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 15

JOINT REVIEW PANEL

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Courtice, Ontario

--- Upon commencing at 1:31 p.m./

L'audience débute à 13h31

--- OPENING REMARKS:

MS. McGEE: Good afternoon. Mon nom est Kelly McGee. Welcome to 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 conjointe du projet de nouvelle centrale nucléaire de Darlington.

Secretariat staff are 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 you want the permission of the chair to ask a question or if you are not registered to participate, but now wish to make a brief statement.

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

We have simultaneous translation; headsets are available at the back of the room. English is on channel one. La version française est au poste 2. A written transcript of these proceedings will reflect the language of the speaker.

Please identify yourself each time you speak so that the transcripts can be as accurate as possible. Written transcripts are stored on the Canadian Environmental Assessment Agency website for the project. The live webcast can be accessed through a link on the Canadian Nuclear Safety Commission website and archived webcasts and audio files will also be available on this site.

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

CHAIRPERSON GRAHAM: Thank you very much, Kelly, and good afternoon, everyone. Welcome to everyone joining us either in person this afternoon, through the live audio link or on the internet. My name is Alan Graham and I'm the Chair of the Joint Review Panel and with me are the other two Panel members. On my right is Madam

Jocelyne Beaudet. My left, Mr. Ken Pereira.

We'll start off this afternoon session as we generally do. Each day the first session of the day, by going and looking at the undertakings that were due or to be provided on today's date. And I'll start -- I'll go to Mr. Saumure for the review of the undertakings.

--- UNDERTAKING STATUS:

MR. SAUMURE: Thank you, Mr. Chairman. The first undertaking due today is number 16. It was assigned to EC and CNSC and it was to provide a comparative analysis of hot and cold plume releases, which are a representative of nuclear accidents. CNSC?

MR. HOWDEN: Barclay Howden speaking. The -- the modelling work has been done by OPG and it's been provided to EC and CNSC. We haven't completed our review yet, so we'll endeavour to report back either tomorrow or on Friday. We'll have to see how the review goes.

CHAIRPERSON GRAHAM: Mr. Saumure?

MR. SAUMURE: Thank you. The other undertaking is number 61. It was assigned to CNSC and it is to provide information from other government agencies on risk assessment framework.

CNSC?

DR. THOMPSON: Patsy Thompson for the record. Actually Health Canada is here and could speak to this undertaking. They will be providing the information to the CNSC.

MS. MA: Kitty Ma for the record. Health Canada will be submitting the response to undertaking number 61 by the end of today.

MR. SAUMURE: That's all for the undertakings, Mr. Chairman, this morning -- this afternoon.

CHAIRPERSON GRAHAM: Okay. So those are the ones for today. Well, with that, now we will move right along and to the first item on the agenda today, which is Health Canada and the Ministry Environment. Both departments are asked -- were asked to return today for follow-up questions by Panel members. And we'll start off today with Health Canada.

I want to welcome Kitty May -- Ma for coming today who is the environmental assessment coordinator, Environmental Health Programs. And I understand you have some other people that are going to be joining us by telephone conference and maybe you could identify those and

what the roles are before we start, so Panel members can -- we'll know who's here. Ms. Ma?

MS. MA: Thank you, Mr. Chairman. Can I have whoever that's on the phone identify themselves, please?

MR. JESSIMAN: Barry Jessiman, Air Health Science Division.

MS. Bergman: Lauren Bergman, Radiation Protection Bureau.

MR. BLY: Stephen Bly, Acoustics, Consumer and Clinical Radiation Protection.

MS. McDonald: Suzy McDonald, Environmental Health Bureau.

CHAIRPERSON GRAHAM: If that's it, then, we will start right into questions from Panel members. Do you have any opening comments, Ms. Ma? No? All right then, if that's the case, we will first go to Mr. Pereira.

--- QUESTIONS FOR HEALTH CANADA BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman. And my first question concerns tritium in drinking water. Many intervenors who have come before us have expressed concerns about the impact of tritium on health. And many have made reference to the fact that in Canada, the dose -- the limit

for tritium in drinking water is 7,000 Becquerels per litre.

In discussing it with -- on different occasions, we have come to realize that guidelines issued by Health Canada and the guideline -- current guideline is 7,000 Becquerels per litre.

In some other countries, some other jurisdictions, the limit is lower than in Canada. Could Health Canada provide a -- some background information on the rationale for the 7,000 Becquerels per litre limit and whether there is consideration being given to lower this limit, given the concern on part of many Canadians that this limit is out of line with what is being done in many other countries? Limits are being lowered.

Have there been calls in Canada for lower limits? What is the policy direction been taken by Health Canada on this issue?

MS. MA: Thank you, Mr. Pereira. I'm going to ask our radiation specialist, Lauren Bergman, to answer this question. Lauren, you can answer when you're ready.

MS. BERGMAN: Lauren Bergman for the record. The guideline for tritium in drinking

water is set the same as it is for all other radionuclides and it's set on a dose constraint of .1 millisieverts per year, so if you were to ingest tritium at the guideline level for an entire year, your dose would be .1 millisieverts, which is only ten percent of the dose limit for members of the public of 1 millisievert per year, so the guideline is intrinsically set to be protective.

The guideline is calculated using a drinking water consumption rate for adult Canadians of 730 litres per year and the dose coefficient for intake by ingestion recommended by the ICRP.

This calculation actually produces a guideline of 7,600 Becquerels per litre, but this is rounded down to 700 -- or sorry, 7,000 Becquerels per litre, again, to be protective of human health.

And this is in line with the international recommendations of the World Health Organization.

As far as how this guideline compares internationally, it actually is a mid to low range in comparison to many other countries.

For example, the tritium guideline

in Finland is 30,000 Becquerels per litre. In Australia, it's approximately 76,000 Becquerels per litre. And both Switzerland and the World Health Organization round up their calculations to 10,000 Becquerels per litre.

It is true that the European Union uses 100 Becquerel per litre as a screening level, but this is the level at which further investigations into tritium is recommended.

And the United States does use a value of 740 Becquerels per litre, but this is calculated based on U.S. statistics and does not follow the World Health Organization recommendations.

As far as Health Canada's future plan for the guideline, we are always reviewing new literature for new scientific evidence, but currently we do not believe that there is any evidence to support calculating the tritium guideline in a way that differs from the other radionuclides.

MEMBER PEREIRA: Thank you for that. Ms. Thompson, just to note that this Panel has received many interventions on this issue and there seems to be considerable concern on the fact

that we have guidelines that are higher than some other jurisdictions.

I'll turn to CNSC, do you have any comments on the issue with you having been here in the hearings and have heard the concerns from members of the public. Any comments on the way we stand in Canada?

DR. THOMPSON: Patsy Thompson for the record. The CNSC did review guidelines that are in place in different jurisdictions. And the summary provided by Health Canada is a reflection of what's in place in many places.

The jurisdictions where the guidelines are lower, for example, 15 in California and Colorado and about 100 in the EU are actually not legal, enforceable drinking water standards, but they're guidelines that jurisdictions are called to aim for in the case of 15. And in the case of 100, it's an indicator that there might be a loss of control from a facility because it's easy to measure, so it's an indication that further investigations need to be done.

The CNSC has taken the position that nuclear facilities in the way that we have been regulating them have very low emissions. And

in all cases around nuclear power plants, both in Ontario, Quebec and New Brunswick, the levels of tritium in drinking water are below 20 Becquerels per litre, which is the standard that was recommended by the Ontario Drinking Water Advisory Council.

And so we see that currently nuclear power plants are being regulated in the manner that maintains very low levels of tritium in drinking water and aligns us with what is being done elsewhere.

We have also raised the issue that protecting groundwater or drinking water resources this is not just protecting drinking water at drinking -- major drinking water supply plants, but there’s also a need to protect groundwater, resources, when there are potential potable drinking water resources. And to that end we’ve done a lot of work to recommend that 100 becquerels per litre be considered at the boundary of a facility in order to protect the resource on a long term because of the difficulty of -- of managing contaminated groundwater, so it’s better to prevent contamination. But certainly for drinking water at major drinking water supply plants, the levels are

below 20 as it is.

MEMBER PEREIRA: Thank you very much for that additional information on that issue. Going on to another topic, I understand that Health Canada maintains the National Dose Register. I don't know if that's the correct term for it. Is there any information that the Health Canada publishes from time to time on radiation doses by workers in Canada as a -- as an independent indicator of control of health -- independent of the regulator?

MS. MA: Kitty Ma for the record. I'm also going to ask Lauren Bergman, our radiation specialist to answer this question. Lauren, when you're ready you can answer.

MS. BERGMAN: Lauren Bergman, for the record. Yes, Health Canada does operate the National Dose Registry, which records doses of nuclear energy workers. And this information is reported, but I don't have any information on how regular this reporting occurs, and I could find that for you, if you would like.

MEMBER PEREIRA: Yes. Could you please, because it might be something that we might refer to in our deliberations on the proposal

before us.

We go on to -- do you want to --

CHAIRPERSON GRAHAM: Before you do, Mr. Pereira, we do undertakings, so, Ms. Ma, if you could make a note to provide an undertaking, that'll be Undertaking 71 from Health Canada, to provide the symmetry records that Mr. -- or symmetry information that Mr. Pereira's asked for. So that'll be 71, and a time.

MS. MA: We'll try for Friday.

CHAIRPERSON GRAHAM: Friday will be fine. Thank you very much.

MS. MA: Thank you.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: The final question overlaps to a certain degree with the undertaking that we already have on the books, it concerns risks being incurred by workers in Canada, health risk, and how these rank relative to each other. So we're looking to have some sort of a perspective on risks -- health risks with people in the nuclear industry versus other industries in Canada. Would this be something that Health Canada would have across the spectrum of all kinds of work in Canada, and health risks that might be

experienced and tolerated, considered to be tolerable for Canadians as a federal sort of guideline on what are acceptable risks.

MS. MA: Kitty Ma, for the record. I'm not quite sure if we do have records like that. Health Canada does risk assessment mostly on chemical basis, not industry base, but I'll also confirm this answer with our radiation specialist. So, Lauren, if you can confirm, please?

MS. BERGMAN: Lauren Bergman. We could add that into the undertaking, perhaps, a discussion of risks associated with the doses supported in the National Dose Registry, but we won't have any information on other industries.

MEMBER PEREIRA: For clarification, then, so you -- all you have is radiation. Would you have comparative risks on chemicals, chemical industries, petro-chemical industry, any other industry in Canada that is regulated and where there are guidelines or targets for what are acceptable levels of exposure, other toxins or -- or chemicals that are considered to be hazardous.

MS. MA: Kitty Ma for the record. I don't believe we do have such studies. If you

could maybe refer to the response that we'll be providing for Undertaking No. 61, you might have a better understanding of what we will be able to provide in terms of risks.

MEMBER PEREIRA: Okay. Thank you very much.

MS. MA: Thank you.

MEMBER PEREIRA: Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Ms. Ma, it's 71, Undertaking 71 not 61.

MS. MA: Sorry, I was referring to Undertaking --

CHAIRPERSON GRAHAM: Oh, there is a 61, okay.

MS. MA: There's a 61.

CHAIRPERSON GRAHAM: That was another one, I'm sorry.

MS. MA: That's okay. Thank you.

CHAIRPERSON GRAHAM: Okay. You're right, the Chair is wrong. Okay Madam Beaudet, next -- you have some questions for Health Canada?

MEMBER BEAUDET: Thank you, Mr. Chairman. I'd like to follow-up a bit on health. We did get an undertaking from CNSC, which is

Undertaking 30, that provides us with a review of different studies that were done with -- regarding a source of radiation and the effects. And done -- the ones that are well-known and have been brought about by some of the interventions, and also the ones that were done in Canada for workers, for parental exposure related to children, leukemia, et cetera. I'm sure Environment Canada is aware of all these studies.

To some extent we were trying to find out what would still be needed in order to advance the knowledge of the effects of radiation on health of Canadians. And I was wondering if, Health Canada, you have in the making and in new studies that you have asked to be done, even if it's by international -- independent source or if you feel that in order to progress you -- you would have, for instance -- I believe from what I've read here is what we need here in Canada would be a cohort study, and so I'd like to hear from Health Canada first, and then maybe CNSC can also comment please.

MS. MA: Thank you, Madame Beaudet. Kitty Ma, for the record. We're going to have Lauren Bergman again to answer this question.

Thank you very much.

CHAIRPERSON GRAHAM: You might as well have come to -- to the hearings today, Ms. Bergman, go ahead.

MS. MA: Lauren, whenever you're ready. Thank you.

MS. BERGMAN: Lauren Bergman, for the record. Health Canada and the Radiation Protection Bureau, we do have several research scientists that do various research projects on biological health effects of exposure to radiation, but we do not have any plans at this point to undertake a large cohort-type study.

MEMBER BEAUDET: Can I have comments from CNSC, do you believe this is the next step for us?

DR. THOMPSON: Patsy Thompson, for the record. What I would say is that the CNSC, in collaboration with Health Canada and independent scientists have conducted cohort studies and will be -- we will be reporting on the -- the latest one, I believe tomorrow, in one of the undertakings. So it's something that the CNSC does on a regular basis, but for workers, because to do cohort studies we need information on exposures,

and information on individual exposures does not exist for members of the public, for example. So it's one of the limitations of being able to do a cohort study, is being able to have information on exposures.

We have been listening to -- to interventions for the last, almost, three weeks, and we will be looking at what type of study would be feasible, but I don't believe that a cohort study is feasible, essentially because most members of the public around a nuclear facility will have no exposures from the nuclear facility beyond natural -- natural exposures essentially. The exposures to the -- what we call critical groups or referenced members -- members of the public are somewhat artificial in that we -- we make a very conservative lifestyle for individuals so that we overestimate their doses, such that members of the public have even lower doses. And the -- the critical groups right now, the highest exposed one for Darlington new build is five microsieverts for an infant living one kilometre away with a very conservative lifestyle. So most people would not be exposed in a way that is measurable, from emissions from Darlington or other nuclear

facilities.

So in the absence of measureable dose information from the nuclear facility, what we would be doing is essentially assessing the risk from naturally occurring radioactive substances, so the natural background of radiation and any medical exposures that people may have. So I'm not sure that design of -- a study -- a cohort study is feasible in those circumstances.

MEMBER BEAUDET: What I had in mind here is -- because a lot of interventions, as you know, have brought up the health risk for children and for malformation of the foetus and research is being done in Europe. And I was wondering -- I mean, as we know the KIKK study had a follow-up which said that they could not come to the conclusion that there was any effect on the children.

But because there were some flaws in the study, the commission that reviewed it could say that. But it doesn't mean that it doesn't exist. And I was just trying to find a way where we could reassure Canadians -- because a lot of it is in the perception -- but where we could progress on whether it's a court study, it can be something

else, but trying to find a way where we could have some information that would reassure the public.

DR. THOMPSON: Patsy Thompson, for the record.

In Canada, the study that provides the most information for members of the public living around nuclear facilities is the Durham study that was done and published, I believe, in 2007 where it's the largest population around the two major nuclear power plants in Ontario. That study did not show an increase in leukemia in children.

In terms of the work that was done in Germany around what's called the KIKK study, because of the findings of the KIKK study, the French and the U.K., France and U.K. did similar studies and found no link between leukemia and radiation where living close to a nuclear facility in either France or the U.K.

We know that the U.S. has asked the -- I believe it's the U.S. Academy of Sciences to do a similar studying the U.S. for all new -- I think there's 104 nuclear facilities in the U.S. So we know that study has been commissioned.

And I think what we would need to

do is sort of look at what would be feasible in Canada, given the small number of facilities we have and the small populations around some of the nuclear facilities.

But it’s certainly something, after everything we’ve heard over the last three weeks that we need to consider and see how best to address people’s concerns and what type of study would be able to do that in a fairly robust manner.

MEMBER BEAUDET: Would we have a recommendation on that or that will take many weeks?

DR. THOMPSON: Patsy Thompson, for the record.

If you allow me, we could -- I will consult with my colleagues and perhaps we could come back early in the day on Friday with a recommendation or a proposal.

MEMBER BEAUDET: Yes, please.

CHAIRPERSON GRAHAM: So we will give that an undertaking, just as an information item coming back. You may not have -- but you will be advising -- so it will be number 72 for Friday, to CNSC?

DR. THOMPSON: Patsy Thompson.

So undertaking number 72?

CHAIRPERSON GRAHAM: Yes.

MS. TOHMPSON: And we will try to come back with either ---

CHAIRPERSON GRAHAM: A recommendation or ---

MS. THOMPSON: Some kind of proposal or recommendation to develop a proposal.

CHAIRPERSON GRAHAM: Thank you.

Madame Beaudet?

MEMBER BEAUDET: Thank you.

I'd like to change the subject now. I'll go to noise, noise aspect.

In Health Canada PMD which is, for the record, PMD 1.8, on page 11, Health Canada advises that the methodology and the frequency of noise monitoring be outlined and details be provided on actions to be taken should noise levels, during construction, exceed regulatory limits.

And I'd like to understand a bit more on this. You want the methodology and the frequency to be submitted to CNSC or you want the public to be advised on how it's done, in case -- well, I presume there would be a complaint phone

line for this project or whatever OPG uses. But I'd like to have more clarification on this recommendation?

MS. MA: Kitty Ma, for the record.

