DARLINGTON NEW NUCLEAR POWER PLANT PROJECT

JOINT REVIEW PANEL

PROJET DE NOUVELLE CENTRALE NUCLÉAIRE DE DARLINGTON

LA COMMISSION D'EXAMEN CONJOINT

HEARING HELD AT

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Volume 14
REVISED

JOINT REVIEW PANEL

Mr. Alan Graham
Ms. Jocelyne Beaudet
Mr. Ken Pereira

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ERRATA

Transcript :

Page 90, line 10

This is confirmed by J. Robert Janes, author of *Geology and the New Global Tectonic* who noted that these shale formations can increase.

Should have read:

This is confirmed by J. Robert Janes, author of *Geology and the New Global Tectonic* who noted that these shale formations can creep.

Page 146, line 24

effluence that would go into the sewer system.

Should have read:

effluents that would go into the sewer system.

Page 147, lines 2 and 8

I believe you're asking if we will discharge radioactive effluence to the sewage system?

MEMBER BEAUDET: Yes, that's correct.

MS. SWAMI: The process that we have for new nuclear is that we would treat our effluence before release to Lake Ontario through our condenser cooling water system.

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MEMBER BEAUDET: Yes, that's correct.

MS. SWAMI: The process that we have for new nuclear is that we would treat our effluents before release to Lake Ontario through our condenser cooling water system.

Page 221, line 25

I would like to point out that the consultant for OPG has actually used a fair bit of state of the art models for the fast-fill model that is away from the diffuser and from the mixing joint.

Should have read:

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that is away from the diffuser and from the mixing joint.

In fact, that's not the major issue here. The question that scares me is the resolution. The resolution of -- the smallest resolution is around 90 metres in the model.

Most of these models predict controversial (ph) kind of output. So what the predictions are a little bit controversial (ph). So that's already been calculated in this.

With higher resolution, obviously, we would expect our model to perform well mainly because in any of this lake or river or any of the surface waters, we do know that the models represent some processes quite well, and those are the processes that in a great sense gives us a reasonable confidence.

And in this diffuser and in that type of situation, we do need much finer resolution than what it is right now.

Another reason for that is the diffuser, a surface model with a more jet type of model, jet long type of model, which is -- which gives conservative estimates but it was incorporated in the largest scale model.

Should have read:

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that is away from the diffuser and from the mixing zone.

In fact, that's not the major issue here. The question that exists is the resolution. The resolution of -- the smallest resolution is around 90 metres in the model.

Most of these models predict conservative kind of output. So what the predictions are, are a little bit conservative. So that's already been calculated in this.

With higher resolution, obviously, we would expect the model to perform well mainly because in any of this lake or river or any of the surface waters, we do know that the models represent some processes quite well, and those are the processes that in a (inaudible) sense gives us a reasonable confidence.

And in this diffuser/intake type of situations, we do need much finer resolution than what it is right now.

Another reason for that is the diffuser itself is modeled with a model, jet plume type of model, which gives conservative estimates but it was incorporated in the larger scale model.

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And some of the uncertainties that can be really taken care of probably like metal reinforcing. If it closed by (inaudible) you already are provided a reasonable and logical forcing.

And then if the model can take care of the ice conditions, then that’s another thing that you have already taken care of.

So these are some of the things that we registered but by incorporating those, we would have slightly or much better predictions than what we have right now.

I hope -- did I answer the question or?

MR. LEONARDELI: Sandro Leonardeli, for the record.

Thank you, Ram. If there’s a follow-up for Ram? No. Okay.

Should have read:

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And some of the uncertainties that can be really taken care of probably like meteorological forcing- if it is close by then. If it closed by then you already have provided a reasonable and meteorological forcing.

And then if the model can take care of the ice conditions, then that’s another thing that you have already taken care of.

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that we suggested that by incorporating those, we would have slightly or much better predictions than what we have right now.

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MR. LEONARDELI: Sandro Leonardeli, for the record.

Thank you, Ram. If there's a follow-up for Ram? No. Okay.

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There is an assumption that a whole road needs to exist.

Should have read:

There is an assumption that a Holt Road needs to exist.

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Courtice, Ontario

--- Upon commencing at 9:01 a.m. /
L'audience débute à 9h01

--- OPENING REMARKS:

MS. McGEE: Good morning. Mon nom est Kelly McGee.

Welcome to day 14 of the public hearing of the Joint Review Panel for the Darlington New Nuclear Power Plant Project.

Je suis la co-gestionnaire de la Commission d'examen conjoint du Projet de nouvelle centrale nucléaire de Darlington.

Secretariat staff is available at the back of the room. Please speak with Julie Bouchard if you are scheduled to make a presentation at this session, if you are a registered intervenor and want the permission of the chair to ask a question, or if you were not previously registered and would now like an opportunity to speak.

Any request to address the panel must be discussed with panel Secretariat staff first. Opportunities for either questions or a brief statement at the end of a session will be

provided, time permitting.

We have simultaneous translation. The headsets are available at the back of the room. English is on channel 1. La version française est au poste 2.

A written transcript of these proceedings will reflect the language of the presenter. Please identify yourself each time you speak in order for the transcripts to be as accurate as possible.

Written transcripts are stored on the Canadian Environmental Assessment Agency website for this project. The live webcast can be accessed through a link on the Canadian Nuclear Safety Commission site and archived webcasts and audio files are also available on this site.

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

One final notice: at a previous JRP session last week, we announced preliminary matters concerning the opportunity to make final written comments.

The full details of the procedures and requirements for final written comments will be

posted on the Canadian Environmental Assessment Agency website later today.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much, Kelly, and good morning everyone.

Welcome to everyone joining us through here in person, through the live audio link or on the internet.

My name is Alan Graham and I am the Chairman of the Joint Review Panel. The other panel members with me here today are Madam Jocelyne Beaudet on my right and Mr. Ken Pereira on my left.

The next bit of the agenda that we will go through, I will ask Mr. Saumure to review the undertakings that were due today.

Just for information, we have had 67 undertakings so far of which a lot of them have been addressed. And the ones that are due today are -- will be addressed by Mr. Saumure, our legal counsel.

Denis?

--- UNDERTAKING STATUS:

MR. SAUMURE: Thank you, Mr. Chairman.

I would just like to start with

Undertaking number 15, which was assigned to OPG and it was to provide visual impact assessment of hybrid or mechanical draft cooling towers with plume abatement.

This undertaking was due to be completed by April 6th. We have received the documents so the undertaking has been completed and the documents will be posted as soon as possible on the registry.

With regard to Undertaking 38 and 39, they were assigned to Greenpeace. They were to be completed April 4th.

The Secretariat has received two documents and are following up with Mr. Stensil for the other two documents. The two Gibson reports will be posted on the registry as soon as possible.

Undertaking number 46 assigned to Sharon Howarth to provide references for information pertaining to provincial energy policies. It was due April 4th. The Secretariat is following up on this undertaking.

I will now turn to Undertaking number 50 and number 55 which were assigned to OPG. The first one is to provide an explanation on how action levels and reporting levels are related to

limits and standards. The second undertaking, number 55, is to provide information on the success rates for certification training programs.

CHAIRPERSON GRAHAM: OPG, I believe you want to respond to those this morning; so please proceed.

MS. SWAMI: Laurie Swami.

We calculate -- in response to the question, we calculate a derived release limit based on the thousand microsieverts per year public dose limit.

We then calculate action levels that are based on 2 microsieverts per week for air and 8 microsieverts per month for water. Those action levels, if they were exceeded, we would report to the CNSC.

We also calculate and -- what we call an investigation limit, an internal investigation limit, and this is based on a review of the radioactive releases over a period of time and we look for a high end of a normal release rate to set that limit and we use that to investigate internally if there is any issues with our environmental monitoring program or with an increase in a release, and we investigate those and

we report those internally.

CHAIRPERSON GRAHAM: Thank you very much.

Mr. Saumure? I'm sorry, that's just the first one. Okay. Now, the second one.

MS. SWAMI: The second undertaking was with respect to authorized staff training programs.

A few days ago, I described the certification process that our staff goes through and just to refresh that, it is an intensive multi-year program that OPG selects candidates to enter into the program.

It is -- the selection of the candidates, as I mentioned is very thorough, but it also requires approval of the senior management at the site before candidates are fully put through that program.

And the question specifically was with respect to the completion rate and the success rate of that program. At Darlington, approximately 70 percent of those who are first admitted to the program are certified.

And I will just mention that personnel who may have difficulty with the material

or the program can self-select to withdraw from the certification process. And as a result, not all that go through the program actually go into the final testing program.

And those that do go through the certification exam process, our historical or our example of 2009, the Darlington pass rate was 93 percent for that program.

Once certified, the staff then return regularly to classroom and simulator training and they go through a formal re-qualification every five years. And 97 percent of the certified staff are successful on re-qualification.

CHAIRPERSON GRAHAM: Thank you very much, Ms. Swami.

Mr. Saumure?

MR. SAUMURE: Thank you, Mr. Chairman.

I'm now turning to Undertaking number 59 which was assigned to CNSC and it is to provide information in co-ordination with Health Canada and the Public Health Agency on cancer incidence, causes in Canada and cross-reference to areas with nuclear activities.

CHAIRPERSON GRAHAM: Mr. Howden?

MR. HOWDEN: Thank you, Barclay Howden speaking.

For number 59, we're continuing to work with Health Canada on that one and we won't be ready today, but it will be ready for Thursday, April the 7th.

I'd also like to comment that one of our other undertakings, number 51, which didn't have a date, number 51, the comparison of the standards, will be ready on April 7th as well.

CHAIRPERSON GRAHAM: Thank you very much.

Mr. Saumure?

MR. SAUMURE: Thank you, Mr. Chairman.

That completes the list of the undertakings for today.

CHAIRPERSON GRAHAM: Thank you very much.

Now we'll move into the first scheduled presentation of today, which is by Ms. Pat Pingle, and it's PMD 11-P1.24. Ms. Pingle, the floor is yours and welcome.

--- PRESENTATION BY MS. PINGLE:

MS. PINGLE: Thank you. To the distinguished Joint Review Panel, ladies and gentlemen, thank you for the opportunity to speak in support of the Darlington new build.

My family --

CHAIRPERSON GRAHAM: Ms. Pingle, if you could just move a little closer to the mike so they can pick it up, please.

MS. PINGLE: Okay. Thank you.

My family have resided in Clarington for many generations. I am a retired nurse, past electric hydro commissioner, ward councillor and a member of the OPG Site Committee.

As a member of the Site Committee I sit with neighbours, representatives of Darlington Park, teachers, municipal and OPG staff. At this Committee, we tour new facilities and are kept updated on environmental issues; participate in workshops such as the Darlington refurbishment.

We were active participants in the environmental studies for this project and have had input on all aspects of the environment. Other large corporations have used this model to establish their own committees to enhance public awareness and trust.

Safety -- safety is a priority at OPG. Open communications to the community have established trust and confidence. Appreciation and recognition is shown to the staff for being safety aware.

Security. The site is well-protected with trained personnel at all times. Fire prevention is part of the on-site operations.

The fire department equipment here is state of the art.

OPG works in partnership with the Clarington Fire Department. They train their staff together. OPG has a special apparatus that smothers fires with foam. This is available for Clarington Fire Department. If there was a fire on the 401, we could use this equipment. This is a great cost saving for the taxpayers.

OPG has a training area for firefighters -- their firefighters and Clarington's. This is situated in Wesleyville which is just down the road here. I have never been there. However, I understand it is a model of the OPG site in Clarington.

Clarington consists of many levels of municipalities inside it and they have it there

when the fire chief goes down and they'll have like an actual little fire happen in Darlington and OPG and then one will be -- maybe in a scale in Courtice or whatever, and the fire chief is expected to react and he is marked accordingly to how he responds to these various fires.

Representatives from other countries have come here and still are coming here to see how this works because it's a great training aspect.

Environmental issues are totally respected here whether it's human, animal, floral, bird or reptiles. OPG monitors all their areas. There are more species, newer species, than ever before. They also control the invasive plant life.

I saw the site prior to construction at OPG, during and after. It is far better now than it ever was. I have only positive feelings about the construction and operations at OPG.

On the site, ponds were built for the aquatic life. They partnership with schools to build bird houses, bat houses, butterfly gardens and children's organizations come here to plant trees.

The waterfront trail which goes all through Lake Ontario runs through this site and it is used by hikers, cyclists and bird watchers. There's always somebody on the trail.

Another example of OPG's involvement with the community is their educational fun activities concerning nature that is free during the winter break. If you are not aware of it, I did bring a clipping from the paper that explains what the kids can do every day during winter break.

Soccer fields at the OPG site are well used and appreciated.

Community impact. OPG has already established trust in the community through their open communications. The staff are available for speaking engagements.

Residents are kept informed through public meetings, prompt response to questions and information available through the computer, phone, staff and an information centre at the mall.

OPG have received many awards from the municipality and the region. They've been corporation of the year. They've won CLOCA,

Central Lake Conservation Area, and Ducks Unlimited for their work in the community and the environment.

This project must proceed as quickly as possible. The time is right. Interest rates are low; workers skilled and non-skilled are available.

If we procrastinate with this we're going to lose all the students graduating from universities in nuclear science. They're going to go to other countries. Then are they going to want to return? And it's going to cost a lot more to entice them back again.

The project will help the community by supplying jobs, tourism and improving the retail and housing development. The end result is going to give us clean, safe, economical power.

I have experienced no negative impacts when OPG was being constructed.

In closing, I'm going to summarize an article that was published in the USA Today on March the 24th. This was written by two reporters; one was a conservationist and one was political.

On nuclear power plants, they both agree more must be built for two main reasons: 1)

cleaner and safer than coal power plants; 2) every kilowatt of power from nuclear power moves the country one step closer to energy independence from the often hostile Middle East.

There are 442 nuclear plants; 65 under construction. There's been three incidents; Three Mile Lake, Chernobyl and Japan. The reason being these are poor design, human error and earthquake.

This makes nuclear power one of the safest energies. There have only been three incidents in the history.

When there is an industrial disaster, an opportunity arises to improve all technology in all areas.

It's interesting to note that more people -- 33,000 -- have died in car accidents in the U.S. in 2009. That's more than have died because of nuclear power plants. Yet, we are not suspending car manufacturing or walking. I urge you to support the Darlington new build.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much for your presentation and the way the process goes now, I go to panel members who may

have some questions for you.

And the first panel member on my list this morning is going to be Mr. Pereira.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman.

And thank you for your very interesting and positive presentation on your perspectives on the new project.

One of the concerns as raised by many of the intervenors who have come before us so far is a concern about health impacts from the operation of nuclear generating stations in the region and many are concerned that any dose of radiation will manifest itself in cancers and other health effects.

You have said that you have lived in this area for -- your family's lived in this area for generations.

Are you aware of health concerns in the community or from your experience? You worked in the health field actually yourself; so you're probably well placed to make a comment on health impacts of this industry in your region.

MS. PINGLE: Yes, Pat Pingle.

I worked in the operating room for 30 years and, no, I did not see any increase compared to other hospitals.

I was active with the Ontario Nurses Association. I was legislative representative for Region 8 and consequently, you would hear if there was an increase of anything whatsoever. And we also -- of course, we have our magazines from nursing and you would do this research, but no, I really can say I did not.

But I will mention, just out of interest's sake, that nurses are usually observant on things that occur and Oshawa General Hospital, where I worked, was the first hospital that became aware of the results of anaesthetic inhalation on female staff in childbirth, miscarriages, et cetera, and that was brought forward 10 or 15 years before a research was done.

So I can assure you that I did not see any increases in my 30 years in the OR which -- that was the theory of taking it out.

MEMBER PEREIRA: Thank you very much. That is very valuable input.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you,

Mr. Pereira.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd like to look with you at one of the aspects you say it would be good for the betterment of the community.

And when you talk about tourism, you're probably aware that it was expected that maybe the workers that are coming to build the plant may compete for accommodation with tourism and with tourists who want to come here.

So I wanted to know exactly what you meant here and how you feel that they would be accommodated properly?

MS. PINGLE: Okay, Pat Pingle.

As far as the workers coming here to stay while they're building the project, that was a major, major asset when OPG was being built.

Many people opened their homes for boarders, et cetera. I would believe if I was working at the site, I would prefer to stay in a home as a boarder or a room as opposed to staying in a hotel, cost factor friendliness, et cetera.

And I think also I've seen what

OPG has done to their site with their waterfront trail and the bird watching. People come here for miles to see the birds, et cetera. And I believe that this is a tourist factor.

In fact, I did book to go on one of the tours they had here and this is a big thing. They want to come down to the Information Centre and understand and the staff are always available to give information. And I don't think -- I just can't see it would be a -- you know, a problem.

And there are so many inns in the area, bed and breakfast inns that that would be a trendy thing. And otherwise, I think a lot of people pass through, stop for a day and whatever. I do not see that being a problem. Maybe we'd have to build another hotel.

MEMBER BEAUDET: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet.

A question, what is a past elected -- you were a past elected Hydro Commissioner. Is that a -- that's an elected position. Could you explain that?

MS. PINGLE: Yes, before like it

used to be called Clarington Hydro and you would have four peer persons elected at large throughout Clarington that would sit on the Hydro Commission.

And now I believe Veridian has a Board. They call it a Board now. We called it Commissioners when I was on; so I still refer to that, and we did basically what the Board would do.

CHAIRPERSON GRAHAM: Okay. I understand now. It was -- in this area, that was the utility that delivered the electricity; is that ---

MS. PINGLE: Yes, they -- yes.

CHAIRPERSON GRAHAM: Okay. I follow that.

Just the only other point, and Mr. Pereira has pretty well already covered it, but we've had a tremendous amount of -- not a tremendous, but a lot of people have come here and voiced their concern about radiation and I believe we've even had nurses, the professionals that have come and said about child leukemia, leukemia, radiation exposure and pregnancies and so.

In your career as a nurse, you've not -- and you said that you hadn't experienced it, but you have nothing more to add than what you'd

given Mr. Pereira with regard to your observation as a registered nurse for more than 30 years.

On the front lines, you have not seen anything specific?

MS. PINGLE: No, and I think that -- the one thing I would comment on when -- is we do a lot of research on, like, cancer incidents, et cetera. I would like to see them do a survey on long life.

When I first started to work at Oshawa General, the comment was from Bowmanville where I used to live. I now live in Newcastle. The comment was from Bowmanville, they live until they are over 100 or 95. We have a long lifespan.

So we -- radiation, maybe it's helping us live longer if it is there, but no, I don't believe there is any connection whatsoever.

At this point I think that there are other factors and, you know, it's -- I have never seen it the operating room where you would see a lot. If there was cancer, that's where you would be seeing it.

CHAIRPERSON GRAHAM: Well, thank you very much.

Now, next on the process on our

hearings is I go to the floor and I'll go to OPG. Do you have any questions to the intervenor this morning?

MR. SWEETNAM: Albert Sweetnam. No questions.

CHAIRPERSON GRAHAM: CNSC, do you have any questions?

MR. HOWDEN: Barclay Howden. No questions. Thank you.

CHAIRPERSON GRAHAM: Government agencies or departments? No one going to the mic. That's fine.

Interventions from the floor? We don't have any yet this morning. That's very good.

Well, with that, I want to thank you very much for coming this morning and thank you for your sincere observation of the -- being a lifelong resident here and your observations and your intervention and safe travels back home. Thank you very much for coming this morning.

With that, we will now go to the second group on the agenda this morning, which is the Pickering East Shore Community Association, which is found under PMD 11-P1.185, which is a submission.

And would the Pickering East Shore Community Association, please, come forward and identify yourself of who will be doing the presentation this morning.

We have -- oh, I'm sorry, we do have a -- I got too many sheets of paper here this morning. I'm following the wrong one.

Mr. Falconer, the floor is yours, sir.

--- PRESENTATION BY MR. FALCONER:

MR. FALCONER: Thank you and good morning, Chairman Graham, and members of the Panel, Madam Beaudet and Mr. Pereira.

For the record, my name is Keith Falconer and I am the Elected President of the Pickering East Shore Community Association, also known by -- as PESCA by an acronym.

In addition, I am also Chair of the PACC, which is the Pickering Accessibility Advisory Committee, a group that works with the City of Pickering on advising council and staff regarding members of disability issues within the Province of Ontario.

Today I am presenting to you as president of PESCA. I've lived next to the

Pickering Plant just outside the one kilometre exclusion zone for the past 24 years.

Today I'm accompanied by Walter Norwood, Past Secretary of the Pickering East Shore Community Association. Having had recent surgery, Mr. Norwood does not wish to speak today, but wanted to be here to show his support for the new-build project.

Mr. Norwood is a 43-year resident of Pickering and I'm proud to say that he is to be the recipient of the City of Pickering's Lifetime Achievement Award this year for his excellence in community work. I'm very grateful for his attendance today under such circumstances.

Firstly, I would like to recognize and thank the Commission for holding these hearings here in Durham region, as you have acknowledged our residence, businesses and community groups are arguably the primary stakeholders with respect to nuclear generation in our community. Thank you for this opportunity to present to you today.

I would like to start by telling you a bit about our organization and whom we represent.

PESCA is an apolitical

organization representing the residents of Bay Ridges and the persons carrying on business in the community of Bay Ridges and Pickering, Ontario.

Our community is the closest neighbour of Pickering Nuclear. PESCA was founded in 1977 as a community association and is dedicated to the beautification of Bay Ridges and the then Town of Pickering.

A map of our member residents and the purpose and objectives of the executive is attached in our written submission under Appendix A.

We are also the oldest community association active in Pickering today. Our boundaries are Lake Ontario to the south, Frenchman’s Bay to the west, the Highway of Heroes 401 to the north, and Squires Beach Road to the east.

In this location we represent approximately 6,000 residents and about approximately 200 businesses. Our goals are to promote and enhance the cultural, civic, social and recreational life of the City of Pickering and more particularly within the PESCA boundaries itself.

All citizens within our area are

automatically members of the association at no cost to the individual.

PESCA is involved in representing the community and as such we welcome and encourage the residents of our area to either come to our monthly meetings and/or join the executive.

The Pickering East Shore Community Association wishes to support the Environmental Impact Statement submitted by Ontario Power Generation for the environmental assessment of this proposed project.

As one of the major employers in Durham Region, the Pickering Nuclear Plant is located in the Bay Ridges area where many local residents are employed directly and indirectly by OPG.

The PESCA executive does not claim to have any professional expertise in the operations at the site, but through a recent tour and several presentations we have become more aware.

We wish to provide an outlook, unique and quite similar to that of Clarington with the proposed new build.

As a community, we saw both

Pickering A constructed in the 1960s and then entered into service in the year ’71 to ’73.

As well, our community experienced the construction of Pickering B, which began in 1974 with the four units coming into service from ’83 to ’86. This is similar to that of the current Darlington site that is in operation now and the proposed new build.

We would like to cover the social economic effects as outlined under the EIS. In an effort to demonstrate OPG’s open communication with the public, members of the public affairs department have addressed the public -- have addressed the PESCA Executive from time to time and have made public presentations at several of our annual general meetings.

At these meetings, they have gone to extreme lengths to satisfactorily deal with concerns and questions raised by the residents. I would not be remiss to acknowledge the recent and ongoing events in Japan.

Our thoughts and prayers go out to the people of Japan as they struggle to cope with the aftermath of the catastrophic earthquake and tsunami. Our sincere condolences go out to all

those who lost loved ones.

In reflecting on these tragic events, I echo the comments made by David Ryan, our mayor of the City of Pickering. While the unprecedented events of the past few weeks should not be ignored, we must refute the ease allure of a retraction policy -- retractionary policy making that is simply not good governance.

Instead, let us steal our resolve and rise to challenge before us. We must recommit ourselves to the main goal of having the most advanced productive and safest nuclear industry in the world. Collectively our goals are not unchanged.

For Canada to remain at the forefront of the Nations, we need to invest in clean, reliable, effective and safe energy production today.

It is our opinion that OPG has made considerable efforts to inform the local community about the Darlington new build.

Explanatory literature was distributed to Durham households, elected officials and to the media. Information was published in the local newspapers, and senior executive managers

made several presentations, even to communities as far away as Peterborough and Markham.

It's important to mention that OPG maintains a strong relationship with the community. As a whole OPG is a member of the Board of Trade, supports local sports groups, charities, the local hospital, the Rotary Rib Fest and PESCA's Garden Awards, and provides educational opportunities to students and their families at their Energy Information Centre.

They also award bursaries to high school students, graduates and make presentations to city and municipal councils, and encourage employees to get involved with charitable fundraising activities.

PESCA is an active member of OPG's Community Advisory Council, and their environmental stewardship Pickering initiative.

In addition, OPG can be seen at many local activities volunteering their time. A few examples are tree-planting, parades, and helping senior citizens at home.

OPG and staff are a significant benefactor to the community and a major contributor to our local economy. Their partnership with our

community is invaluable.

OPG always maintains open and transparent communications with its stakeholders. For example, our PESCA representative on OPG's Community Advisory Council informed our executive about the recent demineralised water leak at Pickering. This was his first report back to us in a number of years, indicating that there is little or to no level of concern.

Only one member of our executive expressed concern about the leak in an attempt to attract media attention for himself. These concerns were discussed in an open forum, and I addressed his concerns with the information provided to me by OPG.

It is also important to note that OPG only received two to three phone calls regarding that incident.

In regards to the choice of using cooling towers or lake water cooling for condenser cooling, we believe that lake water cooling is the best option. Cooling towers would have a negative impact on environmental footprint of the area.

An added benefit to the nuclear Darlington new build is the increased employment

opportunities for our Durham citizens. Along with this, new housing and spinoff businesses and industry will be created indirectly. This will add to the economic development and increased revenues for the local area.

In addition, OPG has won recognition for sustainability environmental initiatives through awards presented by the City of Pickering, the Region of Durham, and the Board of Trade. OPG's support of Pickering's waterfront is a significant environmental contribution.

PESCA supports Canadian jobs and industry, and as such, we would endorse the recommendations of an enhanced CANDU VI proven technology for the Darlington site.

We recognize that the CNSC is a strong regulator and plays a vital role in today's nuclear industry.

PESCA believes that the community residents want a greener environment, one that has a goal of reducing carbon gas emissions, as well as a reliable and economic energy supply. The Darlington new build will go a long way to achieving this goal.

For all these reasons PESCA is in

full support of EIS submitted by OPG for the environmental assessment for this project. We conclude that this project will actually enhance the natural environment.

Many employees and their families live near this nuclear facility. This shows their level of confidence in CANDU technology. Their safety record proves their level of expertise in their field, and OPG's ability to manage a safe and productive plant.

The local communities will benefit from the expansion of Darlington plant, just as the Pickering communities have benefitted in a major way.

We suggest that these local communities, the Canadian public and true environmentalists would be in fullest support of this proposed new nuclear power plant.

The PESCA Executive thanks the panel for the opportunity to be part of this process, and I'll be willing to answer any questions you may have.

Thank you very much for your time.

CHAIRPERSON GRAHAM: Well, thank you very much, Mr. Falconer, for your presentation

this morning, and welcome also to Mr. Norwood. Thank you for coming and showing your support.

I will now go to intervenor questions, and Mr. Pereira.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman.

Thank you for the very interesting presentation. I'll ask you the same question that I asked the previous intervenor, and that's the concerns about health.

In your community, in the interactions you have with the community, are there any concerns that -- that residents in your community express about health impacts of radiation and -- and waste from nuclear operations?

MR. FALCONER: Keith Falconer, for the record through Chair Graham to Mr. Pereira.

We've had many of meetings in the past where OPG has came or either hosted the meetings or been to our meetings. There would be minimal level of concern, and I think it would reflect in their open house venues when you actually see the turnout compared to the residents that actually live in the area versus the special

interest groups that would be involved otherwise.

From a standpoint of does it come up on a regular basis, as indicated when I said about the demin water leak, there was one individual that raised concerns, had indicated to me that he was going to contact OPG.

