 20 Bq/m<sup>3</sup>. The measured are about three.

Specifically, there is a problem. I don't believe even the active tritium monitors are working properly. They saturate. That's why they have such a low -- they draw air in at such a low rate because if they drew it in at a reasonable rate the molecular sieve saturates.

**THE PRESIDENT:** We hear the explanation about the difference between the active and the passive and maybe somebody wants to reconfirm that. But I'm still stuck on the -- on Dr. Greening's view that the DRL is not calculated properly. Somebody please let us know. That was the standard, the CSA standard. Dr. Greening suggests the CSA standard is wrong if I understand.

**DR. GREENING:** Well, no, I am suggesting they are using -- they shouldn't be working to CSA N288.1. They should be working to CSA N288.2.

**THE PRESIDENT:** That's what I meant to say: You're working on the wrong standard. Somebody...?

**MR. RINKER:** Mike Rinker for the record. So CSA N288.2 is for accident scenarios, upset conditions where CSA N288.1 is for routine normal operations. So our view is CSA N288.1 is absolutely the correct standard to follow --

**DR. GREENING:** And if you look --

**MR. RINKER:** -- and I also would state that there's been quite a bit of work done particularly around nuclear power plants to verify what is predicted from the models to what is observed in the environment and in general the tendency is that the models tend to over-predict what is observed in the environment, what is measured in the environment.

And on the issue of the active versus passive samplers, respectfully, I know the intervener presented information that showed, you know, at Pickering that the active samplers were about half of the passive samplers, but the reverse was true in the same articles that we published for Bruce site where the active samplers were actually -- showed more tritium measured than the passive ones. So it's variable depending on the site. It was determined that the passive -- the active samplers were more reliable and that's why others like Labour Ontario

measures using those samplers. That's why -- what we would use as well for measuring tritium.

**THE PRESIDENT:** Got to move on. Dr. McEwan?

**MEMBER MCEWAN:** Thank you, Mr. President. Thank you for the slides. Again, really helpful synopsis of the presentation, so thank you.

Can I just ask a very high level strategic, I guess, question? Dr. Greening has made a case that it is entirely inappropriate to use an incinerator at a waste management facility. We've heard today that it's entirely appropriate to use an incinerator at a waste management facility. Can you help us understand the merits and demerits of the two arguments?

**MS MORTON:** Lise Morton for the record.

So I mean I certainly can reiterate what I said earlier in terms of volume reduction. The volume reduction achieved through incineration is substantial.

And I realize that there's a slide that speaks to costs. I cannot speak to where these costs are referenced or come from. What I can say is that they don't align with the cost estimates that we have provided to the province under our Ontario Nuclear Funds Agreement, so our five year cost requirements.

As a matter of fact, through our

calculations that get a lot of scrutiny and are verified and reviewed, the actual cost per cubic metre of storage of low-level waste over its entire lifecycle is higher than the cost per cubic metre of incineration. It is not as it's indicated here; the other way around. So there actually is -- you know, we also have to provide good value for money for the public and incineration while achieving volume reduction saves on storage costs long term and is a cost-efficient method of volume reduction as well.

**DR. GREENING:** Well, that just proves my point. It's about cost. It's not about protecting the public's health.

And besides if you want to know where I got those figures, they are OPG's figures to the Ontario Energy Board. They are OPG's own figures.

**THE PRESIDENT:** I know that cost, we're not too much concerned with cost even though there's nothing wrong with saving money. The question is, is it safe? And by putting in the ALARA is it the safest?

So I think from our perspective it may be safe incinerating but it may not be the safest. So how would you reply to that?

**MS MORTON:** Lise Morton for the record.

So, yes, it is safe. And maybe another point that's worth mentioning is that there is a waste

acceptance criteria for what can go in the incinerator. So there are limits on things like tritium for the waste that can go into incinerators. So we don't incinerate highly-tritiated waste. There are limits in terms of various contaminants both conventional and radiological in terms of the source term that can go into the incinerator.

In terms of is it safest? Yes, we believe that volume reducing that waste and getting that waste down to a manageable volume in the ash is safe and safest method to volume reduce that waste, absolutely.

**DR. GREENING:** Can I just point out that OPG does not measure what's in every bag it burns. In the earlier reports I've seen the variability of what's in one bag of low-level radioactive waste the tritium is all over the map. And they don't measure it. They can't measure it. And they'll be offering it as inside those bags that are not being measured. There's Strontium-90. There's Cesium in those bags that are not being measured. They just look at a bag and somehow wave a magic wand and say, oh, it's okay to burn it. They really do not know what's in that bag.

**MS MORTON:** Lise Morton for the record.

**THE PRESIDENT:** OPG.

**MS MORTON:** Lise Morton for the record.

So first of all, there are several

controls and steps along the way when we receive waste prior to them being placed into the incinerator. We do -- and Darren Howe can certainly provide more information in terms of how we unload the bins. But we do verify for loose contamination. We do verify tritium in the bins that come from the stations.

And the other thing I want to point out too is more recently through the waste sorting program we actually as a tendency tend to open up the bags and sort the waste so that we are getting the most efficient use of the incinerator. So as a matter of fact, we are seeing what's in the bags and all of that's being done under controlled conditions with appropriate protection for workers and it's all in the Waste Volume Reduction Building where there is monitoring in place.

So we do understand what's in the bags and the dosimetry program that we have for our employees confirms that we're not seeing the kinds of uptakes that are being suggested.

**THE PRESIDENT:** Staff, do you confirm through inspection the quality control on the bags and, secondly, are there alpha monitors on site that actually would capture what goes on into incinerators or --

**DR. GREENING:** Could I ask how they measure carbon-14 in each bag?

**THE PRESIDENT:** Let staff answer first, please.

**MS GLENN:** Karine Glenn for the record.

I'll start off by saying that the way that the waste is segregated, I'll go back to the stations where the waste is generated to begin with.

The waste at the station is sorted within the active areas into either likely clean which is monitored to determine whether or not it is actually clean and can be released without any conditions and disposed of by conventional means. It can be also put into incinerable active waste or processable active waste and non-processable active waste.

When that waste is generated also at the station themselves at the point of generation they self-identify whether the work that was involved or the area where that waste was generated had potential for alpha generation and they qualify it into sort of a high, medium, low. That happens at the station before the bags even make their way over to Western. And so there is the waste acceptance criteria at the station at Western when the waste arrives and it's verified against that and the waste is classified.

I'll let OPG speak to the different waste classifications that they use by types at the station --

sorry, excuse me -- at the Waste Management Facility. However, they do, as Ms Morton explained they do again re-sort all the waste once it gets to the station and verify and validate that it does actually meet the criteria and that it can be incinerated.

We do, as we mentioned previously, some spot verifications when we are on inspections and validate that the process are actually being followed.

**THE PRESIDENT:** But how they are for monitors on site near the incinerator? Does it make sense to have a monitor?

**MS MORTON:** Lise Morton for the record.

I'll get Ephraim Schwartz to speak to that as well, but we did do a full alpha assessment of the waste facility. And he can speak further to that.

**MR. SCHWARTZ:** Ephraim Schwartz, manager, Health Physics, OPG.

There are continuous alpha monitors on the processing floor at the incinerator which is used to monitor the safety of the environment.