In terms of submission, I believe if that information was to come forward, it would probably be submitted to the panel or CNSC. And, if requested, we would do a further review of that information.

And then, with the methodology, I'm going to ask my noise specialist, Stephen Bly, to answer that.

Stephen, when you're ready?

Thank you.

MR. BLY: Yes, I'm here; Stephen Bly, for the record.

Did you say you wanted to -- could you repeat what you wanted me to answer, Kitty, please?

MEMBER BEAUDET: On page 11 of your written ---

MR. BLY: No, no, I'm sorry. I understood the question from the panel member. I did not understand what Kitty -- I thought Kitty fully answered your question, and I did not

understand what aspects I am supposed to answer.

MEMBER BEAUDET: Well, there are two things: there's information requirements that you seem to ask for, and I was wondering this information would be for when we go to a further phase of licensing of the project -- and correct me if I'm wrong -- because I can't imagine that the public would be interested in the methodology, how it's calculated and -- for the noise levels for them.

If you give them the details, whether it's 55 dBA or 100 dBA, it's just -- it's a nuisance or an irritant or it's not acceptable.

So I was just trying to understand exactly. It's more in terms of follow-up, I presume, and monitoring, and in what terms do you want these details?

MR. BLY: Well, the methodology and the frequency of the noise monitoring plan needs to be tailored to the specifics of the site preparation and construction schedule and activities. And we could provide advice on the suitability of the noise monitoring plan once details become available.

The importance would be to ensure

that whether there is a need for incorporating additional mitigation measures, would those be warranted.

And, of course, to some extent that also depends on the complaint history as well.

MEMBER BEAUDET: I believe OPG has detail for that phase of licensing, even the equipment that is going to be used, and -- so you feel there is not enough information with respect to the details provided for us at the environmental impact assessment phase?

MR. BLY: The Proponent has advised that at this time -- and perhaps this should be referred to the Proponent, to OPG -- but my reading of their comments was that they advised that when a vendor was selected, detailed construction plans would be developed which would identify the type and frequency of construction activities, in particular, the frequency and the duration.

It was discussed in terms of enabling estimates of the duration of specific noise-generating activities during site preparation and construction. You may wish to refer to OPG on this, but --

CHAIRPERSON GRAHAM: We are going to ask OPG.

MR. BLY: -- it's my reading of their comments.

CHAIRPERSON GRAHAM: We're going to ask OPG to comment.

MEMBER BEAUDET: Yes, please.

MR. PETERS: John Peters for the record. I think Madame Beaudet has captured the -- the essence of what we have said. We have provided the best information we can to date. And in our IR 54 detailed summary of mitigation by phase of the project, on page A-5 of that document, we provide the most detailed mitigation measures that we could at this point in time provide.

We have accepted that we would be revising this in detailed discussions with the municipality because they are routinely dealing with this kind of site preparation activity in the community on a regular basis associated with subdivision and light industrial development, so that's the way we've approached this. And we believe through the IR responses, we indicated how that would ensure minimum effects through each phase of the project.

MEMBER BEAUDET: And these would be worst-case scenario?

MR. PETERS: Absolutely. OPG has assumed the worst-case scenario in every case and -- and we believe it will be less than -- than we have created as a bounding framework.

MEMBER BEAUDET: Thank you. I'd like to change the subject now.

My last point is -- we were trying yesterday with Environment Canada to get an idea what would be the standards across Canada for acidic acid. I know some provinces have some limits in terms of micrograms per cubic metre whether it's for 24 hours or for 15 minutes or whatever. And acidic acid is not dangerous unless there's a massive amount that comes and then it can cause permanent damage to mouth and throat and lungs. And in the chemical industry field, it can be quite a concern. And so I was wondering if Health Canada has established for Canada a limit regarding this element?

MS. MA: Kitty Ma for the record. To our knowledge, there is no federal regulation with respect to acidic acid; however, if you want to know more about Ontario, I might suggest that

you might want to ask the Ontario Ministry of the Environment that may have some criteria with the ambient air quality with respect to acidic acid for Ontario.

However, I would also ask Barry Jessiman, our air quality specialist, if he has anything else to add to this point.

MEMBER BEAUDET: We have already for Ontario the standard, thank you, unless there's other comments that can be added.

MS. MA: I don't think so. Thank you.

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

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Just for clarification, the undertaking 61, were you just supplying the information or did you want to also speak to it?

MS. MA: We'll be supplying the information by the end of today.

CHAIRPERSON GRAHAM: Okay, but you're not speaking to it today while you're here?

MS. MA: No, not yet.

CHAIRPERSON GRAHAM: Okay.

MS. MA: Thank you.

CHAIRPERSON GRAHAM: Very good. We are going to move to -- we are going to move to Environment Ontario -- Ontario Department of the Environment and then we'll go to questions on that as we go forward. There may be something that might come up with you. If you'd just stay around, if you don’t mind, until we finish this segment?

The Ministry of the -- first of all, thank you very much for having your staff on line and being here today to supply further questions to the panel members, much appreciated.

We now will go to Environment Ontario -- the Ministry of Environment for Ontario and they have a series of representatives that are going to be joining us today via telephone conference. And that group is going to be led by Mr. Ian Parrot, so staff could see if they could get -- you'll be disconnecting Health Canada, I believe, from Ottawa and getting the Ministry of Environment for Ontario on the line.

Mr. Parrot, are you there yet?

--- QUESTIONS FOR THE MINISTRY OF ENVIRONMENT OF ONTARIO BY THE PANEL:

MR. PARROT: Speaking, Ian Parrot.

CHAIRPERSON GRAHAM: That’s great. Would you -- first of all, welcome to the Joint Review Panel being held here and we appreciate your coming on line to answer some questions. If you would identify your team and then I'll go to panel members to ask what questions they might have. We have just finished -- and maybe you've been watching it via the internet or via the web with regard to -- we've just had Ms. Ma and Health Canada before us and now there are some questions that we'd like to pose to you. So would you like to identify your participants and then we'll start?

MR. PARROT: Great. Thank you very much. It’s Ian Parrot for the record and I appeared before you on March 23. And my title with the ministry is manager of the certificate of approval review section of the ministry’s environmental assessment and approvals branch. I have responsibility for the air, wastewater and waste approvals programs with the ministry.

I have a number of people here, so I'll simply go around the table and ask them to identify themselves for you.

MR. BAKER: I'm Kathryn Baker.

I'm the water unit supervisor. I'm a hydrogeologist and I oversee the permit to take water program and any questions about the water would be handled by my group.

MR. BELAYNEH: I am Ted Belayneh for the record. I'm a hydrologist -- a water specialist by profession. I -- I work in the technical support section of the Ministry of Environment.

MR. PANKO: Dan Panko; air, pesticides and environmental planning supervisor.

MR. SZAKOLCAI: Akos Szakolcai, I'm with the ministry's standards development branch. I coordinate the air standards.

MR. PARROT: And I believe -- it's Ian Parrot for the record. I believe we have Dave Fumerton on the line as well.

MR. FUMERTON: Yes, for the record, it's Dave Fumerton. I also appeared with Ian on -- on March 23, and I'm the District manager of the York-Durham district office and, of course, Darlington is located within my district and --

MS. THOMAS: I'm Sandra Thomas, Ministry of the Environment, Durham district office.

CHAIRPERSON GRAHAM: Okay. Well, thank you very much. The last person that identified themselves, I don't -- I didn't get the name.

MS. THOMAS: Sandra Thomas.

CHAIRPERSON GRAHAM: Okay, Ms. Thomas, thank you very much.

Okay. We'll go to questions starting off with Madame Beaudet.

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd like to look first at the soil quality for lake filling in Ontario and also for deposits of soil that is going to be excavated for the project on land of OPG and possible effects to groundwater. We reviewed OPG's documents and I will first ask them to confirm that I'm correct. There's only -- we found that there's only exceedance of beryllium?

MR. PETERS: John Peters for the record. That is correct.

MEMBER BEAUDET: Now, for deposit of soil on the eastern part, let's say, of OPG's land or side for the project, would the Ministry of Environment have any concern regarding

contamination of groundwater if there's exceedance of beryllium?

MR. PARROT: It’s Ian Parrot for the record. I just want to understand the -- the question correctly. So this is the movement of soil within the property that’s been excavated for construction purposes?

MEMBER BEAUDET: Yes, that’s correct, and it’s going to -- part of it is going to be deposited on OPG’s northeastern part of the site.

MEMBER PEREIRA: Okay. And is the -- so the nature of the contamination, is it from -- is it naturally-occurring contamination or is it -- is it deposited from an industrial activity?

MEMBER BEAUDET: Can OPG answer that, please?

MS. SWAMI: Laurie Swami for the record. It’s naturally occurring.

MR. PARROT: It’s naturally occurring? Okay. So there would be no approvals requirements for OPG to move the soil from one part of the site to another. I don't -- Dave Fumerton may be able to address the question of how our -- our ground field regulations may -- may affect the

sites in that circumstance.

Dave, are you able to add to that?

MR. FUMERTON: This is Dave Fumerton, for the record.

There would actually be no ground field requirement at this point or movement of the soils of this nature.

And as Ian has indicated, there would be no approvals required from the Ministry of the Environment.

MEMBER BEAUDET: I didn't understand your last sentence.

MR. FUMERTON: Dave Fumerton again.

My last sentence being that there is no approvals required from the Ministry of the Environment for this activity.

MEMBER BEAUDET: Is it because it's on their own property?

What about if the soil is taken elsewhere? Because these percentage that will be taken to wherever -- the site is an industrial site, and -- and if you take soil that has exceedances of beryllium to be used to land -- to landfills or to be used in residential developments

as soil, what would be the requirements?

MR. FUMERTON: This is Dave Fumerton, for the record.

If the material is designated as a waste because of the contamination of the soil, then it would go to an appropriate waste disposal site.

If the soil or the material is not identified as a waste, then there are various agencies across the province who approve fill sites, and the fill -- those approvals are generally issued by conservation authority, municipalities, or the Ministry of Natural Resources when it comes to rehabilitating gravel pit.

So those agencies would dictate a criteria that they would find acceptable based on the use of the land.

And, consequently, if there's elevated levels of whatever materials, including beryllium, if they are acceptable at those clean fill sites, so be it.

During the March 23rd presentation, I believe, Madam, you had a question related to whether or not those materials would be taken to a

landfill, and you -- there's interim daily cover.

And I might add that that's an excellent suggestion.

That would be something that we would -- we could put in front of our environmental assessment and approvals branch to deem it -- to determine if it would be acceptable as an interim daily cover.

And, once again, if the -- if the contaminants in the material are so high that they cannot be taken to a solid non-hazardous waste disposal site, then the disposal method would be through a hazardous waste disposal site.

MEMBER BEAUDET: I'd like to ask OPG to bring a little bit more information on the methodology that you would use to evaluate the exceedance of beryllium and come to the conclusion that it's naturally occurring, please.

MR. PETERS: Madame Beaudet, I -- John Peters, for the record.

I can provide a general overview here.

If you want me to get into the details, then I would have to take some time and come back with the detail. It is provided in one

of our technical support documents. I believe it's the geology and hydrogeology document that summarises all the soil results.

But I have provided on the record the fact that we have filed reports over the years related to general site sampling associated with the original development of the property. And that work was completed a number of years ago.

The areas that we have studied more carefully in the east side of the property were sampled associated with each of the ground water well sites that we installed. And there are some 70 well locations that we put in on the whole property.

We examined the native soil material uncovered in each of those areas as we did the drilling, and the evidence of beryllium exceedances is one that we have found in other samples previously. I mean, we're not surprised when we found it again in other portions of the site, so it does appear to be more than in an isolated area associated, for example, with the original cement plant work that was done in the original development of the site.

It was found in a number of areas

that we would consider to have been farmland and native soil materials that had not been disturbed previously.

So that's why we have summarized our results as being a native condition.

MEMBER BEAUDET: No, that's sufficient information because I know the TSD -- I have looked at it, so I don't need any more information than that. Thank you.

I'd like to move on about the requirements of Ministry of Environment with fill quality of the soil for the lake infill. I believe you have a two tier type of permit or assessment, and this first list that is compulsory -- and beryllium appears in the second list that you would judge whether to -- to ask the proponent certain conditions with the elements listed, and it doesn't have to include everything on the list, but beryllium is one of them.

And I was just wondering now what would be the requirements for lake infill, and does it have to do -- again, if it's naturally occurring or industrially produced or -- can you give us, please, more information on that, Ministry of Environment?

MR. PARROT: I had asked the question about whether it's naturally occurring or has been deposited there for the purpose of clarifying for me whether or not the material could be considered waste under our regulations.

Naturally occurring material with beryllium or anything else that's naturally occurring would not be considered a waste.

If it was considered a waste, then Dave Fumerton had indicated the material would be subject to approval (inaudible, technical difficulties).

We would be concerned about it definitely.

MEMBER BEAUDET: Excuse me, I'll stop you because we have problems with hearing you correctly here. One second.

CHAIRPERSON GRAHAM: Could you -- yeah -- ask you just to speak louder, and we'll see if that works, but we -- you were breaking up very badly, so if you would start again, we would appreciate it.

MR. PARROT: Okay.

So I started by saying the -- I had -- I had asked the question about whether the

material or the contamination was there as a result of deposition or placement as opposed to it being naturally occurring because I wanted to clarify for my own purposes whether or not it would be considered a waste under our regulatory regime.

If it is naturally occurring, then the -- then it would not be considered a waste, and we would deal with it as Mr. Fumerton has described.

If it is a waste, then that does get dealt with under our regulatory regime and would have to be sent to offsite for disposal purposes. It would have to be classified as a hazardous waste or a non-hazardous waste.

So we do -- would have a different perspective if the material was placed there as a waste. And if that material were to be placed elsewhere and particularity in -- used to infill, then we would have a concern about the use of waste to do that, so we would require waste approvals to do that.

So that’s, I think, part of the question. I don’t know if Mr. Fumerton can talk about the lake vessel guidelines.

Dave, are you able to add more to

that?

MR. FUMERTON: Dave Fumerton, for the record.

Actually when it comes to lake infilling, I -- my district office is really not involved with that. So I can -- I think, Ian, the answer may be if somebody at your table cannot -- cannot respond to it, then we can certainly get a response by Friday, as I understand Health Canada has done some of that.

MEMBER BEAUDET: Yes, please.

MR. PARROT: Okay. So we can -- we can undertake to provide more information on those guidelines and how they're used.

CHAIRPERSON GRAHAM: Mr. Parrot, that will be given -- that will be undertaking number 73.

MR. PARROT: Okay.

CHAIRPERSON GRAHAM: And you will provide that by Friday?

MR. PARROT: I'm just looking around our table to see if that's ---

MR. PANKO: Dan Panko, for the record.

I think we can aim for Friday, but

CHAIRPERSON GRAHAM: I'm sorry, I need you to speak very close to the microphone. If you don't, it breaks up, and it just comes in in bits and pieces. So would you give us that undertaking again?

MR. PANKO: Sure, sorry.

Dan Panko, for the record.

I think realistically if we could if we could get back to you in a weeks' time with that undertaking, that would be the best.

CHAIRPERSON GRAHAM: Okay, and we'll provide you with the details of how that undertaking will get to the panel through our secretariat and co-managers.

MR. PANKO: Right. And if we can have it to you earlier, we will.

CHAIRPERSON GRAHAM: Thank you very much. Madame Beaudet.

MEMBER BEAUDET: Could you also provide your definition of "naturally occurring"?

MR. PANKO: It's Dan Panko for the record. In the undertaking in our response, or right now?

MEMBER BEAUDET: Well, if you can

right now, it's –- it would be fine, or you can do it in your undertaking.

MR. PANKO: I think we'll hold off until the undertaking.

MEMBER BEAUDET: Thank you.

MR. PANKO: To make sure that we get you the correct definition.

MEMBER BEAUDET: Thank you.

CHAIRPERSON GRAHAM: We'd like to have that in –- yes, detailed would probably more prudent. Madame Beaudet.

MEMBER BEAUDET: Yes, please. My other question –- I'd like to change subjects –- it's with –- I seem to making a big fuss about the acetic acid, but I know it's –- can be important.

And I was wondering if we can have on the screen from the atmospheric environment assessment of environmental effects, TSD of OPG, the table –-

CHAIRPERSON GRAHAM: It's on there now, Madame Beaudet.

MEMBER BEAUDET: Okay. For the record, table 6.2-26. It's on page 625. The Ontario –- I believe, Ministry of Environment, you have a standard which is 2,500 microgram for –- per

cubic metre for 24 hours. This is an ambient air quality criteria.

We have here –- you don't have anything per, let's say, 15 minutes or –- like Province of Quebec has which would –- sorry –- give us a better indication of what happens through the day? Because here, if it's 24 hours, there can –- the concentration can be higher during the day because there's no activity during the night. Am I correct?

CHAIRPERSON GRAHAM: Mr. Parrot?

MR. PARROT: Do I –- and I just –- sorry, if it's a 24-hour average, then the result would be averaged over a 24-hour period, and there could be peaks during the day or night during that 24-hour period higher than that number.

MEMBER BEAUDET: I'd like to ask OPG to explain to me this figure, and also the –- the other ones concerning ammonia and folic acid.