I went back to OPG and verified that he had not contacted them, and got the information to them -- got the information to my executive to ensure that any concerns were addressed.

So when they are raised, we do address them and they do have a community hotline that's available, as far as I know, 24/7 where people can reach them, and if there is concern with any particular issues, I'm sure OPG is more than capable to deal with them.

As well as the sampling and that, I think relatively the public and the community is aware that they do -- they do water sampling, soil sampling on a regular basis to ensure that there is no contamination present.

MEMBER PEREIRA: Thank you for that answer.

One of the concerns expressed by

many intervenors is that low levels of radiation exposure increase the risk of cancer, and with the population you have in your community, is there any concern about cancer -- increase in cancer rates caused by the environment they live in, and the fact that they're near a nuclear generation station?

MR. FALCONER: I would say -- Keith Falconer, for the record through Chair Graham to Mr. Pereira.

I would say that if any concerns would come from a cancer aspect, I believe the limit around the plant is .02 millirem or something to that effect.

Any issues that would be brought up with that, there was a study, I think, conducted by Durham Region, and I think it was back in late '90s or something to that effect with leukemia in children and things like that.

I believe there was –- the findings were that there was no increase in cancer rates in the Durham Region. I think in some areas actually there was increased cancer rates without nuclear facilities in that area.

MEMBER PEREIRA: Thank you very

much.

My next question concerns your comments about cooling towers versus once-through lake water cooling. What's the –- what is the primary concern about cooling towers?

Is it just the appearance of –- that the cooling tower would dominate the local surroundings as a significant structure, and what exactly is the reason why residents would prefer once-through cooling as opposed to a cooling tower?

MR. FALCONER: Keith Falconer through the –- for the record, again, through Chair Graham.

I believe the issue with cooling towers applies to the visual impact. They don't want –- members of the community don't want to see it as an industrial site.

As well, the environmental footprint could be increased by the actual land use that's required. It's a tremendous allotment of land use, and I believe it was estimated that there would be something in the range of 400 trucks of soil being taken out, where to put that soil and so on and so forth.

Lake water cooling, on the

opposite hand, when CANDU has been built, it's usually been built with lake water cooling. There's a stigma attached to a cooling tower in the sense that it could be a misconception because, again, where a lot of –- a lot of the issues lay is where we have an uneducated public.

And the plumes that come out of a cooling tower could be thought of as either radioactive plumes, although it's just completely light water coming out.

Also, does the plume go to the 401? Does it go out to the Lake Ontario and so on and so forth?

There are concerns with the fish with lake water cooling, and I believe that is with lake water cooling from the EIS, which I did go through and read.

I believe the impact was particular to the round goby as the fish of impact, not as identified on the Fisheries and Oceans Canada from the federal government as an invasive species.

That would be the majority of the fish that would be going from there. And as invasive species, as classified one, a round goby

actually eats the native eggs of the fish that are in that area and impacts the native fish in that respect.

So in a sense, we're looking at -- there also is in that land aspect, I believe there is tern nests or something in that area, a bird sanctuary, that would have to be ripped up if the cooling towers did go in.

But it does rely a lot on the visual impacts, but I definitely say there is more impact in putting cooling towers in than once-through lake water cooling.

MEMBER PEREIRA: Thank you very much. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Madame Beaudet.

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd like to examine with you a little bit of the experience your association had with the growing up of Pickering, because you do mention that you have seen the construction of Pickering A and Pickering B.

We did discuss that of -- for evacuation purpose and greater safety, I suppose,

the plant should always be at least –- let's say one kilometre away from residential areas.

I'd like to ask you if it had to be done again, what would be the lessons learned with respect to Pickering because Pickering has grown a lot very close and around –- around the site. So what do you feel should have be done or not done?

MR. FALCONER: Okay. Keith Falconer, for the record.

Did you want to jump in too? No, you're okay. All right, through Chair Graham. I would say that lessons learned from Pickering, back –- well, when Pickering was being built, and I'm –- I'm pretty positive that OPG had learned that lesson in the past when it was the old Ontario Hydro was communications.

And they've greatly improved those communications to the effect that if there was traffic congestion during the –- say the build of Pickering B or Pickering A, that they would inform members of the public.

And they have gone to extreme lengths to tell people that with their newsletters. They also actively involve, say, the municipalities

and their community –- their CAC, their community association group.

They actively tell them when there is going to be steam releases, when a unit is shut down, and things like that. The biggest thing to learn from that build would have been the communications.

Just communications to the public, and I think they're –- they've came a long way in that aspect, and it's –- and it's proven over the past, I would say, 10 to 12 years since they have established that CAC, made that open link to the public and tell people what's going on.

Because a misinformed public or an uncommunicated public then goes and falls into assumptions, and everybody knows what happens when we make assumptions, right.

So at least when they –- when they do communicate their efforts, people are informed, and they can –- they can make informed decisions.

MEMBER BEAUDET: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

You made a comment about a lot of

fill had to be moved, and I think you said 500 truckloads or –- it’s 12 million cubic metres. If you figure 24 cubic metres to a load, it’s about a half a million truckloads. So there is a little difference there –-

MR. FALCONER: Yeah.

CHAIRPERSON GRAHAM: –- but I think it’s somewhere around 12 million.

There’s discussion of about 9 million being relocated on site, but still 3 million that has to be relocated off site to some other jurisdiction, and that –- that is a big issue that amounts to a tremendous amount of truck traffic and so on. So just to put it in perspective, it’s a large amount.

MR. FALCONER: M’hm.

CHAIRPERSON GRAHAM: With that, we’ll go to –-

MR. FALCONER: Could I just respond?

CHAIRPERSON GRAHAM: Sure, go ahead.

MR. FALCONER: Keith Falconer, for the record.

I think what I meant to say was I

believe it was quoted at 400 truckloads per day, I think it was, by Mayor Foster. I believe he had mentioned that. I think that they're looking at putting the soil somewhere in the 407 range when the 407 does end up coming out this way.

CHAIRPERSON GRAHAM: Yes, thank you.

MR. FALCONER: Sorry, I apologize for that.

CHAIRPERSON GRAHAM: No, no, if it's 400 a day, it's a thousand days of trucking.

MR. FALCONER: Right.

CHAIRPERSON GRAHAM: To put it in that perspective.

So, anyway, we'll go further now to go to the floor, and, OPG, do you have any questions or comments to the presenter?

MR. SWEETNAM: Albert Sweetnam. No questions.

CHAIRPERSON GRAHAM: CNSC?

MR. HOWDEN: Barclay Howden. No questions, thank you.

CHAIRPERSON GRAHAM: Government agencies? Not, fine.

From the floor, do we have any

from the floor? Julie? We have none, okay. Thank you very much.

Well, with that, I want to take the opportunity to thank the presenters this morning, the Pickering East Shore Community Association. Mr. Falconer and Mr. Norwood, we thank you for coming this morning, and, Mr. Norwood, we extend good health to you, and to you, sir, safe travels back to Pickering.

Thank you very much.

MR. FALCONER: Thank you.

CHAIRPERSON GRAHAM: Now, the next intervenor is the Clarington Board Of Trade, which is found in our presentations under PMD 1.97 and PMD 11-P1.97A, and I believe Sheila Hall is the presenter this morning along with some other people with her.

So welcome, Ms. Hall, and I'll ask you to introduce the presenters with you this morning.

--- PRESENTATION BY MS. HALL:

MS. HALL: Good morning and welcome to Clarington.

I'd like to just take a minute and introduce the people at the table with me.

On my left I have Randy Henry. He's the current President of the Clarington Board of Trade and a long-time family business owner in the community.

I have Rosemary Yeremian who will be doing part of our presentation with us, and Jenna Shaw will be helping us with the PowerPoint presentation.

So I'd like to say thank you for the opportunity for allowing me to speak to you today.

My name is Sheila Hall. I'm the Executive Director and Economic Development Officer for the Clarington Board of Trade. I have also lived in the community for 20 years and raised my two children who are now adults.

We've raised them here with confidence that they will continue to live safely and with opportunity to raise their families as we have done.

I'd like to take just a moment of your time and explain the role of the Clarington Board of Trade in the Clarington community.

We are primarily a membership based organization with approximately 300 members.

We were established in 1998 following a recommendation by a task force set up by the mayor of the day. They were looking for a progressive approach to execute the role of economic development and services to our existing business community.

A philosophy developed that business could sell to business better than government could. This unique model has allowed the Clarington Board of Trade to take on a mediation role to ensure that rules and business are respected in the development process.

We also provide many benefits to our existing business community as we provide cost savings, partnership building and educational opportunities, in addition to being the voice of our business community, inclusive of all sectors and sizes.

We are governed by a board of 16 directors, one of which is occupied by an Ontario Power Generation representative.

In 2005, the Clarington Board of Trade entered an agreement with the municipality of Clarington to work with our existing medical family -- sorry, family medical team to provide the

services of physician recruitment.

We strongly believe that our community development and services are important to our existing and prospective businesses.

We are proud to note that we have moved from being under-serviced by 13 doctors to five and I can personally say that nuclear presence in our community has not been raised as a concern for interested doctors, and that quite to the contrary, our quality of life -- the quality of life that we are blessed with in Clarington is a strong attraction piece for us.

I’m proud to say that I have been involved with the Clarington Board of Trade for ten of our 13 years and have had many opportunities to meet the majority of our business community to ensure we have a clear understanding of their goals and ideas for moving forward.

As Clarington’s largest business organization with a mandate to provide our business community with a voice at all levels of government, in addition to our role in economic and community development, we have proudly supported and participated in many elements of this project.

We have promoted the Darlington

new nuclear project by bringing our members' voices through written letters to all levels of government, hosting round table discussions with provincial Ministers, Sobara, Pupatello and Duguid and most recently Federal Transportation Infrastructure and Communities critic, John McCallum.

We were also very thankful for an opportunity in 2011 to speak to the Federal Standing Committee on Finance, reiterating that the Darlington New Nuclear Project remains a top priority for Clarington.

In addition, through our partnership we have had many opportunities to host events including our annual energy summit, our annual general meetings and our annual mayor's address, featuring representatives from Ontario Power Generation.

This has provided us -- sorry, provided a two-way communication vehicle for our business community to get updates and continued education on the progress of OPG's current and proposed operations.

Clarington has a dynamic business community ranging from agri-business including

diverse vegetable and fruit farms, cereal crops and livestock farms, to vibrant small manufacturing and service industries.

Clarington is proud to be contributing to and exploring new opportunities for growing Canada's economy.

Many of our small businesses are always looking at opportunities to diversify their business have embraced the solar and wind industry. They are also very excited to see the opportunities that may come their way through the new nuclear project at Darlington.

In addition to manufacturing and construction growth, we have been helping our service industries, including restaurants, accommodations, personal services, legal and accounting, et cetera, to understand that there will be a workforce increase in our community and that their services will benefit as well.

I have taken the liberty to speak with a couple of business leaders that have had businesses here when Darlington was originally built and although we don’t have statistics, we do have first-hand experience telling us that the impact for small business was great and that they

look forward to seeing this type of boom in our economy again.

We have several companies that are able to supply to Ontario Power Generation. Many of these and others are very interested in this project as it holds one of a kind supply chain opportunities to help them grow their business and increase employment and opportunity in our community.

I would like to now turn our presentation over to Rosemary Yeremian of Strategic Insights to provide the technical review.

--- PRESENTATION BY MS. YEREMIAN:

MS. YEREMIAN: Good morning. My name is Rosemary Yeremian and I am President and CEO of Strategic Insights Inc.

We were retained through a competitive process by the Clarington Board of Trade to conduct a peer review on the socioeconomic impacts of the Darlington environmental assessment.

My company and I have significant experience in the nuclear energy sector. I am a former employee of Atomic Energy of Canada Limited. During my time at AECL, I was responsible for the Ontario market strategy.

This included educating stakeholders such as provincial government, business associations and other interest groups about the positive socioeconomic impacts of new nuclear builds in Ontario.

Since founding Strategic Insights Inc., I have continued to work in the nuclear energy sector in Canada and abroad.

Our overall objective for this study was to assess the positive and negative socioeconomic impacts for the EA for new nuclear builds at Darlington, in terms of the impact they would have on issues of concern to the Clarington Board of Trade and local business community. These would include issues such as job creation, economic development, et cetera.

In order to determine whether the socioeconomic impacts in the Darlington EIS were appropriate, we compared the estimated effects to other studies conducted, which estimated the quality and level of socioeconomic impacts related to new nuclear builds.

There were five Canadian studies conducted between 2003 and 2009 that estimated the level of socioeconomic impacts related to an

unspecified new nuclear build in Canada.

There was also one American study that was conducted in 2005, that estimated the socioeconomic impacts related to an unspecified new nuclear build in the United States.

Our peer review compared the impacts outlined in the Darlington EIS to those outlined in all the documents listed here. I will now present our findings.

The first area we examined was that of population and demographics. This table is based solely on the numbers in the Darlington EIS.

ased on our experience and forecasting, coupled with our understanding of employment related to new nuclear -- sorry, related to nuclear plants, we felt that the forecasts in the Darlington EIS related to population and demographics were appropriate.

We did note, however, a few factors that may affect the forecasts.

First, we believe there would likely be a different level of employment, particularly in the site preparation and construction phase, depending on which nuclear technology was chosen.

Obviously, a larger reactor, for instance, a 1,600-megawatt reactor, would warrant a larger construction workforce than a smaller reactor, for instance, a 700-megawatt reactor.

This is due to the fact that a larger megawatt reactor would be a larger structure and hence would require a greater workforce to construct it.

In addition, the projections for population growth could be affected upward should nuclear-based companies decide to locate or relocate to the municipality of Clarington.

Finally, the projections could be affected if there were shortages in skilled labourers and engineers in the electricity sector.

hile our evaluation has concluded that skilled labourers would not be in shortage, there are other studies, including the studies conducted by the Electricity Council -- Sector Council of Canada that expect shortages in the electrical engineering field starting in 2015.

If these shortages occur, they may affect the population and employment numbers forecasted in the Darlington EIS.

The secondary area we examined was

that of skills and labour supply for construction.

The Darlington EIS estimated that the site preparation construction phase will require an on-site workforce of up to 3,500 skilled and unskilled workers, engineers, architects and technicians for up to eight years for two units and up to 16 years for four reactor units.

In terms of labour, the only comparable study that was done was a U.S. Department of Energy study conducted in anticipation of new nuclear builds in the U.S.

The U.S. DOE study used an unspecified 1,000 megawatt reactor build on which to base their numbers.

The reactor sizes considered in the Darlington EA are comparable to that size of reactor. The U.S. DOE study estimated 3,200 workers required for two units.

Given that the U.S. data was comparable to that of the Darlington EIS, we found the estimates in the Darlington EIS as related to skills and labour supply to be appropriate.

In order to provide further information to the Clarington Board of Trade regarding the types of skilled labourers involved

in a new nuclear build, we provided a table of the estimated breakdown of labourers involved in a new nuclear build.

This was information gathered from the U.S. DOE study prepared in 2005 that was mentioned before.

Moving on to operations and maintenance, the Darlington EIS estimated 1,400 skilled labourers, employees, contractors, and management related to two units. We compared this number to the operations and maintenance workforce for two units at Bruce Power.

Bruce Power employs 3,700 people and 2,000 contractors to operate and maintain six units, excluding the two units that are currently being refurbished, which produce approximately 4,700 megawatts of power.

Based on Bruce Power’s workforce, one can calculate that a two-unit plant would require approximately 1,900 skilled and unskilled workers, including management, et cetera.

Based on a comparison of these two numbers, we found the Darlington EIS’s estimate to be appropriate, if not a bit conservative, for the O and M workforce of the new nuclear plant.

One very positive aspect of the new nuclear units at Darlington is the impact it would have on education in the area.

We agreed with the Darlington EIS that the project will likely be a driver for increased enrolment in post-secondary educational programs, particularly in project-related careers such as engineering.

A likely positive impact related to this would be the potential expansion of UOIT and Durham College as a direct result of the increased workforce required at the plant.

This would all be considered to be positive for the municipality of Clarington as it would directly increase the level of education across the municipality.

In terms of economic development to the municipality, we also found the new nuclear build to have a positive impact on the local and regional economy through all of its phases.

In particular, the project is likely to attract several nuclear energy-based companies to the municipality as it would be a cost benefit for them to be located near the plant.

We expect that most of the

companies that would locate to Clarington would be directly involved in the design and execution of the new nuclear plants.

In addition, however, we also expect the project to drive further economic growth from other investments in the municipality; for example, some of the companies may decide to locate to Clarington to service the influx of new residents in the municipality.

There will also be increased opportunities for existing businesses. This would all have a positive economic impact on the Municipality of Clarington.

The Darlington EIS categorizes socioeconomic impacts into human assets, financial assets, et cetra. The issues we've examined thus far fall into the human assets category.

While human assets -- while the human assets category was overall very positive in terms of socioeconomic impacts, there were a few mitigation measures outlined in the Darlington EIS, specifically that OPG will share information with local and regional land use planners, economic development staff and social services providers with respect to the timing and magnitude of the on-

site workforce during site preparation construction.

OPG will work with government and other electricity sector employers, labour groups and educational institutions through existing liaison mechanisms and programs during the site preparation and construction and operation and maintenance phases; and that a traffic management plan will be implemented with the objective of reducing disruption and maintenance and maintaining safe traffic conditions during the site preparation and construction phase.

Based on our overall assessment of the positive socioeconomic impacts and the mitigation measures that OPG outlined in order to ensure that that lines of communication are open and that any potential negative socioeconomic impacts are suitably handled, we determined that the mitigation measures for the impacts on human assets was appropriate.

The next area we examined was that of financial assets.

The first area analyzed was that of employment during construction. For this area, we had many reference points to conduct our

comparative analysis.

According to the Darlington EIS, the total direct and indirect jobs created as a result of the construction of two new nuclear units at Darlington would be 9,600.

This figure can be compared to similar analyses conducted on employment and new nuclear reactor construction.

For instance, the Canadian Energy Research Institute, or CERI, released a study entitled “The Economic Impact of the Nuclear Industry in Canada” in 2003.

In it, the study noted that two 720 megawatt reactors constructed in Canada would create 40,000 person years of employment directly and indirectly.

If one proportionately increases this figure to apply to a 1,100 megawatt reactor, the employment in person years increases to 61,000. Assuming an average construction time of six years, the total employment created would be 10,167 jobs.

This is higher than the Darlington EIS figure, yet still within the range of comparability.

In 2008, CERI updated its analysis

in a report entitled “The Canadian Nuclear Industry Contributions to the Canadian Economy”.

In this study, CERI claimed that two new 720 megawatt reactors constructed in Canada would create 80,233 person years of employment or 56 person years per megawatt.

If we assume two 1,100 megawatt reactors will be built at Darlington, then per the CERI 2008 study, that would equate to 123,200 person years of employment or 20,533 jobs.

Another comparable source for employment information is the U.S. DOE NP2010 nuclear power plant construction infrastructure assessment of 2005.

According to the U.S. DOE study, the construction of two new nuclear plants would require 2,560 construction workers, which are 60 percent of the total labour force for construction. Thus, there would be 4,267 direct jobs created for construction of two new nuclear plants.

If we use the common multiplier of 1.5 to include indirect jobs, we come to a total of 6,400 direct and indirect jobs being created.

The most recent analysis of employment linked to new nuclear builds at

Darlington was conducted by the Conference Board of Canada in March of 2009.

According to their report entitled "The Economic Impact of New Nuclear Investments in Canada", the employment associated with new nuclear builds at Darlington is 64,277 person years of employment.

Again, if we assume the average construction of a nuclear plant is six years, the total employment created would be 10,712 jobs. Note that this figure is very similar to the CERI 2003 analysis.

Based on this comparative analysis, we found that the Darlington EIS's estimates for employment during construction to be appropriate, if not slightly conservative.

We expect the actual employment numbers during construction to be slightly higher and more in line with the latest Conference Board study.

The Darlington EIS estimated that by the completion of the site preparation and construction phase, the project is forecast to attribute $1.953 billion in annual added GDP to the region.

In comparison, the CERI 2003 study and the CERI 2008 study both found that the GDP impact would be significantly greater.

The CERI 2003 study found that if two 720-megawatt reactors were to be built in Canada, the impact on GDP would be 2.6 billion.

Likewise, the CERI 2008 study found that the total value added in terms of GDP would be 5.973 billion. In fact, the CERI 2008 study estimated that each megawatt of new nuclear reactor would produce $4.15 million in GDP benefits.

Considering this per-megawatt value of GDP benefit, we then reworked the Darlington EIS methodology using an estimate of $756,592 for every million invested in new nuclear and this estimate was taken from Table C2 of Appendix C for the Darlington EIS in the technical support document.

So assuming two 1,100-megawatt nuclear reactors were invested in, this would produce a GDP impact of 7.566 billion, which is closer to the CERI 2008 estimate than the Darlington EIS estimate.

And then a final comparator to the

Darlington EIS is the 2009 Conference Board of Canada study.

In this study, a new nuclear build at Darlington was estimated to have a $9.8 billion impact on GDP for construction of the Darlington plants.

Clearly this is the highest estimate of all the comparable studies. One reason for this is that the estimate was Canada-wide and not only focused on the LSA and RSA regions.

Based on our analysis, we found the Darlington EIS's estimates for business activity during construction to be too low. Based on the comparators, we would estimate that an actual nuclear reactor build with two units would result in significantly greater GDP activity than the estimates outlined in the EIS.

In terms of business activity during operations, the Darlington EIS estimates that the annual GDP contribution attributable to the project ranges from 1.4 billion in 2018 to 709 million in 2084.

The CERI 2008 study found that there was 4.988 billion in GDP impact in 2005 from 12,767 megawatts of nuclear power running in

Canada.

If one were to address this figure proportionately to reflect two 1,100-megawatt plants, the annual GDP impact would be 860 million.

As such, the Darlington EIS estimate for annual GDP contribution from operations and maintenance for two new nuclear plants at Darlington is appropriate.

The Darlington EIS noted that during the site preparation and construction phase, some construction workers may compete with tourists for temporary accommodation in the Clarington region.

This competition may result in some tourists opting for alternative accommodations elsewhere in the LSA or RSA.

Should this occur, some tourist businesses whose operations are largely dependent on visiting tourists may be the most vulnerable.

Those preferring to stay at the Darlington Provincial Park and nearby hotels and motels would be the most inconvenienced by the competition.

However, the influx of project workers will become an alternative source of

revenue for the temporary accommodation providers.

The Darlington EIS also stated that over the long term, this competition is not expected to seriously affect the tourism industry in Clarington because current occupancy rates are generally low and expect to remain so until the project commences.

This assessment appears to be appropriate given the nature, quantity and quality of accommodation facilities in the Clarington area.

It is also felt that the Darlington EIS is correct in stating that there will be no adverse effects on tourism given that the existing Darlington Nuclear Plant has not caused adverse effects on tourism.

We also examined the mitigation measures of impacts on financial assets and these were primarily related to issues of dust, noise and traffic that accompany the site preparation, construction phases of the project.

We understand that OPG will put in place a nuisance effect-management plan, as well as a traffic-management plan to address these impacts. We found comments to these plans to be appropriate given the expected impacts of the Darlington EA.

We were also pleased to see that OPG will re-establish full access to and use of the waterfront trail once safe access can be provided.

Based on our analysis, we deemed that, overall, a new nuclear plant at Darlington will have significant, positive socioeconomic impacts for the Municipality of Clarington, including among other things the positive impacts related to an increase in employment and business activities in the municipality and the region.

In terms of the estimates for employment and business activity, we found the Darlington EIS' estimates to be appropriate and more on the conservative side

As I mentioned before, we expect that the actual numbers related to employment and business activity in the region to be greater than those outlined in the EIS.

Based on our overall comparative analysis, the Clarington Board of Trade expects positive socioeconomic impacts meeting or exceeding those outlined in the Darlington EIS.

This is a major infrastructure project and we expect positive impacts will reach Clarington, the Region of Durham and the Province

of Ontario.

We feel that the mitigation measures outlined in the Darlington EIS are appropriate and, as such, we found no reason for our client, the Clarington Board of Trade, not to support this project.

I will now turn it over to Sheila Hall from the Clarington Board of Trade to outline her conclusions.

MS. HALL: I'd like to just take a minute and note that in the audience this morning with us we have several local business owners.

We have a representative from Ajax's Economic Development Department and our regional councillors, Willie Woo and Mary Novak.

So on behalf of our Board of Directors, members and business community, the Clarington Board of Trade has completed a fair review of the socioeconomic impacts from the EIS prepared by Ontario Power Generation for the new nuclear project and support that this project will bring many benefits to Clarington, Durham Region and the Province of Ontario.

I would like to thank you for your time and do hope that you are enjoying our fabulous

community and exploring our local business community for your needs during your stay.

CHAIRPERSON GRAHAM: Thank you very much.

Sadly to say, with 13-hour days, we haven’t had much chance to view the community. Nevertheless, perhaps we’ll come back at some other time.

With that, I will now go to panel members and Mr. Pereira, you’re first. You may have some questions.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you very much, Mr. Chairman.

I note that a couple of times in your presentation you talked about the traffic-management plan and the intention to examine ways to respond to possible disruption and safety issues that might arise during construction.

What are the principal choke points in your traffic system that you anticipate would arise during construction activities?

MS. HALL: Sheila Hall, for the record.

So I know that there will be an

increase in traffic. With workers coming in and out, there will be an increase with truck traffic. That was not really part of my expertise.

We have the planners and the engineers that we work with very closely that are looking at those things.

MEMBER PEREIRA: Thank you.

So you're just anticipating a need to do something about it rather than a concern about the specific issue. Okay, I'll go on to something else.

Many intervenors have raised concerns about the appearance of having cooling towers as a possible cooling option for condenser cooling as opposed to once-through cooling which is what is proposed by Ontario Power Generation. Once-through cooling has its impacts in the aquatic environment.

Is there preference among your members for going with in-lake cooling?

MS. HALL: Sheila Hall, for the record.

What we have come to a conclusion on is that we have two nuclear plants in Durham Region right now and they both have the same

landscape image and that there is a stigma attached to the taller cooling towers. And we just feel that from a visual perspective that to maintain the models that we have now is probably preferable.

MEMBER PEREIRA: So it's a visual impact in terms of environmental impact.

Our mandate is to look at possible environmental impacts to seek to minimize the impact on the environment of your region here. So from your perspective, it's more the socioeconomic visual impact that's a primary concern?

MS. HALL: Yes.

MEMBER PEREIRA: I note that you talked about the response from the physicians you've recruited and they raised no concerns about health issues in your community, but what about the people that worked in your area and for your -- the employees of the companies that you -- are members of your organization?

Is there any concern on their part about hazards that might arise from having nuclear generating stations in their area? Radiation, waste, any concerns at all?

MS. HALL: Sheila Hall, for the record.

Now, most of the people that I -- that I associate with professionally understand the benefits and many of them have lived here for a very long time and raised their children and I have never -- very rarely heard concerns.

MEMBER PEREIRA: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

At the end of your written submission, the last paragraph you say that it is difficult to quantify the economy cost with emergency response to nuclear malfunction or accident and you say that this analysis concludes that it is entirely appropriate for the Darlington EIS to omit quantifying base cost assessment related to unlikely events of malfunction or accidents.

We had several submissions here that do complain that, first of all, what is reserved, the amount that is proposed in the *Liability Act* is too small. And second that it

should be the polluter or the responsible person to pay and not the taxpayers.

Now, do you have in your evaluation of different nuclear plants, come across estimates and how was that calculated?

Because you do present several factors that can influence the amount, but what would be a reasonable amount that should be set aside?

MS. YEREMIAN: Rosemary Yeremian, for the record.

We looked at other assessments that have been done for other proposed nuclear plants and in none of the ones that we examined, did we see any quantifiable outline of amount to be put aside for a potential incident.