**THE PRESIDENT:** So does it detect any alpha present?

**MR. SCHWARTZ:** If there was alpha present, it would detect it. So far there have been no alpha events.

**DR. GREENING:** I am sorry to point to this table. This was measured by a COG -- it was a COG study of alphas going up the stack at the Bruce waste incinerator, and every sample there's alphas. And if you walk around the station, the data on the left-hand side of my slide 21 is taken from the Bruce site. And everywhere they smeared, they found alphas. Alphas are all over the place. And they're highly variable. And you cannot monitor them. You can't wave a magic wand over an alpha emitter. You have to do a work-up on the sample. You have to stick it in an alpha spectrometer. They can't do these surveys.

And I'd ask the same question: How do they measure carbon-14 in a bag of waste? You can't measure it without destroying the bag. That's the problem.

**THE PRESIDENT:** OPG?

**MS MORTON:** Lise Morton for the record.

So we did address some of the comments in terms of alpha in our supplement submission. So I do want to point that out.

In terms of C-14, we don't try to measure it at a bag level. We have a C-14 monitor on the incinerator stack. So we know in terms of those emissions exactly what they are. We also have a licensed dosimetry program for our workers with respect to C-14. I don't know if that addresses the comment.

**THE PRESIDENT:** Thank you. Dr. Demeter?

**MEMBER DEMETER:** Thank you. The C-14 is of interest to me. From the intervenor, the calculated dose, the model dose to a worker was 64.4 millisieverts based on his intervention page 33. And then you did submit supplemental that talked specifically about C-14 monitoring.

Can you just let me know how are you monitoring for C-14? And that would be, to me, if you're monitoring for C-14 in an appropriate manner through biodosimetry, that's the empiric measurement. The measurement from the intervenor is an estimated modelled estimate. So I'm just curious what the methodology is you're using and what doses you're getting.

**MR. SCHWARTZ:** Ephraim Schwartz for the record.

OPG was concerned for the protection of our workers. We have designed and implemented a radiation safety program in accordance with international guidelines and requirements, CNSC regulations, and national standards. And as previously mentioned, we are licensed by the CNSC.

With respect to carbon-14 in workers, they are monitored as part of their routine and non-routine bioassay sample. We do detect, analyze, and assign dose when appropriate for C-14. The typical value is zero

milligram. They're very low numbers. The most that we've ever assigned have converted in microsieverts is on the order of 10 microsieverts about four years ago.

**MEMBER DEMETER:** Thank you. And just to bring clarity to this, so your biodosimetry program is you're measuring activity in urine?

**MR. SPEAKER:** That is correct, activity in urine.

**MEMBER DEMETER:** Thank you.

**MEMBER VELSHI:** So fugitive emissions. Again, I want Staff and OPG to comment on that. So if I look at Dr. Greening's slides 12 and 13, and so for carbon-14, what he is suggesting or what he has presented is that it could be a hundred times higher than what's actually been monitored. Can you comment on that please.

**MS MORTON:** Lise Morton for the record.

We did try to address some of this as well in our supplemental submission. But I will just say that again our effluent monitoring program is compliant with CSA N288.5.

And but we actually did conduct previous assessments of our fugitive emissions from the Western Waste Management Facility. And these are documented in an OPG letter to the CNSC dated June 27, 2003. So we have assessed this before. We have reported to the CNSC what

those emissions are. And the conclusion of that report was still that the value for fugitive emissions was less than 0.05 percent of the weekly derived release limit at that time, and that the C-14 was relatively stable in the resin.

As part of our continuous improvement and routine reviews that we do of our environmental management program, we actually in August of last year, of 2016, initiated a new assessment of our monitoring program and we're currently awaiting the final results of that current initiative. But we have identified fugitive emissions going back as far as 2003.

**DR. GREENING:** Could I ask why they were not mentioned in your recent reports, then? This is -- if you knew this from all those years ago, I searched your report for the word "fugitive emissions" and it's nowhere to be seen.

**MS MORTON:** Lise Morton for the record.

We believe that we were reporting emissions as are required under our standard and under our licence guidelines.

**THE PRESIDENT:** So Staff, I think the intervenor also makes a point that you should report everything as an emission.

What got me worried is according to his calculation -- and I didn't follow everything. I read it

through. I tried to understand your math here. So I hope somebody -- an expert actually did go through the math here, because his calculated value for fugitive is of the same order of magnitude of the real emission in some places. So what's going on? So we're just hearing two conflicting --

**DR. GREENING:** Could I just point out that those numbers are not mine. They're from Garisto, Hussein, and Ho, and it's a new NWMO report. And you should read the first 20 pages of that report. The fugitive emissions for tritium and carbon-14 are scary. And they just ignored them. They don't want to talk about them.

**THE PRESIDENT:** Staff?

**MS TADROS:** Yes, Haidy Tadros for the record, sir.

So there's been a couple of different conversations now, and respecting Dr. Greening's intervention, it does look -- he's gone through a lot of work to put the mathematical formulas in place to show his perspective.

I'll pass this to Mike Rinker, who will take the first stab at looking at the fugitive emissions, and then Dr. Nana Kwamena.

**MR. RINKER:** Mike Rinker for the record. So we did look at this from a couple

perspectives. But I just want to start out with that fugitive emissions are not a rare, unknown thing. I think most of the facilities where we discuss releases to the environment have these sort of emissions. And they are more difficult of course to monitor because it's not the end of a pipe, it's, you know, seepage through windows and ventilation and so on. And so you may have ambient monitoring around outside in the environment and other means to quantify what -- the effects of these fugitive emissions.

But by no means are they a type of emission for which we do not pay attention to. And in fact the predictive environmental risk assessment that was conducted by OPG in their application for the new buildings and so on had, you know, inclusion of this in their source term and these are things that we've been reviewing on an ongoing basis.

**MEMBER VELSHI:** Can I comment on that? I think the issue here isn't that they aren't fugitive emissions, it's what's the order of magnitude. And if it's a hundred times what's being monitored, which is what this report is saying for carbon-14, I think that needs to be mentioned in whatever reports that come out. That we're reporting in a hundred curies, but it -- you know, it could be 10,000. Like it's just the order of magnitude that just

stunned me.

And so -- and what you're telling -- so I know in your supplementary you talk about tritium and you're saying it could be double. But carbon-14 could be a hundred times based on this. Is that correct?

**MR. McCALLA:** Raphael McCalla for the record.

So first of all, I want to take us back to the fact that in 2016, the environmental risk assessment looked at offsite impacts. So as part of that assessment, OPG's confident that there's no offsite impacts to the public or the environment, so that's --

**MEMBER VELSHI:** Yeah, we've just said you could release all your inventory and there would be no offsite --

**MR. McCALLA:** The next point I'd like to make is that through our process, through our procedures, we're required, as was just indicated by CNSC, to look at other sources of emissions. And what we do is we calculate a maximum probable emission rate. And through that assessment, you determine whether or not there's a need for performance monitoring and/or control monitoring.