You have in your table –- you say in the notes that –- note number 2, let's take this one on the screen there, that values noted in bold are considered potentially measureable effects.

The assessment criteria is ten percent of the one –- of the 24-hour background

concentration from the existing environment. You do have an increment here, I mean, maybe minute quantities, because I believe here you predict, for instance, for the bounding scenario of operations including the existing site of .329, so that would be microgram per cubic metre, or is it a proportion of the 2,500?

And why would these increments be in bold, and what times –- is it because you can measure the effect, or is it because there's a sign here that we should –- you know, it –- you should be –- you're indicating a concern?

MR. PETERS: John Peters for the record. We're looking at the TSD and page –- table 6.2-26, and what we believe that we are showing you here is it's the bounding scenario over the existing environment, correct? The first column is the what we have as status quo today, and the bounding scenario for 2026, which is when we will have two units fully operational –- actually four units fully operational for the bounding assessment.

We're showing an increment here of greater than ten percent over the bounding –- the base condition, and that's the limit of it at this

point in time. We do not indicate that this is a significant change, but we do note that it is an increase of greater than ten percent over the background.

MEMBER BEAUDET: So when it is –- because other figures also have –- have increments in bold. So when –- what you say here, that if you put them in bold when they're potentially measurable, like, the quantities are so low that most of the time they will not be measureable, or is it because you feel that, you know, you are concerned that there is presence of an impact?

MR. PETERS: John Peters. Can I just have one second? We're carefully assessing this, and we'll be able to definitively answer in a moment.

MEMBER BEAUDET. Yes, please. And I may solve my throat problem.

(SHORT PAUSE/COURTE PAUSE)

MR. PETERS: John Peters for the record. Yeah, we simply were trying to indicate that this is actually a measureable change, not that it's a significant measureable change or that it's one that we would worry about. If you'd like more details, our atmospheric specialist has joined

us at the table.

MEMBER BEAUDET: Please.

MS. KIRKALDY: Jennifer Kirkaldy for the record. If you just give me one moment, and I will locate the right page. Thank you. So –- yes, so the bolding just indicated that we had a ten percent increase in the predicted concentrations, and that was part of the process which we developed to identify when we would have a potentially measureable effect. That was the reason for the bolding.

But as you can see, all of the predicted concentrations are well below the criteria of 2,500 micrograms per cubic metre, which is a 24-hour criteria –- excuse me –- and is based –- is an odour-based threshold, so it is protected –- that 2,500 micrograms per cubic metre is to be protective of odour effects.

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

CHAIRPERSON GRAHAM: Thank you very much, Madame Beaudet. Mr. Pereira.

MEMBER PEREIRA: Thank you, Mr. Chairman. My question on disposal of excavated material has been covered by Madame Beaudet.

CHAIRPERSON GRAHAM: Thank you very much. Now we'll go to the floor and go first of all to OPG. Any questions to Ministry of Environment for Ontario or Health Canada?

MS. SWAMI: Laurie Swami. We have no questions.

CHAIRPERSON GRAHAM: CNSC, do you have any questions?

DR. THOMPSON: Patsy Thompson. No question, thank you.

CHAIRPERSON GRAHAM: Other government agencies, and I guess those are the two government agencies today, so we will –- we have one question that is being given to me by Mr. Castrilli of CELA.

--- QUESTIONS BY THE INTERVENORS:

MR. CASTRILLI: Thank you, Mr. Chairman. This question arises from some questioning that was undertaken by Panel Member Pereira about an hour ago with respect to the subject of Tritium, and the question –- given the fact that we have representatives from the Ministry of the Environment as well as Health Canada, I'm happy to have any of them answer if you can.

Are there any other nuclear –-

radionuclides besides Tritium that are either emitted or discharged routinely to the Great Lakes by nuclear facilities that are regulated by the CNSC?

CHAIRPERSON GRAHAM: Dr. Thompson, would you care to –-

DR. THOMPSON: Patsy Thompson for the record. Yes, there is, and the –- OPG has both an effluent monitoring program as well as an environmental monitoring program that will document what is released and what the consequences are –- on the environment are.

CHAIRPERSON GRAHAM: Thank you.

Perhaps OPG, Ms. Swami, you might be able to give a more fulsome answer to that of the different releases?

MS. SWAMI: Laurie Swami, for the record.

Yes, there are other releases of radioactive materials through the Radioactive Liquid Waste Management System. That system is monitored for tritium as well as the other components on a regular basis and prior to discharge.

The list of radionuclides

potentially emitted is provided in the plant parameter envelope document that was provided as part of the environmental assessment for the new nuclear project. I can provide more details if -- if that's helpful.

CHAIRPERSON GRAHAM: Perhaps if you could just reference it for Mr. Castrilli to get that information. I think that's what you're looking for is just to see what other radionuclides?

MR. CASTRILLI: Yes, that's correct, sir.

CHAIRPERSON GRAHAM: So if you could just maybe give him the reference of where it might be that maybe expedite the undertakings.

MS. SWAMI: Laurie Swami, for the record.

I'm looking at this document and I can give the nuclear reference from our documentation system, but it won't give you the CEAA registry number, and so it will be more difficult to find. I know it's on the registry. It was submitted, I believe in November of 2010 with the update to the inclusion of the EC6 material. We provided that information and I think

it would be best to give the registry number as opposed to our report number.

CHAIRPERSON GRAHAM: Just to expedite things, if you want to check that out. If you can't, come back to us and maybe we'll have further information for you later, but that should give you the undertaking, of how to find it. And if you can't, we'll try and -- OPG will try and assist you.

MR. CASTRILLI: All right. Thank you, sir.

CHAIRPERSON GRAHAM: And that's been covered? I think that document has been -- just one moment. I think maybe it has been found. My advice is that it is 414 -- 414 on the CEAA registry. Okay. Okay.

MR. CASTRILLI: Thank you, sir.

CHAIRPERSON GRAHAM: Thank you very much then.

Is that all the -- all the questions?

Okay. Thank you very much.

Thank you very much, Ms. Ma. Thank you very much to those on the phone from the Ministry of the Environment.

We appreciate your coming back to try and get us more fulsome answers and we look forward to reviewing those answers as we work towards a decision. Thank you very much and have a good day.

MR. CASTRILLI: Thank you very much.

CHAIRPERSON GRAHAM: Now we will go to an oral statement, which I believe is the next one, and that is going to be by Liam O'Doherty.

And, Mr. O'Doherty, if you would come forward and present us your oral statement. As I remind everyone, the oral statements are generally in the vicinity of 10 minutes. And Mr. O'Doherty, are you here? If not then we'll go on and time permitting we'll reschedule. If not we will -- we appreciate his efforts.

Matthew Davidson, Mr. Davidson, if you -- are you here? Now, just -- are you Mr. O'Doherty? Are you Liam or are you Mr. Davidson? Okay, very good. Welcome, Mr. Davidson, and the floor is yours and you -- we look forward to hearing your oral statement.

(SHORT PAUSE/COURTE PAUSE)

--- PRESENTATION BY MR. DAVIDSON:

MR. DAVIDSON: Hello. My name is Matthew Davidson and I'd like to start by saying that I'm a history graduate student at Trent University.

I bring this up for the simple reason that as I understand it, a number of previous presenters have had their credibility questioned by those in favour of the Darlington expansion for the simple reason that they were so-called not experts in their field, while I and I'm sure many others, would certainly contest this. My presentation should reinforce the fact that anyone with basic research skills, can indeed come to a reasonable conclusion that further nuclear expansion is a bad idea for Ontario.

Using primarily sources found in the public realm, I will discuss some of the relevant history to the Darlington project that we would be wise to keep in mind before making a decision on the Darlington expansion. Initially I was going to focus on the history of opposition to the Darlington project, making explicit the point that there has always been opposition to the Darlington nuclear plant and nuclear power in

general, and thus that this newest wave of opposition is not a historically isolated phenomenon.

It would have been extremely easy to do so, to write about such things as the large banner that was unfurled from atop a transition tower along the 401 that read, “Honk for no nukes,” during an anti-Darlington protest in 1979.

However, I realized that this would be pointless to focus on simply on pointing out that Ontarians don’t want nuclear power because apparently even Canada's largest civil disobedience action on environmental issues plus thousands of people attending anti-Darlington protests weren’t worth listening to the first time around.

So if opposition to nuclear power isn’t considered a legitimate topic, I will focus on one area which no one can ignore, that is cost. Simply put, on top of all the other environmental concerns regarding nuclear, the truth is that it is simply not a viable option in regards to cost. I’d like to emphasize that this is not simply my own opinion. The Economist Magazine labelled nuclear power as, “Too costly to matter,” in 2001 and the industry magazine, “Nuclear Engineering

International," even argued that the costs of new nuclear plants are far too prohibitive.

Yet, the best indicator that nuclear costs far too much, is that the major financial institutions don't even like the idea. Wall Street has stayed away from nuclear in the U.S.A. forcing the Obama administration to consider expanding the $18.5 billion loan guarantee program that is already in place just to make nuclear financially viable.

This follows from a scathing report that was issued by City Group at the end of 2009 which argued that, "The economics says no to new nuclear." The report argues that three of the costs involved with building new facilities are so large that:

> "They could each bring even the largest utility company to its knees financially."

Moody's Investor Services has even called new nuclear, "The farm project." Of course, none of this is new either. In 1976, when seeking loans to finance the original Darlington construction, Ontario Hydro was asking for so much that no financial market was willing to lend it at

the time. Five years later, the financial institution Merrill Lynch was advocating for the cancellation of 18 U.S. nuclear projects because the cost was so uneconomical.

Despite the seemingly unfavourable financial climate to nuclear at the time, the original Darlington project was built anyways. This was only supposed to have cost $3.2 billion, which again was already deemed not worth the cost by economists. Yet, the final cost ended up being a whopping $14.319 billion.

Recent history -- or sorry, not surprisingly, the cost of building new facilities has risen dramatically since Darlington was completed in the early 90s. This can best be seen by observing the fact that construction costs have gone up by 185 percent between 2000 and 2007 alone.

Yes, somehow despite this, OPG proposes that the price to build new reactors will be $14 billion at the high end. This doesn’t add up even before taking into consideration that Ontario’s nuclear projects are typically 2.5 times more expensive than projected. It would thus be far more reasonable to view the number proposed by the Ontario Clean Air Alliance who have estimated a

final cost of somewhere between 21 and $35 billion.

Recent history bears this all out. The 1999 estimates to return the shutdown Pickering A reactors one and four, were four times higher at $1.016 billion and 2.7 times higher at $1.25 billion respectively. The Bruce Nuclear Plant restorations have also gone way over both deadlines and budgets. Currently estimated at costing 4.8 billion dollars as opposed to the estimated 2.75 billion dollars that was announced in 2005.

If we are to believe any politicians, according to the NDP, all these nuclear cost overruns have resulted in an additional annual cost of over $500 for the average family in Ontario.

Lest we be too quick to dismiss these observations based on them coming from environmentalists and leftists, it is interesting and extremely revealing to note that in 2009, a staff member of then Natural Resources Minister, Lisa Raitt, leaked a number of documents to the news broadcaster, CTV.

Included were details of AECL’s bid for the Darlington Contract, which included the following line, quote, “There is the risk that

there could be large cost overruns." This significant statement becomes even more significant when it is realized that this caveat was in place when the Ontario Government was willing to pay up to 20 billion dollars for the new reactors.

Since then, the amount that the government is willing to pay has been lowered. Yet the real cost of construction can't expected to have actually followed suit either.

It appears that if we are to build new reactors at Darlington, we will be setting ourselves up to once again see massive cost overruns.

It should not be surprising to hear that for many of these reasons, Saskatchewan has decided not to -- or has decided, sorry, to rule out nuclear energy has being too costly. And yet so far this discussion has only referred to the basic construction costs alone. There are still many other costs to take into account as well.

The issue of what to do with spent nuclear waste still remains. As of now, the final cost for dealing with this is estimated to be at 24 billion dollars. New reactors would only cause this number to increase.

At the same time, the price of the input is expected to increase as uranium becomes more costly to extract.

And then finally there is also the potential costs that would be involved if anything were to seriously go wrong at the Darlington Plant.

Under Canadian law, nuclear plant operators are only liable to pay 75 million dollars. Though the likely financial cost of a meltdown or any similarly sized disaster would be closer to 250 billion dollars.

While it’s certainly discomforting to talk as if such a thing could happen, the recent events in Japan prove that there always is that risk. Moreover, there’s reason to be sceptical of how safe our nuclear plants really are, given the number of issues that have occurred in the past few years and reported by the media.

Add into this mix, the recent revelations of the frequency of issues in American and British nuclear plants and a concerning safety record for the entire nuclear industry emerges.

Now, quickly before I conclude, I would like to quickly point out that I have not yet had the opportunity to discuss the massive amounts

of subsidies that the entire nuclear industry requires to stay financially viable.

I have had not had the opportunity to discuss in full, the cost of the wider uranium cycle. Nor have I had the opportunity to point out that renewable electrical rates are actually cheaper these days then electricity is from nuclear. And which I may remind everyone was once supposed to be, quote, “To cheap to meter.”

Rather I’ve relied on a simple historical approach to point out that nuclear power is and always has been too expensive. It is simply too costly to build new nuclear reactors at Darlington.

The Darlington new-build project needs to be cancelled. Thank you.

CHAIRPERSON GRAHAM: Well, thank you very much for your presentation. Just a question before I go to the colleagues. When you say that they’re talking about the nuclear liability insurance, did you say 250 million or billion?

MR. DAVIDSON: Matt Davidson for the record. The government currently requires the industry to cover up to 75 million dollars.

CHAIRPERSON GRAHAM: I know --

MR. DAVIDSON: The potential cost of the disaster could be as high, according to a couple of newspaper articles, as 250 billion dollars.

CHAIRPERSON GRAHAM: Billion, not million?

MR. DAVIDSON: Billion.

CHAIRPERSON GRAHAM: That's what I was wondering. Okay, thank you very much. We'll go now to my colleagues, Mr. Pereira, do you have any questions?

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman. I'll do two passes of this. I'll start off with Ontario Power Generation on their forecast of the costs and the concern on the part of many intervenors about cost overruns and past performance of industry. And to provide for us Ontario Power's vision for this project in managing the cost and the risk of cost overruns?

MS. SWAMI: Laurie Swami for the record. Clearly OPG has focused its efforts on managing projects and managing the cost of projects over the past number of years and we have focused

our efforts and demonstrated through some of our projects, such as our vacuum building outages and some of the safe storage projects that have been undertaken at Pickering, that we can, in fact, manage projects on time and on budget or under budget.

And that we are out looking at all of the other nuclear projects that are taking place. We do extensive benchmarking and reviewing of the lessons learned from all of those projects and incorporate that into our project management framework, so that we understand the potential risks and how we can best manage them to control and ensure that the costs are brought in on budget.

So we are using project management framework and extensive project management experience to ensure that the costs are brought in on -- on budget.

Currently OPG does not have a cost estimate for this project. This project is -- does not have a vendor at this point in time and it will go through a competitive process managed by the government for the selection of the final vendor and that cost will be determined through the competitive process that will be underway.

MEMBER PEREIRA: Thank you. I'll go to CNSC now to give us an overview of the question of liability, nuclear liability and what the Government of Canada is seeking to put in place on that front?

And also the question about funding of nuclear waste management costs?

MR. HOWDEN: Barclay Howden speaking. Yeah, the new *Act* that the Government of Canada wants to put in, called the *Nuclear Liability and Compensation Act*, the last version that was -- was that second reading when the government -- Parliament was closed was for the operators to provide up to 650 million dollars of insurance. And then the Government of Canada would enter into a Re-Insurance Agreement with the insurers to cover beyond that.

And that was for any type of accident where there could impacts of ionizing radiation on people.

The other question in terms of waste. Part of the *Nuclear Fuel Waste Act,* which was passed by the government in the early 2000s, requires that the operators or the generators of wastes in line with the 1996 Government of Canada

Policy to fund the long-term management of waste and ultimate disposal with segregated funds borne from today's generation, so that future generations don't bear those costs.

And that is managed under the Nuclear Waste Management Organization.

MEMBER PEREIRA: So when you say segregated funds, what does this mean?

MR. HOWDEN: That money is put in and is not available to the operators or to the governments except for the expressed purpose of the long-term management of the waste.

MEMBER PEREIRA: And just a question under nuclear liability provision, the legislation that was put before Parliament, 650 million, how does that compare with provisions in other countries?

MR. HOWDEN: Barclay Howden speaking. There is different schemes within other countries. It's generally comparable, depending on the country.

For example, in United States, the *Price-Anderson Act* requires, I think, 300 million dollars, but then there is a pooling of funds.

In Japan there is unlimited

liability, however, the Government of Japan requires a financial security of 1.2 billion dollars from each of the operators. In each country is different and our expectation is that the *Nuclear Liability Compensation Act* will be back on the governments order paper in with the new government.

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

CHAIRPERSON GRAHAM: Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman. We've received many submissions complaining that it's the taxpayer that would have to pay eventually if there was any serious -- for the consequences for any serious malfunction or accident. The proponent is obligated to put forward the financial guarantee over the years for decommissioning. Is there any financial guarantee or financial security for operation, and how do we compare with other countries with respect to that?