As well, the range of incidents is very large as you can imagine from something very small and minor to a Japan-like incident, which would never happen.

A tsunami just would not happen in Lake Ontario and the types of reactor design there and the type of reactor design we have is very different.

So I did find it appropriate that

the Darlington EIS omitted actual numbers and I cannot comment on that.

MEMBER BEAUDET: Thank you. I'll go to another subject.

It's interesting that you brought about certain facts about Clarington's finances and it is not necessarily, and that's my understanding from your study, as sound financially as the EIS says it is.

Do we understand well what you say on page 10 of your analysis?

That there was certain factors that were not considered, like, pollution control plants, for instance, is not included in these -- there are two projects, the Darlington and Newcastle Water Pollution Plant. And also I think the -- let me get it here. There is also another, Port Darlington Project.

And this -- because it's deferred, it's not taken into account, but it could have a major impact on the finances of the municipalities; is that correct?

MS. YEREMIAN: Rosemary Yeremian,r for the record.

Yes, there were two projects that

were contemplated in the region, in the municipality that were not taken into consideration under the previous mayor's budget.

We now have a new mayor in the Municipality of Clarington and I am not familiar with the budget that they have, but those two projects are a consideration.

I don't know whether it would have a major impact, as you say, but it may have an impact and it was just something we raised as an issue to become -- to be aware of.

MEMBER BEAUDET: Thank you.

I would like to go to OPG because it appears that this -- this could have an impact on the sewer treatment facilities.

The EIS assumes that there is capacity that is available for OPG, but if these projects would go ahead, it wouldn't exist anymore, so have you looked at plan B on there?

It's on page 10, "Municipal Infrastructure and Service". The EIS notes that sewage treatment facilities are located in Bowmanville, Newcastle and Oshawa, and that there is significant excess treatment capacity in all three municipalities.

However, given that an expansion of Port Darlington and Newcastle Water Pollution Control Plants has been deferred in through 2012, there is likely to be excess treatment capacity in those municipalities and I would like to, how does it affect your assessment?

CHAIRPERSON GRAHAM: Ms. Swami?

MS. SWAMI: Laurie Swami, for the record.

I believe your question is whether or not there would be sufficient capacity at the -- for sewage treatment for OPG in future and OPG has been working with the Durham Region to establish a sewage treatment capacity in support of our operations, whether it's through the new Clarington Energy Centre Facilities that will be built. Whether it's for the existing site, which has a -- currently has a sewage treatment plant on site.

We will be moving to usage of the municipal sewage system and eliminate that plant. And whether it's to deal with the new nuclear and we've been working with the region and have established a program to ensure that there will be sufficient capacity for our facilities in the

future.

MEMBER BEAUDET: Thank you.

I would like to go back to what I believe is table 6. I don't know what slide it is because there is no number here. It's on page 21.

I would like to understand a bit about the figures here because they vary a great deal and you consider that for OPG, your comment is that they have underestimated what the gross domestic products can be, but then you say that your estimation on business activity during operations, then, would be appropriate, but here it -- this table covers the construction phase.

You're saying that there would probably be more money in the community at the construction phase, is that what I should understand?

MS. YEREMIAN: Rosemary Yeremian, for the record.

Yes, that is correct. Compared to the other socioeconomic impact studies that have been conducted in the past seven years, eight years, that is correct.

MEMBER BEAUDET: And this assessment is completely independent from what OPG

would do. I mean, this would be new -- the normal numbers that we should expect.

MS. YEREMIAN: Rosemary Yeremian, for the record.

Yes, there were three independent studies done by Canadian sources into the socioeconomic impacts of an unspecified nuclear reactor, too, by the Canadian Energy Research Institute, and one by the Conference Board of Canada.

MEMBER BEAUDET: My last point is on table 4. Why is there such a difference in these series studies of 2003 and 2008?

MS. YEREMIAN: Rosemary Yeremian, for the record.

In 2003 my understanding is that CERI did an overview of the socioeconomic impacts. In 2008 they were asked to refine their study, update their study, and we had additional information on the supply chain of nuclear in Canada after the Chinese units were -- the CANDU Qinshan units were built in China.

So at that time, in 2008, CERI was asked to go in further depth into the supply chain of the Canadian nuclear industry and conduct a more

fulsome analysis of the socioeconomic impacts related to new nuclear builds in Canada.

MEMBER BEAUDET: So there would be a defect with the choice of technology? These numbers could vary depending on whether it's built in Canada or outside?

MS. YEREMIAN: Rosemary Yeremian, for the record.

In my experience and in my -- based on my understanding, yes there would be a difference in socioeconomic impacts if it was a Canadian reactor versus a foreign reactor.

MEMBER BEAUDET: I'd like to go to OPG. You did mention that there's a possibility to go to another technology like Westinghouse.

How do you react to these numbers, then, if they're -- most of the components are coming from outside?

MR. SWEETNAM: Albert Sweetnam, for the record.

All the foreign vendors have indicated that they would concentrate on increasing and maximizing both the Canadian content as well as Ontario content.

In the nuclear industry, a lot of

the parts that are supplied are -- they're supplied specifically for the nuclear industry, and they have to have a certain end-stamp on them. And there's a certain process associated with that manufacturing process. This would be applicable to any technology.

The Canadian nuclear industry that presently supports CANDU can be quite quickly retooled to support a different type of reactor, because the most important thing in this sort of manufacturing is basically your quasi control systems and the quasi program that you have in place.

We anticipate that a foreign vendor would be able, perhaps not to give equivalent Ontario and Canadian content, but certainly competitive Canadian and Ontario content.

MEMBER BEAUDET: To your knowledge, has the government imposed a percentage of Canadian content for this project?

MR. SWEETNAM: Albert Sweetnam, for the record.

There is no imposition at the moment of Canadian or Ontario content. There is some concern that it would be outside of some of

the trade regulations.

Obviously in any competitive bid, the amount of local content that you have would be a factor in the evaluation; however, it's not mandated.

MEMBER BEAUDET: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet.

I just have two questions. As you're aware, this is our 14th day of hearings, and there's been a lot of concern -- or not a concern, but -- yes, it's a concern, but a lot of interventions expressing concern with regard a couple things, and a couple of the issues I want to address.

One is the agricultural issue that's come up on several occasions about testing of crops and so on, which OPG has explained what they do and so on.

But I noticed you had -- you have a strong agricultural industry, which is part of your -- which is part of your board of trade, and you even have an agricultural advisor on that.

In your membership, in your

agricultural membership, has there been any expression of concern with regard to a nuclear plant being so close to major crop productions that are in this area? Have you had any -- has any of your membership voiced these concerns?

MS. HALL: Sheila Hall, for the record.

No, they haven't. I do know that there is an agricultural committee set up by council, and they meet regularly and certainly are not afraid to voice their opinion when they need to. So I have not heard anything through my office.

CHAIRPERSON GRAHAM: The second question I have is with regard to interventions.

There has been a lot of discussion around reports and -- and so on, of -- of illnesses, cancers and so on, in relation to the vicinity of nuclear power plants, whether they be in Europe or whether -- wherever they are, that some of these studies were coming out of Europe and so on.

And I'm wondering, have you -- has your membership had any opportunity -- I know you're an economic-based organization, but we have

to look at both sides.

Have you had any -- any of your membership voice concerns and so on with regard to the vicinity of a nuclear power plant and -- and the possible health effects on -- on the residents of your communities?

MS. HALL: Sheila Hall, for the record.

Again, no, we haven't -- we haven't heard a lot about health concerns.

As I mentioned, we're very connected to the medical community with doing physician recruitment, and even within that group of people, we have not heard a lot of concerns.

Actually to the contrary, we hear that we need the baseload power from a healthcare perspective, and so they're very supportive.

CHAIRPERSON GRAHAM: The only other question I have is acceptance. I don't -- probably you don't do polling, but do you have any statistical information about acceptance versus opposition? You represent 90 some thousand, I think it is, or whatever the figures were.

Regardless, in your economic area, has there been any type of statistical gathering to

see support versus opposition for such a facility?

MS. HALL: Sheila Hall, for the record.

In the last few years we have done some membership surveys and some -- because we have a couple of different pillars in our organization we not only service the 300 members we have, we service the entire business community by sector.

So we have sent surveys out to them, the question we have asked more directly is, do you support the new nuclear and the Board of Trade's role in helping move that forward.

And we have seen strong numbers saying that, yes, that's something we should be participating in.

CHAIRPERSON GRAHAM: Okay. Thank you very much.

Now, we'll go to the next process in our hearings. Mr. Pereira, you have nothing else? No.

We will now to go OPG. Do you have any questions on the presentation by the Clarington Board of Trade?

MR. SWEETNAM: Albert Sweetnam. No questions. Thank you.

CHAIRPERSON GRAHAM: CNSC, do you have any questions.

MR. HOWDEN: Barclay Howden. No questions.

CHAIRPERSON GRAHAM: Government departments or organizations within departments? No. And intervenors from the floor? Very good then. Well, thank you very much.

Well, that terminates or is the end of your presentation. We thank you very much for coming this morning, Ms. Hall, and your -- the group that you have along with your consultant, and also the members that have come, members of your Trade that aren't at the table that have come also to support your organization. We thank you very much and thank you for your input.

With that I'm going to declare a 15-minute break and the Chair will resume at 10:55.

Thank you very much.

--- Upon recessing at 10:40 a.m. /

L'audience est suspendue à 10h40

--- Upon resuming at 10:56 a.m. /

L'audience est reprise à 10h56

CHAIRPERSON GRAHAM: Welcome back everyone, and we will proceed to the next item on

the agenda, which is an oral statement by the Provincial Council of Women of Ontario.

And I'll remind everyone that only panel members will be allowed to ask questions after each oral statement.

And I believe this one is going to be done by telephone conference, and, Ms. Janes, are you there?

MS. JANES: Yes, I am.

CHAIRPERSON GRAHAM: Well, welcome and welcome to the hearings of the Joint Review Panel and you may proceed.

--- PRESENTATION BY MS. JANES:

MS. JANES: Yes. My name is Gracia Janes and I'm the Environmental Convenor Vice-President for the Provincial Council of Women of Ontario.

The Provincial Council of Women of Ontario representing many thousands of Ontarians -- we are 11 provincially-organized societies and six local councils of women affiliated members -- is pleased to have an opportunity to speak to this environmental assessment panel today.

Our views are supported by the National Council of Women of Canada established in

1893, which represents many more thousands of Canadians in four of the five nuclear cycle provinces, i.e., Saskatchewan, Quebec, Manitoba and Ontario, plus Alberta where Bruce Power has been promoting the use of nuclear power lately.

We note that PCWO is not a single-issue organization, but has over the past 88 years democratically developed policies on a very wide diversity of subjects of concern to the general public such as health, economics and environment and social justice, from which we've developed briefs such as this one.

PCWO and NCWC have expressed concerns with the risks, huge costs and environmental and public health impacts of nuclear power to all levels of government and many boards, agencies, commissions and standing committees since we first questioned the potential dangers of atomic power in 1955.

For instance, in 1996 and '97, we presented to the Seaborn Commission Environmental Assessment Panel on Atomic Energy of Canada's nuclear fuel management and disposal concept for burial of high-level nuclear waste in the Cambrian Shield.

As noted in the panel's final report of February, 1998, PCWO stated:

> "The public at the end of phase II technical hearings was left with a feeling of grave unease. The best that could be said in favour of the AECL's concept was stated by SRG, that it could, might, should be doable."

PCWO also took part in NWMO's 300-year adapt a phase management approach consultations and between 2007 and 2008, we were an intervenor in the Ontario Energy Board hearings on Ontario Power Authority's integrated power system plan, with the responsibility before the hearings were postponed to bring an expert witness regarding the lifecycle costs and risk of nuclear waste management.

Our witness was to be Marvin Resnikoff, a foremost nuclear waste management expert in the United States.

In 2008, PCWO commented to the Ontario Drinking Water Advisory Committee on the need for Ontario to update its regulatory standards

for releases of triturated water to reflect the 1994 recommendations of the Advisory Committee on Environmental Standards, that these be reduced from 7,000 becquerels per litre to 20 becquerels per litre by 1999.

And in 2010 we commented to CNSC regarding the Bruce Power licence application to transport radioactive steam generators from the Bruce site to Sweden and on -- to Sweden.

Initially, we felt strongly that these hearings should be delayed because the following concerns and questions we had such as our uneasiness that the recent CNSC approval of the Bruce transport of radioactive steam generators, that according to Bruce statements from the 2006 environmental assessment, were too dangerous to move off site.

The uncertainty re: the ability to isolate the nuclear waste from the public and the environment for an extraordinarily long time while the international regulatory agencies themselves seemed to be hesitantly just beginning to develop uniform precautionary safety standards.

For example, CNSC's Ms. McGee noted that we do participate on international

working groups and one of the working groups is Geosafe through the International Atomic Energy Agency and this is a three-year project to develop international practices and standards through demonstrating geological repository safety, March 31st, page 101.

The absence of Ontario Energy Board approval of the long-term energy plan which of course would verify the fiscal prudence of new nuclear plants, the uncertain time span before NWMO's 300-year adapted phase management plan finds a willing host, determines the geology is sound and again is receiving existing nuclear fuel waste from the nuclear plant onsite storage ponds and dry storage. There are also questions as to how new nuclear waste will fit into this timeframe.

The claim by the nuclear industry in ads, literature and presentations that nuclear is safe, clean and green, when there's considerable evidence to the contrary.

We note Bruce Power's assurances that worker safety is important, yet over 200 workers who were dissembling reactors at the Bruce had been tested after inhaling alpha radiations doses which will seriously affect their health over

several years.

The uncertainty of the EA approval of the OPG's proposed ecological waste repository for existing low and intermediate-non-nuclear fuel wastes on the Bruce Western Management site, given it's location near Lake Huron, the drinking water source of millions of people, and the very strong opposition on both sides of the border.

The definition of a willing host community and the use of jobs and financial incentives to attract them should a community be considered a willing host community for either NWMO's repository or OPG's at the Bruce site, given that the willing host community such as Kancardine have been promised, by agreement, $35 million over 30 years plus jobs to sign on.

The uncertainty of AECL's future and type of reactor to be selected and sited most of which are in the design stages.

The absence of federal insurance legislation to cover the enormous cost of a single nuclear incident arising from human error, earthquake, loss of power to generators, transport accidents or malevolent intent.

The insurance requirement is only

$75 million per incident, which is not even near what the actual cost could be and far below the suggested level of $650 million in Federal Bill C-15 and the $1 billion suggested by the insurance industry.

Public unease regarding the population density near both Darlington and Pickering which continues to increase and the need for the very worst case precautionary approach to such things as evacuation, interruption of businesses, schools, social services, as now in evidence in Japan.

Question around where any new nuclear waste fits into all phases of the 300-year adopted phase plan.

The dangers of keeping nuclear waste onsite for a protracted period of time and the repetitive nature and increasing magnitude of earthquakes along the fault lines at both Pickering and Darlington sites.

The expansion of NWMO’s search for a safe high-level nuclear waste repository to the ore division sedimentary formations and OPG’s determination to site a deep geological site for the low and intermediate-non-fuel nuclear waste in

these formations, this despite the warnings of Geosafe in the study for NWMO that the ore division shales of the Michigan basin have physical properties that can undergo significant alteration with low or moderate changes in moisture, temperatures or stress.

This is confirmed by J. Robert Janes, author of *Geology and the New Global Tectonic* who noted that these shale formations can creep.

Most crucially and dramatically, public awareness worldwide of the need to observe, document, learn and react in a precautionary way to the final outcomes of the magnitude 9 earthquake, the tsunami and reactor meltdowns in Japan.

However, in observing the excellent precautionary presentations today from independent environmental experts and the in-depth questions of this panel, we feel it is in the public interest for the panel to take this opportunity to very closely note and query the adequacy of the information OPG and supporters are putting forward, and in your deliberations to carefully consider, as the Seaborn Panel did to AECL’s application in 1998, turning the application

down at this time as premature.

We reference the Seaborn Panel since what has come before this panel so far is a déjà vu experience for PCWO.

Today the information provided to you by the Proponent is similar to that which AECL and its supporters presented to the Seaborn Panel.

It is often of a general nature. It leaves a great deal out and asks the panel to have trust and, again, it is self-serving.

A general, but important example of this latter point is to be found in Mr. Nash's truncated explanation of the Seaborn final recommendation from its 10-year hearing.

While he stated correctly that AECL's proposed burial and containment of nuclear waste in the Cambrian Shield was theoretically doable, that society wasn't convinced. He incorrectly stated that the panel recommendations were largely incorporated into the 2002 *Nuclear Fuel Waste Act*.

What he left out was telling, i.e., the panel's findings that independent social science information and determination should be a part of the plan and its recommendation that a

nuclear fuel waste management agency be established quickly at arm's length from the utilities of AECL with the sole purpose of managing and co-ordinating a full range of activities.

The panel also drew attention to numerous scientific flaws and recommended to a future management agency, that they review all social and technical shortcomings identified by the scientific review group and other review participants, 125 by our count at the time.

PCWO notes that even after AECL spent over $700 million on research at Whiteshell and then its consultation costs to prove its second concept, they failed to convince the panel which noted that we are very concerned about the number and nature and importance of the scientific uncertainties.

We're also concerned about the specific shortcomings in the AECL proposal that many eminent scientists identified.

This panel has as much the same task as the Seaborn Panel, the review of a concept, only that panel -- only that panel had 10 years at its disposal which allowed a very thorough testing of what AECL assured us was safe, but which the

panel found wasn't proven.

In contrast, this panel’s time frame is short, but if you continue to listen closely to independent scientists, ask probing questions and use the precautionary principle, it is not impossible for you to determine if there is really enough in-depth and inclusive information to allow the proposal to go forward.

The kind of underlying questions we would like to see answered thoroughly should, in general, be does the information repeat past trends such as drawing support from and cross-referencing various pro-nuclear agencies and organizations and downplaying the information from independent scientists?

For instance, as we noted earlier, is it satisfactory for OPG and CNSC staff to say all is well because we in the nuclear scientific community are working on this?

We note Panelist Pereira’s question on April 1 regarding barriers between fuel and the environment, barriers that would stand the test of time in terms of resisting corrosion or whatever breakdown mechanisms containing radioactive elements that are in the fuel, and Mr.

Howard’s answer that, “CNSC participates extensively in international groups that are examining deep geological deposal. There are a lot of issues around the integrity of the fuel when it’s placed in a repository, how it’s going to interact over decades or centuries or beyond” -- March 29.

Why are the proponents, regulators and various ministries seemingly stuck in a time warp when giving safety assurances to public health, worker and environmental protection on nuclear matters?

For instance, until recently regulatory -- excuse me, I'm -- I'm lost here -- regulatory agencies and the nuclear industry used the standard man as a point of reference for exposure to radioactivity and failed to take into consideration gender, age and ill health.

And at the Seaborn Commission’s hearing, the proponents assured PCWO that it was okay to use Canada’s 1975 standards for radioactivity when Europe had moved to 1991 standards, and we were preparing at that time to tighten up further.

Have the proponents taken into

account the complete life cycle of nuclear and have they considered the worst-case scenario? Given the extremely high costs and lengthy time frames of dealing with nuclear waste, will NWMO have the resources to properly ensure long-term isolation and oversight?

Conclusion. This panel has a very onerous and important responsibility, one which PCWO feels should be taken on as a commitment to public and worker health and safety and environmental protection for now and well into the future.

There is much for the panel to study and there is a huge divergence of opinion between the proponents and the many independent witnesses and the public who have testified; however, the hugely important incidents in Japan have provided a real life rather than a theoretical background and a sense of the heretofore unthinkable possibilities.

It is crucial that you satisfy yourself that the public is not left with generalities, theoretical probabilities; that there are more knowns than unknowns and that we have confidence that the panel’s decision will not be

the fatal first step backwards towards another nuclear future of added waste, cost and considerable risk.

We would respectfully recommend that before rendering a decision, the panel satisfy itself that there is an urgent need to give its approval.

If this is not the case, we urge you to declare that the application is premature as there is not enough evidence to prove its merits.

Thank you.

CHAIRPERSON GRAHAM: Well, thank you very much, Ms. Janes.

I'll open the floor now to questions and I'll go to my colleague, Madame Beaudet.

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

You did say that your organization participated when there was a panel to review -- to study, rather, how waste management should go. You didn't -- you did bring up the fact that the major concern is the long-term isolation.

I'd like to hear from you, from

your organization, what are the other aspects concerning waste that you feel should be considered?

MS. JANES: Well, we -- we are really -- we are quite concerned about the costs and they seem to be very much downplayed in all of the estimates.

Our nuclear waste expert that we had engaged -- one of the issues he was following was the extraordinary leap in costs. He mentioned the Yucca -- Yucca Mountain site and a lot of it, I think, related to cost. It’s just enormous costs for this.

The other thing is really to keep it -- how does one even envision keeping this waste away from the public in the future? And we’re very, very worried also about the geology that’s involved in it and, at that time, it was -- the AECL brought a proposal forward and I'm trying to remember the particular containers, but it wasn't copper.

And towards the end of the hearing, they had to bring in another -- having done all this research up to that point, most of the money was spent before they brought this

forward, and they brought forward the copper encasing.

And even though they seemed to have a lot of information, both of the scientific review committees, the one that was their own that belonged to the panel and the other was an independent, the Royal Society, a lot of them pointed to an awful lot of flaws in this.

So having spent all that money and all that science and we still didn't -- we don't have a solution.

And now they’re repeating some of the errors that they were chastised for by the Seaborn Panel such as offering jobs. This happened the first time around.

Over a 10-year period, they were offering jobs to the First Nations up north. They were doing all of this and that’s always a big lure, the job, and so they asked them also in one of the recommendations to start over with their public consultation.

Now, we'd been part of that and we found it to be rather nebulous again, rather superficial, a lot of emails and a lot of emails from the same people. The meetings were not

documented as to who said what. It was just all in groups.

And then at one point in one of the meetings, we had one of the -- one of the people who was part of our group put things on the -- on the -- reported incorrectly this way and we had to make changes, so it wasn't really a public consultation. It was sort of a PR -- PR thing, so I hope that answers your question.

MEMBER BEAUDET: Yes, thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

I'll start with CNSC staff. And the intervenor commented on the fact that the IAEA is developing a guide or a standard on long-term management of used fuel waste.

Can you give us some information on what that initiative is about and what is available?

MR. HOWDEN: Barclay Howden speaking.

I don't have the time scale, but I'll endeavour to get that.

But the initiative is to provide international guidance to countries for the long-term management and disposal of radioactive waste.

A lot of the work is built on international research that the IAEA has been either sponsoring or the NEA, the Nuclear Energy Agency, has been doing and I believe the intervenor had referred to one Geosafe, but there's a couple of other international ones that Canada is contributing to.

And the intent is to provide international guidance so that countries can adopt the guidance as opposed to having to develop it themselves because there's major research efforts and any individual country can contribute to it, but all the countries contributing to it actually gives you better information.

I'll have to talk to our waste people and let you know what the timing is. I should be able to provide that after lunch. We'll just contact them for that.

MEMBER PEREIRA: Thank you for that brief overview.

As far as Canada is concerned, does the CNSC or other organizations in Canada have guides or policy documents or standards that relate to long-term management of nuclear waste?

MR. HOWDEN: Barclay Howden.

Yes, the government of Canada has a 1996 policy on all waste types, not just the long-term management of waste.

Additionally, the CNSC has three guides out. One is called N294, which is the storage of used fuel, which is intended for long-term management of fuel before a disposal option is found.

Related to that is the requirement for financial guarantees, which is guide G-206. And also we have a guide 219, which is preliminary decommissioning plans which talk about decommissioning, but when you decommission, you are generating waste.

So there's guidance in there on that –- the waste within the primary decommissioning plan. Long-term management of waste, whether it's below, intermediate, or high level needs to be accounted for.

MEMBER PEREIRA: And all of these

documents that you refer to, are these internal CNSC documents, and can you go into –- outline how they are developed and whether they're available in –- for public review?

MR. HOWDEN: Barclay Howden speaking.

Two of the documents, G206 and G219, are CNSC documents which are available on our website. They were developed quite a long period of time ago, but they would have went through a public consultation process where the public would have had an opportunity to comment.

Comments would have been dispositioned, and then the commission would have reviewed those –- the documents and the disposition of the comments and the comments.

N294 is a CSA standard, the Canadian Standards Association, so that would have been developed within a broader audience in terms of industry, academia, and the CNSC would have been involved in that.

Those documents, the CSA documents, although they're developed by a broader group, for the CNS –- the CNSC in the end needs to be satisfied that those documents are satisfactory

for regulatory use.

MEMBER PEREIRA: Thank you very much.

Now, back to the intervenor, Ms. Janes, just a couple of points concerning some of the comments you made.

I believe you commented on the unease in the population around the generating facilities about the development of these facilities.

We have had a number of intervenors from the community, and, in fact, this morning, we had a number of intervenors primarily from the vicinity of Darlington and Pickering, and they generally expressed no concerns about the fact that these facilities were in their communities.

So that was the sort of feedback we're getting, and that has been the general theme of other intervenors who have come before us from the community. Maybe from further field there is concern about these facilities.

And another comment concerning the standard –- the standard man used for radioactive dose estimates, that has been an issue raised by many intervenors.

And in responses over the past few days, we have had the regulators, the Canadian Nuclear Safety Commission, stating that the practice now is not to use the standard man but to –- the indoors estimates to consider the age and gender of the the person receiving the dose.

I'll go back to CNSC to confirm the fact that I am capturing what they are saying correctly.

MR. HOWDEN: Barclay Howden speaking.

I'd just like to make one correction before I start. The CSA standard is N292, Interim Long-term Storage of Radiated Fuel.

And, yes, Dr. Thompson spoke to this yesterday where the standard man, which was a very old standard, focussed on workers when most of the workers were men. Now the –- the models use infants, children, teens, and adults, both men and women, to do the assessments.

MEMBER PEREIRA: Thank you very much. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much, and, again, Ms. Janes, thank you very much for your telephone conference and your oral –-

your oral presentation this morning.

MS. JANES: Not to interrupt, Mr. Graham. I thought that the panel member asked a question of me through you?

CHAIRPERSON GRAHAM: My understanding was that he was addressing your statement from the –--

MS. JANES: Oh.

CHAIRPERSON GRAHAM: –-- from the observations given over the last several days with regard to general acceptance by the population and with regard to health studies that have now been broadened. That was my understanding. He was referring to you but not asking a question.

MS. JANES: Would I be able to answer those questions even though they were not addressed to me, as a final?

CHAIRPERSON GRAHAM: The rules say no, but I'll say yes.

MS. JANES: Oh, thank you very much.

CHAIRPERSON GRAHAM: But very, very briefly, please.

MS. JANES: I knew you would. I was watching you.

Yes. I guess the point we were trying to make was that the regulations and the standard drag, you'll notice the dates on quite a few of them, and I imagine that now for the standard man and changing to where it should have been changed just –- is just very recent as well. And for years and years, we've been going with the standard.

As to the people in the various communities who don't –- don't have a problem, I have met –- there was group in Durham who was certainly concerned about the nuclear in Pickering, and usually in issues such as this, we found in other environmental issues the jobs seem to trump everything, and so that's my final word.

Thank you.

CHAIRPERSON GRAHAM: We thank you very much for your presentation and also for your observations on panel member's responses. Thank you very much.

MS. JANES: Thank you.

CHAIRPERSON: And with that, in light of the morning and the time that we're at right now, I think that we'll be able to alter the agenda just a little bit.

And my understanding is that Ms. Dianne Knight has agreed to make her presentation this morning instead of this afternoon.

And, again, Ms. Knight was to and will be doing it by telephone conference along with Curtis Bennett, and my understanding –- just a moment now. Ms. Knight's intervention is found in PMD 11-P1.244 and PMD 11-P1.244A.

So technically, Ms. Knight, are you on the phone?