So when you go through that evolution, if your MPER calculation, so your maximum probable emission rate, is less than 0.05, and your normal -- if you have

normal emissions, if you're less than one, than there's really no need to actually report that value. So there's a framework which we have to follow to determine whether or not there's a need for reporting.

So we go through that process from time to time as our effluent monitoring program, our environmental monitoring program -- they're all risk-based programs. So from time to time we go back, we verify our assumptions to see whether or not anything has changed. And if so, that information is used to update our programs.

With respect to the value being, say, twice the amount, or for that matter a hundred times the amount, if you were to apply those factors, your dose implication or your dose impact to the public would still be below -- would still be at a very low value. It would be at a small contribution. And from the Western Waste Management Facility, it's actually a factor smaller than from the overall Bruce site.

So as was mentioned a while ago, we are actually currently going through the exercise to determine whether or not there are other sources of emissions which we need to include into our program. And based on that, the report, once we have a chance to review that report, if we need to make changes, we will make those changes to our program.

But I want to assure everyone that even at the levels that we're talking about, there are still no significant offsite impacts to the members of the public or the environment.

**DR. GREENING:** Could I just point out that I also wrote the MPER report, maximum probable emission rate, for Bruce Power. It's a 50-page report.

And the whole point is back then I didn't know about carbon-14 fugitive emissions. And had I known about them, they would have been in my report. To say that, oh -- the MPER report has to look at all possible pathways. And they're saying this one, oh, just because the amount gives a dose of whatever, we don't have to look at it -- you have to look at it to find out what it is. And it turns out to be far more important than the stack emissions. That's the point that's being missed here.

**MEMBER VELSHI:** Dr. Greening, I think they have said they're looking at it now; right.

I guess the question then is if you were to fast-forward, and what you find is that these currently unmonitored releases are actually orders of magnitude higher, it would warrant reporting; right? And --

**MR. McCALLA:** Raphael McCalla for the record.

That is correct.

**MEMBER VELSHI:** So this is a 2009 report from NWMO. I think that's what it says. Oh, is it? 2009? So that's a while ago where it was indicated that these fugitive emissions could be significant. I'm just curious why that hasn't -- that we haven't seen anything on it before. It's just the order of magnitude higher. I understand your argument that the end result, the impact is minimal. It's just when we go through all this trouble of monitoring, and yet there's this big stuff that's not getting monitored, shouldn't that even be reported?

**THE PRESIDENT:** Let me piggyback on this. Even if you were to ignore it, you should acknowledge that there is such a phenomenon, this fugitive emission. And if you give the argument as to why you're ignoring it, that's fine. But at least not to mention that there is a fugitive emission, I think it's not telling the whole picture. I think that's the intervention comment. And I think I agree with it.

**MR. McCALLA:** Raphael McCalla for the record.

So what I will add is that as part of our risk assessment we do go through and re-evaluate those assumptions. And that's exactly what we're doing right now. And we will address that going forward.

**THE PRESIDENT:** Okay. Thank you.

Question? Question?

Okay, Dr. Greening. You have the final words.

**DR. GREENING:** Oh, thank you.

Well, I'd like to end with a cautionary tale about a place called CANDU Land, where the authorities have set a speed limit on cars of 200 kilometres an hour, even though the fastest car on the road is only capable of 150 kilometres an hour. So somebody does a study in CANDU Land and looks at CANDU Land drivers and finds the average speed of drivers is --

--- Technical difficulties / Problèmes techniques

--- Upon recessing at 8:17 p.m. /

Suspension à 20 h 17

--- Upon resuming at 8:33 p.m. /

reprise à 20 h 33

**THE PRESIDENT:** First of all, let me apologize, we didn't give you any break for dinner or anything like that, either did we, so we're in the same space.

So now we'll move to the written interventions. Why don't you tell us the process?

**MR. LEBLANC:** Yes. So by moving to the

written interventions, I will identify each intervention, and the Commission Members will have the opportunity to ask questions on each of those submissions.

**CMD 17-H3.3**

**Written submission from the  
Hydro Pensioners of Ontario, Georgian Bay  
District Pensioners Association,  
Bruce Sub Group**

So the first submission is from the Hydro Pensioners of Ontario, Georgian Bay District Pensioners Association, Bruce Sub Group, as outlined in CMD 17-H3.3.

Are there any questions from the Members on this submission?

**CMD 17-H3.4**

**Written submission from the  
Hydro Pensioners Association of Ontario,  
Toronto District**

So, as I said, there's no question I'll go to the next submission, which is from the Hydro Pensioners Association of Ontario, Toronto District, as outlined in CMD 17-H3.4.

Any questions from the Members?

**CMD 17-H3.5**

**Written submission from the  
County of Bruce**

The next submission is from the County of Bruce, as outlined in CMD 17-H3.5.

Any questions? Thank you.

**CMD 17-H3.6**

**Written submission from  
The Inverhuron Committee**

The next submission is from the Inverhuron Committee, as outlined in CMD 17-H3.6.

Any questions? Madam Velshi.

**MEMBER VELSHI:** So on page 2 of the submission there is a reference made to a 2002 Auditor General report that indicates that the risk associated with the site are extremely high and that the insurance is inadequate. It's not around the insurance, it's about the risks are very high.

Was there anything specific in there that you're aware of?

**MS MORTON:** Lise Morton, for the record.

I'm not aware of anything with respect to extremely high risks. But again, I believe it's a risk versus probability discussion.

What I can say is that the Western Waste Management Facility is a designated nuclear installation under the *Nuclear Liability and Compensation Act* Regulations. In accordance with the requirements of that Act, we do hold -- OPG holds the required insurance coverage for its facilities. The liability limit of \$650 million for the operator of a nuclear installation came into effect January 1<sup>st</sup> of this year, 2017. So we do meet the requirements under that Act.

**THE PRESIDENT:** Any other comments from Staff? Because this is the first year, but eventually it goes up, does it not? Can somebody remind me?

**MS GLENN:** After a year.

**THE PRESIDENT:** After a year, it goes to...?

**MS GLENN:** Karine Glenn, for the record.

I believe we had Jacques Hénault from NRCan on the phone. I don't know if he's still available?

**THE PRESIDENT:** No.

**MS GLENN:** Because it is Natural Resources Canada that is responsible for the Act.

**THE PRESIDENT:** I know. But I remember it goes -- do you have the answer?

**MS MORTON:** Lise Morton, for the record. Yes, it's provided in the Act, this limit will increase to \$1 billion over the next few years.

**THE PRESIDENT:** Right. Okay, thank you.

**MR. LEBLANC:** Any other questions? Dr. McEwan?

**MEMBER MCEWAN:** The other thing, I think it's important to note that on the second page of the letter, the second paragraph, that that was dealt with in our discussion with SON, and with some of the conversations around that from OPG and from staff, so I think it's important just to note that that has been addressed in today's conversations.

**CMD 17-H3.7**

**Written submission from the  
Council of the Corporation of the  
Municipality of Kincardine**

**MR. LEBLANC:** The next submission is from the Council of the Corporation of the Municipality of Kincardine, as outlined in CMD 17-H3.7.

Any questions?

**CMD 17-H3.8**

**Written submission from the  
Corporation of the Township of Huron-Kinloss**

The next submission is from the Corporation of the Township of Huron-Kinloss, as outlined in CMD 17-H3.8.