MR. HOWDEN: Barclay Howden speaking. In Canada right now there -- there isn't a -- any operational financial guarantees in place, however up -- when British Nuclear originally took

over the Bruce site, the CNSC did require an operational financial guarantee such that they could -- there was money set aside to ensure that the -- if there was a financial issue with that particular operator, that the -- the plants could be put in a safe shutdown state and maintain for a long period of time to allow the decommissioning to be put in place. The ownership of that changed and the -- there is no operational financial guarantee.

In terms of other countries, I would have to double-check, particularly in the United States, because most of the utilities are private utilities, and they're not owned by the States or the Crown, so we would have to get back to that -- to you, Madame Beaudet, for operational financial guarantees.

MEMBER BEAUDET: Yes, please.

MR. HOWDEN: But the thing is -- that I'd like to point out is that under the *Nuclear Safety and Control Act* the authority is there for the commission to require an operational financial guarantee. But we will do that as an undertaking.

MEMBER BEAUDET: Is it done?

CHAIRPERSON GRAHAM: We'll give

that one --

MEMBER BEAUDET: Sorry.

CHAIRPERSON GRAHAM: Pardon me. Give that undertaking number 74 to CNSC to provide a -- the operational -- details on operational financial guarantees. And when would you have that available?

MR. HOWDEN: Barclay Howden speaking. May I report back tomorrow to give you a timing of that?

CHAIRPERSON GRAHAM: Sure. Mmhmm.

MR. HOWDEN: Thank you.

CHAIRPERSON GRAHAM: Reporting tomorrow on timing.

Madame Beaudet.

MEMBER BEAUDET: Thank you. To follow-up on -- on this, I just have a question on CNSC PMD 1.2 with the licence to prepare a site. Where you -- you say that there will be no financial guarantee if the project doesn’t go ahead. After the licence to prepare site has been granted and the site is prepared, if the project doesn’t go ahead, financial guarantee would be zero. We can understand it’s because the -- I mean, there’d be no decommissioning activities, but

then if the site is used -- you mentioned that the site can be used for industrial purpose. That's why I was wondering, you know, who -- whose responsibility is it in terms of still monitoring on the site, and that's why I had -- I had a question regarding financial security, not just for the site that will have no further activity, except follow-up, but also for the existing Darlington?

MR. HOWDEN: Barclay Howden speaking. There's a few options, and the licensing and financial guarantees would follow the options that OPG might want to follow. So I can provide some of the options. So they could prepare the site and then cancel the project. And the view that we had was that the site, as long as they were in compliance with the licence, the site could be left with no restrictions, and it would be owned by OPG, and then they could do any other industrial activities.

We would expect them to do -- well, they have three options. One, they could leave it under the licence to prepare a site, because they may be just waiting for a future date. In that case they would have to retain, continue to maintain the site and follow-up programs per the

licence to prepare a site. But, again, since they were just bringing it to grade, we would not see the requirements for a financial guarantee, but recognizing that OPG would be under regulatory control.

The second option that they could follow is they could request a licence to abandon, and basically release that site from regulatory control, and we would have to determine that it could be done in a safe manner such that it could be released for their use. You know, and right now they own it now, do not have a licence to prepare a site, but they -- they have it there.

Their third option would be if they wanted to use this land more for the operating station from the nuclear standpoint of the operation station, they could apply to have it -- that licence amended to allow it to be brought in, in which case it would be under the regulatory control.

So those would be the three options. In all cases we would have to assure ourselves that they would have to -- for any of those options they would have to make an application which would have to go through a

commission review process, and a decision rendered to ensure that the site was in a safe state and that if there was going to be any financial guarantees incurred, they would have to be put in place.

With regard to financial guarantees, they're normally reviewed on a five-year cycle, unless there's changes. So if there's changes occurring to that site for whatever reason, the expectation is that the licensee then updates the financial guarantee, and their preliminary decommissioning plan, and we assess it, whether it remains proper, for lack of a better word.

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

CHAIRPERSON GRAHAM: Well, thank you very much, Mr. Davidson. We appreciate your -- your putting your statement in to some questions, and hopefully that the panel has asked some questions to get some clarification, but we'll also review your statement when we review each day's records. And if there's any follow-ups that we needs from either OPG or staff or -- or anyone else, we will, and we appreciate you coming today and giving us your views.

MR. DAVIDSON: Thank you. May I quickly respond to a couple of comments made, both by OPG and CNSC?

CHAIRPERSON GRAHAM: The rules say no, but I -- I'm always a little lenient. And if you keep very, very brief.

MR. DAVIDSON: Thank you.

CHAIRPERSON GRAHAM: Is it going to be a question?

MR. DAVIDSON: Just a follow-up comment.

CHAIRPERSON GRAHAM: Very short.

MR. DAVIDSON: And so, for the record, it's Matt Davidson again. I just want to refer to the comment about how the current government has been seeking to update the nuclear liability amount. I think it's worth remembering that as we are now facing an election, that Bill has been cancelled. So it's still in the air as to what's going to happen with that.

And then in reference to one of the first comments made by OPG regarding them saying that they have a proven track record of meeting projects on time and under budget, while the projects they referenced certainly they met in

that case, the scale of the projects that we're talking about are extremely different. We're talking multi-million dollar projects, according to what they referenced, and then multi-billion dollar projects according to what I was referencing, which has a difference -- major difference there throughout the history. Thank you.

CHAIRPERSON GRAHAM: Thank you. I just had to ask -- because I've lost track, but this is, I think, the 15th day, and over the period of the last 15 days there has been many intervenors bring up the topic of -- of liability insurance, and we -- we'll have to address that, and also the cost and cost overruns, we've had a lot of questions to OPG with regard to that, and the Ministry of Energy for the province and so on with regard to their -- their plans. And we appreciate your comments, but we -- we've heard them before and we take them very seriously in making -- when we make our decision.

Thank you very much and safe trips back to -- to Peterborough.

I'm going to declare a recess because the next intervenor has -- is going to be covered under a PMD, so I will say the Chair will

resume at 3:17.

--- Upon recessing at 3:02 p.m./L'audience est suspendue à 15h02

--- Upon resuming at 3:17 p.m./L'audience est reprise à 15h17

CHAIRPERSON GRAHAM: Good afternoon again everyone and welcome back.

Our next intervenor is Ms. Kelly White, and her presentation can be found in PMD 11P1.195 and is quite welcome and the floor is yours.

--- PRESENTATION BY MS. WHITE:

MS. WHITE: Good afternoon, my name is Kelly White and I thank you for the opportunity to speak today.

My argument against the Darlington proposal is basically based on economics which I know you've heard quite a bit about.

Economically, nuclear generating stations are expensive outdated large complex units. The current centralized system is vulnerable to long, costly transmission distances and grid failures.

Cost overruns, delays, unexpected shutdowns and ongoing maintenance problems have

made nuclear generation the highest cost and highest risk power source in Ontario.

Over the past 50 years, Canadian taxpayers have subsidized the Canadian nuclear industry with over $17 billion. Capital costs overruns have also been passed on to the electricity consumer and taxpayers.

Historically, actual costs of projects completed have exceeded the original estimate by two and a half times. The Darlington rebuild plan has an estimate between 8.5 and 14 billion and based on past projects, these reactors could end up easily costing taxpayers between $21.25 and $35 billion.

The public is still paying down a debt incurred by Ontario Hydro totaling $19.4 billion. In 2009 alone, nuclear debt retirement payments were $1.8 billion. This is the equivalent to $137.73 per person.

At the fiscal year-end, 19.603 billion had been paid to service and pay down the stranded debt; thereby debt payments have exceeded the original value. This stranded debt is not expected to be eliminated until sometime between 2014 and 2018.

Returning the Pickering A unit for its service has cost electrical consumers $1.25 billion. Broken down per kilowatt, that is $2,400 per kilowatt versus $800 per kilowatt produced by a high-efficiency gas power plant versus $1,500 per kilowatt form a new wind turbine.

Nuclear electrical costs, production costs, do not cover the additional expenses like decommissioning a reactor or the long-term storage of radioactive waste.

Ontario Power Generation assumes the completed project will have a cost of $8.5 to $14 billion with an average annual capacity utilization rate at Darlington ranging from 82 to 92 percent. Thus, the price to produce electricity should cost six to eight cents per kilowatts per hour based on 2009 numbers.

However, Ontario reactors have never reached 82 percent or better in the last 25 years. The Pickering A units 1 and 4 nuclear reactors, during the four years between 2006 and 2009, only reached an average of 64 percent annual capacity utilization rate. Assuming 64 percent, the cost of producing electricity is eight to 10 cents per kilowatt per hour.

Ontario Power Generation assumes it will have a 30 percent debt financing with an 18 percent return on equity for the Darlington rebuild which rises the cost to produce to 10 to 14 cents per kilowatt per hour, assuming an 82 percent average annual capacity utilization rate.

At a rate of 64 percent average annual capacity utilization rate, this increases to 12 to 18 cents per kilowatt per hour.

As an electrical consumer or taxpayer, the cost overruns have been passed along at an average of two and a half times higher than the original estimate. The Darlington rebuild could very well end up costing the public $21.25 to $35 billion.

At an average capacity utilization rate of 82 percent, electrical costs would then range from 19 to 27 cents per kilowatt per hour, when a more realistic capacity of 64 percent indicates 24 to 37 cents per kilowatt per hour.

The Ontario Power authority is not aggressively campaigning energy efficiency. At the end of 2009, the Ontario Power Authority contracted new electricity supply projects with a total capital cost of $23.622 billion, yet only spent

541.6 million on energy conservation and demand management.

Conservation and efficiency can be our least cost and highest benefit option, yet for every dollar the Ontario Power Authority spent on energy conservation and demand management, 44 was put towards new contracted supply.

Ontario Power Authority's industrial accelerated program offered industrial customers energy efficient investments, a savings of up to 23 cents per kilowatt per hour. With an average annual payment of 23 cents saved, customers then pay 2.3 to 4.6 cents per kilowatt per hour during the first year.

Ontario Power Authority's payments for saving energy are actually 76 to 94 percent less than the cost to producing kilowatt by rebuilding Darlington.

With newer technology, prices declining, gas co-generation and combined heat and power can offer energy efficiency of 80 to 90 percent compared to 33 percent energy efficiency of a nuclear reactor.

In 2009, the existing capacity of co-generation and combined heat power was 1,281

megawatts.

According to the Ontario Power Authority, combined heat and power plants can supply electricity at a total cost of 5.7 to six cents per kilowatt per hour.

Combined heat and power plants can be installed near demand or on-site, such as apartment buildings, condominiums, shopping centres, hospitals, schools, airports and factories.

An industry expert, Mr. Tom Caston, believes that Ontario's total combined heat and power potential capacity is 11,400 megawatts. Therefore, Ontario's combined heat and power supply potential is at least 2.8 times greater than Darlington's nuclear generation station output of 3,512 megawatts.

Water imports from Quebec now interconnect between Ontario and Quebec with a total transfer capacity of 2,788 megawatts. These available imports could replace more than 75 percent of Darlington's generating capacity.

Ontario has the opportunity to purchase electricity from Quebec at a rate of 6.5 cents per kilowatt per hour.

According to Helimax Energy Incorporated, the on-shore potential of wind power alone can reach 1,711 billion kilowatts per hour per year. The Ontario Power Authority suggests that wind farms in southern Ontario productions costs will range from 9.6 to 13.5 cents per kilowatt per hour.

Another option is importing hydroelectricity from Labrador. An expanding project on the Churchill River could potentially export to Ontario 3,000 megawatts or 16.7 billion kilowatts per year.

So to sort of round out -- there was a table listed in the submission -- energy efficiency, we were looking at 2.3 to 4.6 cents per kilowatt per hour; combined heat and power, 5.7 to 6 cents; water imports from Quebec, 6.5 cents; hydroelectricity imports from Labrador, 9 cents; land-based wind power in southern Ontario, 9.6 to 13.5 cents; and, according to the Darlington rebuild figures, 19 to 37 cents per kilowatt per hour.

Instead of relying on nuclear generators, invest in a combination of energy-efficient programs, new low-impact renewable

supplies, high-efficiency natural gas co-generation and combined heat and power.

Preference should be given to ecologically benign renewables like water, wind, solar power and biomass.

A distributed generation system of small- to medium-scale power plants could meet the growing market demands. Then open up the market to a diversified pool of power producers, for example, power coops, municipal utilities, direct energy companies, manufacturing companies and investor-owned power companies.

Replacement options can meet the province’s electricity needs at a much lower cost than nuclear reactors. Falling electricity demand alone, at approximately -- decreasing at 1.6 percent average per year, could almost cover the gap, half the gap, that will be left when nuclear power plants go off-line by 2021.

A competitive bidding process could be set up for long-term supply contracts. The power producers would then be responsible for upfront capital costs. Cost overruns would have to be financed by independent suppliers and their shareholders.

Another option would be to include a performance guaranty clause to enforce financial penalties for power suppliers failing to meet electricity capacity and production targets.

The economy is on the forefront of many topics and discussion today. I believe it is time to look at a new, cheaper, greener, ecologically friendly power sources for our future. They offer a solution to the overpriced grid band, outdated Ontario giant nuclear reactors.

CHAIRPERSON GRAHAM: Thank you very much for your presentation and I'll go now to my colleagues and panel members.

Madame Beaudet?

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

I have three points to check with OPG. We mentioned when Pembina Institute was presenting their submission a few days ago that the utilisation rate for wind is about 32.6 or 33 percent. I'd like to confirm with you the -- this submission mentions that for nuclear power it's 82 to 92; is that correct?

MS. SWAMI: Laurie Swami, for the

record.

The reference to 82 to 92 percent was a value that we have used for assessing the project for the Darlington refurbishment project. And this material was submitted with the Ontario Energy Board and has been reviewed by the Ontario Energy Board.

MEMBER BEAUDET: And what about in the figure there that the Darlington rebuild would cost 19 to 30 cents per kilowatt hour. I think we received from Mr. Sweetnam a different figure a few days back.

MS. SWAMI: Laurie Swami, for the record.

I believe that Mr. Sweetnam was referring to our existing operations. Today the current that we receive from the -- as regulated through the Ontario Energy Board.

The Darlington plant, after refurbishment will continue to be a regulated asset. And based on our estimates and the current plan that we have in place, we estimate that it will be less than eight cents per kilowatt hour following the refurbishment project completion.

The numbers that are listed here,

this 8.5 to $14 billion at the early part of the intervention, we estimate that the cost for the project is six to $8 billion -- sorry, six to $10 billion and overnight costs and then there would be added interest and escalation as the project proceeds.

Again, I mention that all of this material was reviewed through the OEB rate regulation at the last rate hearing and they have endorsed the planning that OPG has done for the refurbishment at this stage of the project. It's still fairly early on. The refurbishment actually doesn't start until about 2016 so it's still in the early planning phases, but we've taken a very broad view of what the potential costs would be.

We've looked at all of the other projects, the refurbishments that are taking place at Bruce, at Lepreau, at other CANDU facilities and incorporated that into our cost estimates. So we're fairly -- we have a high confidence that these are the prices as presented by OPG to the Ontario Energy Board.

MEMBER BEAUDET: We did ask in one of the information requests about the costs of the new build. I'd like, with reference to what the

intervenor is presenting here on the first page of the written submission, which is paragraph one, two, three, four, five, six, seven, could you give us as part of -- we did ask for a total cost, but could you give us some information as to the debt financing and return on equity? I mean, what -- what are we looking at here with the new build?

MS. SWAMI: Laurie Swami, for the record.

It's very premature and we don't have that information yet for new nuclear. The rate of the return on equity is actually set by the Ontario Energy Board and it's -- we're just far too premature in this process to be able to assess that.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

Thank you for the figures you presented to us in the review. We have had these sort of reviews from different perspectives and it depends on which side of the centre line you are and we get different numbers and we found that in

commenting on presenters -- just from different intervenors would come up -- it is possible to come out to any conclusion you want to.

And the same can be said with things like health effects and so on; there's different perspectives, different ways of using looking at the same data. It's very challenging for us as a panel, but we like to hear these views and to assess them each at -- on their own merit.

For us on the second day of the hearings, the assistant deputy minister of the Ontario Ministry of Energy appeared before us and presented the way the province came up with this plan for long-term energy generation development in Ontario.

And he gave us the rationale for the plans and they gave probably the costs and so on and the consultation that they engaged in coming forward. So they -- the ministry did -- and they consulted with the people of Ontario on what was the preferred options and came up with the plan that's before us.

And so as we gather information, we are challenged with trying to understand the perspectives that people offer and -- and it's not

easy because people have their own preferences and many have preferences for renewables and green energy and combined heat and power and distributor grids. And all of these options are not -- each have their own challenges and implementation of the different options, come up with -- you know, you come up with different challenges that we face.

So my main questions would have been the ones that were covered by Madame Beaudet already in talking to OPG on the costs that you have quoted and we've had different numbers from them so we'll take that at face value and consider all the arguments you present. Thank you very much. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you.

Thank you, Mr. Pereira.

I have a couple of questions to OPG. It's quoted here that your rate of -- the average utilization rate referred to at 82 percent and then down to 64 percent. Your existing utilization rate at the existing Darlington plant, what's it running at?

MS. SWAMI: Laurie Swami, for the record.

The lifetime rate is 83 percent

for the Darlington facility. And the current number -- I'm just checking my number here -- the current number is 87 -- 87 and a half percent.