MS. KNIGHT: Yes, I am, Mr. Chairman.

CHAIRPERSON GRAHAM: Well, thank you very much, and welcome to CNSC –- not CNSC, pardon me, Joint Review Panel review of the Darlington New Build, and you are now on the agenda, and you can proceed with your presentation.

--- PRESENTATION BY MS. KNIGHT AND MR. BENNETT:

MS. KNIGHT: I would like to introduce my co-presenter, Mr. Curtis Bennett.

CHAIRPERSON GRAHAM: Yes, go ahead. I did mention him perhaps before you were hooked up, but go ahead. So you do your introductions, and the floor is yours.

MS. KNIGHT: Curtis, would you

like to introduce yourself at this point, please?

MR. BENNETT: Yeah. I want to first thank you very much for allowing us on such short notice to present for you.

Just to let the panel know that my background is I have a building engineering background, and I also have a separate education with provincial and national credentials in electrical energy provision to building to development. So and what that means theoretically is, you know, my professions actually calculate those energy uses that are required for building development and for industry.

Now, what I did differently on top of that is I actually built that double education to compliment an extensive background in infrared technology, which just allows us to see temperature accurately in the infrared spectrum.

And as we present some of this information, I'm sure that some of you are going to feel a little bit blind-sided, but do this with the understanding that, you know, at the world's academia, although we consider temperature in everything we do, building development is signed off as compliant.

Even though that very important law originates with Environment Canada –- Environment Canada's contribution through buildings codes, so we –- so we use energy responsibly.

And I'm going to be just helping Dianne here explain to you as we move forward here how we found a very serious problem, not just with Canadian buildings, but with development as a whole that just couldn't be seen before, and we're using a lot of energy.

And when I say a lot of energy, I'm talking billions and billions of dollars, and probably enough even to meet Kyoto's protocol and just this waste that we're employing, reacting to the symptoms of buildings being radiated by the same sun that burns our skin. And even though Building Code covers this, again, we couldn't just see it before.

So we're going to be showing you some accurate temperature information. And, again, my point in bringing this information forward is never to take away from what you're trying to do, but developing new energy sources while we're employing this incredible energy waste that you just aren't aware of just needs to be brought to

your attention so that –- so that you can do your most important job.

MS. KNIGHT: Thank you. That was excellent.

Slide one. Darlington Nuclear. If true costs and safety risks for all future generations are actually incalculable. Slide two. Let us see a new green perspective.

David, are we on slide three?

Dear panel members, I thank you for the wonderful privilege granted to me to speak today, and as of yesterday, allowing Curtis on this presentation with me.

I asked the question of the panel what would happen if you could see where you have never seen before, where energy is being lost and when we implement safe, economical, sustainable, new conservation methods for our building, turn around the future of Ontario, seizing the opportunity to become a world leader with a tiny footprint?

Slide 6, David, please.

Let’s take a look. Go ahead, Curtis.

MR. BENNETT: Okay. When we talk

about solar EMS causing global warming in the winter, now what she talks about there is just something I've posted in general that urban heat islands are something that cost the world a tremendous amount of money in an energy response.

But we couldn't see what was actually causing an urban heat island and when we were asked to take on this incredible temperature challenge, they knew that urban heat areas were slightly warmer.

What they couldn't qualify is that each and every building was, in effect, being radiated by electron. And when I say "radiated" I want to be very careful because this isn't the same thing that's going on in Japan. We're talking about being radiated by solar EMS.

Now, the same way that that sun burns our skin, you know, Environment Canada passes on this incredible contribution to building codes where they tell us, "Here's your design criteria in your specific area and you will design and insulate and put in your building systems to accommodate these specific temperatures".

And even Environment Canada takes it further where it says to us as builders, "Watch

out for solar radiation because it can be more significant than design criteria".

And what you're going to see with this slide and this information that's available to you is that even in the wintertime, here I am on a minus four degree Celsius day in Kelowna, British Columbia. I'm picking up building skin temperatures as high as 60 and 70 degrees Celsius without emissions being produced.

Now, in the summertime, the saddest part about this is that because the UV index is stronger, we're closer to the sun. We're actually responding to the symptoms of these buildings being radiated with something called air conditioning. And air conditioning, as you're going to find out, is air conditioning is, in fact, refrigeration.

It's a very nice trade name, but it is refrigeration and even as a builder, I've got to tell you -- and an energy provider -- this information contradicted my own education because we never thought about putting heating and air conditioning or refrigeration in the same application.

Okay, so then I'll just move

forward with the slides here, but what they're talking about here is that, you know, even though I did this for the United States where we did studies in 26 states and 7 provinces and 7 countries to show that buildings, as a rule, were being radiated by these EMS from the sun.

And again, imagine avoiding this with a coat of paint. Imagine avoiding this with shade that we just couldn't see before.

And again, I'm not here to be commercial in any aspect of this because this is my area of expertise, but to see building codes signed off at the end of the day saying, okay, we're all going to pick up liability for this even though we don't know what the heck is going on and we just couldn't see it.

So one of the examples that they're talking about here is imagine this, the City of Los Angeles uses over $100 million a year in energy cost emissions of burning coal and all the above reacting to their buildings being radiated when they could have been painted and employed proper finishes in the very beginning and caught them before this became a warranty issue for taxpayers.

And so I'm going to just proceed actually to Slide Number 6 now and I want to show you an image here. Now, David, are we on Slide Number 6? Do I have to say that every time or are we okay?

CHAIRPERSON GRAHAM: We are following you and you are on Slide 6.

MR. BENNETT: Okay, good, Slide number 6.

Now, what you're going to see here and again, you're going to see these slides and I'm actually going to look forward to showing you more information, but you're going to see a temperature scale to the right of the slide for each of the infrared images.

Now, what we did is we started solar radiation experiments first thing in the morning because we wanted to see how fast it was interacting with buildings or if, in fact, it was interacting with buildings because if you reflect these EMS, they're harmless, but if they get a chance to interact with something, they can be very dangerous.

And what you're going to see in this first slide here is we started at 6:53 in the

morning and the buildings are fluctuating with atmospheric temperatures.

And again, what you're going to see in the second slide is at 8:18 in the morning, the building is up around 47 degrees Celsius when the temperature outside is 9 degrees Celsius. So here is this net heat gain atmospherically that changes this weather formula which is, quite frankly, the interaction of cold and warm air and water vapour.

Environment Canada does not want us to heat the atmosphere for all the right reasons in the world because we share that atmosphere.

So again, this is just very basic information here. We actually did time-lapsed videos over 2-minute increment. It was horrifying to see how much heat was generated on the side of the building even early in the morning. And imagine this in Canada.

Now, Mr. Harper has committed -- here's an example of this. Mr. Harper committed to spending, you know, $800 million in Keephills, Alberta to capture carbon. At the same time that he was talking about that, we're documenting building skin temperatures 94 degrees Celsius on a

35-degree day.

And like I said, in the summertime what we're doing is -- and you're going to see examples of this -- we're responding to the symptoms with air conditioning which is a great, big electrical load.

You know, my building itself uses the equivalent of -- has to generate the equivalent of 30 100-watt light bulbs an hour just to run my air conditioning which is reacting to the symptom of my building being radiated.

Now, I'm going to switch back to -- go to the next slide and here's what you're going to see here is on the left-hand side of this slide, you can actually see here's a brand new development. These are $600,000 homes, but because we put absorbent instead of reflective or protective finishes on that development, it's 23 degrees outside and that whole development is up in the -- up around 80 -- 86 degrees Celsius.

And once you generate that heat -- and that building's only designed for a maximum of 33 degrees Celsius -- that heat transfers and it transfers outside atmospherically where it's changing the weather formula and contributing to

climate change and it’s also transferring back inside the building where the building’s just not insulated for those temperature extremes.

Now, all of us have been in a building before where we’ve said, “Oh, my goodness; it sure is hot in here.” We just truly couldn’t see before that the exterior of the building had become a source of heat and that urban heat islands were, in effect, buildings being radiated and cooking people from the outside.

Now, just even -- and this is a little bit of the importance of this consideration. The image on the right-hand side shows two buildings; one doesn’t have the roof on it yet and the shingles on it yet and that’s just simply to demonstrate if you look at the colour palette to the side of that image, you’ll see that that unfinished roof is cooler because we haven’t put on these dark, absorbent shingles to mix with their neighbourhood theme which therefore would generate more temperature.

So I’m going to switch to the -- I’m sorry, I’ve already switched to the next slide here. So now I want you -- hold on, I’m sorry about that.

Okay, here we are with the next slide here. Now, I want to -- this is so important here with this one here because this one actually made me panic a little bit because, as a building professional and an energy professional, we want to generate as few emissions as possible because at the end of day for me too I also lecture medical education on what these emissions are doing in producing inflammatory responses and problems within children that doctors just can’t see or with an adult just can’t be seen.

So what we did with this -- to again expand on this, you can see on the image in the top left-hand side, we’ve actually put two different paint colours on the side of the building; one being brown and one being white and we stuck a piece of Styrofoam in the middle of it.

Now, the reason we put the Styrofoam in there is just to show that there are products that just don’t get UV excitable. We’re not talking about using Styrofoam, but you can see that the temperature has doubled from the dark side to the light side in just using paint.

Now, imagine this; when we do business development and building development

across Canada or anywhere in the world, those building exteriors have a function. They're an envelope to shed the elements and to protect us. They're functional. They're not supposed to be pretty. And so just this simple issue here. Now, you'll see this actually when it ---

CHAIRPERSON GRAHAM: Mr. Knight -- Mr. Bennett and ---

MR. BENNETT: Yes?

CHAIRPERSON GRAHAM: --- Ms. Knight, you've used up quite a lot of your time and the relevance to the Darlington new build and this Joint Review Panel's review. So I just wonder if you wanted -- we have your presentation. We have gone through it all; the panel members have, but I wonder if you want to get back on the new build and the relevance.

MR. BENNETT: Well, that's exactly where I'm at with, you know --

CHAIRPERSON GRAHAM: Well, as I say, you're using up quite a lot of your time and according to what I have, we would like you to get -- speed it up so that you can come to the point that you want to make.

MR. BENNETT: Yeah, precisely and

the only reason I'm taking this extra time on this is -- you know, and again with the greatest respect is that, you know, all the consultants in Canada haven't seen this information before. We use a calculator with the greatest accuracy.

So what this set of images does here is this actually shows you what's happening on the inside of the building and you can actually see that because we've generated heat on the outside of the building, it's transferring inside the building with the image on the right-hand side.

When you switch to the next slide, you can see here is that same building with the brown and white paint, but on the right-hand side, you can see where we've employed 3,000 watts of air conditioning to react to that symptom and because it's air conditioning and -- or refrigeration, it's actually laying on the floor while the top of the wall superheat the building.

So this 3,000 watts per hour is a waste and this is just one building. So, again, we're talking about, you know, with any new energy development, why wouldn't you want to make sure that -- of this excess demand.

We're reacting to symptoms before

we build something other than, so these images will just show you that this is what's laying across there. And technically, sir, listen that's illegal. That's illegal according to Environment Canada. It's illegal according to building code and it's a big energy waste.

And from there we can just step into this that I'm -- again, I'm not here being commercial. I'm looking for your leadership on this that when we present this information for Ottawa and otherwise, the entire United Nations is missing this information. And it is a big deal for Canada to be bringing this forward.

But again, with what you're doing with energy there, either in retrofits or developing new energy provision, we have to deal with this massive, massive waste that's going on or be aware of it, so that you can just do your jobs responsibly.

And, Dianne, do you want to take a go from there?

MS. KNIGHT: I think Curtis has covered slides 10 and 11 and 12 and 13 and 14. He's explained all those thoroughly.

MR. BENNETT: And, again, they've

got this presentation in here. And, again, I would just ask you to take close look at this information because even when I dealt with Ottawa and they said we have our own consultants. Their consultants -- we have the same education, but we're blind in a calculator.

So I would just take you to -- have you take a serious look at this. And something that Diane talks about at the end of her presentation here, and the reason she asked me to talk about this too is October 26th, I believe, I was an expert witness for Health Canada Standing Committee on the potential harmful effects of EMFs, so one of the things that -- again, asking you to consider this because it's just of interest is that, you know, EMFs are very unnatural to what we're doing.

Have they considered EMFs impacting the water or impacting the insides of the facilities and somehow interacting with that process? Because these EMFs are just causing a lot of problems out there we just couldn't see before.

And, again, I'm not trying to be all over the -- all over the place on this. We've just got some precedent study information for you

and if we could even pass on a presentation related to that or answer any questions, I absolutely look forward to that.

MS. KNIGHT: The point of my presentation is slide number 16. If you can bring that up on the screen for us, please, David?

With the heat reflectors as Curtis has mentioned, would Ontario Power Generation's proposal to build additional reactors at Darlington be totally obsolete before it even got off the ground? Therefore rejected and all existing reactors be retired because they would not be needed at all.

MR. BENNETT: And, gentlemen, what she means with that truly is -- and when I've contacted the Ontario Government, imagine if Ontario could reduce their emissions and there electrical consumption just by dealing with this waste and is that significant enough that that's worthy of your attention on this?

Because how much energy do they use in the summertime responding to urban heat islands? What is the air conditioning load associated with that?

And that -- that could immediately

be saved at the front end of this by -- by professionals being responsible of their buildings and using the proper finishes on them to stay within the existing code.

MS. KNIGHT: Slide --

MR. BENNETT: And I would like forward to any questions on this.

MS. KNIGHT: Slide 18 is my personal background. I grew up in the cold war. Slide 19 is the same. Slide 20 is very significant. In my self-education work, I came across an interesting website that relates to nuclear. And I've reproduced screen shots on slides 21, 22 and 23.

It's an almost unthinkable outcome that the Electrosmog flying around today could right now be possibly corroding the rods right inside the nuclear reactors.

So if you can go to slide 21 about building 13? Slide 22 where this took place for excess mortality over the researchers. Slide 23 references the website where this information can be found.

And I draw your attention to the last paragraph on slide 23.

"This interaction from EMF is a new phenomenon that accelerates the corrosion of metal elements such as water pipes and guttering, reinforcements and concrete, et cetera, and even the rods of nuclear reactors."

So I encourage the Committee to review that, please.

And, Curtis, go back to slide 24, please?

MR. BENNETT: Slide 24 on the error?

MS. KNIGHT: Yes.

MR. BENNETT: Yeah, and what's she talking about the error in safety code 6. Now, error in safety standards I should say.

Safety standards do not want EMFs to interact with a lot of things. We actually try to separate signals, so that EMFs do not cause a problem, but when it came to the interaction of these EMFs with people, there was an error in safety standards.

And what I did present to the

Committee on the 26th is that, you know, we -- we weren't taking the right science into consideration and there was missing critical data on -- that this EMF interaction exists, but it said, just a very serious issue that -- if they are talking about an corrosion of rods or any potential of -- you know, these EMFs how we generate electricity and they just -- they are a very serious consideration that we just need to pay attention to for their interaction with all things.

MS. KNIGHT: And slide 25 is saying, "Thank you and please make your decision according to the law of love." It said, "Choose the best possible future for all of humanity, our creatures and our planet."

MR. BENNETT: And I would take it further and say, we need to do this for the laws of science. That all the laws are there that Environment Canada has these laws, that we've got this big waste that we just weren't aware of and you as the Panel were not aware of this as well, and I only say that as a credentialed professional, both provincially and nationally.

Can I answer any questions for anybody?

CHAIRPERSON GRAHAM: Thank you.

The rules are now that I go to Panel members and they may either have questions to you or to the other officials here. And I go, first of all, to Mr. Pereira.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman, and thank you for your presentation.

We will take your -- the points you have made, the information you offered into consideration as we deliberate on the matter before us. Thank you very much.

MR. BENNETT: Okay.

CHAIRPERSON GRAHAM: Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'm just trying to integrate what you've brought up here with what we are doing.

Correct me if I'm wrong, but you seem to propose that there are certain things that we can do for energy conservation and energy efficiency and by saving some megawatts of -- we could -- it could be used to -- not to have nuclear power?

We had a presentation yesterday that said that there are other ways that in terms of renewable energy that we could use some megawatts there to replace the project that’s under study at the moment.

And for you, you seem to underline that there is certain aspects that we don’t consider when we do our buildings. Whether the buildings code has overlooked certain things or Health Canada doesn’t specify things that should be done in the code 6 and that some energy could be saved and be used to better end.

Is that what we should understand?

MR. BENNETT: You know, you’re exactly right, it’s not just talking about that, you know, there is other alternatives out there available that would do very well. I’m talking about there is existing energy waste today that could be addressed that we just couldn't see before and it is very significant.

And especially when you look at the United Nations’ meeting, you know, whether it’s in Copenhagen or Brazil, where they’re talking about spending hundreds of billions or trillions of dollars in a global economy to address these

specific issues that are presented in front of you today, they just couldn't see that here's a building that's using energy. So you're exactly right.

Here's a very existing issue right now where savings would be immediate, but also in the work that we do there are incredible avenues for using alternatives that we just couldn't see before and, hence, me presenting this information and looking for leadership then to answer any other questions for your professionals after the fact as well.

MEMBER BEAUDET: Thank you for bringing that up with us, and thank you, Mr. Chairman. I have no questions.

MR. BENNETT: And similarly, if I can just add to this too, is that when it comes to the code issue, our building codes are wonderful. These are violating building codes; these are violating energy codes today and so it's not a matter of a code change or taking up with a different department. We just couldn't see this before.

CHAIRPERSON GRAHAM: Thank you, Mr. Bennett.

Now, I'll go to OPG, do you have any questions?

MR. SWEETNAM: Albert Sweetnam. No questions, thank you.

CHAIRPERSON GRAHAM: CNSC?

MR. HOWDEN: Barclay Howden. No questions, thank you.

CHAIRPERSON GRAHAM: Government participation? With that there are no questions.

We want to thank Mr. Bennett and Ms. Knight for your presentation today and you're always, as all submissions, they will be carefully considered. Thank you very much and that winds up this morning's presentations.

And I'll now declare a recess and the floor will -- or the meeting or the panel will resume at 1:30.

Thank you very much.

--- Upon recessing at 12:30 p.m. /

L'audience est suspendue à 12h30

--- Upon resuming at 1:30 p.m. /

L'audience est reprise à 13h30

MS. MYLES: Good afternoon everyone. My name is Debra Myles. I'm the panel co-manager.

Welcome back to today's second session of the Darlington New Nuclear Power Plant Project Joint Review Panel public hearings.

Secretariat staff are at the back of the room. Please speak with Julie Bouchard if you are scheduled to make a presentation today, or if you'd like permission from the chair to put a question to a presenter, or if you're not registered to participate but would now like to address the panel.

Opportunities for questions to a presenter or a brief statement are subject to the availability of time.

Please identify yourself each time before you speak so the transcripts are as accurate as possible.

And as a courtesy to everyone in the room, please silence your cell phones and electronic devices.

Mr. Chair?

CHAIRPERSON GRAHAM: Thank you very much, Debra.

Just before we start with the first presentation, I believe CNSC, Mr. Howden, you had clarification to give to the panel.

MR. HOWDEN: Yes, Barclay Howden, for the record.

This morning there was a question asked by Mr. Pereira in terms of the safety standards that were being developed by the International Atomic Energy Agency. And so I obtained some information from our specialists in Ottawa. So I'd just like to make you aware of three documents that are available -- would be available on the IEA website.

One is *"Geological Disposal of Radioactive Waste Safety Requirements"*, which is series number WSR4, which was -- actually was a published in June, 2006. And in this document it talks about low, intermediate and high-level radioactive waste including used fuel.

Another document that is in development, it is in draft, which I think is of interest to the panel, is draft safety standard DS357, which is, *"Monitoring and Surveillance of Radioactive Waste Disposal Systems"*. This is going through a review period right now and is scheduled for publication in 2012.

There's one other document, DS355 which is a draft document which is the, *"Safety*

Case and Safety Assessment for Radioactive Waste Disposal", and it's in development and our staff are trying to obtain the date for publication. We'll let you know as soon as we hear that information.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much, Mr. Howden.

So to start off the afternoon's agenda, we have two participants who are each registered as oral statements. I remind everyone that only panel members will be asking questions after each oral statement.

And the first participant this afternoon is Karen Buck. Ms. Buck, welcome to the Joint Review Panel, the floor is yours.

--- PRESENTATION BY MS. BUCK:

MS. BUCK: Thank you very much and it's really a pleasure to be able to come and speak and be welcomed here.

I am the President of Citizens for a Safe Environment and basically we do advocacy work for clean air, clear water, clean soil and we're looking to build healthy communities for healthy Ontario -- Ontarians to live in. So that's

sort of why I am here and what has brought me here.

I want to start with tritium and -- because it is our Canadian experience with nuclear and the CANDU reactors. It's a radionuclide. It's a Beta emitter and it is associated with increased cancer risk. I'd like to talk about the current nuclear concerns around tritium and they're brought up in a number of news articles.

For example, Paul Dewar is very concerned about tritium releases and tritium in water and has said that the Canadian regulation is far too high and would like to see it reduced to 200 as an interim and 20 -- oh, 100 as an interim and 20 as a final becquerels per litre.

I agree with him as he says:

> "As radioactive hydrogen, tritium cannot be filtered out of water and it does have a half life of 12 and a half years."

The tritium awareness project says the AECL nuclear plant released 28 trillions becquerels of tritium into the Ottawa River and there are indications that it is in the Ottawa

drinking water source.

The Canadian Nuclear Safety Commission said tritium releases from Chalk River have been controlled and monitored within environmental standards, which I believe are much too high, and that the public faces no risk. I'm not really sure of that.

I did talk, prior to this hearing, at a meeting that was held as a public consultation to this process and I did bring up the concern I had about Chalk River leaks and the reporting of those leaks.

I was absolutely shocked to know that the person who was in oversight of Chalk River asked for the closure of that plant and political interference meant that the plant was not shut down. She was fired.

Someone else was hired and as a result, it opened up again and a leak occurred. If this is the way we control nuclear in Canada, it’s unacceptable.

The other thing is that the Canadian Government owns and heavily subsidizes atomic energy. It recently asked the New National Bank of Canada, a private bank, to propose an

escape plan for taxpayers.

That study remains secret, but the Globe and Mail, citing unnamed sources, reported on Wednesday that the only -- that the study recommends that the government sell at least 51 percent of that company to the private sector.

A huge amount of nuclear costs are borne by the taxpayer and I don't think it should be done that way. I think the nuclear industry should, in fact, have to look after its own costs and live up to its own cost estimates when it responds to an RFD proposal. It is not up to the public to continue to subsidize it.

There's another news item regarding the Canadian Nuclear Safety Commission and SRB Technologies, where that commission is probably going to grant a licence to discharge tritium in amounts up to 448 trillion becquerels per year though its stacks, and 200 billion becquerels per year into the municipal sewer system.

These radionuclides are not removed by wastewater systems, and that, again, is the way we're looking after things in -- in Canada. I think that that does not bode well for public

health goals. Tritium is a serious hazard in Canada and it requires urgent action by the public and legislators alike.

And virtually -- and then there's another news article here, you might have heard about them before, or you night have read them or been kept up to date by your own interests. Virtually every commercial reactor in the US is leaking tritium.

Those basically are my concerns. I would like to just say that the regulated levels of tritium, as Helen Caldicott said when she did a presentation before you here last week, that she thought it was going to be very, very difficult for the Canadian regulator and for the CANDU reactors, whether they're the old ones or the new ones, to actually reach 20 becquerels per litre, and that would be a concern.

I'd like to move on now to -- oh, I'd like to say that the Waterkeeper was actually cited in a new -- in a Star newspaper article, where they were asking for a closed unit for cooling; I would agree with that.

The less we use water and the more we conserve, and are energy efficient, the better

we are in a forward-looking manner in Canada. And also, he talked about protection of the fish at the water intake. And I would agree with that.

I am very concerned with the panel independence here, and I remember watching Chief Justice Dennis O'Connor and the proceedings on Walkerton.

I don't know what your position is here, but in Walkerton he had lawyers who advised him; he had researchers who advised him.

What I've seen here to date, and I haven't really looked into it, as that you're being advised by the very people who are putting the technology in place. I don't think that is the same kind of independence that was afforded at the Walkerton Inquiry.

With regard to the EA process, I've been involved in EA processes since 1990 in Ontario, and in Canada, and I would say that the EA process says that anything can be mitigated. It doesn't allow for sufficient buffer zones, and it doesn't ever really take into account accumulative impacts.

I'm very concerned about the EA process here, that it's generic, it's not based on

any one technology, and I do not support that. I think it should be a process that is on one technology and I believe that because I believe there will be very limited input into the licensing of whatever technology is chosen after the EA process, and I think that bodes very poorly for Canadian democratic rights.

I would like to also say that the economics of this area will be affected by the location of a nuclear facility here. I've heard just positive ones, but I really do think that we are in a transition away from non-renewable resources for our energy supply, and we should be moving away from nuclear.

Nuclear is a step -- it's keeping us in the past rather than moving us forward to where we should be going, away from uranium, radioactive materials that we really haven't been able to handle from the beginning to the end without interfering with the health of people and the environment and away from fossil fuels.

The alternative, I believe, one of the alternatives is that Ontario is a province lodged between Quebec and Labrador on the east, and Manitoba on the west. Both of these provinces have

large hydro facilities, and I think that we could purchase hydro from them.

CHAIRPERSON GRAHAM: Ms. Buck, I just want ---

MS. BUCK: And that ---

CHAIRPERSON GRAHAM: --- I just want to mention, you have ten minutes, and ten minutes are up, but I'll let you have a couple of minutes to -- to summarize.

MS. BUCK: Yeah. I think -- yeah, I've ---

CHAIRPERSON GRAHAM: If you need a couple more minutes, please summarize.

MS. BUCK: I think that's it. I think that my concerns about nuclear, I've -- I've gone through, that I don't believe in a generic EA process, and that I think that we should be in a transition state away from nuclear, and into a future of renewable energy. And that's it.

Thank you very much.

CHAIRPERSON GRAHAM: Thank you very much for your presentation. You've touched a lot of topics, from -- from user pay to tritium to input and so on.

So I'll start right off with my

two panel members and the first one being Mr. Pereira for questions.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman.

I'll focus on two issues. The first one is tritium in water and the hazards that arise from releases of tritium, and the examples given of some of the regulated facilities in Canada.

I'd like to turn to the CNSC for a comment on safety with respect to releases of tritium from licensed facilities.

MR. HOWDEN: Thank you. Barclay Howden speaking.

Yeah, tritium is like other radioactive materials that are emitted from the facilities. They're subject to what were called derive release limits, which are based on dose limits to members of the public.

Then within those dose limits, which is one microsievert per year, there's a requirement in the radiation protection regulations for the licensees to put in place action levels, which are much lower.

And the purpose of the action levels is to ensure that if an action level is triggered then an investigation is done to review the -- the operations to determine whether there's a problem with the operations.

Below that, the proponents or licensees put in their own administrative and -- and levels that they use, so that they don't trigger the action levels.

So when the facility is licensed, it looks at all the emissions that come from the facility, not just tritium, to ensure that they're -- the public is not being exposed to the dose limits, and in fact, the releases are as low as reasonably achievable.

For the Darlington proposed plant, from all sources the predicted doses to the public is five microsieverts per year, with the dose limit being 1,000 microsieverts per year.

MEMBER PEREIRA: Thank you, Mr. Howden.

A further question, the intervenor has raised a concern about the Canadian limit for tritium in drinking water of 7,000 becquerels per litre, and the call from a number of speakers has

been to have that limit lowered to 100 as an interim -- to 100 becquerels per litre, and eventually to 20 becquerels per litre.

What would the source of authority for lowering of the limit lie in Canada? So where would -- where should we go if we want to seek action to lower the limit?

MR. HOWDEN: Barclay Howden speaking.