Any questions?

**CMD 17-H3.9**

**Written submission from the  
Kincardine and District Chamber of Commerce**

The next submission is from the Kincardine and District Chamber of Commerce, as outlined in CMD 17-H3.9.

Any questions from the Members?

**CMD 17-H3.13**

**Written submission from  
Power Workers' Union**

The next submission is from the Power Workers' Union, as outlined in CMD 17-H3.13.

Any questions?

**THE PRESIDENT:** I always ask the same question. Did the Union raise any safety -- any concern with OPG about the management of the facilities?

**MS MORTON:** Lise Morton, for the record.

I believe their intervention speaks to that, but certainly we have a very collaborative relationship with our Union, with our Union members, and we have processes in place so that both the Union and the Union membership can raise concerns, that's part of our healthy nuclear safety culture, one of the traits is promoting an environment for raising concerns. We certainly promote that with our employees and they have various venues in which they can raise concerns, and certainly their Union leadership as well is one opportunity for them to raise those concerns.

We have ongoing joint working groups between Union and management to work through any concerns that may arise. But in terms of an overall concern with the operation of the facility, I believe their intervention speaks to that, not having one.

**THE PRESIDENT:** Thank you.

**CMD 17-H3.14**

**Written submission from the  
Canadian Nuclear Laboratories**

**MR. LEBLANC:** The next submission is from the Canadian Nuclear Laboratories, as outlined in CMD 17-H3.14.

Madam Velshi?

**MEMBER VELSHI:** A very quick question to OPG. Are there areas of collaboration between you and CNL on waste processing and management and disposal?

**MS MORTON:** Lise Morton, for the record.

Yes. Again, similarly to what we discussed with Bruce Power, we do collaborate with CNL because obviously we do a lot of the same types of work. So we certainly have benchmarked their facility, they have benchmarked ours in terms of areas such as waste management, transportation, and others.

So we do collaborate with CNL whenever the opportunity arises.

**MS VELSHI:** They don't incinerate any of their waste?

**MS MORTON:** Lise Morton, for the record.

That's correct.

**THE PRESIDENT:** But they are proposing to

have near surface. So are they talking to you about some lessons learned from your experience?

**MS MORTON:** Lise Morton, for the record.

Yes, absolutely. We are discussing our experiences and our understanding and working with them as well, so that if there's any lessons learned they need to get from us we're absolutely participating with that.

**CMD 17-H3.15**

**Written submission from the  
Canadian Nuclear Workers' Council**

**MR. LEBLANC:** The next submission is from the Canadian Nuclear Workers' Council, as outlined in CMD 17-H3.15.

Any questions?

**THE PRESIDENT:** Dr. Demeter?

**MEMBER DEMETER:** I don't know if the question can be answered in the absence of the author. But the very last sentence of their written statement is, "Our support is conditional on the fact that CNSC Staff's annual oversight WMF report continues during this licence period."

I don't know what the incentive was for them to write that, but I know they may not be here and they may not be able to respond, but it just seemed like an

unusual supportive letter with that last statement.

**MS TADROS:** Haidy Tadros, for the record.

Likewise, I'm not sure what prompted that, but just for the record, regulatory oversight reports are reviewed here annually and we have no desire to stop it at this point.

**THE PRESIDENT:** OPG?

**MS MORTON:** Lise Morton, for the record.

I certainly don't presume to speak on their behalf but, you know, certainly similarly we do have -- you know, we do work with the Canadian Nuclear Workers' Council as well through our Power Workers' Union members and, you know, the conversations we've had, they certainly are supportive. I think they're just highlighting there that, you know, their expectation would be that CNSC continues to provide oversight.

**THE PRESIDENT:** I think they're viewing this as yet another sort of an accountability scheme where they like to participate, make sure they can raise issues as they come. That's my understanding.

**CMD 17-H3.17**

**Written submission from the  
Town of Saugeen Shores**

**MR. LEBLANC:** The next submission is from the Town of Saugeen Shores, as outlined in CMD 17-H3.17.

Any questions?

**CMD 17-H3.19**

**Written submission from the  
Board of Health for the  
Grey Bruce Health Unit**

The next and last written submission is from the Board of Health for the Grey Bruce Health Unit, as outlined in CMD 17-H3.19.

Any questions?

**THE PRESIDENT:** Well, there is -- they're replying to the concern about health. I'm looking at the last sentence, I'm trying to figure out where -- that's one big sentence here. Just about the fact that there's no -- any significant adverse effect to human health.

So if they raise any concerned about the particular health -- I mean they're the authority that actually determines the health of the communities around

the facility.

**MS MORTON:** Lise Morton, for the record.

I apologize, was that a question, if they've raised concerns? Was that the question?

**THE PRESIDENT:** Well, I'll start with OPG but, but it is the last sentence, it is the position of the Board of Health based on environmental assessment... et cetera, et cetera ... that the renewal can be done without any effect on health. I assume they would be the health authority for the region, would they not?

**MS MORTON:** Lise Morton, for the record.

That's correct. The Grey Bruce Health Unit is the public health authority for that region, and we certainly do engage with them, and we're not aware of any issues and concerns that they have raised.

**THE PRESIDENT:** So they would be aware of any unusual incidents on any kind of unexpected incidents of cancer, disease or incidents like this? They would raise a red flag, is that correct?

**DR. LANE:** Rachel Lane, for the record.

The public health unit do regular surveillance of the health of the community. As I spoke to earlier, they do regular reporting on and they've written various reports on the health of the community. Dr. Hazel Lynn has come in front of the Commission on several

occasions and spoken on behalf of the health unit, of the community, and it is a vibrant community. Thank you.

**THE PRESIDENT:** Did they ever ask for a specific kind of a longitudinal study be done on this community?

**DR. LANE:** No.

**THE PRESIDENT:** Okay, thank you. So this concludes the list of written submissions.

Now we'll go into the final round, the round you've all been waiting for here.

**MS TADROS:** Sir, if I may? Haidy Tadros, for the record.

We just wanted to clarify something based on a conversation that we had on Dr. Greening's intervention. We wanted to ensure that there wasn't any misunderstanding with regards to fugitive emissions.

So I'll pass the microphone to my colleague Mike Rinker so we can read something into the record with regards to the fugitive emissions.

**MR. RINKER:** Mike Rinker, for the record.

I acknowledge I think we may be repeating something, but I just want to make sure that uncertainty doesn't remain regarding fugitive emissions.

First of all, the predictive environmental risk assessment that was submitted by OPG was reviewed by

staff and accepted and it did include an assessment of unmonitored releases, fugitive emissions, for example. I know there was concerns raised about the exact magnitude of those emissions, some from Dr. Greening, and we acknowledge that and we're going to continue to pursue the work. We're not dismissing his concerns.

But from a defence in-depth to ensure that the workers and public and environment remain protected, there's a perspective that must be taken that ambient monitoring around the facilities, within facilities, and in particular at the perimeter of the facilities done by ourselves independently, done by Labour Ontario independently, can confirm that all emissions, fugitive emissions as well as point source emissions, contribute a very, very small dose to the public, like less than a microsievert per year, and that the operation of this facility now is safe and that there's no impediment towards any relicensing for this facility.