CHAIRPERSON GRAHAM: The 87 and a half would be just in the last year; 83 would be over the life of the plant; is that correct?

MS. SWAMI: That's correct.

CHAIRPERSON GRAHAM: The other question that I have is -- and it was referred to that you -- that you can get I think 2,800 and -- or 2,788 megawatts from Quebec. The -- we were told in the hearings that there was 1,200 megawatts of power available -- of hydro power available from Quebec. Is the 2,788 in -- is the 1,200 going to be in addition to the 2,788 that you're getting now or is that 2,788 combined or is that a correct figure?

MS. SWAMI: Laurie Swami, for the record.

That information would be available to other parties in the electrical sector. It's not an OPG value so I can't respond specifically.

CHAIRPERSON GRAHAM: Okay.

I guess that did come from the

Minister of Energy, deputy minister's office. One other point I guess that's brought out more or less in this and other interventions, but your rates or the amount of money you receive for electricity is regulated. And it's regulated I believe -- it's called the Ontario Energy Review Board or whatever it is.

You're getting now -- the figure was given to us the other day with regard to six cents or somewhere around 5.8 cents or something like that. If this project goes ahead and -- regardless what technology is chosen and so on, and if the capital costs are such that some are predicting overruns and so on and you tried to assure us there wouldn't be, but if those happen and your rates were, as some tables show, could be up to 18 or 20 cents, would that just put you right out of the market completely and then the Review Board would not allow that or -- in the mix or how would that work, would having such a large change in the amount of rate that you're getting now versus what you would get in the future?

MS. SWAMI: Laurie Swami.

The current rate that OPG receives is 5.5 cents or approximately that. It's not as

high as 6 cents.

And it goes in front of the Ontario Energy Board on a regular basis, and we present all of our financial information through that process. And they determine the rate that we will receive for our energy.

I can speak to the refurbishment project more than I can speak to new nuclear at this point simply because it's premature, if that's helpful.

CHAIRPERSON GRAHAM: No. I -- the deputy minister -- or the Ministry of Energy is going to appear before us tomorrow, and I perhaps should save those questions for that intervenor tomorrow.

Just one other question, and that is to Ms. White. You live in Whitby according to your presentation, so you're in this vicinity.

We've heard a lot of people say that there's -- that they're in favour. We've had a lot of intervenors say they're in favour, and we've had intervenors say they're opposed to this new build.

Is there -- have you any idea of what -- and you're appearing as a -- as a citizen

of the area. Is there any idea of the support versus opposition, how it has come down? Is it -- in your mind, is it half and half, or how is it in the area of -- this general area of Darlington, Oshawa, Whitby area? Have you any idea? Have you done any polling, or have you -- you've done some references here to various groups, Sierra Club and Clear Air Alliance and so on. But what's your estimation?

MS. WHITE: Kelly White speaking.

I actually haven't done a certain polling amongst my peers. I've only been in the area for three years, so I'm actually in the process of learning quite a bit about what's going on at this point.

CHAIRPERSON GRAHAM: Thank you.

I just wondered if you had a feeling. Is there grounds, while out there, in opposition, or is it only -- a lot of people don't have the -- don't have enough information to make an informed decision, or how do you -- how do you read the general public or your friends and neighbours?

MS. WHITE: I would agree that there isn't enough information out there.

And what's interesting is that recently OPG showed up at my daughter's school promoting nuclear power, and yet there hasn't been an opportunity for other groups to go into the school to express their renewable sources as another option.

So I think there does need to be more information on other sources that are out there other than nuclear.

I am against it, of course.

CHAIRPERSON GRAHAM: No, that's what we -- that's what we're hearing and want to hear is everyone's opinion.

All right. With that, now I will go to the floor, and I will -- oh, no. Mr. Pereira, Madam Beaudet, I've had both, have I?

Yes, I've had -- yes.

I didn't check -- do my checklist here.

OPG, do you have any questions to the intervenor?

MS. SWAMI: Laurie Swami for the record.

I just thought I would mention a couple of points, if I could.

OPG had an extensive consultation program as part of this EIS development, and we were in the communities, including Whitby, on many occasions, and we did provide information to the public.

I just want to make sure that -- the intervenor is a recently arrived resident, I would say, and perhaps didn't receive all of the information.

And our program for -- in the schools is in support of the Ontario curriculum for energy, and I would guess that other -- other producers are fully available to go into the schools, as OPG is.

And we do initial instruction on electricity in general, and, of course, nuclear is discussed, but we provide a full range of types of generation.

CHAIRPERSON GRAHAM: That's all you have to say? Okay.

I'll now go to CNSC. Do you have any comments or overviews?

DR. THOMPSON: Patsy Thompson.

Thank you. We have no questions.

CHAIRPERSON GRAHAM: Thank you.

Government participants?

And I don’t see any here.

And I have Mr. Kalevar. I guess you’re our annual questioner, so your question to the -- to the Chair, please.

--- QUESTIONS BY THE PUBLIC:

MR. KALEVAR: Of course through the Chair. I don’t like to go through anybody else.

I’m Chaitanya Kalevar from Just One World.

The question is in view of what the intervenor had just said. Should OPG make a presentation by itself, or it should always request an anti-nuclear or environmental group to go with them? Because obviously they already delivered the information bias in the community.

CHAIRPERSON GRAHAM: I would -- as Chair, I would think that each group should request.

And this is to the -- to the intervenor. Have other groups requested to appear at schools and so on? Have they not been permitted, or do you -- have you any knowledge of this?

MS. WHITE: Kelly White speaking.

I know that no other groups have come into the school. But I am part of the Eco Kids Program, and I'm hoping to bring that information to the -- to the kids that are involved at this point.

CHAIRPERSON GRAHAM: Thank you very much.

Thank you, Mr. Kalevar.

Raymond Leistner, Mr. Leistner?

MR. LEISTNER: Hi. This is -- this Raymond Leistner.

I have a question regarding the capacity utilization factor that's being used to calculated the overall cost of power generation.

If -- I've been watching the price of photovoltaics drop at about 7 percent a year recently. And if in 20 years or 30 years that price becomes very competitive with retail grid prices, people are just going to put them on their roofs all over the place, and they're going to stop buying from the grid when the sun is shining.

Will that adversely affect the capacity utilization factor that's being used to justify this reactor build?

CHAIRPERSON GRAHAM: Thank you for that question.

OPG, would you care to answer if you had built in that type of scenario and the supply on the -- the supply and demand may drop?

MS. SWAMI: Laurie Swami for the record.

The minister -- or the Assistant Deputy Minister will be here, as I understand it, later to provide answers to some of these questions, but this -- the long-term energy plan establishes the targets over the long run for the type of generation that will be in the province, and they have established that.

I can’t speak to market forces that would take place 20 or 30 or longer years into the future, and perhaps that would be best answered by the Assistant Deputy Minister.

CHAIRPERSON GRAHAM: Mr. Leistner, you had a good question, and because the ministry will be here tomorrow, if you can be here; if not, perhaps maybe one of the panel members may ask a similar question or something with regard to your -- to your observation and concern.

So thank you very much.

That concludes the intervention by Ms. White. And we thank you very much for coming, and we appreciate every -- always appreciate everyone's interventions. And we wish you good luck in your -- in your work with the schools and your eco programs. Thank you very much and good luck.

Now we will go to the -- we will go to the next presenter, which is Mr. Ahmad Osgouee. And he -- his PMD is 11-P1.233.

And my understanding is he is not here. We will endeavour to try and find out if he plans to present, and if not, we will take his submission as a written submission.

If time permits, we'll hear -- we'll reschedule him, but if not, because we have worked these schedules, we will still entertain it as a written intervention.

So with that, we are through this afternoon's program as far as interventions go and -- oral interventions, I should say.

And I think now we'll have some time that we will go to written ones.

And I'll call upon my co-manager Ms. McGee to start the process on which ones we

were -- we will go with.

So, Kelly, it’s up to you now. Just give me a minute.

We’re going to start with P122, I believe, 11-P122.

--- WRITTEN SUBMISSIONS AND QUESTIONS BY THE PANEL:

MS. MCGEE: Thank you, Mr. Chair. The panel will now move to consideration of some of the written submissions that have been received. I will identify the PMD number and the writer for each submission, and then the panel members will have an opportunity to ask questions or provide comments.

The first group of written submissions, PMD 11-P1.22 from Doug Goodman, PMD 11-P1.48 from Kathryn Barnes, PMD 11-P1.70 from Peter Smith, PMD 11-P1.73 from Pierrette LeBlanc, PMD 11-P1.77 from Josh Snider, PMD 11-P1.81 from Graham Ketcheson, PMD 11-P1.114 from Raymond Leistner, PMD 11-P1.129 from Deborah Wiggins, PMD 11-P1.132 from France Benoit, PMD 11-P1.135 from Erwin Dreessen, PMD 11-P1.138 from Steve Lapp, PMD 11-P1.183 from Marion Copleston, PMD 11-P1.186 from Robert C. Azzopardi, PMD 11-P1.198 from Jack Goering, PMD 11-P1.205 from Ruth di Giovanni, PMD

11-P1.216 from Brett Dolter, PMD 11-P1.219 from Brenda Thompson, and PMD 11-P1.224 from Peter Shepherd.

CHAIRPERSON GRAHAM: Thank you very much for those written interventions. I'll go to panel colleagues. Mr. Pereira, do you care to speak to any one or all of these?

MEMBER. PEREIRA: Thank you, Mr. Chairman. I have reviewed all of these panel member documents and they all form a group, and generally they talk about the preference for a recourse to renewable energy generation options.

They express concerns of the cost of a nuclear power, the record of cost overruns. They raise the questions about health risk and –- related to emissions –- air emissions and Tritium in drinking water, other releases to the lake.

The express concerns about waste legacies and long-lived waste and the cost of managing waste over the long term. They urge energy efficiency in what we chose to do going forward.

They express concerns over the risks of accidents with nuclear power, and they also express concerns about security with the

nuclear facilities and the risk of terrorism.

Among the odd ones, there's some that express concerns about the record of performance of the industry in Canada, including the performance of the ACL. One of these intervenors talks about concerns about sustainability of nuclear power, and one proposes an option to manage energy demand by reducing the population of Ontario. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira, for that overview of these written submissions. Madame Beaudet.

MEMBER BEAUDET: Thank you, Mr. Chairman. I do agree with the summary that my colleague Mr. Pereira has just given. All of these are against the project except one submission where he makes a recommendation, but it's not clear if he's pro or against.

And they're concerned first –- to concern the real cost compared to nuclear of the different alternatives and costs and with respect to environmental risks.

And also he brings a point –- I think he's probably the only submission of bringing the point of why OPG has considered that whatever

consequences of accidents would be the same with respect to accidents –- I mean –- yes, consequences of malevolent acts, and I would like to hear from CNSC about that. How accurate is it to consider whatever can happen with the plant would be similar or exactly –- or equal what could happen with malevolent acts?

MR. HOWDEN: Barclay Howden speaking. Dr. Newland can provide additional information if you wish, but we're –- we will be limited to what we can say. But basically with malevolent acts, these are basically intentional acts by people.

The initiating event is actually prescribed information because it would be under the design basis threat that we spoke about. However, the way we look at it is malevolent acts could impact a plant in two manners.

One, you have a common mode type failure, which is where targeted systems or –- or, like, a pump system where someone would target it so that all the pumps would fail in a certain –- at the same time for a certain reason. And there's another one, which is the common cause, which is an event –- some sort of attack that would impact

multiple systems and equipment, and this is called a common cause failure.

Like, another type of common cause is, like, a flood that comes in and impacts all the equipment in a certain area.

So what we're looking at is -- is from the initiating event, regardless of what it is, is the plant able to survive either a common mode failure or a common cause failure?

Dr. Newland can speak a little more about the design basis accident and beyond the design basis just to provide a little bit more information on how we'd approach that.

MEMBER BEAUDET: Yeah. I think it would be interesting for the public, anyway, for the ones that are bringing forward their concern here. In this list, we have about the risks and the consequences of accidents.

DR. NEWLAND: Dave Newland for the record. I'd like to draw a little bit of a distinction between design basis accidents and design basis threats because there is an important difference. So in design basis accidents, there is a set of sequences that one can sort of naturally predict based on failures of certain systems, of

certain components, and so you can then build in defence and depth provisions against those failures.

For design basis threats, it's a little bit more complicated, and so because of that, if you like, additional degree of uncertainty around exactly what the threat or the equivalent accident would be, one has –- one identifies vital areas that must be protected, and then one has a tactical response on site to protect those areas.

So in one instance, for design basis accidents and beyond design basis accidents, we have specific design provisions to deal with them. For design basis threats, it's the combination of the on-site tactical response and the protection of equipment and the functioning of that –- those pieces of equipment.

In addition, in a similar way that we have beyond design basis accidents, we have characterized a beyond design basis threat, which is essentially a large commercial airline crash into the containment, and that is assessed, and I think that is pretty much all that we can say outside of going into camera.

MEMBER BEAUDET: Thank you. Thank

you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much. Mr. Pereira and Madame Beaudet have covered everything I found interesting. PMD 216 from Brett Dolter with regard to the paper he provided on –- from Prairie Forum and the debate that was going on in Saskatchewan with many of the same 216 from Mr. Galther (phonetic) with regard to the paper he provided on -- from Prairie Forum, and the debate that was going on in Saskatchewan with many of the same things that we're hearing today, but it was an interesting -- interesting package that he provided.

The others, I think, have all been covered, so, Kelly, if you want to proceed with the next group.

MS. McGEE: Thank you, Mr. Chair.

The next two written submissions for the panel's consideration are PMD 11-P1.19 from Rob Evans, and PMD 11-P1.46 from Mark DeWolfe.

CHAIRPERSON GRAHAM: Madam Beaudet?

MEMBER BEAUDET: These two submissions -- the concerns of these two submissions are with respect to waste and long-term

management of wastes.

One of them, PMD 11.1.19 brings about the fact that he considers there's no solution yet for long-term waste storage. And the other ones is the dangers that would be created by long-term waste storage.

I believe we did ask many questions because other intervenors have the same concerns, and so I have no further questions.

CHAIRPERSON GRAHAM: Thank you.

Mr. Pereira?

MEMBER PEREIRA: No. No further questions. I agree with the comments provided by Madame Beaudet.

CHAIRPERSON GRAHAM: Thank you very much.

Ms. McGee, do you want to proceed with the next group.

MS. McGEE: Thank you, Mr. Chair.

The next group of written submissions for the panel's consideration: PMD 11-P1.33 from Richard Denton; PMD 11-P1.47 from Neil Dobson; PMD 11-P1.50 from Phyllis Ketcheson; PMD 11-P1.52 from Kurt Koster; PMD 11-P1.60 from Fritz Lemberg; PMD 11-P1.66 from Eva Kralits; PMD 11-

P1.71 from Don Ross; PMD 11-P1.72 from Tanya Szablowski; PMD 11-P1.80 from George Karpat; PMD 11-P1.84 from Frithjoff Lutscher; PMD 11-P1.86 from Elaine Hughes; PMD 11-P1.88 from Heather Ross; PMD 11-P1.101 from Alexandra Gilbert; PMD 11-P1.107 from William Shore; PMD 11-P1.126 from Janet Gregor; PMD 11-P1.128 from Karen King; PMD 11-P1.134 from Barbara Muller; PMD 11-P1.137 from Tony McQuail; PMD 11-P1.140 from Trevor Chow Fraser; PMD 11-P1.141 from Bob Stuart; PMD 11-P1.190 from David Huntley; PMD 11-P1.191 from Rena Ginsberg; PMD 11-P1.204 from Suzanne Crellin; PMD 11-P1.214 from Maryann Emery; PMD 11-P1.230 from Jason Melnychuk; PMD 11-P1.231 from Martin Tessler; and PMD 11-P1.234 from Donald Kerr.

CHAIRPERSON GRAHAM: Thank you very much.

Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

These interventions are all not -- do not support the proposed nuclear project. The concerns raised are health risks, the risks of cancer and leukemia. There are concerns about nuclear power accidents; cost overruns, the fact

that many consider the nuclear industry is being subsidized by taxpayers; concerns about long-lived legacy of waste; tritium emissions; tritium in drinking water.

The preference in all of these cases is for going to green energy, renewable options; distributed grids.

Looking beyond that, there's references to the record of leaks and spills, legacy wastes in uranium mining, and -- and concerns over the energy policy that the province has adopted being not founded on rationale, which is aligned with the option of going to its more renewable solutions.

The concern about the solution proposed for deep geological disposal of -- of used fuel waste, the concern that this option is not proven as being viable.

Among the slightly different ones, there's one intervenor who -- who advocates use of geothermal energy. This is different from the other renewable proposals.

And one intervenor who says he probably would support the project if it was costed properly, and it was done in such a way as to -- so

as to determine the real cost of the nuclear generation option, and also if the technology choice was known so that it could be costed properly.

I have no questions concerning these interventions.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madam Beaudet?

MEMBER BEAUDET: I agree with the summary of Mr. Pereira.

In addition to that I'd like to underline that for over a third of these submissions, with respect to the long-lived legacy of waste, the fairness principle of leaving to children and grandchildren, a legacy of long-term storage waste is specifically brought up in -- in this package of intervention.