The 7,000 becquerels per litre limit is a guideline issued by Health Canada, but the actual management of -- and that’s for tritium in drinking water. And so in terms for drinking water within a particular province, it generally lies with their environment ministry and in Ontario, it’s the Ministry of the Environment.

And as people are aware, there's been some recommendations to go down to 100 and then possibly down to 20, and the Government of Ontario hasn’t made that decision yet.

The CNSC does not regulate drinking water or Tritium in drinking water. It regulates the emissions from the facilities, but the focus is to ensure that the emissions are low enough that they don’t impact people and they don’t

impact groundwater such that it would impact the drinking quality of it.

MEMBER PEREIRA: But Health Canada would have expertise on assessing why a guideline of 7,000 is appropriate for Canada?

MR. HOWDEN: That is correct. Their number is based on the potential health effects, but then it’s up to the provinces to determine whether they want to go below that, but Health Canada has not changed their number, 7,000 becquerels per litre, for a very long time.

MEMBER PEREIRA: Thank you, Mr. Howden.

Another question for the CNSC. The intervenor has expressed a concern about controls under the regulatory process for facilities -- nuclear facilities in Canada, urging us to put in enough controls in the environmental assessment so that we wouldn't have to depend to a great extent on the licensing process, the regulatory process for nuclear facilities.

Would you like to comment on what assurance is available to the public from the regulatory process for nuclear facilities in Canada?

MR. HOWDEN: Barclay Howden speaking.

Before any facility can go ahead, the first step is the environmental assessment as we're discussing today. And the purpose of that is to determine whether there may be any significant environmental impacts.

The actual process for regulating the facilities if they go forward is through the licensing process that the CNSC has and other regulators such as DFO for protection of fish and fish habitat.

From the CNSC perspective, the process is a proponent makes an application which is assessed by the staff and then it goes to a public hearing where the public has an opportunity to intervene and provide their views to the commission.

For a nuclear power plant, there's three steps. There's the licence to prepare site, licence to construct, and licence to operate. And at each stage, there's an opportunity for public input.

One thing that is new that is just being introduced is previously participant funding

was only available on the environmental assessment side as issued by the *Canadian Environmental Assessment Act.*

The CNSC has recently received approval to set up a participant funding program which is in place. So now for the licensing portion, there is opportunities for intervenors to seek participant funding.

And my understanding is that the -- the first opportunity for that is the upcoming Chalk River relicensing which, I think, is starting in June and there's an opportunity. But the intent is to have this available for all licensing stages.

MEMBER PEREIRA: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd just like to check a few points with -- concerns that were raised by the intervenor here with the OPG concerning radioactive effluents that would go into the sewer system.

MS. SWAMI: Laurie Swami.

I believe you're asking if we will discharge radioactive effluents to the sewage system?

MEMBER BEAUDET: Yes, that's correct.

MS. SWAMI: The process that we have for new nuclear is that we would treat our effluents before release to Lake Ontario through our condenser cooling water system. It’s not our intent to release radioactive material to the sewage system.

MEMBER BEAUDET: You mentioned the other day that in -- in the program to reduce waste you would, for instance, wash clothes. Would that have an impact on -- I mean would that have -- it’s low level radiation, but that would have an impact on your reject to the sewage system?

MS. SWAMI: Laurie Swami, for the record.

Typically, we have laundered at our facilities. When we have done that, it’s treated and released through the radioactive liquid waste management system. It’s not treated and released through the sewer system.

MEMBER BEAUDET: Thank you. Thank

you, Mr. Chair.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Just one comment. You referred to the process in the Walkerton Inquiry. I don't know how that went, but our process is to allow the panel to gather all the information we can and hear from everyone, from the proponent, from CNSC, from the general public, from all participants, from NGOs and from everywhere we can to get that information. We had the rules to follow.

I've gone the extra mile on those rules to hear everyone possible and to get as much information as possible and certainly hope that our process will foster other processes to go forward in the future to -- to be an open way of gathering information.

I only speak for this one, but we certainly are trying to get all the information we can. We're not just taking it from one source or two sources, but even like the oral statements like today, we appreciate your comments.

So with that, no further comments, we want to thank you very much for coming. I want to thank you very much for participating and if you

wanted to just have a short comment at the end -- it’s not in the rules.

I'm not supposed to, but again since you did take the time and you did address a lot of issues, I'll give you 30 seconds if you'd like to sum up.

MS. BUCK: I am concerned about the independence of the panel and receiving really good advice from independent people who are not a part of the technology. And I'm concerned about the regulation process as well.

There's a thing that’s called an MCLG, which gives you a margin of safety, but it’s unenforceable.

And then you go to an MCL regulatory process where you have an enforceable limit, but there may not be a safety -- a margin of safety there and it could be based on cost.

And one of the things that I've heard on the Japanese news on -- on TV and from a nuclear expert was that in many cases, technology and costs tend to mean that when a nuclear facility is put in place, what happens is it’s the most likely scenario as opposed to the worst-case scenario and I would caution on that.

Thank you.

CHAIRPERSON GRAHAM: Thank you. And as I failed to mention, we have listened to intervenors and they've referred to studies that maybe we didn't have and we've had 67 undertakings to get other information that was brought up by intervenors that were not from CNSC, that were not from OPG, but they were from outside information, many of them being on health studies, many of them being on a significant relationship to Tritium and those uses, and the panel is going into this with an open mind.

Thank you very much and we appreciate your oral presentation.

Go next to Mr. David Done, who has an oral statement also. Mr. Done?

(SHORT PAUSE/COURTE PAUSE)

CHAIRPERSON GRAHAM: Anywhere at all or there's -- I guess, all clean glasses for water here right after lunch, so everything is -- there's a button there to press when you go to start to speak.

Bring the microphone close to you if you can so the interpreters can pick up the -- and at pace of speech relatively slow so the

translators can pick it up also.

MR. DONE: Okay.

CHAIRPERSON GRAHAM: Thank you very much and welcome.

--- PRESENTATION BY MR. DONE:

MR. DONE: Well, thank you. Actually, it went on by itself there.

Well, my -- my name is David Done. I live with my daughter in the Beaches neighbourhood of Toronto. I was a graduate engineer in engineering science, '66, and a former geophysicist. I'm co-founder of the Safe Sewage Committee.

I mention that only because of water issues with regard to heavy water -- saturated heavy water, the deuterium changing into tritium.

Basically I'm here as a citizen. I think that it's a wrong turn or development for Ontario to move into an expansion of the nuclear industry in the commercial and industrial sectors.

I believe that nuclear should only be used for research purposes, medicine, maybe the space program, particle research. And it's too dangerous a set of technologies.

Now, we can talk about various things. I mean the Japanese situation has brought things to a climax here again. We had Three Mile Island, Chernobyl. It's going to happen again.

And we're sitting into a fairly stable plate tectonic area here in Ontario, although Southwestern Quebec and the Ottawa Valley fault zone, we had a small quake last summer. I remember the vibration.

The problem is if you -- if you're running the plant and everything is perfect, no valves breakdown, there is no human error, there is no earthquakes, there is no sabotage, then things are fairly stable, but even a fairly stable tectonic area like Ontario, is still -- there is still the possibility of once in a century major earthquake.

And we have to think about future generations. We have to think about one or two centuries here, not just the 50 years of a plant and it's decommissioning, so I think just based on geophysical considerations, this is an extremely dangerous project and I can't understand why Mr. Duguid or Mr. McGuinty are promoting this in Ontario.

We should really be decommissioning our plants and moving to alternatives. I know it's a set of dilemmas, but basically -- well, that's enough about the geophysical dangers. That alone should be an end to this expansion.

But in terms of the nuclear, I mean it's always been known for the major part of the 20th century, the inability to neutralize radioactive waste.

The uranium-235 splits into maybe 35 by-products, 2.4 neutrons, tellurium and zirconium. These waste products have tens of thousands of year, half-lives.

And what do you do with them? You cover them with lead and case them in lead or water. You put them in the Gowganda Formation of the Canadian Shield. You put them up in space and put them into the sun. Sure, but you got get them there. You got to get them to Gowganda Formation.

This is global insanity using nuclear in populated areas except for very important interests of the human race in terms of research.

So that again is a good reason not

to be expanding this capability in Ontario or anywhere. These remarks are just meant to be -- to be actually provincial.

Now, about heavy-water disposal. The problem there is equipment failure and human error. I mean, the AECL gets about 100 incidents a year. I mean Norm Rubin has published that. It's got quite common knowledge. There is all sorts of minor problems that never get into the press.

And so, you know, my daughter and I and my wife -- well, I'm a widower now, but we went to the RC Harris Water Plant in Toronto. I wanted to show my daughter a facility.

I said, is there any tritium in the water? Oh, yeah, there is tritium. Where does it come from? It comes from Pickering. And then that's -- that's the guide at the plant telling us that.

Now, there -- environmental regulations are not good enough. If it's detectable, it's too much. It's not that it's below a certain limit. Those limits are always changing.

They're based on statistics that haven't been fully understood because we're only a

half century into the nuclear technology in society.

So I mean, I'll sort of repeat what Karen said about heavy water, I won't say what she said, but the -- the real problem there is -- is failures at the plant, equipment failures and human error releasing when it shouldn't be -- shouldn't be released.

So what's the -- what's the alternatives here? Well, I'll just say one more thing about decommissioning. I mean the plan -- any plan can only go about 50 years, then it has to be mothballed. It has to be covered in lead or something, but it becomes a dead zone, so we're creating all these dead zones in populated areas.

If we're, say, a century from now or even -- well, Pickering, Pickering must be pushing up to 50 years now, so do we really want to extend this in Ontario?

You know, and I as an environmentalist, I mean originally I was an engineer but I became sort of an environmentalist later in life. I think we may be taking a wrong turn here.

So some of the alternatives, what

are the alternatives? Well, cogen renewables like, well, solar, wind, tidal, methane.

Possibly -- possibly -- and see in research, possibly fusion could eventually provide a safer technology than fission. So basically in terms of research, we want to maybe maintain this kind of activity, but not in the industrial and commercial areas.

And now there has been some talk about thorium reactors, dangerous, but less dangerous, but, you know, Professor Bill Rees in his Eco Footprint idea that basically the G8 in the world has to move into a lesser growth mentality -- mentality. They have to look at energy efficiency, consuming less. You know, basically it's a dilemma in terms of our society and the way the G8 is actually moving.

But I guess I don't have much more to add, except that based on geophysical considerations, nuclear considerations, radioactive waste and decommissioning and the heavy-water disposal -- you know, with heavy water, I was going to mention one thing. Like, we are very concerned about detection devices by the U.S. Government at border points using saturated heavy water.

You know, like, there is certain issues her that -- or certain paranoia that exists with the general public because of Japan and because of international terrorism, but we can't go Willy-Nilly with these dangerous technologies.

I mean one thing I learned as an engineer, equipment breaks down and it's -- it's all very pragmatic and then nothing is perfect, so we shouldn't be investing and expanding. Technology, the research hasn't been able to harness in terms of its dangerous consequences.

But anyway, that's all I have to say this afternoon. I appreciate the opportunity to come and speak to the people here and --

CHAIRPERSON GRAHAM: Well, thank you very much. We appreciate you sharing your experiences and your thoughts.

And then now the way the procedure goes, I'll go to my panel members that may have some questions. So Madam Beaudet, would you start off, please?

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

I would like to check first with

CNSC and then OPG, incidents do occur. I mean, as you say, rightly, equipment breaks down. There has to be maintenance and there's also human error.

I would like to -- I think, CNSC, you have a procedure to -- for incidents. You're supposed to be advised every time there is an incident and I would like to see the scale of how many incidents per year you receive?

CHAIRPERSON GRAHAM: Mr. Howden?

MR. HOWDEN: Thank you. Barclay Howden speaking.

Yes, there is an incident reporting system that the licensees have to report to. It's guided under a document called S99, which is referenced in their licences.

In terms of the number, we'll seek to obtain last year's nuclear power plant annual report, which I think will have the -- the information for that. So we'll get that for you as an undertaking.

Also one of the things that we subscribe to is the defence in depth approach, such that there's physical barriers, operating systems, programs and administrative controls, and the intent of this is recognizing that things do break,

and barriers break or barriers degrade, and the whole view of this is that you anticipate that they are going to break and then you build a system that's robust enough to be able to react to that. So that's sort of the philosophy that is used in the nuclear industry.

But in terms of the incident reporting, we'll obtain the statistics for you and provide it.

CHAIRPERSON GRAHAM: I'm going to give that an Undertaking number 68, for all significant reports the ST99 reporting on the annual incident rate.

And when would you have that, Mr. Howden?

MR. HOWDEN: I'd like to provide that Friday morning. If we have it earlier, we'll bring it up earlier than that.

CHAIRPERSON GRAHAM: Thank you very much.

Madam Beaudet?

MEMBER BEAUDET: I'd like to have not just numbers, but the type of incident as well, please.

MR. HOWDEN: Barclay Howden

speaking.

We will make sure that there's some description in terms of sort of the -- the levels of events.

MEMBER BEAUDET: Thank you.

I'd like to go to OPG now and ask them when they do have an incident and report, what is the protocol in terms of lesson learned, and the action that usually you take, and also, if you have any statistics to compare, if it's equipment failure or breakage, compared to human error.

MS. SWAMI: Laurie Swami, for the record.

We have -- as Mr. Howden has mentioned, we have the reporting requirements for operating nuclear power plants that are required under our licence for identifying events. They are a listed number of different events.

But we don't just rely on the regulatory reporting processes, the only way we monitor and track events in our system, and we have a system called the station condition reporting program where we identify any event that could take place, whether it's an equipment, human performance or other type of event, and those are routinely

input by our staff.

And through that process we assess what the impact would be. We look for trends within the reporting, so some of these are fairly low-level events, but what we do is we track them to see if there's a trend that we need to address rather than waiting for a breakthrough event.

So that process is a fairly robust process. It's based on industry practice, and we've adopted that in OPG to ensure that we're tracking trending identifying events and taking corrective actions.

The process requires that we do an apparent cause evaluation or a root cause evaluation, depending on the level of the event. So a fairly significant event naturally would have a much more detailed review of what the root cause was.

Some of the lower-level events don't require that type of an investigation, and so we -- we sort of have different levels of investigation that take place, and we use that to ensure that we are preventing events from taking place in the future. So that's all part of the process that we described.

But I'd like to -- to also focus on what Mr. Howden referred to as defence in depth, that while I agree equipment can fail, we typically don't rely on one piece of equipment to prevent an event from taking place.

We have multiple barriers to prevent events from equipment, so that there may be redundant equipment, it may be a design redundancy, it could be a location redundancy, there are many, many things that we do in the design of a plant to ensure that the events don't progress to more serious and significant events.

So I think the statistics on the S99 reporting versus what we do internally are fairly different.

From the perspective of the breakdown of the different events types, I don't have the information in front of me, but we can get that information and provide it for the Darlington site.

MEMBER BEAUDET: Yes, please.

CHAIRPERSON GRAHAM: That'll be number 69 undertaking by OPG. Time frame please?

MS. SWAMI: Laurie Swami.

I'm just trying to remember the

day. I think on Thursday we can provide that information.

CHAIRPERSON GRAHAM: Yeah, today is Tuesday; so it'll be Thursday then. Okay.

Madam Beaudet, anything else?

MEMBER BEAUDET: No, that's all. Thank you.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

Mr. Done, thank you very much for your very perceptive overview of the challenges we face in the nuclear industry. There are a couple legacy issues that you brought up.

One was high-level waste and the challenge we're facing trying to manage that waste for the long-term. But the second one you brought up was concerned decommissioning of nuclear facilities and how that can be achieved.

I'd like to turn to the CNSC for an overview of what exactly the regulatory process does in terms of returning decommissioned facilities to benign sites that can be released for -- for reuse for other purposes.

Would you outline what exactly is

in place in terms of regulatory requirements?

MR. HOWDEN: Barclay Howden speaking.

So for any facility starting at potentially a licensed to prepare site, the proponent needs to put together what's called a preliminary decommissioning plan.

And with that they have to put together a financial guarantee to ensure that if the company suffers issues, that there'll be enough money to decommission that facility.

Then as a plant goes -- a facility goes through its life it gets to the point where it breaches a point where it's to be decommissioned.

And then what they do at that point is they apply for a decommissioning licence. And with that they need to submit what's called a detailed decommissioning plan, which is assessed to determine whether the decommissioning can be done safely because decommissioning does have some risks, and it also can generate wastes.

With that they can decommission the site, and depending on the type of facility, they may be able to, in some cases, for example a uranium mine they would have to -- normally they

would leave it under a decommissioning license for maybe ten to 15 years to ensure that all the -- the controls that were put in place and all the predicted effects were there before they would apply for what is called a licence to abandon.

So an example in Canada of licence to abandon, two SLOWPOKE reactors have been decommissioned in Canada, the U. of T. SLOWPOKE and the Dalhousie SLOWPOKE.

The U. of T. SLOWPOKE was decommissioned about ten years ago, and they were able to decommission to such a state that they were able to build a nano-technology laboratory there.

The Dalhousie one was just decommissioned, but their intention is to turn that space over into the future to -- to other work.

So once they get to the point where the -- the facility is decommissioned and it can be returned to other uses, they apply for what's called an abandonment licence, and when they obtain that licence they're released from licensing.

However, all these facilities are subjected to international safeguards, even into the future. If the IEA wants to come and confirm

that the facility has been removed, they're able to do that in the future. So that's the basic process.

MEMBER PEREIRA: Thank you. Just for clarification, when you say licence to abandon a site, what does that mean? What risks do the public face in visiting or using those sites?

MR. HOWDEN: The intention for a licence to abandon is that there wouldn't be restrictions to the -- the use of the site afterwards.

In the case of uranium mines, some -- what they would look for is release the site back to the province, and then the province would ensure that there -- if there's longer term controls needed, they would -- they would impose those, but for some facilities once decommissioned they can be released to free use without any restrictions. It depends on the facility.

MEMBER PEREIRA: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: I have two questions.

First of all, the one with regard to Mr. Done's comments with regard to the water

treatment plant, which he had experience at in Toronto and visited. At what level or how is -- how are the levels reported. Is there safety margin? At what level would that plant have to be shut down with a concentration of tritium coming into that plant because it is being tested?

I wonder, CNSC, could you answer that?

MR. HOWDEN: Barclay Howden speaking.

What do you mean by the level that would be coming into the plant?

CHAIRPERSON GRAHAM: Well, Mr. Done said that his comment was, visiting the plant, his experience was that they said there is tritium in the drinking water.

At what parts per million or -- is it that -- when they're testing, is that they cannot allow it to go into the system?

(SHORT PAUSE/COURTE PAUSE)

CHAIRPERSON GRAHAM: OPG, could you answer that?

MS. SWAMI: Laurie Swami, for the record.

The Toronto-Harris Water Supply

Plant is part of our radiological environmental monitoring program and we do measure the tritium in -- at that plant on a regular basis. And I can confirm that the 2009 annual average level was 4.6 becquerels per litre as reported to the CNSC.

The decision on stopping drinking water coming from a particular plant is made by the province of Ontario and they would look to the guidance provided in the Ontario Drinking Water Standard.

Currently it's 7,000 becquerels per litre on an annual average basis; so it's not necessarily that they would shut down at 7,000. It would be a choice made by the -- the medical officer of Health I believe.

CHAIRPERSON GRAHAM: And that -- the recommendations are to go down to 100, but that -- those have not been adopted yet and then down to 20. Is that correct?

MS. SWAMI: Laurie Swami, for the record.

The recommendations, as I understand them from the Ontario Drinking Water Advisory Committee, is to move to 100 becquerels per litre on an annual average basis and eventually

go to 20 becquerels per litre.

Those have not yet been adopted, but I would also mention that OPG has committed, since 1994, to 100 becquerels per litre at water supply plants in Ontario.

CHAIRPERSON GRAHAM: And it's never been exceeded?

MS. SWAMI: Laurie Swami, for the record.

There have been -- there have been spills in the past where it was exceeded for a short period of time in the '90s, but currently we indicate the annual average is around or below ten becquerels per litre and it has been that way since 1995.

CHAIRPERSON GRAHAM: Thank you. Just one other question Mr. Done asked with regard to his concern with regard to heavy water and detection.

Could CNSC perhaps -- I'll maybe ask them, how is heavy water detected if it was -- goes into the environment? Yeah, I'll let you -- maybe I asked the wrong question. Turn on the -- your --

MR. DONE: I was asking about

detection devices at the border, like they use heavy water and a device for detecting plutonium by terrorists coming across the border.

The U.S. Government is buying from OPG or attempting to buy from OPG heavy water for that purpose. Very dangerous to have it at the border; people are going by, you know, who's getting eradiated? I mean, it's just -- it's motherhood, you know, the danger I don't even have to explain it.

CHAIRPERSON GRAHAM: Okay. I did ask the wrong question in that way, and I believe that's a security one, but -- that we can -- we are not supposed -- we're -- can you add to that then?

MR. HOWDEN: I can answer the question, yeah.

Heavy water is not a radioactive substance; so it doesn't pose a radioactive hazard. However, it is a controlled substance under the non-proliferation treaty that Canada is signatory to because it can be used for non-peaceful uses. So it would -- the use of it would be subject to licencing in whichever country that it's used.

CHAIRPERSON GRAHAM: Thank you.

Mr. Done, thank you very much for

coming and sharing your concerns and sharing your interest in our panel. And certainly we take your comments along with all the others. Thank you very much for -- a safe trip. You're -- I don't allow -- I'm not supposed to, but again I will let you.

MR. DONE: Just two points of issue with the -- is it CNSC; is it -- decommissioning of plants. They are not necessarily usable, like, those are -- I'm not saying it's like a Chernobyl situation, but the level of radiation is such that they wouldn't be used. Maybe a uranium mine, but not a plant like at Pickering.

And heavy water is an unstable quantity and is a low-level form of radiation on another issue. The deuterium picks up the neutron, but the neutron is unstable and it is -- so I'm opposed to what the gentleman just said on those two counts.

Thank you very much; I appreciate being here. Thank you.

CHAIRPERSON GRAHAM: Thank you very much; much appreciated.

--- QUESTIONS BY THE PANEL TO ENVIRONMENT CANADA AND FISHERIES AND OCEANS:

CHAIRPERSON GRAHAM: Now, we're going to government agencies and I think we need about a half a minute or a minute to get set up with our technical people.

So we'll just take -- we're not taking a break; we'll just take a minute or so for you to get that. And in the interim, would officials from Environment Canada and Fisheries and Oceans Canada come up, please.

(SHORT PAUSE/COURTE PAUSE)

UNIDENTIFED SPEAKER: Can I ask who is on the teleconference line?

MR. THOMPSON: Aaron Thompson, Environment Canada.

MR. CADMAN: Mike Cadman, Environment Canada.

UNIDENTIFIED SPEAKER: Thank you.

MR. GOFFIN: Goffin, Environment Canada.

CHAIRPERSON GRAHAM: Are we all set technically? Okay. I've got the nod.

So we have here Mr. Dobos from Environment Canada with his team and introduce yourself on -- I'm sorry, I don't have ---

MR. HOGGARTH: For the record, Tom

Hoggarth from Fisheries and Oceans.

CHAIRPERSON GRAHAM: Mr. Hoggarth from Fisheries and Oceans. Okay.

Then we'll start off with questions to -- I believe questioning from panel members were required and I'm not sure who I'll start with, but I'll start -- I'll start, I guess, with Madam Beaudet.

MEMBER BEAUDET: Thank you, Mr. Chairman.

Good day everyone. We received -- you did provide us -- I don't know if -- it must be an undertaking number with *Fisheries Act,* authorization example and sort of to give us a little bit of the feeling of what usually you would ask.

And in the authorization you sort of placed the conditions of how the works and the activities and the operations would go; the conditions that would relate to mitigation, the conditions that would relate to monitoring and follow-up and doing the operation; conditions relating also to the monitoring and reporting of any compensation or -- habitat -- compensatory habitat regarding this.

We did hear the other day that DFO didn't have an authorization, but you had been working with them in order to come to an agreement on how we could -- the habitat at the existing site for possibly Pickering, but let's talk about the existing Darlington site, could be managed.

And I'd like to hear a little bit more about that, please first?

MR. HOGGARTH: Okay. Tom Hoggarth, for the record.

And the process that we work with OPG and all other clients that are in non-compliance, we need to separate Section 35 and Section 32 of the *Fisheries Act*.

So under Section 35, for example, we do not have the ability to get or put in place an authorization after the fact. So in Darlington there was an infill.

Again, the infill occurred at a time prior to us, Fisheries and Oceans Canada being there for the application of the habitat provisions of the *Fisheries Act*.

So that's why that was done, and we will not be working with OPG to get an authorization after the fact for the Section 35

infill.

However, as an example, with the Section 32, that's an ongoing issue. So there's, you know, fish being destroyed by means other than fishing at the existing site.

And so as I indicated, I'm not actually directly involved in the –- in the meetings, but DFO does have a Memorandum of Understanding with the Ontario Power Generation, and part of the tables in that process do speak to working with them on impingement entrainment issues as well.

And we've also –- CNSC has already given us the sort of heads up that the existing Darlington site will be going through a refurbishment process, and it will be in that process as well that we'll be working with CNSC and OPG on the issue of getting the –- the existing Darlington intake in compliance with Section 32 of the *Fisheries Act*.

MEMBER BEAUDET: I believe in this authorization, and I was wondering if it's usually the case, that the authorization states that the DFO may suspend any work or undertaking or activities if, in your opinion, there is an impact

greater than what was assessed.

Here we have –- the proponent did assess the impact to fish habitat for one thing, and also, too, fish –- I don’t know if you call it fish biota in terms of entrainment and impingement.

So first we have to establish if we agree with that judgement, and then maybe set higher standards. In the review of the project, for you, do you –- I know that you have proposed a two-metre contour line and possibly longer –- I mean, the structures being placed in deeper waters.

I’d like to hear from you with respect to entrainment and impingement. Do you consider that the quantities that OPG said we would have, you know, like 45,000 fish or whatever number of tonnes per year, do you consider that acceptable to start with?

MR. HOGGARTH: Yeah, Tom Hoggarth, for the record.

The number of whether 45,000 or whatever the actual number is and whether it’s acceptable or not acceptable, Fisheries and Oceans work directly with the Ministry of Natural Resources on determining that number.

And based on –- on the numbers

that OPG has predicted and our discussions with the Ministry of Natural Resources, we would consider that level not significant or not having a significant impact on the fisheries within the Great Lakes.

However, it is still a concern, and we would –- we would want to work with OPG to decrease that number as much as possible. And we're speaking to a projection of today's numbers, of today's fish that are going –- are being entrained and impinged.

We're also –- because the populations of fish within the Great Lakes are very dynamic and change over time, there may be –- today we'll be saying that the number is not likely significant, but tomorrow, if we –- if we're able to manage the fisheries properly and let's say, as an example, get Atlantic salmon back into the Great Lakes and back at a number that they start showing up at the intake, we will be then, again, requesting more work be done to decrease any potential impact on a species like that if they start showing up.

MEMBER BEAUDET: I'd like to go to OPG because I want to stay in this line of

questioning. And on one of the recommendation of DFO and the document you submitted to us March 14, 2011, on page 6, the recommendation 20, you said that you accept the workshop with Ontario Power Generation and appropriate government agencies to covers different things, but you do say that it has to be aligned to the project as implemented.

And I was wondering exactly what you mean here?

(SHORT PAUSE/COURT PAUSE)

MR. PETERS: John Peters, for the record.

This DFO number 20 on page 11, P-1.7 in their PMD, specifically describes the workshop we held and then ongoing work that we would undertake as a commitment as in planning the detailed design work and then implementing those works and monitoring the programs going forward through each stage of the project; that is, through life operating phases, all the three phases that are –- the functional effects on fish may occur.

And we –- we accepted this recommendation simply to acknowledge that the specifics might be different in each phase, which I think we've described in the follow-up commitments

in other portions of the work.