**THE PRESIDENT:** Go ahead.

**MEMBER SOLIMAN:** These buildings are seismically qualified?

**MR. WITZKE:** Dave Witzke, for the record.

At the Western Waste Management Facility, that is no requirement to have the building seismically qualified.

**THE PRESIDENT:** That's new. I didn't realize that. Why not?

Are we not worried about, I don't know, some of the waste spilling into the lake?

**MS MORTON:** Lise Morton, for the record.

**THE PRESIDENT:** I'm always using doomsday scenarios.

**MS MORTON:** So Lise Morton, for the record.

So there is a safety assessment that accompanies the facility and looks at design basis earthquakes, tornadoes, et cetera. If we require more information than that, we can certainly get Carlos Lorencez to perhaps speak to that, who's involved in safety assessment. But through the safety assessment, they don't require to be seismically qualified for the design basis earthquake for that region of the province.

**THE PRESIDENT:** Okay.

**MEMBER SOLIMAN:** ...qualify for the site design earthquake? Site design earthquake, the size.

**MS MORTON:** Lise Morton, for the record. The size of the earthquake? Is that what you're --

**MEMBER SOLIMAN:** There is DBE and SDE, and there is RLE for Fukushima, for example, beyond design

base --

**MR. LORENCEZ:** Carlos Lorencez, for the record.

**MEMBER SOLIMAN:** -- for operation.

**MR. LORENCEZ:** Yes. We understand your question. Carlos Lorencez, for the record.

The buildings for the Western Waste Management Facility are built to the National Building Code, so they don't need to be seismically qualified. We have analyzed the effect of a seismic event on the buildings. It has been documented in the safety report. We have looked at it again after the Fukushima accident, and we have concluded that there is no need to seismically qualify them.

Even if the building were to collapse on the dry storage containers, the releases to the public will be minimal.

**MEMBER SOLIMAN:** (No microphone) the public, but how about the worker in the facility?

**MR. LORENCEZ:** Carlos Lorencez, for the record.

The doses -- the doses estimated for an accident like that are in the order of microsieverts, so it's also safe for the worker.

**THE PRESIDENT:** What about the dry fuel

facility itself? Are they not -- in the case of earthquake, are they not going to -- are they going to withstand and not break up, if you like?

**MS TADROS:** So Haidy Tadros, for the record.

We have our colleague who works in the field, Mr. Chris Cole, who can answer the question from a safety perspective.

**MR. COLE:** Christopher Cole, for the record. I'm the Director of the Engineering, Design and Assessment Division.

All the buildings on site are built to the National Building Code, and within the National Building Code there is a requirement for seismic capability, so the buildings will withstand earthquakes to the National Building Code standard. They're not qualified to design base earthquakes or review level earthquakes as we apply to nuclear power plants, but they are seismically qualified to the National Building Code.

**THE PRESIDENT:** So the fuel storage doesn't require anything addition -- in addition.

**MR. COLE:** Christopher Cole, for the record.

It's built to industry standard, which is within the National Building Code. So there's no

additional requirement. Additional requirements are imposed through CSA Standard 289, which is for nuclear power plants only.

**MEMBER SOLIMAN:** (No microphone) seismic margin assessment.

**MR. COLE:** Christopher Cole, for the record.

The seismic margin assessment is applied again to nuclear power plants to see the capability of the building to withstand earthquakes beyond the design basis earthquake. Within the Building Code, there is a minimum requirement for seismic capability and all the buildings at OPG's site are built to that Building Code standard.

So we don't do an assessment for beyond that capability. It's included into the Code.

**THE PRESIDENT:** Ms Velshi?

**MEMBER VELSHI:** Some quick editing comments, suggestions.

So OPG, in your CMD page 37, Section 2.1, Nuclear Waste Management, in the last paragraph -- actually, it's the last sentence -- you don't talk about receiving waste from Bruce Power there, low and intermediate level waste, or am I missing something?

I see, "Priority will be given to management of low and intermediate level waste from

Pickering and Darlington" and then just used fuel from Bruce Power.

It's page 37 of OPG's CMD, H -- CMD 17-H3.1. Page 37, Section 2.1, last sentence.

**MS MORTON:** Lise Morton, for the record.

I do see that now. I apologize.

**MEMBER VELSHI:** No. Okay.

**MS MORTON:** You're correct. That appears to just be an error. So we certainly do manage other waste from Bruce.

**MEMBER VELSHI:** I just wanted to draw your attention to that.

And then another quick one for staff. In the licence itself, Appendix A -- this is when we were looking at the change you have made -- I think it would be helpful to put a title to that appendix on that page. That's just the limit of activities for import and export.

Thank you.

**MEMBER SOLIMAN:** On page 32 -- okay. On page 32, the Ontario Power Generation CMD, the second paragraph from the bottom, you are requesting -- OPG is requesting the renewal of the operating licence for WWMF until May 31st, 2017. It's supposed to be 2027.

**MS MORTON:** Lise Morton, for the record.

You're correct, and I apologize. Despite

our many reviews, we did not pick up on that.

**MEMBER SOLIMAN:** On page 89, there is subsection 2.9.2.3. This section is in the wrong place because we are talking there about Section 3. As a matter of fact, page 82, there is Section 3.9.2, and the page 89 -- at page 100 is 3.9.3, so in this case, either this page doesn't belong to this section or the section number is wrong.

**MS MORTON:** Lise Morton, for the record.

The section number appears to simply be in error. It should be 3.9.2.3, I believe. I can confirm.

--- Short pause

**MEMBER SOLIMAN:** I think the way I read it, it's supposed to be no section number there.

**MS MORTON:** Correct. Lise Morton, for the record.

That is correct.

**THE PRESIDENT:** Any other typos, corrections, anything like that? We may as well get it out of the system. We can see how attentively we pay attention to all this.

**MEMBER MCEWAN:** Can I just ask if there's a typo in a table? And if there's not, if I missed why it's not, I apologize, but I'd like to know why.

Table -- slide 32 of the staff

presentation.

So under Total Stored Activities in 2008, the figure of 28,000 is an order of magnitude more than anything else. Is that a real value or is it a typo? And if it is a real value, why, and what happened to it?

**MS TADROS:** Thank you for the question, Dr. McEwan.

Yes, it is a real value, and I'll pass it to my colleague, Shirley Oue, to explain the spike.

**MS OUE:** Shirley Oue, for the record.

Yes. So for 2008 in the table presented here on slide 32, the total stored activity in terabecquerels is 28,242. It is correctly entered.

The spike in 2008 and 2009, the significant increase was due to low level waste volumes and activity is related to the Bruce A refurbishment waste that was received during those years.

**MEMBER MCEWAN:** So that is annual storage, not cumulative storage.

**MS OUE:** That would be the annual storage for that year, 2008.

**MS MORTON:** Lise Morton, for the record.

If I could just clarify, though, that 28,242 includes intermediate level waste as well, so that includes the retube waste components from Bruce Units 1 and

2.