And I have no further questions.

CHAIRPERSON GRAHAM: Thank you very much, Madame Beaudet.

That concludes our schedule this afternoon. We're done a lot earlier than what we planned, but two of the scheduled presenters this afternoon, one an oral statement and one a written

-- written and oral presentation have not shown up.

And as I said at the outset, we'll try and reschedule, but if time does not permit, they will not be able to be heard and they'll be taken -- the oral one will be taken as a written, and the oral statement, we'll have to reconsider.

With that we are -- we have finished today's schedule, I guess. We, the floor will resume tonight at seven, and that's resuming with, I believe, OPG giving us an undertaking -- some information on Undertaking 15.

So with that we adjourn unless someone else -- does anyone else have anything to add? If not, thank you very much and we'll see you at 7:00.

Adjourned.

--- Upon recessing at 4:08 p.m./

L'audience est suspendue à 16h08

--- Upon resuming at 6:59 p.m./

L'audience est reprise à 18h59

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

Welcome back to today's second session of the public hearing for the Joint Review Panel of the Darlington New Nuclear Power Plant

project.

Secretariat staff are available at the back of the room. Please speak with Julie Bouchard if you are scheduled to make a presentation, if you want permission from the Chair to put a question to a presenter or if you are not registered to make a statement, but would now like to address the panel.

Opportunities for questions to a presenter or a brief statement to the panel are subject to the availability of time. Please identify yourself each time you speak to make the transcripts as accurate as possible. And as a courtesy to others please silence your cell phones and electronic devices.

CHAIRPERSON GRAHAM: I'll also call on -- thank you very much, Debra.

I'll also call on the co-manager to read another bit of information -- statement into the record.

--- STATEMENT READ BY MS. MYLES:

MS. MYLES: Thank you, Mr. Chair.

I'd like to read a statement. It is the Joint Review Panel's decision with regard to the request presented by Lake Ontario Waterkeeper

at the session yesterday.

Yesterday afternoon counsel for the Lake Ontario Waterkeeper, Ms. Joanna Bull, requested that the Joint Review Panel give participants the opportunity to ask questions on the documents, reports, studies and answers filed by various participants, as directed by the panel through the undertaking process.

In coming to its decision, the Joint Review Panel reviewed its mandate as defined by the agreement to establish the Joint Review Panel, the terms of reference for this review, the public hearing procedures adopted for this hearing, together with the rules for procedural fairness applicable for this review.

Throughout this proceeding, participants have been given numerous opportunities to present their views, comments and post questions to the proponent, government participants and other intervenors. It’s important to note that the panel has allowed registered intervenors the opportunity to put questions to the presenters or to direct those questions to the proponent or government participants where appropriate. The procedures adopted for this review are there to ensure that

the panel obtains all the information that it requires for it to fulfill its mandate. As we've mentioned previously the Joint Review Panel process is not an adversarial process like those of a court.

The objective of our process is to ensure that the hearing is conducted as informally and expeditiously as the circumstances and the considerations of fairness permits while giving the panel all the necessary tools to gather the information it requires. It's the panel's responsibility to consider all of the information it deems relevant including the information received pursuant to undertakings and to come to a reasonable conclusion on that information.

At this point, considering the opportunities given to all participants to provide their comments and questions to the panel regarding this project, the panel is of the view that allowing a further round of questions on the undertakings is not necessary.

As announced previously by the panel, participants have been given an opportunity to file final comments. The time line for participants to file their final comments will not

start until the panel believes it has received all the other documents and information it requires and those documents are available to all participants through the public registry.

The panel has decided to increase the maximum length of the final submission and give participants an additional 1,250 words or approximately five pages in which to -- in which participants are encouraged to provide their comments regarding the undertakings if they wish to do so

Considering that a few undertakings are due after this week, the panel has decided that this is a better course of action. For those reasons, the panel has decided not to grant the request of Lake Ontario Waterkeeper. Mr. Chair.

CHAIRPERSON GRAHAM: Thank you very much, Debra.

The first item on this evening's agenda is Ontario Power Generation and they have a presentation what will address about -- which will address Undertaking 15, a review of the report of Pacific Northwest National Laboratories.

So OPG, the floor is yours.

--- PRESENTATION BY MR. SWEETNAM:

MR. SWEETNAM: Good evening and thank you for this opportunity to provide additional details on the updated effects of hybrid plume abated cooling tower technology in response to undertaking number 15.

For the record my name is Albert Sweetnam. We asked today our representatives of MPR Associates, Marshall Macklin Monaghan and SENES were the consultants that performed the technical evaluation of the condenser cooling alternatives and the associated visual analysis.

OPG has updated the visual effects assessment of cooling options including the option of mechanical draft cooling towers and co-operating plume abatement. These are referred to as hybrid towers. OPG filed with the Secretariat undertaking number 15 including three technical reports documenting the updated visual effects assessment.

We previously filed the MPR 2010 report in response to undertaking number 3 which provides additional contacts for our comments today.

To perform the updated assessment, additional information was obtained from SPX. SPX

is the vendor for the Clear Sky Hybrid Wet/Dry Cooling Tower, the characteristics of which have been adopted in this assessment.

SPX confirmed that at the Darlington site, the hybrid towers would generate a plume some of the time, but it would have less visibility than the bounding assumption utilized in the EIS.

As a final element of this presentation, OPG has prepared a re-evaluation of the cooling options to incorporate the updated visual effects assessment and technical information that has been provided to the Joint Review Panel during the hearings.

OPG has prepared this figure to illustrate the layout used to assess the visual effects using hybrid towers. This is based on the layout originally provided in the 2010 MPR report on page 1-8 and includes the spacing for four linear hybrid cooling towers, sized to provide cooling for four AP100 reactors in an optimized configuration.

The four hybrid towers are each approximately 30 metres tall, 40 metres wide and 400 metres long. The hybrid towers extend a total

of 1.4 kilometres from the lake inland to the railway right-of-way. They require lake infill to the four-metre depth contour.

For illustration purposes, we have marked in red the two-metre lake infill recommended by Fisheries and Oceans Canada and the CNSC.

The performance characteristics of the hybrid tower, in combination with local weather conditions would result in a visible plume about 45 percent of the time during winter; about 10 to 15 percent of the time in the spring and fall and infrequently in the summer period.

The plume dimensions are reduced to approximately one-third the height, length and radius of an unabated plume. Based on average weather conditions at the site in the fall, winter and spring, the plume would extend approximately 2.6 kilometres before dissipating. The opacity or density of the plume has been assessed to confirm an average deduction in density of about 50 percent.

The next four slides show the revised visual illustrations of the plume as it would appear from various vantage points in the South Clarington landscape. Each of these views

have been reassessed and visually modelled using the same visual analysis and illustration procedures described in section 3.2.1.3 of the land use effects technical support document.

The first view illustrates the regional views of Lake Ontario typically associated with views from the Oak Ridges Moraine in Clarington approximately 10 kilometres north of the Darlington site. The abated plume will be visible at this distance, drawing attention to the presence of the nuclear plant.

This is an illustration of the views from the Baseline Road and Waverley located within three kilometres of the Darlington site. This illustration shows how the plume will be more dominant in the view south to the lake horizon from Bowmanville and South Clarington closer to the nuclear site.

This late afternoon view illustrates the visibility of the plume when the light levels are low, backlighting the plume for more than 10 kilometres east of the plant.

Even though the plume is reduced in size and density, a person driving west on Highway 401 will be able to see the plume as they

approach the Darlington site. As the daylight fades, security and safety lighting will continue to illuminate the plume at night.

The last illustration is the view east along the shoreline from Oshawa Harbour where recreational land use and long views are predominant.

The Darlington site's presence today is muted by its generally low profile focused only on the vacuum building.

All of the presence of the new nuclear power plant structures will not increase the visibility of the facility.

The plume will emphasize the visual presence of the Darlington nuclear site from both the west and the east. Waterfront viewers are likely to notice the plume.

Chair, we are going to spend a few minutes explaining this slide because we feel it's important.

OPG has prepared an updated evaluation concerning the inputs to the cooling options presented through this hearing and taken into account OPG's commitments.

Pacific Northwest National

Laboratories suggested a simple evaluation framework would be helpful to focus attention on the differences between the technologies.

OPG has adopted PNNL's format using small, moderate, and large descriptors to distinguish differences between the options. And we've added a numerical rating scheme assigning (1) to a small effect, (0) to a moderate effect, and (-1) to a large effect.

The evaluation has not been weighted as hearing participants with different perspectives may suggest different weights depending on their own perspectives.

This non-weighted comparison allows the decision-makers to make their own judgments regarding the most and least important considerations.

OPG has prepared a summary evaluation table to focus on the three technologies since these have emerged as options in the discussions at this hearing; once-through lake water cooling, mechanical draft wet cooling, and hybrid cooling.

The first section of the table reflects the parameters used in the summary slide

from CNSC's December 2009 technical briefing to the JRP.

OPG has adjusted their 2009 assessment as follows.

Where CNSC had left a blank, i.e. no value, we used "small" to allow for a complete assessment.

Where mitigation was identified and adopted by OPG to reduce effects, a "less effect" rating was selected than the CNSC may have considered in 2009.

OPG has highlighted these differences in yellow and included the CNSC value in brackets.

The CNSC framework includes nine topics; five related to aquatic effects and the others relating to noise, atmospheric, terrestrial and energy efficient effects.

OPG notes that both CNSC and Fisheries and Oceans Canada have indicated that fish impingement and entrainment are not significant effects.

OPG has rated impingement "small" and entrainment "moderate" based on the options available to further reduce these potential

effects.

OPG views the infilling required for cooling towers and associated intake and discharge pipe installation to be a greater effect on fish habitat than the smaller footprint of lake infill and related intake and discharge structures associated with once-through cooling.

With regard to the energy penalty evaluation, atmospheric cooling systems have a greater impact on the energy efficiency of the nuclear facility as the increased pumps, fans, and other supporting systems all require electricity to operate.

MPR estimates that the increased electrical consumption by hybrid cooling towers is 2.2 percent, increasing to 5 percent during hot summer weather when the electricity is most in demand.

MPR recommended in their evaluation additional criteria, which are provided in the lower portion of the table. These have been spoken to by all the participants in the process. For example, water consumption was raised as a concern by Environment Canada.

Community representatives have

provided their positions to the Joint Review Panel on the potential concerns with cooling towers and associated plumes.

OPG also notes that at our operating plants, the community has advised -- is advised in advance of large steam releases. OPG's experience has been that steam releases have the potential to raise public concern.

The once-cooling option scores better than the two other options. The advantages of once-through cooling are due to the circumstances of the site with access to deep cold water for the intake and the offshore diffuser and OPG's commitments to appropriate mitigation.

Our final points with regard to the cooling options relate to the extent of the excavation that would be required in relation to the options considered.

This first image illustrates the site today with the bluff intact and no lake infilling on the east half of the site.

This slide illustrates the most extensive excavation and infilling required for the hybrid cooling tower option. The hybrid two-tower option would require the removal of the entire

bluff, encompassing the natural bank swallow habitat and would require lake infilling out to the four-metre contour.

The last illustration depicts the excavation associated with OPG's preferred once-through cooling option. This would reduce the extent of excavation on the east side of the site and preserve much of the natural bluff associated with the bank swallow habitat.

As confirmed in OPG's first presentation to the Joint Review Panel, OPG remains committed to ensuring the aquatic effects of the once-through cooling system are as low as reasonably achievable.

OPG continues to prefer once-through cooling over other condenser cooling technologies as it enables OPG to reduce the extent of lake infill to the two metres recommended by the regulatory agencies, preserve the majority of the bank swallow habitat, and fully addresses community concerns that have been raised with respect to cooling towers.

The evaluation of the visual effects of the hybrid cooling tower option presented here tonight has not provided any reason

to alter OPG's preference for once-through cooling.

The numerous studies we have performed are sufficiently clear to conclude that further evaluation would only reinforce OPG's conclusions.

As committed, we will continue to work with the CNSC, DFO, and Environment Canada and other agencies in the design phase to ensure that the once-through cooling system that is implemented would be the best available technology economically available.

We are now ready to take any questions you might have.

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

Mr. Pereira?

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: I don't have any questions this time. It's a lot of information to digest, so we'd like to review it and perhaps come back for questions.

CHAIRPERSON GRAHAM: That's concurred also by Madame Beaudet, so perhaps after we've had a chance to review all the information you provided in your overheads, we'll -- and your

statement -- we'll go to questions at another time. So we'll reschedule that on the schedule when -- and give notice so that other interested parties will be able to participate.

So with that, our next participant this evening is registered to make an oral statement. And oral statements, as you know the rules, 10 minutes.

And the first participant tonight, of which only panel members can ask questions afterwards, is Ms. Wheatley, Eryn Wheatley.

Ms. Wheatley, welcome, and -- accommodate you to get set up and so on.

--- PRESENTATION BY MS. WHEATLEY:

MS. WHEATLEY: Good evening, Mr. Chairman.

CHAIRPERSON GRAHAM: Just bring it a little closer ---

MS. WHEATLEY: A little closer?

CHAIRPERSON GRAHAM: --- so they can pick up the ---

MS. WHEATLEY: Is that better there? Okay.

Good evening. My name is Eryn Wheatley. I'm here today as a concerned, young

resident of Ontario to recommend that this project and that this Panel reject the Ontario Power Generation's proposal for Darlington New Nuclear Power Project.

I'm recommending that you do not approve this licence based on the reasons that OPG's project submission and this Panel has thus far failed to address, a lack of transparency, poor process, avoiding and undermining of public participation, particularly around the safety of the project, inadequately addressing the *Sustainable Development Act* of 2008.

The Environmental Impact Statement fails to consider or comprehensively analyze any alternatives to building new reactors and fails to meet Environmental Impact Statement Guidelines violating Canadian law.

You've heard many arguments about safety by other intervenors. My birthday is in two and a half weeks. I'm turning 25. I'm not interested in this Panel wishing me a Happy Birthday, but I -- but I'd -- but for you to recognize April 1986 for the Chernobyl disaster, which is also 200 -- or also 25 years ago rather.

As these hearings convene, the

Fukushima disaster is unfolding in Japan. With low levels of radiation, reaching as far as Ontario already, these are only two of many accidents and incidents at nuclear facilities.

This proposed project puts not only millions of Ontarians at risk, but also the over 40 million people who live and rely on the Great Lakes Watershed. This risk is entirely unnecessary.

Additionally, it is not possible to have adequate public participation or scrutiny from intervenors, as this Panel has allowed multiple potential and incomplete overviews of possible reactor setups for this project including the last-minute submission of the CANDU 6.

This Panel would be allowing AECL's veiled attempts to save themselves at the expense and safety and health of the Ontario public. The reasons a prototype is not been built to test is because they don't have enough money without a contract.

OPG is attempting to push this project through without actually deciding what the project will be. If you approve this project, you will be rubber stamping a vague idea of possible

projects that erode transparency and meaningful public participation, violating the principles of the *Canadian Environmental Assessment Act*.

AECL, OPG and the Ontario Government say there is little risk of accidents. They have taken a patronizing and paternalistic approach to nuclear safety, patting the public on the head, saying everything is fine, then avoiding and deflecting any difficult questions on the Darlington new-build.

If they're so convinced nothing will go wrong, why does the *Nuclear Liability Act* exist? The nuclear industry in Canada lobbied for legislation that ensures it will be the taxpayers not the companies responsible to pay for damage in the event of a nuclear accident.

The Polluter-Pays Principle should apply to this project and all projects that the Environmental Assessment Agency approves.

Not only has a comprehensive cost and environmental assessment of renewable -- renewable energy alternatives not being conducted or submitted. OPG and the Ontario Government have shown, including during the Energy Minister’s participation in this Panel that they are more

interested in maintaining the status quo by ploughing ahead with this project than considering the consequences and that there are better, safer, cheaper alternatives.

This also results in OPG failing to show there is a need for this project. The answer for this lack of analysis in my opinion can be found in the large number of comprehensive studies conducted by other governments and non-governmental organizations globally that show economic environmental and social benefits of renewable and often decentralized energy production.

OPG does not analyze or report on the lifecycle of emissions and environmental impacts of the project. By lifecycle studies, I mean the total emissions and impact of the project and associated processes from mining uranium through refining, as well as all associated construction with the facility and storing of nuclear waste.

The idea that nuclear energy is clean and green is a dirty lie and OPG is intentionally misleading the Ontario public by omitting information.

One example, a meta-analysis study finished in 2007 on 103 lifecycle studies completed by Benjamin Sovacool found that nuclear power plants produce electricity with about 66 grams equivalent lifecycle, carbon dioxide emissions per kilowatt hour. While renewable power generators produce electricity with only nine to 38 grams of carbon dioxide emissions per kilowatt hour.

This comprehensive study found renewable electricity technology -- technologies to be two to seven times more effective than nuclear power plants per kilowatt hour basis at fighting climate change.

And such estimates already include all conceivable emissions associated with the manufacturing, construction, installation and decommissioning of nuclear power plants.

Furthermore, as the available average ore grade of uranium declines, carbon dioxide and other greenhouse gas emissions from nuclear power will increase. This is just one of many studies on renewable energy that has been conducted.

Taking a step back and analyzing the entire scope of the project is something that

OPG is not willing to do. The omission of nuclear waste from their submission by a deferral to Nuclear Waste Management Organization is also a massive question mark.