But we accept this in principle and look forward to doing the detailed examination in cooperation with the other agencies.

MEMBER BEAUDET: What I had in mind here is more in terms of delays because you may have to add a study to confirm the results and then there would be delays, let's say one year or two years, and when you say that the efforts have to aligned with the project implementation, you know, that came to mind, if you would accept as well delays?

MR. PETERS: John Peters, for the record.

I think we accept that this is a risk-based assessment, and we have to sit down together and have a meeting of a mind –- of the minds as to what is the critical pieces of information we need for each step in the process.

It's a bit premature to say whether there would be delays or whether we can, through the work we're already doing, and I can report that there's field work going on today to address questions that were raised. And OPG doesn't take this lightly.

We accept that that is a potential risk that we're carrying, but we believe that there's a good path forward, and we have had enough discussions to believe that this commitment is reasonable for this project.

MEMBER BEAUDET: Another recommendation by DFO is number 17. OPG accepts this recommendation if once-through cooling option is implemented, otherwise OPG will pursue the necessary studies and research to allow additional infill beyond two metres.

So here, in case there's cooling towers, you won't necessarily accept this proposal or this recommendation without doing further study that would allow you to infill more?

MR. SWEETNAM: Albert Sweetnam, for the record.

As we have previously stated, if we go to cooling towers, we would need –- depending on the site layout and the optimization of the site layout, the potential is, is that we will need additional lake info. So we can only commit to the two metres infill if there is once-through cooling.

MEMBER BEAUDET: I'd like to go back to DFO, then. What is your reaction to such a

constraint, because you do impact on habitat in a more significant way?

MR. OGGARTH: Yeah, Tom Hoggarth, for the record.

Again, the decision that we made coming to the two metres, and I'll explain it in a little more detail that might help, is that it's very hard to –- especially with a species like round whitefish –- to actually go out and say, okay, this is where an egg is, so we know this is the exact spot where they're spawning.

So surrogates to actually finding the exact location of the spawning is you look at the habitat first, and if the habitat is, you know, the type of habitat that's typically reported within scientific papers is habitat that round whitefish usually spawn in, you start there. So the habitat there is the type of habitat that they do use for spawning.

Then the next thing you look for is, are there adult fish in this area at the appropriate time to suggest that they're spawning there as well. And all the studies that we've done suggest that they are there.

And when you check a fish, it's --

when you catch a fish during the spawning season, you can easily just squeeze the fish and if the -- if the fish releases eggs or releases milk, that indicates that they're ready to spawn and so they're spawning really close to the area. That's the type of evidence we get there as well.

Then the third piece of evidence we use as well is, are there larval fish. So larval fish, they're -- they're not big swimmers when they first hatch. So if you're catching larval fish adjacent to the site as well, that's another indicator that the spawning occurred there or adjacent.

So because we don't have the information where, you know, here is exactly where an egg is, we use that information as surrogates to say they are spawning in this area. So that's how we've made that decision, is that this area, on a precautionary approach, is considered spawning habitat.

And so we would like to see the very minimal amount of impact on spawning habitat for round whitefish as possible.

And then so how that then relates to -- so for us, we then look at the literature and

where do they spawn, where have people found that they know that eggs are broadcast and laid?

It’s generally from the two metre to 12 metre depth. So we said, “Okay, we’re fairly safe to say then that if the infill is less than two metres, we’re not impacting round whitefish.”

So then that gets us back to the question of, okay, if they have to go beyond two metres, what did that do to our decision process? And one of the things that we -- you know, at this point in time because there's not a specific project -- or a specific reactor type selected, therefore, we haven't had the opportunity to work with OPG to truly optimize the site, it’s -- it’s completely hypothetical of how much more infill is going to be needed until all that gets in place.

But once -- let's say we've got a reactor selected and we've optimized the site and, yes, we do need to go beyond two metres. The type of evidence that would be -- we would like to have to support whether it impacts round whitefish spawning habitat would be, you know, work with divers in the water assessing that area.

The risk that we take with that though is that this year the divers might go in and

they found no eggs within that area that they want to infill, but -- they are broadcast spawners, so they don't just key into one spot and drop their eggs in one spot.

Like, you know, bass, they do that. They make a nest and they put it in the one spot only. A fish like round whitefish are broadcast spawners, so this year they may not be there; next year, they might be. So that's again why we've taken this precautionary approach to the two metre.

But again if -- if we've got some time frame, you know, my thought is, is that after the hearing if it's a go-ahead to move forward with the project, there will be that period of time to where, if required, we have to do detailed site assessments to decide what that impact -- the only concern would then be is, well, what if we find out that we are asking or wanting or needing to put infill on the only known spawning area along that chunk of shore? That would be the risk of -- of waiting.

MEMBER BEAUDET: I know that in the first week we came -- well, not the realization. I think anybody who has worked in --

with the environmental assessment knows the gaps or the paradox between your responsibility and Environment Canada.

You have here -- and I'm coming to that now. You have here in the practitioner's guide it says that -- let me see now for the public to refer to it. There's no page numbers.

So it would be in section 3.1, that the authorization or the legislative approval issued by the minister which allows otherwise prohibited impacts to fish and fish habitat as stated in subsection (35)(1) and section 32 -- and those talk about no person shall destroy fish by means other than fishing.

Here you -- correct me if I'm wrong, but my understanding is there's always a possibility of authorization, so, in a way, no compliance to *The Fishery Act*. In a way, you always allow an authorization to -- with measured or an enlightened judgment as to the destruction of habitat and biota.

MR. HOGGARTH: Tom Hoggarth, for the record.

It's correct. The way the -- the way the *Fisheries Act* is actually read is, you

know, you're not allowed to destroy unless we let you, so the authorization -- or the *Fisheries Act* does allow it.

It's our policy which speaks to when and how we allow it. So our policies -- and again, it's very high level, but do speak to whether an authorization is acceptable or not.

And again, it's at a high level, so if it puts a population of fish at risk, it would not be considered acceptable. So it's not the Act which says how we issue our authorizations; it's our policy which speaks to that.

MEMBER BEAUDET: I'd like to go to Environment Canada now and -- if I can find my papers. What is -- for you, of course, especially in your submission and also in sufficiency analysis that you've done, if I understand well, the big issue is no dilution, and so I'd like to see how we reconcile that.

Do you consider, for instance, that the discharge through a diffuser or the methodology that OPG is proposing is considered dilution?

MR. DOBOS: Thank you. Rob Dobos, for the record.

Mr. Chairman, before we answer that specific question, I'd like to ask your indulgence. If we could just reconfirm who we have on the phone? I didn't catch all of our members on the phone. Thank you.

CHAIRPERSON GRAHAM: Yes, certainly we can, Mr. Dobos.

Who's on the phone from Environment Canada? Could you identify yourselves?

MR. GOFFIN: Michael Goffin.

MR. CONWAY: Fred Conway.

MR. THOMPSON: Aaron Thompson.

MR. YERUBANDI: Ram Yerubandi.

MR. CADMAN: Mike Cadman.

MS. AUSTEN: And Madeline Austen.

CHAIRPERSON GRAHAM: Okay. Thank you very much.

Go ahead, Mr. Dobos.

MR. DOBOS: Thank you. I'll ask Sandro Leonardelli to take a first shot at that answer and then I might pass that on to one of our experts here. Thank you.

MR. LEONARDELLI: Sandro Leonardelli, for the record.

I'm going to try and answer it

from the perspective of the design of the facility first and then I'll ask Nardia to speak to the *Fisheries Act* requirements, the actual legislation.

So in the context of the project, there are a number of things that we have to determine before we can say there's -- there's a deleterious effect.

So we spoke here about the precautionary principle as being applied, that we're assuming that there's round whitefish habitat in the area. That being said, we're using the round whitefish action plan to supplement the data to see more definitively what we can determine about that.

In terms of the diffuser discharge, it was our position and it was confirmed by the PNNL report that high resolution modeling would be required -- higher resolution monitoring would be required.

Now, the high resolution modeling will tell us more about the size of that mixing zone, that dilution zone after the initial discharge.

It will also tell us at what temperature we would be expecting that to occur as

you go outward from the centre line of the diffuser; so within the first 10 metres, what's the temperature, within the first 50 metres, hundred metres, et cetera.

So that would give us a better idea of the temperature distribution, which is important for us in determining whether or not there is actually going to be a thermal effect on eggs at the bottom of the lake.

The other aspect of it is what the final design of the diffuser is going to be. For the bounding approach that was used by OPG, they assumed a certain flow volume at a certain temperature, which was nine degrees Celsius at the initial discharge port.

There was -- they laid out some options in the November report, The Thermal Mitigations Report, that could potentially change the design of the diffuser in such a way as to reduce thermal impact, so there are those considerations as well.

None of those design considerations have been tested with any modelling, so we can't give you a definitive answer as to how effective that would be in reducing thermal

effects.

And then ultimately it's the location of the diffusers and at what depth and is it near any sensitive habitat where we would expect deleterious effects from the thermal discharge?

So those are the sort of design considerations that go into that assessment if whether there is going to be an effect, but within that initial mixing zone, you would expect a higher temperature profile than at the edge of the mixing zone, which is where OPG is saying -- you know, they're defining that as two degrees Celsius.

So about from the edge of that mixing zone to where the initial discharge is, there is going to be a temperature grading to cross that, so recognizing that it's a thermal -- that it is a very turbulent zone of mixing initially,

So anyway so those would be sort of the technical considerations around it and I think I will ask Nardia -- Nardia Ali to speak to the legislative requirements.

MS. ALI: Nardia Ali, for the record.

With regard to the legislative requirement, it's very simple. The *Fisheries Act*

does not recognize the mixing zones. So when we work, I guess, on OPG on mitigative options, once we know what the final design is or what type of diffuser, we will be trying to have a temperature at the point of discharge that will ensure no deleterious effect. Thank you.

MEMBER BEAUDET: Thank you.

My second question was in relation to the temperature. As you say, the grading between the center and the edge of the mixing zone. I think there is a range of about nine degrees, if I'm correct. I'm not sure, but I think that's what it is.

I would like to know how it is determined, who has decided that the edge would be acceptable to have this plus or minus two degrees centigrade?

MR. LEONARDELLI: Sandro Leonardelli, for the record.

I'll ask OPG later to confirm this, but when they -- I believe that when they wrote the EIS, they wrote it from the perspective of the -- the Provincial Permitting System, which allows them a mixing zone, so if define that mixing zone based on the temperature that they feel would

meet the provincial requirements and so their analysis was based on that.

Could OPG confirm that?

MEMBER BEAUDET: Yes, please?

MR. PETERS: John Peters, for the record.

MEMBER BEAUDET: Can I say something first? Because a new reaction -- you say that you will accept -- let me get it here.

The recommendation of Environment Canada, 3.2 on the condition that -- on the understanding that the methodology for mean weekly average temperature and the estimates are only required for once-through cooling.

I can understand that it doesn't apply to cooling towers, but then I wondered, why do you want to make sure that the methodology that you used has to be accepted? I would presume you would want also the methodology to be accepted for the cooling, once-through cooling.

MR. PETERS: Could we get -- I'm not just sure what you're referring to, Madam Beaudet? Could we just make sure that we're on the same page?

MEMBER BEAUDET: Sorry about that.

MR. PETERS: Thank you.

MEMBER BEAUDET: Yeah, it's recommendation in the document March 14th, 2011 that you've submitted to us, page 7, recommendation 25 on this document, but in the Environment Canada's submission, PMD 1.6 I think, it's recommendation 3.2.

And that you accept the recommendation on the understanding that methodologies for mean weekly average temperature and estimates are only required for once-through cooling.

Now, when you read this, you -- I mean, it's obvious that it doesn't apply for cooling towers, but my question is, why do you put this condition? Why do you -- you know, that the methodology -- correct me if I'm wrong, I have a feeling here that you don't want the methodology to change or be challenged.

MR. PETERS: John Peters, for the record.

The point we were trying to illustrate here is that one of the challenges both of us had was understanding exactly where there might be a deleterious effect on the eggs that Mr.

Leonardelli has mentioned as being a risk, at risk.

And the way that we will need to examine that is through the actual demonstrated performance of a discharge structure that would release heat at some temperature rate. That would be a problem.

And so we wanted to make sure that we acknowledge that that's an important question for us to address together and we do accept the recommendation. I don't see any reason why we can't agree on that methodology.

The difference that we have pointed to with cooling towers is that we do not anticipate a large mixing zone and a diffuser type structure that would be required.

So my understanding is we would have a point of release and we would comply with the temperature requirements without the need of a mixing zone.

MEMBER BEAUDET: Thank you. I'll go back to Environment Canada. And is it the understanding that the ambient temperature would change, would be average daily or monthly or --

MR. LEONARDELLI: Sandro Leonardelli for the record.

Before I answer that, I think I want to clarify something in regards to what Mr. Peters said.

In terms of the -- the thermal plume associated with the cooling tower discharge, we did not spend a lot of time reviewing that because that really wasn't the bounding scenario. It wasn't the preferred technology.

So I can't really comment as to whether or not there would or would not be a potentially deleterious effect in the same way that we've examined the -- the once-through cooling discharge.

They did not propose a diffuser structure, so it was an end of pipe release, so you do not get the same amount of initial turbulent mixing that you would with a diffuser.

So the behaviour of that, the size of the potentially thermally impacted zone associated with that, the temperature of that release, which I believe was a hotter release I think is the way it was proposed.

That -- I can't comment on that. If it does -- if a decision is made to go to cooling towers, we would be required to run a model

on that to determine if there was potentially a deleterious effect or not, so that -- that issue hasn't really been examined as part of this.

Now, if I may ask you what was your subsequent question?

MEMBER BEAUDET: Excuse me, I missed that?

MR. LEONARDELLI: What was your subsequent question? I -- I was responding to OPG's comment and --

MEMBER BEAUDET: It was about averages for ambient temperature of the water.

MR. LEONARDELLI: Right?

MEMBER BEAUDET: What -- what would you consider, I mean daily, monthly?

MR. LEONARDELLI: If -- are we speaking about the MWATs, the mean weekly average temperatures? That specifically?

MEMBER BEAUDET: Yes.

MR. LEONARDELLI: I'll ask Duck Kim to address that question. Thank you.

MR. KIM: Duck Kim, for the record.

The mean -- the criteria that we use is based on the Canadian Environmental --

sorry, Canadian Water Quality Guidelines for the Protection of Aquatic Life. And one of the criteria is maximum weekly average temperature, and that is measured based on a rolling -- seven-day rolling weekly average of daily mean temperatures.

So you have a 24-hour average of a daily temperature, and that is -- and the temperature that you would get is a seven-day average of that. So each day would have the preceding seven days averaged into a weekly average temperature.

The criteria, however, is based on the physiological optimum temperatures, and the maximum lethal temperature that that species is capable of tolerating. And it's a -- there's a formula for that.

And so the rolling seven-day weekly average temperature have to -- for the protection of that species from chronic effects, needs to fall under that MWAT criterion.

MEMBER BEAUDET: Thank you.

I'd like to go CNSC now. I have a few things or so to -- a few questions regarding fish habitat and biota.

In the PMD your submission 1.3,

page 69. The last paragraph, I believe this PMD was written before we got the final report from OPG of the fall 2010 fish catch results. The interim report, I agree, had no statistical comparison.

I wonder if you had the chance to look at the last -- the final report and would that answer, the point you were raising here, in the last report, did -- did you get your answers?

MR. WISMER: Don Wismer.

Yeah, the concern here was that with just a single year of -- in this case it was fall round whitefish spawner data, it doesn't allow us to estimate the variability, and that's quite important for a baseline going forward, because if you want to detect change in future due to the project, your ability to detect change is constrained by the variability.

If you have a lot more variability then you can only detect a huge change. If you have small variability, you can detect a small change.

And the results we got were that the two years were quite close together, and that's what you would hope for. So what means going forward, with that baseline, for the fall Round

Whitefish we'll be able to detect low levels of change due to the project.

MEMBER BEAUDET: Thank you.

I'd like to go to page 86 now. Here in -- in the -- for the second paragraph of recommendation 13, on the next page, and also on the approach of plan adaptive management, and I'll ask OPG afterwards. I'm trying to get at the official definition of adaptive management, and I believe it is not a tool that you can use if you have uncertainties.

It is -- usually your follow-up program has to be specific and it is if there's a problem like OPG have proposed, for instance, with the algae, an adaptive management, and that's correct, because then, you know, you know there's going to be a problem and you have to follow up with adjusting by whatever, retrofits or whatever.

In the case here, you're recommending, and also Environment Canada and DFO are recommending further baseline studies. We have uncertainties from a scientific point of view, which the precautionary principle allows, but from the determination of the significance of an impact, it's not allowed.

So if you propose an adaptive management you have to know to some extent what the impact is going to be. And we've just heard from DFO that there's still great uncertainties as to what the adverse effect is going to be.

So I'd like, if possible, from CNSC, comments on that. How do you look at that?

MR. WISMER: Don Wismer.

On page 86, just prior to the recommendations, you refer to -- there's a bullet about adaptive management. And what that is referring to is that in environmental impact situations like this, we use the best science we can, but it's -- it's really not very good, to be blunt, so we have to be prepared to be flexible and learn from our results. We have to be adaptive.

But the other part of it is not to be just passive and sitting, waiting, but decide ahead of time what kind of a result would trigger a need for mitigation or some other management action, like additional monitoring or something. Define that ahead of time, before you see the results, because once you see the results you're biased by them.

And this has worked in other

instances, and that's what that is getting toward. We'll learn from our results, but before doing studies that could lead to mitigation, we'll define the threshold that -- ahead of time that could prompt management action before we see the results.

MEMBER BEAUDET: At a technical meeting back in June 2010 we did discuss threshold definition and threshold -- establishing thresholds.

So it's -- your adaptive management strategy would be based, if I understand well, on establishing first the threshold and then if that is exceeded, then the necessary actions have to be put in place.

And that could go as far as, in terms of retrofits, et cetera; is that what you're saying?

MR. WISMER: Yes. Don Wismer here.

And further in that paragraph, near the end it mentions species of conservation status that are not interacting with the existing facility right now to an extent that would matter biologically, but given that the fish community is shifting in response to changes in the food web,

ten years from now that may not be the case.

So you would need to decide what would trigger the need for further intake mitigation in terms of numbers of Atlantic salmon being impinged, for example.

MEMBER BEAUDET: Thank you.

I'd like to move with CNSC to cumulative impacts. And on page 88, your conclusion says that EIS effects assessment in some instances presents insufficient or unsubstantiated information on the project's predicted effects and cumulative effects to support a conclusion on significance of the adverse effects.

And this is in relation to -- I believe fish habitat -- sorry, cooling water intake and diffuser siting.

So what happens if the concerns you raise here are true? What are we supposed to -- to do in terms of recommendations?

MR. WISMER: Don Wismer.

The reasoning behind this recommendation was that the EIS hadn't brought together all the information on effects on this one species from impingement, entrainment, thermal effects, habitat loss and then there's sewage

plants located four kilometres east and west and there's the Pickering station 35 kilometres west that affects the same species.

So as part of the round whitefish action plan, one of the items in there is to look at cumulative effects to get a better understanding so we can put the predicted effects of the new nuclear at Darlington in the proper context, and then be in a better position to judge the status of the population and the level of risk and the level of mitigation that would be required.

The once-through cooling system does have a number of options that can be added to it to reduce the level of risk as OPG has outlined in the reports they did for Environment Canada and DFO.

So if the decision was to go that route, then we would probably have to exercise most of those options to make sure the level of risk was acceptable.

MEMBER BEAUDET: Thank you.

Mr. Chairman, I finished my questions with regard to aquatic environment. We can come a second round for questions on different topics with Environment Canada, please.

CHAIRPERSON GRAHAM: Yes, that's what the plan -- I think we planned.

So, Mr. Pereira, on aquatic environment.

MEMBER PEREIRA: Thank you, Mr. Chairman.

Some of my questions have been covered by Madam Beaudet, but I'll follow up on an issue which she did raise and it concerns the habitat location and DFO talked about how there could be variability from one sampling to the next.

But we're talking about a period for up to 60 years of operation and maybe longer so with that in mind, I believe we need to look at more than just two or three sampling years.

We need to look over a period of 60 years, and to do that, perhaps we've got to look back and look at what experience we have of changes in habitats along the shores of, say, Lake Ontario, what experiences DFO has on variation and habitats over a long period of time.

Is there enough information to be able to guide us on the sort of limits to changes? Is it an experience that can guide us as to what we should do or not do, knowing what has happened

previously, changes in weather, changes in near shore environment, that happened in cycles, I presume in the lake?

So what is Environment Canada, with many years of experience, able to offer us in terms of knowledge of how habitats along the north shore of Lake Ontario are likely to vary over a period of 60 years?

MR. HOGGARTH: Tom Hoggarth, for the record.

I don't have any of that information with me directly right now, but I do know, again, our sister agency, the Ministry of Natural Resources, has quite an extensive dataset of long-term data on fish populations moving -- going up and down and records on populations specifically to fish.

And then we have, as well, I know, DFO science has spent within the Great Lakes, has spent time on mapping out habitats over the years.

And so there will be and there is datasets out there that we can tap into that, you know, gives us an idea of what -- like, I say, Lake Ontario habitat does over that period.

But what needs to be done, we will

be looking -- and we can look back at historical data that gives us sort of insights to what might happen in the future, but with something like the Darlington site we've recognized and -- that that is something that needs to be assessed.

And so the part of the round whitefish action plan that is a plan that's put in place to not just monitor, let's say habitat, that's out in front of the Darlington, but monitor sites off the Darlington site for comparison.

Because if you're just monitoring, let's say, Darlington and all of a sudden you see a change occur, well, is that a change because of the existing Darlington site or the new Darlington site or is that a change because that's a -- a global change that is occurring along the entire north short of Lake Ontario.

So any program that we put in place to monitor that, would actually be monitoring other sites so that you can pick up that variability so that if the other -- you know, your reference site is changing as well, that might be the reason why there's a change at Darlington and not specifically just because of the new reactor sites.

MEMBER PEREIRA: But my -- the purpose of my question is to develop an approach that's not based on reaction to observations, but is more strategically based on observed patterns and can then define confidence bounds which will guide where we should place something that's going to be in place for a long period of time.

And once it's in place, modifications are not that easy because this is a physical construction exercise involving work on the lake. So providing mitigation later is like a band-aid solution whereas I think in something of this size, this magnitude, we need to be more strategic and I believe Fisheries and Oceans should be providing the guidance on the strategy to minimize the risk of impacts on fish over a long period of time, decades.

And if we have data to guide us to get there, perhaps we need to look at that and maybe it won't tell us anything, but at least we give it a try and go down that route.

Is there something that Fisheries and Oceans can offer as an undertaking to bring to the table for -- to guide our discussions?

MR. HOGGARTH: I can take that as

an undertaking and we'd have to go to our science branch with that specific question.

And so I'll take that as an undertaking that we will go to our science group and pose that exact question to them and what information they have that would allow us or provide us the ability to provide strategic advice on the long-term.

MEMBER PEREIRA: Thank you.

Another one ---

CHAIRPERSON GRAHAM: Sorry, that will be given -- I'll give that Undertaking number 70 and because I think it will be quite large, this information to accumulate it, what type of time would you need to do -- to give us some data on long-term planning?

MR. HOGGARTH: Yeah, that I'm not too sure. I think that I would go at it in sort of two steps. The first step would be as asking is that information out there and available and finding out?

So if our science comes back to us and says, yes, we have the stuff to be able to do that, then the next step would be to put something together that would help us, is the way I would

look at the --

CHAIRPERSON GRAHAM: Before the end of this week, would you be able to tell us if, yes, it's available, no, it isn't, and if it is available, then give us a timeframe?

MR. HOGGARTH: Tom Hoggarth, for the record.

I'll do my best. I honestly -- going to our science people will have to -- we've got a fairly extensive process of getting advice from our science and so I'll do my best to try and get it to you by Friday, but I just --

CHAIRPERSON GRAHAM: No, just if it's a yes or a no, that's all I need by Friday?

MR. HOGARTH: Oh, I know, even -- even for just a yes or no.

CHAIRPERSON GRAHAM: Okay, very good. We'll put that on for Friday and then we'll have it on the agenda.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: Thank you.

The second question for DFO, again, a more general question. We have heard many intervenors talk about the importance of the near shore habitat or environment.

Is there information available that can describe the habitat profile, not only spawning, but fish life along the north shore of Lake Ontario, going out from the shore into the lake so we can have an idea of what sort of habitat existed different distances from the shore and at what point it begins to go down to a level where there is very little? Is that sort of information available?

(SHORT PAUSE/COURTE PAUSE)

MR. HOGGARTH: Specific to this area, I don't know if there's anything, but there's -- on a general level, there's lots of science out there that does, again, speak to the significance of near-shore areas.

And so beyond that, I -- again, I don't think DFO -- well, I know we would not be the keeper of all that kind of information. And as I spoke the last time I was here about this issue around near-shore and so people are saying, well, you know, generally near-shore areas are more productive, and that's true.

However, in certain areas like the North Shore where we're working here, there's very high energy zones that, you know, fish just cannot

use.

So I don't know if there's anything specific. The only thing that we do have for here is, again, some of the information that OPG has provided in the surveys and the continued work that, you know, we're asking for more assessment.

And that's what leads us to say, you know, again, for us, where for me –- for us –- for DFO, making a decision on what's acceptable impacts or not, it's that information that led us to say, okay, from two metres less, we can accept that, and we know we have the ability to compensate for it.

Once we're beyond that, we –- we get ourselves into more significant habitat that is used by fish for spawning and will be harder to compensate for.

MEMBER PEREIRA: But what I'm talking about is going beyond that, going much further into the lake, beyond the near-shore.

MR. HOGGARTH: Yeah.

MEMBER PEREIRA: Is there knowledge of what's out there, or is that an unknown territory?

MR. HOGGARTH: There will be –- again, I would say for the entire Lake Ontario shoreline, there's –- you cannot pull out a map and get that. There will be areas –- like the Toronto Region Conservation Authority have done a lot of work out in front of –- on the Toronto area, and so they will have mapping that shows, you know, here's what's being used.

I do know some of our science people have put together maps of where spawning shoals are located, more so for Lake Trout than other species throughout the lakes.

The Ministry of Natural Resources will have that kind of information as well on, you know, habitat types around. But there is no central location.

And just as a side note, I did sit for a while with –- on one of the groups for the Great Lake Water Quality Agreement recently, and that is one of the information gaps that's out there.

There is no centralized location on specific information for near-shore that, you know, is a process like this would be able to tap straight into.

MEMBER PEREIRA: That's interesting in that we have recommendations from Fisheries and Oceans, from Environment Canada, and from the CNSC that one way to reduce the impacts is to move the intakes and the diffuser deeper into the lake.

But –- so if there's no real knowledge of what's out there, why do the three agencies recommend –- three departments recommend that? Because you don't know whether you're going to get more significant impacts, or you're not certain?

MR. HOGGARTH: Yeah, Tom Hoggarth, for the record again.

That recommendation comes basically, again, from the general knowledge that fish are spawning in the near-shore. A definition of near-shore would be where the thermocline starts and stops.

Once you get below the thermocline, the areas are not generally used by fish. So, again, this is general information, and so that's why we do need more information.

But if I get back to –- again, almost a question like Madame Beaudet asked me.

With the numbers that we're getting right now from OPG on the estimates on fish entrainment, and so that's what we'll look at right at the moment, fish entrainment and impingement.

Based on our discussions with the Ministry of Natural Resources, these numbers are considered not significant today on impacting on the population.

Can we do better? Absolutely. One of the better ways of doing it would be moving it into deeper because there's less chance you're going to have larval drift in the deeper because they're spawning in the shallows, so the fish will be in the shallows.

So that's how our recommendation is based, and then further studies will provide us with the specific detail to say that, well, a depth of 20 metres or a depth of 15 metres.