**MEMBER SOLIMAN:** Table 7, page 46, 2016, Q1 and Q2, the first three number does not agree with OPG numbers. The 164 is an OPG 170, the 162 in OPG is 168 --

**THE PRESIDENT:** Sorry. You're going too fast for us.

What -- where are you?

**MEMBER SOLIMAN:** Okay. This is Table 7, page 46 in staff report.

**THE PRESIDENT:** Staff report.

**MEMBER SOLIMAN:** Yeah. Two thousand (2000) is the last row, 2016, Q1 and Q2. The first number in that row is 164 compared to 170 on OPG. Second number is 162 compared to 168. The third number is minor, 601 compared to six.

**MS TADROS:** Haidy Tadros, for the record.

Thank you for pointing that out, sir.

We'll verify the numbers. I don't know if it's a question of because we only looked at Q1 and Q2 versus a different parameter that OPG had looked at, but we'll verify the numbers and ensure that they're corrected.

**MEMBER DEMETER:** So that you can help with -- help me understand, on page 33 of -- I want to make sure I'm on the right package here. I think it's OPG's submission. There's three bullets, and the third bullet

talks about, "OPG will need to construct four additional storage buildings outside the current licence area, either in construction lay-down area or wood lot", which are quite separated from each other. Just -- and then a particular assessment has been conducted.

Just from an approval point of view, it's not telling me what I'm approving because it's either/or. And if, from staff's point of view, it doesn't make a difference where it's located, that's okay, but it's -- you know, usually when it's going to come before us to approve it, we've got the layout. This is saying it's either here or here, and I just need some assurance that it doesn't really matter whether -- which location that -- those particular four buildings will be.

**MS MORTON:** Lise Morton, for the record.

So both locations were included in the PEA, and so both locations -- we're seeking approval for both locations. And currently, our plan is to construct first on the construction lay-down area because it already is a previously-disturbed area, as you can see from the photographs. But certainly for future expansion, the option of building on the wood lot is required.

**MEMBER DEMETER:** So what I've heard, both have been considered and analyzed from the health and safety and environmental point of view.

Thank you.

**MEMBER VELSHI:** Do you store liquid in liquid form or do you solidify it?

**MS MORTON:** Lise Morton, for the record.

There is a very small volume of liquid, of waste oil, that is stored within one of the low level storage buildings within a dyked area, and we do incinerate that oil. Other liquids that might be generated at the stations are solidified before they're shipped.

**MEMBER MCEWAN:** So we're on questions, just general questions?

So page 51 of the staff CMD under Proposed Improvements, the second bullet, the introduction of -- or the adoption of a wireless infrastructure for radiation protection equipment, what happens when the network goes down, which it will?

**MR. SCHWARTZ:** Ephraim Schwartz, for the record.

That will be part of our design consideration to take a look at redundancies for the network.

**MEMBER MCEWAN:** And from staff's point of view, how would you be persuaded that there was a fail-safe backup?

**MS MORTON:** Lise Morton, for the record.

I apologize. Can I just add to that?

I just want to point out that -- so our -- we are evaluating the technologies first and developing a plan. Correct.

**MS TADROS:** Haidy Tadros, for the record.

Just to point out, these are proposed improvements and we will look at all of the different systems that need to come into place to make them implementable. I will turn it to our colleagues in radiation protection, Mr. Salah Djeffal, to answer the question.

**MR. DJEFFAL:** Salah Djeffal, for the record.

The -- OPG is evaluating the possibility to use personal alarming dosimeter with remote capability. These detectors or these dosimeters are not used for the assessment of what we call the regulatory dose, which is in addition to the TLD. So the TLDs will be used every time, and these dosimeters are only for work planning and for the control of the dose during the shift for the job activity.

But in any case, when they will introduce them, they will do the study and they will submit them to the CNSC and we'll review and we'll look at the -- any deficiencies that may have arisen from the project.

**MEMBER MCEWAN:** So perhaps again a change

in the use of English because the way it's written made me think it was the -- it was sampling around the site.

**MR. SCHWARTZ:** Ephraim Schwartz, for the record.

This would be for radiation protection equipment that is used by workers. Typically, we're talking about the whole body contamination monitors that would send signals as well as other ambient monitors.

**MEMBER MCEWAN:** I understand that, but the text is not specific.

**MR. SCHWARTZ:** Thank you for that.

**MS TADROS:** We will -- Haidy Tadros, for the record.

We will clarify the text to ensure that it's clear.

**THE PRESIDENT:** This is a good point to say I really like the format of the CMD. It gives a history and the proposed improvement, which I assume now you will -- this is a commitment of OPG to do those improvements and you will now report on progress against those commitment in your ROR.

Is that the way this will evolve? Because in practically every section, you have proposed improvements, and that's not a bad template for you to keep monitoring and reporting as to how they're doing.

**MS TADROS:** So Haidy Tadros, for the record.

Very good question, sir. With regards to proposed improvements, and we do appreciate that it's always good to look forward in terms of what better mechanisms, what better programs, what better measures and controls can be put in place, so as they currently stand, they are not mandatory. Any proposed improvements to the systems, processes, controls that make their way into OPG's processes and procedures and once CNSC staff have reviewed the processes and procedures and they become part of the licensing basis, then yes, they will become regulatory requirements that we will look to to conduct and verify compliance verification activities on and they will become part of the licensing basis.

As they stand right now, these are proposed improvements that, once implemented within OPG's framework, we can then roll into our regulatory oversight regime.

**THE PRESIDENT:** I understand they're not mandatory, and I'm not really concerned with this. They are proposed improvements which CNSC kind of accepted and agreed with. Presumably, if somebody changed their mind, there will be a story behind why we changed our mind that will be reported on; right?

**MS TADROS:** Haidy Tadros, for the record.

You are correct, sir. So once the proposed improvements have been looked at and proposed to CNSC staff, we will look at that, we will review that and, again, the regulatory oversight reports are a mechanism by which we can update the Commission on what regulatory focus or improvements are being conducted at the facility.

**THE PRESIDENT:** Thank you.

Questions?

**MEMBER VELSHI:** So around contingency planning, particularly -- and it was tied in with aging management and end of life. I mean, do any of these facilities have a specific date by which they need to be replaced?

I just wondered what your contingency planning looks like if some of your assumptions don't come through.

**MR. WITZKE:** Dave Witzke, for the record.

We have extensive aging management plans in place for all of our system structures and components at the Western Waste Management Facility, and we are continually evaluating their fitness to continue for duty. Contingency plans would be enacted in -- and prepared if we noticed that a particular structure or component was nearing the end of its life or beyond economic repair.

**MEMBER VELSHI:** So hypothetical case, and you've made certain assumptions of when the DGR for low and intermediate level waste is expected to be in service and then you find out it may be, you know, 20 years later or whatever it may be. At what point do you then say, okay, these facilities will need to get replaced, or is that part of your aging management plan each time you look at it and you go, "Yeah, it's got life for another 10 years" or whatever?

**MS MORTON:** Lise Morton, for the record.

So yeah, there's a finite design life to the -- to the structures and components, but then, as you, I'm sure, understand, you can obviously extend the service life based on certain inspections and aging management programs.

So there would become a time, though, if the delay gets to be too long, where, absolutely, we would have to retrieve waste from certain structures and re-emplace them either into a new structure or potentially even over-pack waste into new containers.