The Nuclear Waste Management Organization does not have a plan for long-term nuclear waste management for the waste that already exists, let alone any new waste. In fact, there is no long-term waste management plan for nuclear waste anywhere in the world.

The existing proposal from the Nuclear Waste Management Organization includes hypothetical, unproven technology and proposes burying nuclear waste in economically depressed northern rural communities without the local communities actually knowing what the project will entail before signing contracts.

This incomplete proposal, though vague about details and science to back it up is clearly a continuation of the Canadian nuclear industry’s behaviour of exploiting and negatively affecting rural communities and violating Indigenous’ rights.

This Panel should demand answers and an environmental assessment on long-term waste

management before approving this project.

I recommend that this Panel reject the Darlington new-build by considering sustainability, Canadian law and the future generations who will need to deal with the toxic radioactive legacy of this project for millennia.

If you approve this project, you will be robbing me, my generation and future generations of Ontario residents of the option of renewable energy without a comprehensive assessment of the alternatives to this project.

You will be enabling AECL, OPG, and the Ontario Government's continued bad behaviours of withholding information to avoid real scrutiny of a multi-billion-dollar project that will lock out renewable energy alternatives.

I believe the difference between a politician and a civil servant is that politicians are concerned with their short-term political gains, favouritism and have no long-term vision.

A civil servant is a person who honestly considers how the decision they make today will affect future generations and are willing to ask tough questions. And aren't simply concerned with immediate gains and will hold government

officials, corporations and individuals accountable within their mandates.

I implore you to live up to these standards in your decision and to not approve this politically motivated project.

Thank you for your time in considering my submission.

CHAIRPERSON GRAHAM: Well, thank you very much for -- thank you very much for your -- covered a lot of subjects and I will go now -- as I said, only Panel members ask questions and I'll -- Mr. Pereira, do you have any questions?

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you. Thank you, Mr. Chairman. And thank you for your presentation. We've covered a number of very important issues, important considerations that this Panel is charged with addressing.

Many of the points you've raised have already been raised by others before you who have intervened over the last two and a half weeks.

One of the first things you spoke about was transparency. We believe in this Panel that we have tried to maintain a process, which is open and allows -- has allowed for participation by

the public and there's been a long period over which the environmental impact statement prepared -- submitted by Ontario Power Generation has been out for public comment, so there has been a considerable period of time over which we have sought input and we have received a lot of input. And over the past two and a half weeks we have received different views, some in support, many who have brought up similar comments as you have, so I believe as far as this panel is concerned, we have attempted to operate in a transparent manner.

You make some comments about approval of the project and in that -- with respect to that, I'd like to just point out the mandate of this panel.

This panel is looking at whether the project proposed by the applicant -- that's Ontario Power Generation -- will cause significant environmental impact and, really, the aspects under -- on this here are covered under the *Canadian Environmental Assessment Act.* As far as safety is concerned for nuclear power projects and anything in the nuclear industry, there is another layer of regulation regulated under the *Nuclear Safety and Control Act*, which provides considerable oversight

of the safety aspects, so there's two aspects to this, the safety issues and environmental impact issues.

And in considering the option of going with the project proposed by Ontario Power Generation, as opposed to other energy supply options, the province of Ontario has made certain decisions on the supply mix. And we did have the assistant deputy minister of energy of Ontario with us on Friday of the first week and he outlined -- he and his team outlined the process they went through in deciding on what options Ontario would like to proceed with and they provided direction to Ontario Power Generation to examine a nuclear generation option. But he talked about renewable energy and all of the options in the mix that Ontario -- the province of Ontario has decided to move forward with. And we as a panel are examining all of -- all of these aspects, including the way in which alternatives have been considered and questions about sustainable development. These are certainly things that we are considering and listening to interventions from different parties, so that is, you know, where we are.

One aspect that I'd like to also

talk about is the options that Ontario Power Generation is considering with respect to selection of technology. There is a suggestion in your comments that the project proposed is being proposed as an opportunity for AECL to continue to supply generation capacity.

In the approach that Ontario Power Generation has described in the environmental impact statement, they have used a plant parameter envelope which describes bounding conditions for the technology that might be adopted. And they certainly haven't identified a preferred option.

They've used four designs to define that bounding envelope and the choice of reactor that they will make from what they've said -- told us is still open and so whatever they select will have to be within that bounding envelope because that envelope is what is being examined as part of this environmental assessment process, so there's no -- at this point, as far as this panel is concerned, we're not looking at any one of the reactor technologies identified in the environmental impact statement.

What is before us is an envelope that describes parameters for which we -- which

environmental impacts are being examined, so that’s where we stand.

In going forward, I’d like to ask Ontario Power Generation whether they'd like to comment on how they see the plant parameter envelope applying for the environmental impact statement they have put to us to, in fact, identify what they saw in their proposal as defined by the plant parameter envelope with respect to selection of technology.

MR. PETERS: John Peters for the record. As we've said in the previous questions along this line, the plant parameter envelope is a -- a tool that is used in modern nuclear power facility studies to give you a capability of examining a wide range of different machines, all which have to complete a wide range of safety assessments and analyses that will accomplish licensing requirements within the jurisdictions that they're being designed to -- to work.

And we feel that we've looked very carefully at the licensing requirements for nuclear power plants in Canada, which are modern codes and standards which are of a very high standard, and we've examined in each of the plants that the

province of Ontario is examining -- we've examined parameters that cover all of the different aspects of environmental as well as technological engineering parameters that -- which must be considered carefully in assessing effects and the potential for any kind of accident going forward in the future.

The work that we've done is comprehensive in that regard and -- and has been updated as the process has proceeded and we believe that the work going forward will bound -- are bounded by the commitments and the understandings that we've -- we've provided through that plant parameter envelope framework.

MEMBER PEREIRA: And just to extend that a bit, at this point, has Ontario Power Generation identified any technology that is the focus of your assessment?

MR. SWEETNAM: Albert Sweetnam for the record. There is no technology that we are focusing on at the moment, but the Ontario procurement system is looking at all four technologies and the Ontario government has indicated clearly that they have a preference for Canadian technology.

MEMBER PEREIRA: Thank you. I'll now turn to the CNSC. And the intervenor has expressed some concerns about safety with new reactors and the concern that there are hazards in adopting nuclear power as a generation option. I'd like you to talk about what safety standards we have in place and how these standards apply relative to standards that are in place in other countries that do operate modern reactor technology.

MR. HOWDEN: Barclay Howden speaking. I'll start and then ask David Newland to provide the details, but the setup -- the regulatory setup is under the *Nuclear Safety and Control Act*. There's a set of regulations that outline the -- the high level safety requirements that licensees have to meet. Below that, we use a series of regulatory documents, international standards and Canadian standards to guide our work.

One of the primary ones is a document called RD-337, which looks at the design of new nuclear power plants and that document has been put together specifically for new plants. And I'll ask Dr. Newland to speak to those.

DR. NEWLAND: For the record, Dave

Newland. Yes, just to follow on from what Mr. Howden was saying, we developed RD-337 from 2005 to 2008 specifically with new nuclear power plants in mind. It covers, we think, all of the aspects that need to be considered from a regulatory aspect in terms of systems, how they're designed, the kind of management practices that we expect a vendor to put in place to guarantee a good design, and things like considerations of high reliability and assessments of accidents that must be performed over the life of the plant.

We did benchmark our requirements against international standards such as those of the International Energy -- Energy Agency and also against the practices of other countries; for -- for example, the U.S., Finland, France and the U.K., so we feel that we have a modern set of requirements for the design of new nuclear power plants.

MEMBER PEREIRA: Thank you. I'd like to turn again to the CNSC and ask you to describe the process that was put in place to develop the environmental assessment guidelines which -- with which Ontario Power Generation had to comply. They prepared their environment impact

statement and which guide the -- the conduct of this assessment by the Joint Review Panel -- or review by the Joint Review Panel.

DR. THOMPSON: Patsy Thompson, for the record. What I -- the guidelines were developed when OPG submitted their project description and so the guidelines take into consideration OPG's project description along with the requirements of the Canadian Environmental Assessment Agency. And in this case, because the -- it's a joint review, also considered the licence to prepare site requirements under the *Nuclear Safety and Control Act.*

The guidelines were drafted by CNSC staff, staff of the CEAA, Canadian Environmental Assessment Agency, Department of Fisheries and Oceans and Transport Canada. The CNSC, DFO and Transport Canada are the three responsible authorities for this project.

Once the draft guidelines were prepared they were shared with the other federal government agencies who were federal authorities for this project and would have expertise to -- to provide to the -- to the assessment. Once the guidelines were -- the draft guidelines were

finalized, they were then issued for a 75-day public comment period. At the end of the comment period, all comments were considered, were dispositioned, and there's a table that provides how each comment was taken into consideration in finalizing the guidelines.

The guidelines were issued for public review at the same time as the Joint Review Panel Agreement for a 75-day period again, and both of those documents, after the public review period, were finalized and became the guidelines under review agreement that the panel is working with, and the guidelines served as the basis for OPG to do the technical work and submit their environmental impact statement.

MEMBER PEREIRA: Thank you. And I'll comment, finally, on the issue of nuclear waste and the challenge of managing nuclear waste.

This indeed is a -- is a challenge and -- and we, the panel, have received comments from many intervenors expressing their -- their concern over the legacy of waste, and if there's something that we are considering closely, and we'll be featured in the decision that we eventually make when we write our report, and the

recommendations we present in our report. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira. Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman. I'd like to go on a bit more on the discussion how the guidelines were prepared. In the comments you received, was there any request to consider the project, the full lifecycle of the project, because we did get a lot of interventions complaining that we were not looking at the full cycle of the project from cradle to grave, and looking also at the mining aspect, et cetera.

DR. THOMPSON: Patsy Thompson, for the record. We did receive comments to the effect that the -- the assessment should consider a lifecycle approach, and under the *Canadian Environmental Assessment Act* the requirement is to assess the proponent's project. And so in reviewing the guidelines based on the comments we received, we went back and made sure that the guidelines were aligned with the proponent's project description.

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

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet. Thank you very much for coming tonight. As I said, you've given us a lot to think about. A lot of them have been already been presented, but they certainly are points that the commission -- that the panel has to address each and every one of them, and we appreciate your sincerity in coming as -- as someone that is the next future generation that has to go forward. So thank you very much for coming, and safe travels back.

With that I think we should take -- and I apologize to the next two intervenors that are coming up, but I think for sake of clarity on a couple of items that came up in OPG's overheads and so on, that I'm going to call for a 15-minute break and come back. We may have some questions to OPG before we get into the other interventions. So I declare a break and we'll be back at 8:00.

--- Upon recessing at 7:44 p.m./L'audience est suspendue à 19h44

--- Upon resuming at 8:00 p.m./L'audience est reprise à 20h00

CHAIRPERSON GRAHAM: Just waiting for CNSC staff to get back in. I believe you're

Ms. Skelly?

MS. SKELLY: M'hmm.

CHAIRPERSON GRAHAM: And before we go to you, if you don't stay there, no problems that -- that we now, I think, have some -- some of the technical difficulties worked out.

Environment Canada, are you on the phone now? Is Environment Canada -- have we been able to get them now or not?

Well, we'll keep going in the essence of time, and with regard to Undertaking 15 I understand that the panel members may have some questions, and then I think the intervenor -- I think intervenors have some questions. So I guess we -- we might as well get started, and you can -- maybe the technical people can let us know when Environment Canada does get on.

So, Madame Beaudet, do you -- would you care to start then?

MEMBER BEAUDET: Thank you, Mr. Chairman. In the document -- sorry, MPR, Associate and Corporate Engineers, on page 5. I was wondering if -- if you could explain a bit more how this table 1 and table 2, you say observations from year 2005 to 2009? This is plume occurrence. This

is not a future estimate, so I'd like to have more information on this table, please.

MR. KAUFFMAN: Storm Kauffman, MPR, for the record.

Madame Beaudet, these are the numbers that were used to provide the seasonal estimates of the frequency that a plume would occur. Those were summarized as percentages. They were derived by using Toronto Pearson Airport meteorological conditions for the years 2005 through 2009. And as you'll note, after the year column there's observations. They're hourly readings, so 8,760 hours in a year.

Of those -- of those hours it's estimated that in the case of table 1 a hybrid cooling tower would have a visible plume 1,222 hours in that season. In spring, 332, summer, 37, fall, 365, for a total of 1956. So, for example, summer, 37 divided by 8,760 gives you the -- sorry, by 8,760 further divided by four gives you the percentage of the time that a plume would be visible in the summer.

So most simply, if you use the number on the far right-hand column of 1,956, and divide it into 8,760, you'll get a number in the

range of 22 to 14 percent for the different years.

MEMBER BEAUDET: Thank you. The other thing is -- and I can’t find -- there it is. I was looking for this table. Page 22, and I don't know if that’s -- you have the overall visual effect summary chart with plume abatement, and the visual effect that was done in the land use assessment of environmental effects without plume abatement had a few instances where it was –- the effect –- the overall effect on view was high. Now it’s –- there’s no high anymore, and you can see that also low is –- is more frequent.

You do mention, in terms of percentage, how much it is reduced in terms of density, and I think it’s occurrences. For OPG, do they consider now that –- because I remember you said that in the ISU evaluation was that the visual effect could not be mitigated. It could –- the natural draft, of course, I mean, obviously we know it cannot be mitigated.

But you didn’t provide anything about mitigation of the plume for the mechanical draft. So now other people may still object to any plume, but I’d like to have your comments on –- on the percentage of the overall view effect that has

been reduced considerably. If you have 70 percent, I mean, this can be considered significant, so I'd like to have your comments on that, please.

MR. PETERS: John Peters for the record. I can give you what I think is an overview of what I think the answer is from –- what I know the answer is from our perspective, and if you would like some technical discussion, we have the visual analysis modellers here with us tonight.

The point I would make is that the view –- the views that we have modelled are exactly the same views that you saw in the bounding scenario. These are not bounding scenarios. These are what we would call the 50th percentile representative average conditions across the whole study area again.

So, yes, the views are not as dramatically altered, and there will be periods of time when there will be no visibility at all.

However, in our presentation, we point out that we have experienced changes in steam releases from our plants actually create more anxiety amongst members of the public, and we've actually got a notification system established so that is there notice provided routinely when we do

make a steam release that's different than normal operation.

These kinds of conditions, yes, they will be less visible, but there will be a significant amount of visibility, and it will perhaps be more changeable because it's driven by wet bulb conditions and temperature obviously.

And we know –- you know, we were being –- trying to give you a sense that we agreed that there were mitigations available, and we've done this analysis completely over to reflect that. However, we think it was a little bit misleading –- or the evidence that was being given to you generally might have lead you to believe there would be no visual plume from a plume abated tower, and we believe clearly we have been able to demonstrate to our satisfaction that that just isn't true given the technology that we have available today.

MEMBER BEAUDET: I guess what I was getting at is, would you revise your statement by saying there's no mitigation measures? You have proven here that there are mitigation measures, and would you consider to do plume abatement? Because there is a possibility of mitigating this visual

effect, so is it –- are the results significant enough for you to consider plume abatement as a mitigation measure?

MR. SWEETNAM: Albert Sweetnam for the record. As you can see, we've done significant work on the mitigation possible. We recognize that mitigation is possible; however, mitigation only partially covers the issue. And going along with that, sure there's mitigation, and if we're requested to do plume abated towers, we will do plume abated towers.

But I think that it would be appropriate for the panel to look at the overall picture, which would include the additional landfill that's required, the impact on the –- on the aquatic life as a result of that, and the fact that the mitigation that would be provided is only partial mitigation of the issue in terms of visibility of the plume.

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

CHAIRPERSON GRAHAM: Mr. Pereira.

MEMBER PEREIRA: Thank you, Mr. Chairman. I have questions from page 7 in your report on other considerations. Okay, you say

there's limited operating experience with plume abated towers, particularly for large power plants. What are the concerns that you have here? Is that the reliability issue at the bottom, or is it more than that?

MR. KAUFFMAN: Storm Kauffman for the record. It's a combination of concerns, Mr. Pereira. The plume abated towers or hybrid towers represent about .1 percent of the market, and are rarely, although occasionally, used for large power plants.

Since power plant reliability depends on its condenser cooling system, if, for some reason, the towers are not as reliable as expected, then the plant capacity could be reduced when it's most needed. So it's a risk, both from a cost standpoint and a capacity standpoint.

We just wanted to point out that it is –- is another consideration.

MEMBER PEREIRA: So the reliability issue is concerned with what? Power supply? What is –-

MR. KAUFFMAN: Yes, reliability of power supply and long-term operating costs.

MEMBER PEREIRA: And as far as

reliability of power supply, is it a significant power burden compared to once-through cooling, or is there a reliability of power supply issue also with once-through cooling?

MR. KAUFFMAN: I'm not sure –- Storm Kauffman for the record. I'm not sure that I understood you, but it sounded like you combined two considerations. One was energy penalty –-

MEMBER PEREIRA: Well, leave the energy penalty out of it. But in terms of reliability of power supply, if there's a concern with reliability of power supply for the cooling towers, will that not also apply to once-through cooling to dissipate a large amount of heat?