We do know that moving it will likely result in less of impingement entrainment. We're just –- today, it's a hypothetical guess of that 20 is better than 15, but we do know that deeper is better.

MEMBER PEREIRA: Thank you.

I'll go on to Environment Canada

now, and you presented to us some results of modeling, and you recommend reducing the mesh size to get more accurate modeling of plumes in the lake.

Now, what confidence do you have –- if you go to smaller plume size, what confidence do you have in the results that you will get? What validation is there off the modeling predictions? What are the basic assumptions? And what variability are you likely to have in your predictions going forward?

So the question is really, once you get these predictions with smaller mesh sizes, how confident are you that what you get out of that will be truly representative of the likely hazards?

And I say this because modeling is often a function of what assumptions go into it, and the variability of your inputs. You can assume certain inputs, but they’re not –- because you’re talking of a lake and you’re talking about wind and you’re talking of conditions that are not very precisely measureable with time.

Like, there can be tremendous variations using mean –- mean averages and so on. So the outcome being, then, that the impacts are –-

have to be stated with confidence bounds.

Can you comment on that?

MR. LEONARDELLI: Sandro Leonardelli, for the record.

I certainly will comment on that. And I think also you're seeking strategic considerations, and I thought maybe I could provide some perspective on that question that you asked the DFO.

In terms of the mesh size, I believe it was PNNL a few days ago put up a graphic that showed what happens when you have a large mesh size. You have a large degree of averaging within that, and then when you go to the next grid beyond that one, you have additional averaging within that. So it's a gross scale of averaging. So you can't see some of the finer effects.

So I'm -- I'm not sure -- we certainly noted this in our commentary -- our written comments regarding the OPG modeling, but it -- it hasn't really come up for discussion here.

I want to point out that their -- their existing modeling at the current mesh sizes that they're using and with the atmospheric -- sorry, the meteorological data that they chose, it

–- it is tending to over predict temperatures at the bottom of the lake when you’re at temperatures of less than five degrees.

So when you take a look at their calibration statistics, the –- which was something that we had asked questions about, the model tends to be much more accurate in terms of making predictions that are calibrated to actual measurements that were made in the lake at higher temperatures.

But when you get below five degrees Celsius, which is really important because that’s the –- we’re talking about low temperatures in the wintertime when the eggs are potentially being exposed to thermal effects, the statistics showed that the modeling tended to over predict potentially the temperatures.

So it –- on that basis, it –- you know, we can’t say definitively that the temperatures that have been predicted by their model are going to be deleterious. A higher resolution model would allow us to get a better sense of what those actual temperatures would be.

Of course, it would have to be run with a finer mesh, and we asked for meteorological

data and lake current and temperature data –- data that was collected in the vicinity of the actual facility as opposed to using the meteorological data from Trenton.

So that would give us a better –- a better confidence that what the model is predicting is going to be what we would expect to be occurring in the environment when a discharge is actually occurring.

So from that perspective, that's why we had asked those questions and why we're asking for those -- for that data to be collected and then -- you know, and the models rerun.

So I hope that answers your question in terms of how we would look for the modeling to produce better results.

MEMBER PEREIRA: Yes, it does in a sense, but what I'm questioning is, you know, you're looking at a fairly low temperature, and how confident are you that what you're actually modeling is truly what is happening there?

Because, you know, you can improve the accuracy, but if you're starting assumptions, you know, just to guess at what should -- what you think is appropriate, you could be quite far out,

unless you have measurements and you replicate actual patents in the spawning area fairly well, you could think you're getting a better prediction. You're getting more accurate mixing modeling, but you may not be representing truly what's happening in the lake.

And that's the challenge of modeling from past experience. I know that happens, that the scientists come in with piles of computer output that high, but they can be invalidated by challenging one of the basic assumptions. That quite often happens.

I mean, is this something -- and you've done modeling. Environment Canada has done modeling for a number of years. So you must have some experience of how valid and what confidence you can have in the results given the fact that you're looking at fairly tight margins on impact or no impact, given the temperature in the lake in the winter, and the temperature rise in the water. So this is -- this is indeed a challenge.

Any comments of that?

MR. LEONARDELLI: It is true, modelling is always challenging to get that truly representative analysis, but that is the tool that

allows us to make the best predictions that we can.

Now, our comments reflect the type of things that we think need to be done in order to give us the best confidence to the extent that you can put confidence in modelling.

Now, I'm not sure if Ram is -- is he available to speak to this? Okay.

We can -- I can ask him to speak to this in greater detail, but before I do, the -- there would be follow-up measurements that would be done during actual operations to validate the predictions.

Now, of course, you've already got a diffuser built and in place and you'll have all that cost structure, et cetera, et cetera. And so, you know, it's -- to your earlier point about that.

But anyways, I'll ask Ram to speak to it he wishes in greater detail on this and then I'll go to the strategic comments.

MEMBER PEREIRA: Can I just comment on that? And that's the point. Once you get to an installed system, it's too late.

And with modelling I think if there isn't adequate confidence in the adequacy of the modelling, perhaps the way to go forward is to

take a precautionary approach and to say that this challenge is too difficult to model given the very tight constraints we have on what we're trying to achieve in the lake.

But that's where I come back to Environment Canada to say, is this a challenge that we can effectively manage, given the modelling challenge, or do we need to take a more precautionary approach?

MR. LEONARDELLI: Sandro Leonardelli, for the record.

Well, I guess in terms of the detailed response to your question about the accuracy of the modelling, I think I'll let -- I think I'll let Ram Yerubandi speak to that first.

But then I will come back because I understand you're getting to a service strategic question, which you posed to DFO, and I can comment on that afterwards.

Ram, are you there?

MR. YERUBANDI: Ram Yerubandi on the phone and thanks for the question actually.

I would like to point out that the consultant for OPG has actually used a fair bit of state of the art models for the far-field model

that is away from the diffuser and from the mixing zone.

In fact, that's not the major issue here. The question that exists is the resolution. The resolution of -- the smallest resolution is around 90 metres in the model.

Most of these models predict conservative kind of output. So what the predictions are, are a little bit conversvative. So that's already been calculated in this.

With higher resolution, obviously, we would expect the model to perform well mainly because in any of this lake or river or any of the surface waters, we do know that the models represent some processes quite well, and those are the processes that in a (inaudible) sense gives us a reasonable confidence.

And in this diffuser/intake type of situations, we do need much finer resolution than what it is right now.

Another reason for that is the diffuser itself is modeled with a model, jet plume type of model, which gives conservative estimates but it was incorporated in the larger scale model.

So in order to do those things,

there was some kind of approximations used there. Avoid a little bit of those things by going into higher resolution and our confidence will increase a bit more, but as the panel member said, in a model obviously there will be always some uncertainties.

And some of the uncertainties that can be really taken care of probably like meteorological forcing – if it is closed by then you already have provided a reasonable and meteorological forcing.

And then if the model can take care of the ice conditions, then that's another thing that you have already taken care of.

So these are some of the things that we suggested that by incorporating those, we would have slightly or much better predictions than what we have right now.

I hope -- did I answer the question or?

MR. LEONARDELI: Sandro Leonardeli, for the record.

Thank you, Ram. If there's a follow-up for Ram? No. Okay.

So I'll try and attempt your --

I'll try and address your strategic guidance question.

If you take a look at the -- at the three submissions from DFO, CNSC, NEC, there is strategic guidance in there. We just haven't packaged it as, you know, here's your final answer necessarily.

But some of the strategic guidance in there is, for example, the concern about cumulative effects and taking a look at cumulative effects from infilling, inpingement entrainment, from thermal effects, from potential loss of habitat to do degradation of the artificial embayment. I'm just going from memory here.

So, I mean, that is a strategic consideration. Climate change needs to be factored into this assessment. You yourself noted you're looking at a 50 to 60-year time frame of operations.

So although there's a great uncertainty about what specifically will happen, both in terms of the magnitude of temperature changes in the atmosphere and in the lake, and then ultimately how that affects species distribution, spawning habitat distribution, there's a lot of

uncertainty about that.

There's uncertainty about what species will be around. There could be invasive species that alter the biological dynamics of the lake and you end up with a different species structure. So there's -- there's a lot of uncertainty there.

But you do need to take into account what could arise as a result of climate change and factor that into your -- into your overall recommendation on what approach to take.

We talked about putting structures further offshore, and I think -- I think Tom spoke to that quite well, and even answered your question in terms of, you know, the thermocline and -- and then the habitat, is it out at 15 metres or 12 metres, et cetera.

There have been a lot of discussions about impacts from cooling towers versus impacts from once-through cooling.

You've certainly heard PNNL's assessment of what they felt the relative magnitude of impacts would be within the aquatic environment. And I don't think I need to speak further on that.

But from a thermal modeling

perspective, in terms of, you know, you're taking a look at cooling tower discharge versus once-through. As I said, we didn't look at it in detail, but the -- what I can speak to is that the volume would -- the volumes of the water being discharged would be much smaller.

I believe it's only the water from the blow-down circuit, probably in the order of five to ten metres cubed per second. I can't speak to that specifically. OPG could probably quote you the exact number, as opposed to 250 meters per -- meters cubed per second, assuming four reactors. So there is that. The other thing is, well, there is a trade off. We've heard OPG say that if you go with cooling towers, we might -- they might need additional infilling.

Okay, that's a valid point, but then you have to take a look at the site layouts, and I believe Mr. Sweetnam had mentioned depending on site optimization.

You need to take a look at what you can realistically keep on land as opposed to needing for additional infill and I guess we don't have any answers on that as yet because we don't have a detailed reactor design.

But you know, there were some questions that were raised through the information request process about, well, you know, can you move the railroad or can you -- can you put some of your facilities north of the railroad, if you're assuming you're not moving the railroad? But I think there were other creative site management options that could have been explored.

For example, there is the Site Visitor Centre, which, you know it's a great public relations tool, but it doesn't necessarily have to remain where it currently is. And does that allow you to put additional fill over there, for example, or some of your less important auxiliary facilities or is that the location where you can put bank swallow habitat if you're creating new nests?

There is an assumption that a Holt Road road needs to exist. There are other roads on the property that could be considered as the main access into the property, either the -- on the east and the west of the facility that you could potentially build roads there or upgrade the existing roads in order that you have additional flexibility in the middle of the property for laying out your fill, for example.

So strategically, there are a lot of things that could go into this type of analysis.

Anyways so I just thought I would try and address some of that.

MEMBER PEREIRA: Thank you, you answered my next question in passing, but thank you very much.

CHAIRPERSON GRAHAM: I just have a question for Mr. Hoggarth.

Is there enough knowledge to know that if the line went out further into the lake to a deeper depth that it would be less intrusive on fish habitat? Is there enough knowledge to know at least that?

MR. HOGGARTH: Tom Hoggarth, for the record.

Absolutely. Again, you know, we're looking specifically, and as I talked to originally, we're basing or we're using a round whitefish as a surrogate for the production of all fish.

We've done that because we feel that round whitefish are -- would be the most sensitive species in this area.

We do know the literature does

speak to spawning depths of four -- or two to 12 meters. So if we get the intake out of the 12-meter zone and the diffuser out of the 12-meter zone, we know that we should have, and we would be confident that we have less impact on round whitefish.

And as they are the most sensitive species here, you know, we could -- that in itself would be protecting the aquatic side of it.

CHAIRPERSON GRAHAM: But would that be intruding on another species, another habitat? Have you enough knowledge to know that that that's not the habitat -- it's not round whitefish, but another habitat out further? Is -- have you enough knowledge on that?

MR. HOGGARTH: Tom Hoggarth, for the record.

It will be habitat for another species absolutely. You know, if -- one fish that's out there in large numbers right now, and on some levels to our chagrin, is the round goby. They will be there.

Other fish will be using it as transitory habitat, but I -- we don't have any information. This is stuff from OPG as well that

there would be another species. Let's say, like, lake trout or another species out there spawning and using this area that we have concern about right now.

CHAIRPERSON GRAHAM: The other question I have is, do you have a -- is there a lake-wide management plan? I know it would take in two countries and so on, but do you have such a thing as a lake-wide management plan?

MR. HOGGARTH: Tom Hoggarth, for the record.

No, Fisheries and Oceans doesn't, but I do know that on the Minister of Natural Resources sits down with the United States and come up with an actual fisheries management plan, sort of a co-management agreement between them on how to look after the fisheries of Lake Ontario.

CHAIRPERSON GRAHAM: So that's province to state more or less rather than federal government to federal government?

MR. HOGGARTH: Yeah, that's correct.

CHAIRPERSON GRAHAM: Okay. Environment Canada and Mr. Dobos?

MR. DOBOS: Mr. Chairman, I might

ask Mike Goffin who is on the phone who would be able to speak to lake-wide management planning for Lake Ontario.

CHAIRPERSON GRAHAM: Certainly.

MR. GOFFIN: So Mike Goffi, for the record.

Under the Canada/U.S. Great Lakes Water Quality Agreement, there is a provision for development of lake-wide management plan and there is a lake-wide management plan in effect for Lake Ontario, but the provision of the agreement is really to use that plan to identify impairments to the lake and to coordinate actions of Canada and the U.S. at Federal State and Provincial levels.

So it’s a higher level plan focused on analysis of available monitoring information and directed at identifying priorities on a lake-wide basis for action.

CHAIRPERSON GRAHAM: Thank you.

Mr. Sweetnam, I think you wanted to ask something. Madam Beaudet has another question of DFO and the Environment Canada and then we’re going to take a break because we still have more topics to resolve here.

So Mr. Sweetnam, I’ll give you

just -- do you have a question or a comment?

MR. SWEETNAM: Albert Sweetnam, for the record.

Just two quick clarifications we would like to offer, Mr. Chair.

One is that both the Environmental Canada and DFO have been indicating that a choice of reactor type actually drives the size of the infill.

This is not correct as indicated in our submission of the 16-layer drawings and again, in the Undertaking number 29 where we show quite clearly that with once-through cooling, all of the reactor types actually fit on the site.

So the actual infill is determined by the selection of the cooling technology, which is why OPG was really requesting the Panel to make a decision on the cooling technologies so that we could get the work on the license to prepare the site underway.

And the other issue we wanted to comment on was on the modelling and I'll ask John Peters to do that.

MR. PETERS: John Peters, for the record.

The simple clarification that we wanted to just provide is that OPG has been working at the Darlington site since the mid ‘70s to identify the optimum location for intakes and discharges.

We’ve relied on that information and provided it as a basis for an improved design that we are proposing in this case.

The 10-meter depth and the six-meter -- the 10-meter depth for the minimum was identified in those early studies and we continue to believe it’s a good starting point and we accept a need for further refinement going forward.

The other point is that with regards to temperatures, this is an ideal situation and we have actually provided actual measurements of the diffuser performance at its boundaries based on hour-by-hour, day-by-day, year-long studies, which we have provided to the -- as a basis for developing modelling.

Going forward, we will only improve that information and it will based on the real baseline data, as was suggested in the design of a fine-mesh analysis tool.

So I believe that we have a good

foundation now for making our predictions of effects and that can only be more precise going forward. And we have no doubt that we will be able to demonstrate a satisfactory intake and diffuser as a result.

CHAIRPERSON GRAHAM: I'll go then to Madam Beaudet.

I was going to finish up this topic, but if you want, now we'll take a break. We've been here for over two hours.

So we'll resume at four o'clock.

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

L'audience est suspendue à 15h45

--- Upon resuming at 4:00 p.m. /

L'audience est reprise à 16h00

CHAIRPERSON GRAHAM: Welcome back everyone and take your seats, please, so we can continue with information required -- being required from DFO and Environment Canada.

And, Mr. Pereira, I think you were finished on that line of questions.

Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

I just had one more question for

DFO. I was wondering if you had considered a specific technology for acoustic deterrence that you -- there's a proposal in the compensation action plan of OPG, that it is a possibility to reduce entrainment.

And we had a gentleman the other day who came and talked about how the diffuser was developed for the existing site and he did mention one -- well, I don't know if you can call it a technology because it was rather primitive, just making noise with a drum and I'd like to have your comments on that, please?

MR. HOGGARTH: Yeah, Tom Hoggarth, for the record.

At this stage, no, we would have no specifics around which of the acoustic technologies would be best for, you know, the needs at the Darlington site.

And we would need to be working with CNSC because I think they have more information on this, as well as OPG and just reviewing what the technologies are out there because again, I've -- you know, at a very high level I've read lots of literature on this and there are different types of acoustics that do

work.

Some work better for one fish species than others and so we would need to sit down and figure out which one is the best under the situation.

And again, that's the kind of stuff that comes at the detailed engineering phase so as long as we've got the agreement that, yes, we will look at acoustics and if we set parameters whereby you now must institute acoustics, if OPG is good with that, we would sit down and discuss, you know, what are our best options and what type of instrument would give us the best improvement on fish impingement and entrainment.

MEMBER BEAUDET: I'd like to go to CNSC on this.

Do you have any data or evaluation in terms of impact because I presume that whatever technology would cause some impact as well?

MR. WISMER: I believe that question was with regard to acoustic and you heard Dr. Christie here earlier in the week. And acoustic technology is installed and working on the side of the lake at the Fitzpatrick Nuclear Generating Station.

It's very effective for alewife which right now is, along with round goby, one of the most common species being affected and alewife's valued because it's food for salmon and trout.

It also works for Atlantic salmon. You heard that from Dr. Christie and that may be a species in future that shows up more frequently, that we're hoping will come back to Lake Ontario.

In Europe a different system has been used and it's now required in the U.K. for new facilities to use acoustic deterrence. The other thing I could offer is I see Dr. Paul Patrick in the audience and he's done a lot of work directly on this, if you wanted to talk to him.

MEMBER BEAUDET: Yes, please.

MR. PETERS: Madam Beaudet, John Peters for the record.

Paul Patrick -- Dr. Paul Patrick is a member of OPG's team and has been involved in the project since the beginning.

DR. PATRICK: Dr. Paul Patrick, for the record.

As Don Wismer correctly has indicated, acoustics are being used at a couple of

locations, at the Fitzpatrick plant on Lake Ontario as well as at the AEP Cook on Lake Michigan.

It's also noteworthy that acoustics is also being used at the Lambton facility -- OPG's Lambton facility, which is on the St. Clair River. The only point to make here is that acoustics is designed and does work, but is very specie specific.

What this means is, for example, it can be designed to work well for alewife, gaspereau on the East Coast which is -- basically at the Fitzpatrick plant and the AEP Cook plant, Red Lambton, it was designed for gizzard shad.

Again, it's used in Europe as well, primarily for pelagic-type species. So tensor worked better for the pelagic-type fish. These are fish that basically live in the open water column, whereas the ones that are more benthic, it doesn't appear to be as effective.

Just adding to that is that the porous veneer system that we have, one thing that has not been mentioned about it is that one of the really unique features of this is that it has a very low approach velocity.

And this is very critical if you

look at the literature in the U.S. EPA requirements and so forth, that if you have a low approach velocity such as .5 feet per second or .15 centimetres per second or metres per second, it is very important in having this criterion for reducing fish impingement.

And we have that not only for the existing facility, but also for the proposed project. And I think that's really important at this point.

Thank you.

MEMBER BEAUDET: Thank you.

CHAIRPERSON GRAHAM: Thank you.

Just one bit of information. I'm advised that the CWS expert has to leave the line at 4:15. So do we have any questions for Canadian Wildlife Services?

Madam Beaudet, would you have any questions for Canadian Wildlife Services?

MEMBER BEAUDET: No, I don't.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: No, I don't. Thank you.

CHAIRPERSON GRAHAM: Okay. Well, that gives you the clearance then to go, but stay

around till 4:15 just in case, there might be an afterthought.

Questions now with regard to emissions. I think, Madam Beaudet, do you want to start that to Environment Canada?

MR. HOWDEN: Mr. Graham?

CHAIRPERSON GRAHAM: Yes.

MR. HOWDEN: It's Barclay Howden.

CHAIRPERSON GRAHAM: Yes, Mr. Howden?

MR. HOWDEN: Could we make a comment before we leave this topic?

CHAIRPERSON GRAHAM: Certainly.

MR. HOWDEN: Thank you.

MR. McALLISTER: Thank you. It's Andrew McAllister for the record.

As Mr. Howden mentioned, on discussions around infill, we've had the opportunity to look at OPG's response to undertaking number 29 which had the revised layouts with the two-metre depth contour.

When we compared it to what they had previously put on, earlier I believe in response -- earlier IR and the review process, their drawing series D0045, when we looked at the

hybrid cooling areas and the mechanical draft cooling areas that are depicted on these new set of drawings, they appear to be larger in size than what was on this older series of drawings.

And we're asking if they could possibly clarify that for us?

CHAIRPERSON GRAHAM: Can we get some clarification?

MR. SWEETNAM: Albert Sweetnam, for the record.

I'll ask Don Williams to respond.

MR. WILLIAMS: Don Williams for the record.

If you look at the hybrid cooling areas, I believe you will find they are the very same within the ability of the sketch.

For the mechanical cooling, you are correct in that we have gone back and looked at a more realistic or feasible site as we've further refined and optimized the site.

So you'll notice on the mechanical cooling, although they're the same area, they are a bit narrower which does force or push the area out onto the lake infill a bit more.

CHAIRPERSON GRAHAM: Does CNSC

have any other comment?

MR. McALLISTER: No, perhaps we'll follow up with OPG on the matter just to make sure we're clear on the understanding on that.

CHAIRPERSON GRAHAM: And the panel members here have to -- may have questions on undertakings also which will be dealt with once we get a chance to work on them. We've been working on other things at this time.

Madam Beaudet, do you want to go ahead now with your questions?

MEMBER BEAUDET: Yes. It's addressed to Environment Canada. We did cover some of the emissions, I think it was yesterday, conventional emissions and as you mentioned you would have to know -- be about to review when the technology is chosen. I have a question regarding acetic acid and I'm not sure if it's Environment Canada or Health Canada.

Some provinces do have a limit or an order and, for instance, Quebec it's 90 micrograms per cubic metre for emission every 15 minutes. And that's when they recognized that 50 percent of the people would be able to smell the odour of acetic acid, this being because if it

comes to a certain quantity, people can faint.

So it’s better that you know, you can detect the odour. And I was wondering if you have any information on that? I don't think Ontario has any standards. We tried to find, but maybe you can help us with that?

MR. LEONARDELLI: Sandro Leonardelli for the record.

The -- I mean it would be -- I believe the -- the province would have the -- the appropriate standards for this.

If they don't have it, then you'd have to consult with Health Canada to see what the federal standard would be. We didn't review it in the context of standards.

We did note that it was one of the substances that they had put a bound on in terms of they prorated emissions from the existing facility as a means of estimating what might be released from -- from the new facility.

That would -- of course, would have to be verified afterwards, but in terms of the standards, I couldn't speak to that.

MEMBER BEAUDET: We'll check with Health Canada. I believe they're here tomorrow.

Thank you. That's all my questions, Mr. Chairman.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: No further questions. Thank you.

CHAIRPERSON GRAHAM: Well, that then takes us to the next part of our agenda and we go to various people from the floor. And I first go to OPG.

Do you have any questions regarding Environment Canada or Fisheries and Oceans?

MR. SWEETNAM: Robert Sweetnam. No questions. Thank you.

CHAIRPERSON GRAHAM: CNSC?

MR. HOWDEN: Barclay Howden. No questions. Thank you.

CHAIRPERSON GRAHAM: Other government departments other than Fisheries and Oceans and Environment Canada? Do you want to ask yourself a question, Mr. Leonardelli?

MR. LEONARDELLI: Sandro -- Sandro Leonardelli for the record.

Yes, I like being asked questions, so why not?

No, actually, the thing I wanted

to point out, after -- during the break, we had discussed the questioning about the 20 metres and the issue of fish species. I think Tom was going to speak a little bit more about -- no? Duck, was it you, going to speak --

CHAIRPERSON GRAHAM: Did you want to ask DFO a question?

(LAUGHTER/RIRES)

MR. LEONARDELLI: I think I'm being hung out to dry here.

CHAIRPERSON GRAHAM: Maybe you'd share with us what was discussed?

MR. LEONARDELLI: Yeah, I -- I think Nardia can help. Hang on a sec.

(SHORT PAUSE/COURTE PAUSE)

MS. ALI: Nardia Ali, for the record.

After Tom answered his question about what species, you know, we'd be able to diffuse or whether there'd be other species using that space, it occurred to me that he didn't mention that we picked round whitefish because it is -- it is one of the most sensitive species out there.

We feel that in addressing the

concerns of thermal impacts around round whitefish, it would also cover off, you know, possible impacts with less sensitive species. So we just -- I just wanted to make that point.

CHAIRPERSON GRAHAM: Thank you very much.

MS. ALI: Thank you.

CHAIRPERSON GRAHAM: Now, we will go to questions from -- since no other government questions, go to questions from the floor and I believe Joanne Bull from Lake Ontario Waterkeepers. And you have several questions and please keep them concise and we'll try and deal with it as quickly as possible. Thank you.

--- QUESTIONS BY THE PUBLIC TO ENVIRONMENT CANADA AND FISHERIES AND OCEANS:

MS. BULL: Thank you, Mr. Chair.

First, we've been told informally that there will not be a time scheduled to ask questions on the undertakings that have been answered.

Can I ask for a ruling on this since there's been a lot of information and much of that is on the record now, but we haven't had the opportunity to ask questions?

CHAIRPERSON GRAHAM: Yes, I'll have to take that under advisement because we don't even have all the undertakings in yet, so I'll have to take it under advisement and we'll advise you.

MS. BULL: So my question for Mr. Chair in regards to the presentation, we've heard Environment Canada refer to deleterious effects. For clarification, discharging a deleterious substance is a criminal offence regardless of whether it causes an effect.

We know that neither Environment Canada, DFO, nor this panel can authorize discharge of a deleterious substance.

Can we just have clarification as to how the modeling and mixing information that we've heard is relevant to the *Fisheries Act*?

CHAIRPERSON GRAHAM: DFO or -- I'll go to -- I'll go to Environment Canada first.

MR. LEONARDELLI: Sandro Leonardelli for the record.

I think I'll let Nardia speak to the -- to the legislative aspects of that.

In terms of the modeling, I can speak to that afterwards, how it's relevant. I believe the question was how is it relevant -- how

is the modeling relevant to the -- to the --

MS. ALI: To the *Fisheries Act* --

MR. LEONARDELLI: Okay.

MS. ALI: -- which prevent deleterious substance discharge?

CHAIRPERSON GRAHAM: I don't think they were asking with regard to the legislative part, just how you deal with it, so maybe you can clarify that?

MR. LEONARDELLI: Well, okay. The question about the modeling, the modeling is determining the temperature at any particular point in space within the lake that -- that would be expected or could reasonably be expected based on the -- on the bounding scenario.

So we then take a look at those predicted temperatures and if -- assuming -- if there was habitat there -- in this case, the round whitefish is the one that we've all been speaking about because it’s the most thermally sensitive.

We then make a determination against the -- the criteria which are the -- the MWATs, the mean weekly average temperature and there's also a short-term maximum temperature that’s looked at.

So if we know habitat exists in a certain area and we know what the temperature effect in going to be in that area, we can then see if those -- those criteria are being exceeded. If the criteria are being exceeded, then -- then that would be deemed to be deleterious.

MS. ALI: Right, that’s a clarification that would go to deleterious effect, which is sentencing rather than deleterious substance, which is what the Act prohibits.

MR. LEONARDELLI: Okay. And that was the aspect that I was referring to, the legislative part, in -- in terms of how a deleterious substance is defined.

So perhaps Nardia could speak to that?

MS. ALI: Nardia Ali for the record.

I'll try, but you are correct, that the Act does specify that the substance -- like you don't have to have a deleterious effect if -- if it’s deleterious at the point of discharge. And the *Fisheries Act* prohibits deposit of deleterious substance unless it’s authorized by regulation.