So that's part of, again, monitoring that through the aging management plan, and that's an ongoing annual thing. But the day could come, absolutely, where we need to be rebuild a structure or over-pack a container.

**MEMBER VELSHI:** And on a related topic,

and I think we did have an intervention on this on RWOS 1 or maybe on the Quadricells or the tile holes, are there plans, at least in this upcoming licensing period to do any major work or decommission them or anything like that?

**MS MORTON:** Lise Morton for the record.

So with respect to our Rad Waste Operation Site 1 specifically, so we did remove the vast majority of that waste many years ago. There is a very small volume that remains and I apologize, I'm estimating it, if I remember it was around 300 or 500 m<sup>3</sup>?

**MR. WITZKE:** Not that much.

**MS MORTON:** So there is a plan to retrieve that remaining waste and it likely would be in the next licensing period. Is it, Dave? I'm going to let Dave Witzke answer this.

**MR. WITZKE:** Dave Witzke for the record.

So currently we have a project in the planning stages to start around 2019 to remove that waste.

**THE PRESIDENT:** So I have a related question to this. Right now we have heard that you have money set aside of the order of \$17.96 billion to do the job of remediation and decommissioning. What's Plan B when none of the assumptions -- do you have a contingency plan that none of the assumptions you made like DGR and you have to stay onsite for many, many years, would that fund have

to be augmented on an ongoing basis? Is it going to be more expensive or less expensive?

**MR. WEBSTER:** Allan Webster for the record.

At this point in time I don't think we know whether it would be more expensive or less expensive. We do know if we have a fundamental change in our assumptions we have to go back and look, we have to go back and relook and change those assumptions and look at what the cost impacts of those are.

**THE PRESIDENT:** And you're going to do this periodically as you have to do a new preliminary decommissioning every five years. There is one coming up I assume, 2018?

**MR. LEBLANC:** In early fall of this year.

**THE PRESIDENT:** Early fall.

**MR. WEBSTER:** Correct. And we also just do it if a big assumption like that one changes in between because we have to know we have enough money.

**THE PRESIDENT:** Thank you.

Questions, Dr. Demeter?

**MEMBER DEMETER:** This is just some feedback for OPG. On page 45 you talk about event reporting at the bottom and you say:

"A listing of OPG's Waste Management

Facilities' reportable events from 2010 to the present is posted on OPG's public website, www.opg.com."

I tried my darndest to find it and it's buried in various documents. Like there isn't a reportable event by site, so I used staff's Appendix F, which was excellent, because it actually -- but that's what I -- it would be nice if you are going to give a reference, make it very specific so that people can find it or say what documents it's in, because I honestly at the end of the time I didn't find it or I found buried bits of it in various other annual or other documents. But this makes it sound like there is an actual document and I couldn't find it. So that's just feedback. It would be reasonable.

**MS MORTON:** Lise Morton for the record.

And I believe that was in one of the interventions, so we will take a look at it as well in terms of how that is posted on the website.

**THE PRESIDENT:** Dr. McEwan...?

**MEMBER MCEWAN:** This is just again use of English, so forgive me. Page 73.

**MEMBER MCEWAN:** Where is it?

**THE PRESIDENT:** Sorry, the staff CMD. If you look at the discussion 3.11.2, the opening sentence reads, unfortunately:

"OPG has a waste management program in place at the [Western Waste Management Facility]."

I think the answer to that is, "Good". I know what you're saying and the rest, but I think if you could make it a little more specific, that you actually relate it to the onsite generation of waste and it's part of a planned waste reduction facility, it would just help reading -- somebody reading it a little.

**MS GLENN:** We will consider that going forward. Thank you.

**MEMBER VELSHI:** A question for staff around the licence. Maybe I'm drawing a blank because it's so late in the day, but remind me, the Western Waste Management Facility cannot accept decommissioning waste; is that correct?

**MS GLENN:** Karine Glenn for the record.

Decommissioning waste is not a type of waste. Wastes are classified in Canada as low-level, intermediate- or high-level waste or uranium mines and mills -- uranium tailings, excuse me. So where that waste was generated or how it was generated is irrelevant to the Type 2 waste classification. Currently, the waste from the refurbishment from Darlington is going to the Western Waste Management Facility and waste from decommissioning could

also be stored -- if it was low- or intermediate-level waste could be stored at Western. There is nothing prohibiting that waste from being stored there.

**MEMBER VELSHI:** So, as I said, I'm drawing a blank, but I do remember us having a discussion at a hearing about operation waste and that the Western Waste Management Facility could only accept operational waste, which would include refurbishment waste but not decommissioning waste. Does that -- it's on the DGR, not on the W -- okay, thank you.

**MS MORTON:** Lise Morton for the record.

So that was correct with respect to the DGR, but I do want to echo what Ms Glenn has said. She is correct in that the type of waste, so technically we could accept decommissioning waste at the Western Waste Management Facility right now, but as per our PDP, you know, decommissioning is a plan for many decades still -- sorry, our Preliminary Decommissioning Plan.

**MEMBER MCEWAN:** Again, in the environmental assessment, pages 41 and 42, in the paragraph talking about stormwater quality it would have been really helpful to have had a diagram related to that. It's very difficult to flip backwards and forwards with the limited maps that we have to understand what that means. So that would have been helpful.

And on page 42, the middle bullet of the three related to TSS values. I mean that's a sort of a throwaway statement. Because it's frozen part of the year, the effects on environmental receptors are limited. It would have been again nice to just have a little more background to that statement and a justification of why that was true. Is it because it peaks occasionally or because there isn't a continuous exposure?

--- Pause

**MR. RINKER:** Mike Rinker for the record.

I'm just making sure I understand and reread this bullet. So when we look at for example the effects on a certain species at a location, there is generally a difference in the magnitude and duration of the stressor and how that would cause an effect. And in this case the argument is that because they're intermittent stressors on the environmental receptors and they can usually recover and over a month or two be a very healthy population, then another instance, as opposed to a rapid periodic annual frequent stress.

**MEMBER MCEWAN:** So repeated intermittent stress is recoverable and doesn't leave some residual damage to the population, which slowly becomes cumulative with multiple exposures?

**MR. RINKER:** Mike Rinker for the record.

So it's hard to be precise on a vast generalization like that, but something like TSS for example, these are suspended solids, they do wash out. It becomes a pristine environment immediately after a rainfall event.

**MEMBER VELSHI:** So on the same theme, something that would have been helpful -- and this is both staff and OPG -- is what does the next 10 years look like, particularly when it comes to inventory? I know you talked about your system planning and we know -- and we just picked one year when there was refurbishment and, you know, everything was so different than other years, and so I went through this and I just couldn't get a sense of how much is the volume really going to be changing if all -- whatever your projections are. And maybe it was there and I just missed it, but that forward-looking thing just didn't come through. So I think that would be helpful because it changes the whole risk structure as well. And same with the buildings, you said, you know, these are authorized, these are additional ones that they have asked for, but how does that compare to what they have in place today even from a volume capacity perspective? That piece was missing, so I didn't get a sense of the scope of work that's being contemplated and I think that would have been very helpful. You guys may want to comment on it.

**MS MORTON:** Lise Morton for the record.

So thank you for that feedback, that's certainly helpful and we can try to incorporate or perhaps not to suggest, but the annual report could be something where we could provide that kind of information in terms of how has the volume in stored quantity changed over the last year or something like that. That's one option.

**THE PRESIDENT:** You may as well, because the Joint Convention is coming very soon which we will have to present the Canada total holdings and I was hoping by now that you were providing IAEA information online and I thought at one time this information online is some of the breakdown of the waste and the type of waste. Am I right or not? Don't we have to report -- don't you have to report to the IAEA on all waste holdings?

**MS GLENN:** Karine Glenn for the record.

As part of the Joint Convention Report that Canada produces we do report on all of the waste inventories at all of the different waste generators and that will be submitted to the IAEA in October of this year, so October 2017. It will be available for the public when we table it at the review meeting in May of 2018.

**THE PRESIDENT:** I thought you had to also do the accountancy; right?

**MS GLENN:** So the inventory is managed by

Natural Resources Canada, the Nuclear Waste Bureau and they are assembling the inventory. We have not received it yet I believe.

**THE PRESIDENT:** Again, correct me if I'm wrong, but I thought we have a whole shop that produces a report on reconciling all the stuff that comes from nuclear power plant processing, et cetera, et cetera. What am I missing?

**MS GLENN:** So I think, sir, you're probably referring to safeguards and that is only a very small subset of material that falls under international --

**THE PRESIDENT:** Okay. But even that material you should have precise down to the microgram on that stuff. No?

**MR. JAMMAL:** It's Ramzi Jammal for the record.

You're mentioning safeguards, sir. The safeguard elements associated with the safeguard is not public information. So we can present at the Joint Convention the production of spent fuel. I would report the safeguard quantities associated with it. That is protected and it is not public information. So it is not going to be in the report. You are going to know how many bundles we have, but it's not going to be what safeguard element it is, what is the total inventory, but that is

being reported to the IAEA in a protected manner.

**THE PRESIDENT:** Okay. Thank you.

Question?

So I have just I think a couple of them. Somewhere there was a statement that there was 40 years of shipments of material to the waste facility with no accident. There was no accident that caused emissions or no accident period?

**MS MORTON:** Lise Morton for the record.

So there were no accidents that have caused release or injury, but yes, there have been some minor vehicle accidents and in our history we have only had one what we would call a preventable accident, which means that our driver could have prevented the accident. We have only had one of those. But again, we have had I believe the total -- I apologize, I would have to go back to my records, but over the 40 years it has been something like seven or eight -- Mr. Darren Howe tells me seven collisions or minor accidents. But again, none of them have resulted in any kind of release to the public or injury of personnel.

**THE PRESIDENT:** So are the drivers specifically trained for this particular thing or are they --

**MR. HOWE:** Darren Howe for the record.

The drivers are extensively trained. Before we even accept a driver into the program, they have to have a clean driving record, excellent performance before they get into the program. It takes up to 12 months to actually train one of our drivers. They do take advanced anti-collision and skid control training with highway tractors, similar to what you would maybe see with people with cars and trucks, but they do it actually with highway tractors. So they have extensive training controlling the unit, as well as load securement, along with radiation protection training, Class 7 dangerous goods training and so forth. So they do go through an extensive amount of training and they are evaluated by a third party when they are coming into the program and then every two years after that.

**THE PRESIDENT:** Thank you.

The last ROR, somebody mentioned, I think staff mentioned, was for 2015 I believe, right, or the 2016 year to come?

**MS TADROS:** That is correct, sir. So the first waste management ROR that staff put together we presented in December of 2016 and it covered the performance of the 2015 year.

**THE PRESIDENT:** So when is the next one?

**MS TADROS:** So we are in the process of

looking, because there were a lot of comments and a lot of feedback in consideration when we presented both the Nuclear Substance Processing Regulatory Oversight Report as well as the Waste Management Regulatory Oversight Report and we are looking at efficiencies.

The next one we are planning to present to the Commission will be in 2018. That will cover the 2017 year. So next year as part of the Nuclear Power Plant Regulatory Oversight Report and we will be presenting that in 2018 to cover the 2017 year.

**THE PRESIDENT:** My last question is the IEMP data, the 2016, when is that available?

**MS TADROS:** So I will ask Ms Kiza Sauvé for her expertise on the IEMP.

**MS SAUVÉ:** Kiza Sauvé. I am the Director of the Environmental Compliance and Laboratory Services Division.

So the 2016 sampling campaign at and around the Bruce Nuclear Facility was done in kind of mid-fall of this year and so the results actually were just received from our lab back to the Environmental Protection staff. And so we have done our cursory review of the results and the dashboard, so the public-friendly dashboard on our website should be up in the next month or so.

**THE PRESIDENT:** So my final plea, in terms

of the maps, you have some nice maps, particularly on the environmental assessment, but I can't read them. So on page 24, 26, there are a couple of other ones. Please, it really breaks the flow of the argument when we cannot read what you are trying to convey to us.

Anything else?

Okay, OPG, you have the final word here.

**MS MORTON:** Lise Morton for the record. And for the interest of time I will keep it short.

First, I just wanted to reiterate our commitments to Saugeen Ojibway Nation, Historic Saugeen Métis and Métis Nation of Ontario, and we appreciate and thank them for their positive acknowledgement of our engagement today. But we also recognize that our work is not done and, as some of them indicated, these are complex issues and they require ongoing engagement and dialogue and we certainly are committed to continuing to do that.

And further to that, you know, we commit to the inclusion of valued ecosystem components in as timely a manner as possible through engagement and consultation. Nonetheless, the existing program has demonstrated safety and no environmental impact and there is no impediment to granting a licence.

And again, just final closing comments. We continue to operate these facilities safely and safety

will always be our top priority, as I said earlier in the day. We are proud of our safety record and we continue to focus on our Human Performance Program and ensuring that we maintain the healthy safety nuclear culture that we indicated.

Waste minimization will continue to be a focus for us as well over this next licensing period and all of our programs, whether it's environmental, rad protection, safety and others, we approach every one of those programs from a perspective of continuous improvement and so a lot of the feedback today is very valuable for us and we can certainly implement some of that into our programs.

So we thank you for your time today and, again, thank you for your time.

**THE PRESIDENT:** Thank you.

Marc...?

**MR. LEBLANC:** Yes. So with respect to this matter, the Commission will confer with regards to the information that it has considered today and then determine if further information is needed or if the Commission is ready to proceed with a decision. We will advise accordingly.

So this concludes the hearing on the application by OPG for the renewal of the licence for the

Western Waste Management Facility.

The Commission will resume at 8:30 tomorrow morning with the public hearing on OPG's application for the renewal of the licence for the Pickering Waste Management Facility.

Thank you very much for your attendance and participation. We apologize again for the mistiming, that's my bad, so I apologize for this and we will see you tomorrow morning.

--- Whereupon the hearing adjourned at 9:33 p.m.,  
to resume on Thursday, April 13, 2017  
at 8:30 a.m. / L'audience est ajournée à  
21 h 33, pour reprendre le jeudi 13 avril  
2017 à 8 h 30