And this is why, I guess, earlier in the -- in the panel I had mentioned that OPG has asked for regulatory certainty and Environment Canada will be looking at options to give that certainty to ensure that there is compliance with the *Fisheries Act* for deposit of deleterious substance. And that's about all I can say at this point. Thank you.

CHAIRPERSON GRAHAM: Ms. Bull, you had one further question, I believe.

MS. BULL: Thank you.

We know Environment Canada deals with section 36 aspects and deleterious substances. Thermal plumes, even if they're not found to be deleterious, can still alter fish habitat and I'm wondering how DFO's accounted for that under section 35?

CHAIRPERSON GRAHAM: Mr. Hoggarth?

MR. HOGGARTH: Tom Hoggarth for the record.

When we -- when we looked at it, our -- in our opinion, if the -- the temperature change was not deleterious and, therefore, didn't have a deleterious effect on it, we were not making the decision that there was a section 35 impact to

it.

So as we did talk, with the diffusers, the -- the concern that we would have is not in the -- the mixing zone area, but is the potential impact that the upwellings would have on larval drift and -- and we still need to look at that, but we -- for us, that would -- that would be a section 32 issue.

And just further again, if -- if it is a deleterious substance or has a deleterious effect, Fisheries and Oceans cannot issue a section 35 authorization for it.

So just again, just as a summary, when we're -- when we're going to be issuing our authorizations -- and this is just for this project -- we envision potentially four -- I think it's four authorizations.

And one will be for the infill, so when -- if this hearing goes forward and says that there's a -- you know, the project can proceed, they'll go to CNSC for a licence to prepare site.

At that time, they'll also come to DFO and say, "Okay, we need an authorization for the infill." We'll be working with them through the detailed engineering design on what that infill

will actually look like in detail and then design an authorization around that.

We will also then -- that’s the first authorization we'll be providing.

The next authorization that we'll be providing will either be for the intake or the diffuser structures and whether they're separate authorizations or one will just depend on the construction timing and that kind of stuff.

But we will not be in a position to issue a section 35 authorization for the diffuser until we get concurrence from Environment Canada that there will not be the release of a deleterious substance.

So we will not be giving a section 35 authorization for the works that are required around the diffuser until we’re confident that there’s not going to be a deleterious substance issue.

So those –- so one for the infill, one for the diffuser, one for the intake, and that’s the footprint of the intake, and then the next authorization that will be given is for the operation of the facility, and that’s the section 32 authorization around –- for the mortality of

fish.

And then that authorization as well, through the detailed design stage, will –- will speak to the issue –- the things that we put in there, whether we are demanding at that point in time that acoustics are actually required, and if we're saying acoustics are not required, we'll be setting, within that authorization, levels that will say, okay, if this is met, you will now do acoustics.

If this situation comes across, you –- you know, other options are potentially, you know, rotating screens with a fish return system.

So we can put within our Section 32 authorizations conditions upon once they are met, you must proceed with other options. So that's –- that's how we see or that's how we'll be moving forward with our authorizations.

But back to the question, we cannot give an authorization, section 35, destruction of fish habitat, if there's a deleterious effect from the plume.

CHAIRPERSON GRAHAM: Thank you very much.

MS. BULL: If I may, sir –- Mr.

Chair, my question was where if, theoretically, there's no deleterious effect, there could still be impacts on fish habitat, and I'm wondering if DFO has accounted for that.

And it sounds like from the answer that DFO is using the deleterious substance test, which is for section 36(3), to determine whether there's an effect under 35, and I wonder if there's a source for that?

MR. HOGGARTH: Tom Hoggarth, for the record.

No, I don't know if that's correct in what you're saying. We're basically –- again, as I said, we don't have the ability to authorize the destruction of fish habitat because of a deleterious substance, so that we're not doing.

When we've done our review, we don't consider the diffuser having impact on habitat from the turbulence, and as well, we wouldn't consider it an impact on habitat, again, providing that it's not deleterious.

CHAIRPERSON GRAHAM: Thank you very much, Ms. Bull.

MR. LEONARDELLI: Mr. Graham, if I may, just one further clarification.

CHAIRPERSON GRAHAM: Okay, if that will help.

MR. LEONARDELLI: Sorry, Sandro Leonardelli for the record.

The use of the term deleterious substance versus deleterious effect, just to clarify, you know, in doing the environmental assessment work, I'm thinking –- specifically me, I'm thinking in terms of deleterious effects because we're advising on whether there's an adverse effect associated with the diffuser.

When we talk about, you know, regulatory certainty or does it meet the *Fisheries Act*, then it's people like –- like Nadia and Doug who –- they'll be thinking in terms of deleterious substance. So if I've used the terms interchangeably, it's because of that.

CHAIRPERSON GRAHAM: Thank you.

The next intervenor is Mr. Kalevar, and I hope, Mr. Kalevar, your questions are around the topics being discussed here this afternoon. Mr. Kalevar.

MR. KALEVAR: Mr. Chairman, but the question was answered already. Thank you.

CHAIRPERSON GRAHAM: Thank you

very much. Then it's Karen Buck.

MS. BUCK: In my statement to you, I said that I was concerned that this was generic, and now after hearing the back and forth between OPG, Environment Canada, DFO, and the CNSC, I am asking the question, how are you actually going to make a decision satisfying the requirements of regulatory certainty that we've been talking about trying to achieve to move forward and actually approve a generic scenario? And I guess this is to the panel and to --

CHAIRPERSON GRAHAM: It's to the Chair, and the Chair will direct it to Environment Canada, please.

MR. LEONARDELLI: Sandro Leonardelli, for the record.

So I just want to make sure I understood the question. You're asking how we can assess regulatory certainty at this point in time with the details that are before us; is that correct?

MS. BUCK: Right. And come to the conclusion at the end of this process that there will be approval of moving forward with a project, an unknown generic project.

MR. LEONARDELLI: First of all, I would –- Sandro Leonardelli for the record.

First of all, I would answer that it's not Environment Canada that decides whether this project proceeds. We don't grant an approval on this. Our purpose in the hearings is to provide technical advice to the –- to the responsible authorities and –- and the panel. So that's –- that's the basis of the advice that we're giving.

In terms of regulatory certainty, it's not something that has to be determined right now at this particular stage in the project.

But what we did say in our submission is that taking a precautionary approach and assuming that round whitefish habitat exists in the area and based on the thermal plume modeling results that we have before us, that we would anticipate that there would be a likely effect –- a deleterious effect within the mixing zone.

So we have stated that. We've –- we –- I –- you know, it's, in essence –- so it's, in essence, a worst case scenario of we are predicting an impact within the mixing zone. So in that sense, we -- we're on the record as to what the potential effect could be based on the

information that's before us.

CHAIRPERSON GRAHAM: Yes. And after the panel receives all the information, then it's up to the panel to make the decision. As an example, Environment Canada and Fisheries and Oceans were here the first week. We brought them back today for more information, and it's an ongoing process.

We haven't made a decision. We have to gather all the facts, and that's what we're trying to do through these in a public forum. We're working towards that. So that's –- it –- the decision is going to be up to the panel.

MS. BUCK: I just have one quick final question to the panel, and that is, how many huge projects like this go through and are approved on a generic EA process, and is this a first or are there precedents of this happening before?

CHAIRPERSON GRAHAM: I can't answer that because I've –- this is the first panel I've been on, but I –- I can't answer that question at this time.

MS. BUCK: And so is that an undertaking or not?

CHAIRPERSON GRAHAM: No, it isn't.

MS. BUCK: Okay.

CHAIRPERSON GRAHAM: The next question is David Done. Mr. Done.

MR. DONE: It's David Done, not Done.

CHAIRPERSON GRAHAM: I am sorry. Done, I'm sorry.

MR. DONE. That's all right. I had a question, and it's really –- really my own ignorance, but the circulating lake water system for dissipating the excess heat has nothing –- I'm assuming has nothing to do with the moderator heavy water system that is regulating the pile? Is that right? Am I right in that? Or is –- you know, assuming a CANDU scenario, but –-

CHAIRPERSON GRAHAM: I think I'll go to Environment Canada.

MR. LEONARDELLI: Sandro Leonardelli for the record.

Strictly speaking, OPG could answer this but –-

CHAIRPERSON GRAHAM: Well, if you want, they can.

MR. LEONARDELLI: –- it's the –- it's the cooling water circuit, so it's –- this is

the condenser cooling water. It's not the primary cooling circuit, which I believe is what you're referring to, and I'd ask OPG to confirm.

MR. SWEETNAM: Albert Sweetnam for the record.

That's correct. The two systems are entirely separate.

MR. DONE: Very –- very good. Thank you very much.

CHAIRPERSON GRAHAM: Thank you, sir. And with that, that concludes the information.

Mr. Pereira, you have nothing else? Madame Beaudet?

So with that, we will, first of all, thank Mr. Dobos and Mr. Hoggarth for coming today with your teams to try and clarify some of the information, and we may be back in touch with you again. Anyway, thank you very much for coming and also having -- thank you for having your teams on telephone conference also.

MR. HOGGARTH: Thank you, Mr. Chair.

MR. DOBOS: Thank you.

CHAIRPERSON GRAHAM: Now, the last

bit of -- on the agenda today is an intervention by Kathleen Chung under PMD 11-P1.220 and I'd ask -- as soon as the floor gets -- as soon as the table gets cleared, Ms. Chung, we will entertain your intervention.

Maybe someone could get a fresh bottle of water for Ms. Chung also.

MS. CHUNG: I don't drink bottled water.

CHAIRPERSON GRAHAM: Okay.

--- PRESENTATION BY MS. CHUNG:

MS. CHUNG: I'm speaking on behalf of my four grandchildren who live and go to school within range of Pickering and Darlington. One attends school within site of the Pickering reactor.

Also I am a member of the Canadian Voice of Women for Peace, the Older Women's Network, Canadian Unitarians for Social Justice and the Green Team of my local church.

There is a Haida proverb that says, "We do not inherit the earth from our ancestors. We borrow it from our children."

This hearing is about future generations, it's not about us. We're saddling

those generations with a poisonous legacy. Not one I want to leave for my grandchildren and their grandchildren.

So what kind of future are we going to create with the resources we have? What's holding Ontario back from developing renewable energy resources instead of nuclear? I say it's the Old Boys' Network, which controls the power industry and the construction industry and it's lack of vision.

The Government of Ontario must rise above of these. The Government of Ontario must lead. Right now the people are far ahead of the government in seeing the urgency of the problem and our need to development renewable power sources and to conserve energy.

Do we concerned citizens really need to remind you again and again of the cost overruns, the danger to the environment and to people and the total lack of any way to safely deal with nuclear waste? Not one country in the world has found a way to deal with it and you know what's happening in Japan. Just think about Fukushima.

In 1997 Ontario Hydro admitted that it had failed to report tritium contamination

of the groundwater on the Pickering site for the last 20 years and the leaks have continued with another within the last two weeks.

Do we need to again mention the radioactive sludge dumped into the oceans or that Ontario Hydro has dumped tons of copper, zinc and other metals from Pickering into Lake Ontario?

Why do we have to remind you yet again about the millions of tons of radioactive tailings left behind from mining uranium ore. These residues contain 85 percent of the radioactivity that was present in the original ore. They will remain dangerously radioactive for hundreds of thousands of years.

Radioactive radium, polonium and lead are seeping into the surface waters and contaminating groundwater.

For years I worked within sight of the Pickering Nuclear Plant and then I had my throat slit. Yes, to remove most of my thyroid and there has been no research about the effects of living and/or working or going to school near a nuclear power.

I wonder how many of you saw the film the *China Syndrome*? It was based on the Three

Mile Island near meltdown. A nuclear engineer at the Pickering Plant who saw the film remarked that everything in that film was applicable to Pickering except for the misplacement of one fire extinguisher.

Yet the politicians of the Town of Pickering are so concerned about real estate prices perhaps dropping, that they refuse to install warning sirens in residential neighbourhoods that might save lives if there was a more dangerous than usual leak.

And the politicians in this area insist that there be no cooling towers at Darlington because they might remind people of the danger of nuclear and would lower real estate values here. That’s all they care about is the real estate values, not people’s safety. Not about children’s future.

And never mind that this radioactivity then might leak into Lake Ontario, and I was very interested to hear the discussions about fish habitat and about water temperature.

In fact, I was talking to an engineer recently who told me that the water temperature in Lake Ontario is rising and what’s

happening is the upper layer of warmer water is increasing in size and the lower layer of cool water is decreasing in size.

So if you're spilling the warm water out further into the lake, all you're doing is destroying the lake further, increasing the temperature. That's a deleterious effect.

If you think you can protect yourself by taking Potassium Iodide pills when disaster strikes, forget that. They're simply not available to anyone in the general public who doesn't live extremely near the nuclear plant, so for example if you live in Pickering, just west of Whites Road, you'll not be given them, so my granddaughter can't get them unless she's at school because she goes to school on the other side of Whites Road.

The danger on Fukushima was declared by the Japanese Government to be 30 kilometres, but the U.S. Government advised all their citizens who were in Japan to evacuate to beyond 80 kilometres. Have you checked the map lately to see how far you would have to go to get just 30 kilometres from Pickering or Darlington, never mind 80 kilometres?

I've been informed in writing by this Panel that the Joint Review Panel for the Darlington New Nuclear Power Plant Project has determined that the Ontario Power Generation's Environmental Impact Statement and the information in support of the application for a license to prepare a site, along with the additional information that has been provided in response to questions from the Panel sufficiently responds to the Environmental Impact Statement Guidelines.

Does this mean that there will be no proper environmental assessment done? If that's the case, it's a dereliction of duty.

With the Fukushima disaster unfolding before your eyes, how can you be so complacent?

If renewables will cost us only half what nuclear will, why the push for nuclear? Maybe the Old Boys' Network?

Long-range transmission lines are wasteful of energy, both in terms of construction, never mind the use of land. And in terms of the loss of efficiency over long distances, but small local wind farms and solar and other renewables can keep cost and energy losses both to a minimum.

Co-generation and other green technology is the way of the future. Nuclear is old technology. We have the technology and we have built examples right here in the Toronto area to make all new buildings, including high rises off grid. You can have methane recovery systems. And there is actually a building in Mississauga with a methane recovery system.

And I've heard that windmills in the vicinity of Fukushima have survived the earthquake and the tsunami just fine and continue to produce power, but we don't want to put wind turbines in Lake Ontario because it might spoil our view. We would rather live next to a nuclear plant. Explain that?

Nuclear power is non-renewable. Global resources of extractable uranium will be depleted within the next 40 years, even if the number of nuclear power plants is not increased.

Think about what all this means for our grandchildren, for your own children and grandchildren. I urge you, do not extend the life of the Darlington Power Plant and do not build anymore nuclear reactors.

For the sake of all of our

grandchildren, for seven generations and beyond, let’s clean up the environment while we still can.

And I’m going to put on another hat and bring you a message about nuclear waste from the Toronto Raging Grannies. “We say, how could they contrive to bury alive all that dangerous stuff. The nuclear bus never knew what to do with all the waste in their witch’s brew, so let’s just say no, loud enough to show we want our kids to survive and their kids and theirs too without nuclear curfew, way past 65.” Thank you.

CHAIRPERSON GRAHAM: Thank you very much for that presentation.

Now, we will go to questions and I will go to Madam Beaudet for the first -- pardon me, what’s going on?

No, you stay up here, ma’am, until I get finished, if you don’t -- if you don’t mind, because there may be questions to you.

The questions -- the way the process goes is panel members first, then OPG, then CNSC, and then government officials, then the floor may have questions. So that’s the way it is. So there may be questions. So we’re not through yet.

MS. CHUNG: All these experts are

very intimidating and I keep having the fear that the answer has already been decided, that it's going up no matter what we say, but I'm not going down without a fight.

CHAIRPERSON GRAHAM: Appreciate that, and the answer is -- nothing has been decided, and I can assure you that.

So Madame Beaudet.

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

Thank you for your colourful presentation and your passion to defend your concerns.

There's one point I would like to cover with you, it's about our duty to make sure that OPG has filed an EIS, and they did, and we did send over 200 questions to try to complete that information, and when you received that letter it was to advise people that we felt we had enough information to go on to the next phase of the evaluation, which is the public hearing.

We wanted to hear from different ministries, ordinary people, environmental groups, from everybody, which is what we're doing now.

This statement, when you talk about health where you say that Ontario Hydro revealed that it had failed to report tritium contamination of ground water on the Pickering site for the last 20 years.

Can you give us a little bit more details where you say that, what happened exactly?

MS. CHUNG: That came from an OPA -- OPA data, but I can't remember now because I read that about three years ago. So I can't tell you the exact source, but it did come from OPA.

MEMBER BEAUDET: Can we hear from OPG about this statement please?

MS. SWAMI: Laurie Swami, for the record.

There is a -- was a tritium in groundwater contamination issue at the Pickering site. I believe that we reported it in and around 1996, '97, I can't -- I'm going by memory. And we've reported that and we worked under a director's order from the Ministry of Environment to assess the risk associated with that, and we continued to work with them on what needed to be done to address that situation.

MEMBER BEAUDET: Did you have

monitoring at that time at Pickering? I mean, how has it progressed it now, what you're doing compared to what was happening at the time?

MS. SWAMI: Laurie Swami, for the record.

At the time we installed an extensive monitoring network for groundwater sampling around the site, and perhaps I'll ask Jane Borromeo if she has the exact -- oh, she left. I'm sorry. We have the exact number.

It's in the range of 200 sampling locations at the Pickering site where we monitor for groundwater tritium concentration on a regular basis, and we report that information at this point.

MEMBER BEAUDET: And you report to CNSC?

MS. SWAMI: Yes, it's reported through the CNSC and at this time we're seeing a drop in the tritium concentrations at -- in the groundwater at Pickering.

MEMBER BEAUDET: Thank you. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Mr. Pereira.

MEMBER PEREIRA: Thank you, Mr. Chairman.

Thank you for your presentation. I'll go to CNSC and ask about health studies and the studies that have been done in the vicinity of nuclear generating stations, and among workers at nuclear generating stations, and you -- I think -- I believe you reported this to us before, but just -- just for the sake of this particular audience now, could you go over what the findings are?

MR. HOWDEN: Thank you. Barclay Howden speaking.

This is summarized in our Undertaking No. 30 that has been provided to the panel, but the -- the high-level summary is that we've had, during this panel hearing, about five undertakings on health studies or health effects, and there's quite a few that are outlined.

There's also the 1997 Durham Health Study that was included, that was reported by the medical officer of health when he was here earlier, showing that there was no -- they couldn't see any evidence that the plants were having impact on the -- the local population. As well, there's

broader health studies that were indicating the same things.

There was also discussion about low doses and studies on that. And I think one of the things we tried to clarify was that the low dose studies are talking about doses in the range of 100 to 500 millisievert doses, and they're not -- have not been able to demonstrate effects below 100 millisieverts, and we've shown that the public dose limit is one millisievert, and that the predicted doses to the local population is .005 millisieverts.

So that has -- the basis for our conclusion that we don't think that there will be health effects from the operation of this facility.

The other thing is, is the health studies that have been done, also feed in to the international work by the International Commission on Radiological Protection, which makes recommendations on dose limits. And the CNSC has adopted the dose limits recommended by the ICRP. Thank you.

CHAIRPERSON GRAHAM: Thank you very much.

MEMBER PEREIRA: Thank you, Mr.

Chairman.

MS. CHUNG: Have there been any longitudinal studies over a large -- you know, a length of time, of many years, have there been studies done of children who've grown up in the area?

Have there been studies comparing people who live in the area and based on their distance from the plant, and people who work in the area, similarly based, and then people who both live and work in the area.

You know, speaking as someone who's done research, I think it's really important to have very thorough research done and not just say, oh, well, we've studied, you know, people last year that lived in the area, because these things take place over a long period of time, and they affect children much more than they affect adults.

So I have a lot of concern about the children, who, for example, including my grandchildren, who go to the park down at the bottom of Liverpool Road, right next to the nuclear plant.

CHAIRPERSON GRAHAM: Well, try and get you answer. You've asked the question, Ms.

Chung.

So Mr. Howden, can you respond please?

MR. HOWDEN: Barclay Howden.

Dr. Thompson isn't here to speak to the specifics, but I suggest that we provide the undertaking to the intervenor so at least she can review it and maybe she'll have questions for Dr. Thompson, she'll be back tomorrow, Mr. Chair.

MS. CHUNG: And you'll provide it to the panel as well?

CHAIRPERSON GRAHAM: Definitely, all -- all interventions come to the panel, and we disburse them after that. And I think there are a couple of other interventions that are covering some of these that were asked by other intervenors over the last couple of weeks, or last week especially, along very similar lines, but we have on the record Madam Chung's intervention with regard to the studies she'd like, and -- and if they're not already provided or not already going to be provided, if she would look at any additional ones.

Tomorrow maybe Dr. Thompson can -- is she back tomorrow, Dr. Thompson?

MR. HOWDEN: Barclay Howden.

Yes, she is. All of the questions that were raised in the other interventions about the other health studies that they brought up have been all included.

And also the intervention is posted now with the -- on the Canadian Environmental Assessment Agency's website, but rather than the intervenor having to chase that, we'll hand over a copy now so you don't have to look for it.

CHAIRPERSON GRAHAM: Yes, that's what I was referring to, and my understanding is now I have it, it was intervention number 30, provide a list of all health studies that have been conducted in nuclear communities, and the main findings. Provide details of the methodologies. And that has already been provided, and it's on the CERA website, number 847 and 848, if you want to just make note of that.

And if that's not sufficient, then -- but our Secretarial staff will help you at the back and give you that information before you leave. So hopefully you'll get the right numbers.

And CNSC said they would provide

further ones. Do I give another -- CNSC are going to provide you with a copy from Dr. Thompson along those lines. So the Secretariat probably doesn't have to give you that because that's coming tomorrow, but they will give you those two reference numbers.

Any other questions? Mr. Pereira, do you have any questions?

MEMBER PEREIRA: No, not from me, thank you.

CHAIRPERSON GRAHAM: You're finished, and Madam Beaudet is finished.

Now, we will go to -- from the floor and I'll go to OPG first, Mr. Sweetnam?

MR. SWEETNAM: Albert Sweetnam, for the record.

If the chair will allow, perhaps we could assist in providing the information that was requested by the intervenor?

CHAIRPERSON GRAHAM: Certainly.

MS. SWAMI: Laurie Swami, for the record.

Mr. Howden referred to a 1997 study completed by Durham Region. I would like to let the intervenor know that there was a second

study that was completed as a follow-up to the first one. There was one in 1997; there was another one completed in 2007.

And if you look into the details, and I don't have the full report with me, it discusses childhood leukemia and other types of hereditary -- or sorry, events that could occur if there was a radiation effect and that’s discussed in this report. This report finds that there is no link between the operation of the nuclear facilities in Durham and the health effects in the community.

It looks at a control study that was -- a control case versus the Pickering-Clarington area as their comparator. So it’s a fairly good study. It’s not the level of detail that the CNSC will be providing, but it certainly does discuss children as well as females versus males.

So you may find that study of particular interest. And it’s available on the Durham Region website.

CHAIRPERSON GRAHAM: Thank you.

CNSC, do you have any further questions or comments?

MR. HOWDEN: Barclay Howden. No, thank you.

CHAIRPERSON GRAHAM: Government agencies? I guess maybe they've all left. If not, that's the case then, and we will go to intervenors' questions and we only have one and that's Mr. Kalevar

--- QUESTIONS BY THE PUBLIC:

MR. KALEVAR: Thank you, Mr. Chairman. Chailanya Kalevar from Just One World.

You are a local resident. So I'm very interested in knowing since -- if anything like what is happening in Fukushima happens here --

CHAIRPERSON GRAHAM: Mr. Kalevar, it's up here, the Chair you address.

MR. KALEVAR: Yeah, yeah. Through the chair, of course, all the time through the Chair.

If anything like Fukushima happens around here, all of us will be vacating, but the emergency personnel of police and fire will be going the other direction.

I would like to know if you have had conversations with the local police, firefighters or ambulance people and what your

experience with that is?

CHAIRPERSON GRAHAM: You're asking the Chair what experience -- so I'll refer that -- no, no, I'll decide Mr. Kalevar, and we'll decide which way it goes.

I will go to the intervenor first and then I'll ask for clarification from OPG.

So Madam Chung?

MS. CHUNG: Actually I did have some experience because I used to work in Durham Region and I worked in Social Services. And we were declared to be the emergency personnel who would handle all the refugees who would come from Pickering who were going to be taken to Whitby for a shower, like Iroquois Park. I mean, this is what the plan was.

And we went to training at the police station in Whitby and we were told how, you know, this was the plan and that was the plan, and I put up my hand and said, what about the school children? Oh, we forgot about them. I guess we'll send them home. Pickering is blowing up and you're sending the kids home? The mothers are all at work. Oh, well, maybe we'll bus them.

But of course, nobody's stopping

to think that the buses are triple used in Durham. They at least run -- have three runs. The schools all start at different times. So like I have grandchildren that start school at five to 8:00 in the morning and then other children start at 8:30 and others start at 9:00, and the same bus is taking -- going out and doing another run.

So if you've got Pickering or Darlington blowing up, how are you going to get all the kids evacuated? I don't know if they changed the plan yet, but they sure hadn't then.

CHAIRPERSON GRAHAM: As I said, I will go to OPG. I believe we had a very extensive presentation on the first week from Emergency Preparedness Ontario, but you might want to add to that on what the plans and what is put in place for any type of emergency in this region.

MR. PETERS: Thank you, Mr. Chair. John Peters, for the record.

I think the best way to summarize this up, I'll focus on the Board of Education in Durham Region which is specifically got a role and responsibility from the Durham Emergency Management Organization to develop and maintain emergency response planning for their schools.

And they have sister schools, twinned with each of these schools as I understand it, and there is a plan to work together to get children moved collectively and safely from the school where they might be at risk to the other location.

And this applies whether there's a train derailment or an accident on the 401 or whatever emergency is required to respond to. And it is no different in the case of a nuclear facility. It's a well integrated piece of Durham Region's emergency planning process.

CHAIRPERSON GRAHAM: Thank you very much.

Well, Madam Chung, thank you very much for coming. Thank you for lightening up our afternoon.

MS. CHUNG: I'm hoping that I get a copy of that emergency plan. It's not on the website that I could find.

CHAIRPERSON GRAHAM: OPG?

MS. SWAMI: Laurie Swami, for the record.

The emergency plan would be available through Durham Region. They have a

complete communication protocol with the public and they, I'm sure, would be happy to share that with you. And if necessary, I'm sure OPG can help you do that -- obtain that.

MS. CHUNG: Who do I call?

MS. SWAMI: Laurie Swami, for the record.

Ivan Ciuciura is the commissioner responsible for emergency planning in Durham Region. I'm not sure of the spelling of his last name. I think that Durham Region website would certainly have the appropriate contacts for emergency. I'm sorry.

MS. CHUNG: I couldn't find it when I looked.

CHAIRPERSON GRAHAM: We'll try and assist you and get you the information. With that, I want to thank you very much for coming this afternoon.

And I want to thank all the other intervenors. I want to thank the -- everyone participating today because it was a fulsome day with regard to gathering information.

Tomorrow being Wednesday, we are not sitting tomorrow morning. We're sitting

tomorrow afternoon and evening and -- you seem happy about that.

So the Chair will resume at 1:30 tomorrow afternoon. Thank you very much and safe travels everyone.

--- Upon adjourning at 4:57 p.m. /

L'audience est ajournée à 16h57

C E R T I F I C A T I O N

I, Alain H. Bureau a certified court reporter in the Province of Ontario, hereby certify the foregoing pages to be an accurate transcription of my notes/records to the best of my skill and ability, and I so swear.

Je, Alain H. Bureau, un sténographe officiel dans la province de l'Ontario, certifie que les pages ci-hautes sont une transcription conforme de mes notes/enregistrements au meilleur de mes capacités, et je le jure.

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