MR. KAUFFMAN: Storm Kauffman for the record. No, sir. I didn't mean that there's a concern reliability of the power supply to the cooling tower. There is a concern with the reliability of all the operating fans, pumps, the more complex system associated with a hybrid cooling tower.

As a result, with the greater degree of complexity if components are out of service, that degrades the heat rejection capability of the tower and leads to the

possibility that you cannot make full capacity from the plant.

MEMBER PEREIRA: Another issue that you talk about here on page 7 is the amount of land required for the footprint of the cooling towers and the concerns about spacing of towers and recirculation. Are we at the limit of what this site can accommodate for this type of tower, the hybrid tower?

MR. KAUFFMAN: Storm Kauffman for the record. For the hybrid towers, yes, we are. The linear hybrids, as we've analyzed, will not fit within the two-metre boundary. You would have to put them so close together there would be a considerable amount of what is called recirculation, where the warm, moist air coming from one tower enters and passes through an adjacent tower making it less effective and resulting, once again, in a loss of capacity in cooling.

So in order to build the hybrid towers, you need more lake infill than you do for mechanical towers, and certainly more than the once-through cooling.

MEMBER PEREIRA: And might that

vary with weather conditions, recirculation and so on?

MR. KAUFFMAN: Yes, sir –- Storm Kauffman for the record. Yes, sir, it does vary, but you have to design and lay out the cooling towers for the worst case weather conditions, which are summer humid conditions because that’s when you need the power most. You can’t move the towers around once you’ve built them.

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

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira. I have one question with regard to your updated site layout, and you’ve showed the linear towers and you showed them all east of the railroad and not on the westerly –- westerly part of your property, or I think that the way I read it and the way I look at the railroad and so on. Is there any reason why you couldn’t locate some of those towers on the westerly side and not do the infill that you’re projecting?

MR. PETERS: John Peters for the record. Could I just -- I assume that we’re talking about our slide number three in the presentation. And the lake is on the south side of

the plant and the railway is on the north side. We have used -- this is the same layout as we provided in the plan views for AP1000 and the hybrid cooling towers layout. So these are encompassing all the land that we have available from the railway tracks south to almost the four metre infill point in front of the plant.

CHAIRPERSON GRAHAM: Well, first of all to clarify, I always take the top of the picture as being north and that's why.

MR. PETERS: Fair enough.

CHAIRPERSON GRAHAM: For maps. So that's why I did that. It didn't answer my question. My question was, could any of those cooling towers be relocated or established on the other side of the railroad track on your land where the fill is being put, being established and so on? Instead of going out into the lake, go the other way. Is there any reason why that couldn't be done because you do have that land on the northerly side I guess you'd call it and so on, but in my photo it's on the left side of the railroad track, to alleviate the lake infill. I realize that all your plant layout has been the other way, but can cooling towers be put on top of fill?

MR. SWEETNAM: Albert Sweetnam for the record. I'll ask Laurie Swami to address this question.

MS. SWAMI: Laurie Swami for the record. I believe that you're talking about a couple of different aspects, if I could address both, one, moving the towers further to the west of the property. We have sited the reactor structures in -- as close to the centre of our property as possible for exclusion zone considerations and to ensure the exclusion zone remains on our property.

The second factor that you discussed was moving further north of the rail line. It's a fair distance from the reactors to the northern part of the property so there'd be a long pipe that would be required to take the water from our plants up to the cooling towers. And you would also have to manage a crossing of the rail to actually facilitate that and that would be a difficult passing. And we also have the 500 KV power lines that go across the property and that has to be taken into consideration, in terms of where you could place structures underneath those lines.

CHAIRPERSON GRAHAM: But to -- the

distance that you may have to go in once through cooling out into the lake, versus the distance you may have to go in -- over onto the other side of the railroad track and the relocation of the KV line, were those all taken into consideration?

MS. SWAMI: Laurie Swami for the record. When we were laying out the sites, the site layout originally we considered the various factors including the 500 KV lines, the rail crossing through the property, the energy that would be required to pump, whether it's from the lake or from a cooling tower, all of those are considerations as we laid out the site in an optimal manner.

CHAIRPERSON GRAHAM: I guess my only other question would be, is there an optimal distance that those cooling towers can be from the reactors? Is there a maximum distance that they can be located or can they be located, if other solutions were found?

MR. KAUFFMAN: Storm Kauffman, MPR for the record. Mr. Chairman, there is considerable flexibility in the siting of cooling towers, however, as Ms. Swami said, the farther away that you put them from the plant, the higher

the energy penalty you pay.

Also on the limited Darlington site, you get it closer and closer to the 401 and the conclusion regarding icing, visibility and other effects from the towers would have to be re-evaluated and likely be more of a consideration. So keeping them where proposed helps address those other side effects of cooling tower operation.

CHAIRPERSON GRAHAM: Thank you. I understand that we now have Environment Canada on the line and do you have any comments?

--- QUESTIONS BY THE INTERVENORS:

MR. LEONARDELLI: Sandro Leonardelli for the record. We just saw the presentation. I was watching it on the webcast so we really haven't had time to consider the layouts that they had there. So we don't have any comments at this time.

CHAIRPERSON GRAHAM: Thank you. With that then I will go to the process which I've been following and I'm not going to ask OPG to ask themselves questions. So I'll go to CNSC, do you have any questions for OPG?

DR. THOMPSON: Patsy Thompson for the record. If we could, Mr. Chair, we would have

one question and then perhaps a statement or a clarification.

CHAIRPERSON GRAHAM: The floor is yours.

MR. McALLISTER: Thank you, Andrew McAllister for the record. Based on our previous -- based on our experience in previous EAs that involved cooling towers, and the case was the Bruce new build, in their analysis of plumes, they had a differentiation between a night and day occurrence. There was a response from a biothermal PG to an information request indicating that the SACTI model that was used, doesn't differentiate between the time of day, i.e., day versus night. Based on the -- I guess the consultants' experience that we have here, is there a greater frequency in daytime versus nighttime for plume development for existing plants that are out there?

MR. KAUFFMAN: Storm Kauffman for the record. The SACTI model doesn't differentiate between night and day conditions, but does consider the actual meteorological conditions which as I said in answer to Madam Beaudet's earlier question, were based on hourly readings from Toronto Pearson Airport.

Night, because of the cooler temperatures and the relatively high humidity in this vicinity, does have a higher frequency of fogging or plume conditions than daytime. But as OPG noted in Mr. Sweetnam's discussion, the lighting conditions required for security and operations around the plant make the nighttime plumes also visible.

Dr. THOMPSON: Patsy Thompson for the record. We had little time to review the presentation and not a lot of time either for the document that was provided with -- as undertaking number 15. We are still of the view with the information that has been provided and limited time to review it, that the information still appears too coarse to support objectively the identification of a preferred option.

The recommendation that CNSC staff made to the panel in terms of conducting a quantitative cost benefit analysis I think is still required and we believe that such a cost benefit analysis would need to be able to support transparently decision-making in terms of identifying a preferred option, and we would say that a decision analysis matrix is required. The

criteria that had been identified in the table in the presentation, in our view, may not be complete and a lot of the information that is in document number 15 is -- we're not sure how and where it's captured in the criteria that had been identified.

We believe that if OPG is to use this type of analysis to identify a preferred option that they would have to identify -- a weighting of each criteria would need to be and the weighting be justified because not all environmental impacts are of equal importance.

And the scores that are provided for each criteria would need to be justified and it would -- in a transparent manner with a detailed analysis of each of the environmental impacts and how the scores have been identified on that basis.

We -- as just has been discussed, we still have noted there are discrepancies in the information presented with regards to the maps and still have questions about the site optimization, some of which were more detailed information was provided a few minutes ago, but we still believe that the recommendations that we made to the JRP and our PMD still are appropriate.

CHAIRPERSON GRAHAM: Thank you.

I will go -- I'll let OPG come back at the end, but I'll go to questions from the floor. And I believe, Ms. Bull, do you have -- someone said three and a half questions. I'm not sure what a half question is, but we'll try the first three anyway.

MS. BULL: Thank you, Mr. Chair. Actually my half question was addressed by yourself, so I appreciate that.

CHAIRPERSON GRAHAM: Thank you for identifying mine as only a half question.

MS. BULL: It was an excellent half.

OPG presented information on the potential plume and the potential for plume abatement that contradicts the expert evidence that we heard from PNNL.

What's the basis for this contradiction and will PNNL be given the opportunity to review this new information and respond?

CHAIRPERSON GRAHAM: OPG?

MR. PETERS: John Peters, for the record.

I don't believe that we have

actually contradicted PNNL at all. I believe that what we've done is we've taken the insights that PNNL provided to the panel and we've gone directly to the cooling vendor that was used to illustrate the potential of these hybrid-type towers and we believe we've done a very credible job of illustrating what is seen today as the best technology available from a hybrid cooling tower point of view.

We were trying to just make it very clear in a factual basis what the nature of those effects would be. Thank you.

CHAIRPERSON GRAHAM: Also, if the panel sees that we need clarification from PNNL, we have the opportunity to go back to them on our own, so your next question?

MS. BULL: I appreciate that. That was a question for the panel as to whether you would go back to PNNL.

My second question is that OPG submitted that once-through cooling will have a small or moderate effect regarding impingement and entrainment, how was this derived when we've heard evidence that once-through cooling will require multiple authorizations under the *Fisheries Act*,

emit deleterious substance and have the greatest overall negative impact on fish and fish habitat?

CHAIRPERSON GRAHAM: OPG?

MR. PETERS: John Peters, for the record.

The evidence we were citing is the evidence that has been provided through the discussions before the panel where the Department of Fisheries and Oceans Canada, as well as CNSC has indicated that, yes, while there are impingement and entrainment effects that there are also mitigations that OPG is committed to employ, which will reduce those effects.

And that from a lake-wide population and from an overall effects assessment perspective, the residual effects would not be significant.

MS. BULL: My last question is following up on your question, Mr. Chair, about the site layout.

In the diagram that OPG presented, the red line showing to metered depth is actually the -- all of the cooling towers are within that red line. I'm wondering why OPG insists that four metres is required?

CHAIRPERSON GRAHAM: OPG?

MR. PETERS: Mr. Chairman, John Peters, for the record.

We were referring to the slide 3 that you had provided for your comment and discussion. And the slide 3 shows that the fourth cooling tower, the one that's out towards the lakefront, half -- more than half of the tower is beyond two metres of depth on the drawing, so the tower is split essentially.

Half is less than two metres and half is more than two metres. And it's a total of 400 metres long from one end to the other, so it will clearly be in the lake infill out to four metres.

CHAIRPERSON GRAHAM: Just to follow up on that, I don't have -- I went through the site layout plans and those are back at my hotel, but I didn't -- to go along with what Ms. Bull has asked, what you produced tonight seems to be going out further than what the site layout plan -- is there a change or not? Because I'm trying to remember what I reviewed myself and it seems to be going out further and from what we were given in the site layout plan the other day, I think it's

undertaking 29 or one of those.

MR. PETERS: Mr. Chairman, we actually have the slides, the layout slide that we used on the projector. If it would be helpful, I can bring them up and we can examine them together?

CHAIRPERSON GRAHAM: I think that would be helpful and helpful also to -- to Ontario Waterkeepers. If you could bring them up, please?

MR. PETERS: Mr. Chairman, the slide that we have on the screen is -- I've got the one -- I'm going to go one further here. All right, here we are. This figure is taken from the MPR-2010 Figure I4, which was Appendix I.

And when we were asked to do this work, we -- this is the drawing that we have used to create all the figures and do all the analysis that we've described and that was stated in our presentation tonight for you.

Now, you can see, I -- I'll ask any details you want to be covered by the specialist, but you can see here this is -- the power block is sitting on the west side of the property, the railway track is midway up and the lake infill is at the south end of the bottom of the slide.

The four lines show the actual location -- the dark bands show the locations of the hybrid cooling towers as we optimize them on the sight. And the question that you've raised comes as a result of this issue of optimization and it's well described in the MPR-2010 Report in association with this slide, this figure.

Mr. Kaufman can give you the details of what we've had to do, but it comes to the point, as we said, that you need to make sure that you don't have the heat being released from one tower and the moisture released from one tower being entrained in the intake of the next tower.

So what has been done here is Mr. Kaufman has looked carefully at the wind rose data which is also provided through the SENES work to the panel and made sure that the angle of the towers and the spacing is optimized for the wind conditions that are present at the site. That is why we have shown an actual layout that goes a bit further into the lake than we had been able to show in the drawings that we provided earlier.

CHAIRPERSON GRAHAM: Thank you.

As I say, I'll have to check my -- my own drawings and I may -- the ones that you had

provided and I may have questions or the panel may have questions and Ontario Waterkeepers may also have questions afterwards. Because in my mind, it didn't go that far into the lake and I think that was your impression also, so we may have to come back.

MR. PETERS: I would agree with you, sir, that -- John Peters for the record -- that we were somewhere around three, three and half metres and this shows closer to four at the -- at the furthest, outest most point. I accept that comment.

Thank you.

CHAIRPERSON GRAHAM: Thank you.

MS. BULL: Thank you, Mr. Chair.

Just because I didn't use my extra half, can I ask one follow-up question?

CHAIRPERSON GRAHAM: I -- I will -- we have an intervenor that's being very patient and I do want to give her the -- the lady the opportunity, but, yes, you can have another half.

MS. BULL: Thank you.

It was just in terms of the long pipe that would be required to locate the towers

north of the rail line and save the infill. Has any analysis been done comparing the pipe in convenience with the actual environmental impacts of filling in the lake?

CHAIRPERSON GRAHAM: OPG?

MR. PETERS: John Peters, for the record.

We have -- as we've said, we've looked at the entire property and tried to come up with layouts that were credible. We fully considered all of the use of the north part of the property in coming up with these layouts and we don't believe that you could successfully locate these kinds of cooling towers that close to the 401, and in an orientation that would not be optimized for wind conditions, given the limitations of the 500 kV right-of-way and the CN Rail Line for which we do not own.

It's a very challenging layout to imagine how you could fit a 400-metre structure in the orientation shown in this figure that we just spoke about and achieve the goals that you are requesting, so I believe we have considered it carefully and it's not a credible layout option.

CHAIRPERSON GRAHAM: Thank you

very much.

MS. BULL: Thank you

CHAIRPERSON GRAHAM: Mr. Kalevar, you have a question and I presume, and I would ask you to make sure it's with regard to the visual impact of cooling towers and plume abatement.

--- QUESTIONS BY THE PUBLIC:

MR. KALEVAR: I'll come as close as I can to that. Thank you very much, Mr. Chairman.

This is Chaitanya Kalevar from Just One World.

Firstly, I would like to say that I haven't done recently any optimization of -- for cooling towers, but just looking at it and the constraints we face at this drawing, it would appear that maybe they haven't looked at a square configuration of the four towers, or have they?

That might remove the length required to a little smaller area, and maybe you don't have a -- the lake infill that is -- they're talking about.

So I'd just like to know that question, if they have done a square configuration for optimization or not.

CHAIRPERSON GRAHAM: The question, I believe, is the configuration of those cooling towers. I think you answered that, but if you would answer that with regard to the optimum placement and the configuration. Would you answer that question, please?

MR. KAUFFMAN: Storm Kauffman for the record.

The alternate hybrid cooling tower configuration would be a round cooling tower such as shown in PNNL's report.

There's considerably less experience with that tower, but the main drawback is that it's very large. It's approximately 53 metres tall. It would be visible from the 401 and offsite. It would likely fit, but we did not do arrangement studies.

It also has drawbacks of higher energy penalties and higher costs. Approximately a 50 percent higher energy penalty is estimated.

So while it wasn't explicitly evaluated, it was considered less desirable than the linear hybrid towers.

CHAIRPERSON GRAHAM: Thank you.

And I think, Mr. Kalevar, that

answers your question.

MR. KALEVAR: Not really. I think ---

CHAIRPERSON GRAHAM: Well ---

MR. KALEVAR: --- they haven't done it. That's what this tells me.

But, anyway, if I may ask another half question.

CHAIRPERSON GRAHAM: You can have one more, and then we have to get on with the business, yes?

MR. KALEVAR: Sure. Well, since we are working from plant parameter envelope and we haven't got the technology and each technology has a different, how shall I say, radioactive profile in its waste -- we have heard considerably about tritium in many presentations.

I would like to know if they have looked at the tritium profile of the plume, if you like, for the different technologies and if they have any idea how that will relate to different technologies?

CHAIRPERSON GRAHAM: Thank you, Mr. Kalevar.

OPG, do you care to answer that?

MR. PETERS: John Peters for the record.

We have not assessed tritium as being a significant issue for the cooling towers. We recognize that there is very low amounts of tritium in the water that we would use to completely fill the towers, and they would be -- they would be recharged periodically, but there would not be a measurable difference in tritium as a result of the use of cooling towers one way or another.

CHAIRPERSON GRAHAM: Thank you.

Mr. Leonardelli, do you have any questions that you now might come up with?

MR. LEONARDELLI: Sandro Leonardelli, for the record.

I'm looking at the figure -- Figure I4. So this is the first time I've seen that figure. Now, which is a better representation than the other -- the photo from -- from looking from the west to the east?

CHAIRPERSON GRAHAM: Could you speak closer to the microphone? You're breaking up.

MR. LEONARDELLI: Sure. I'll try

to speak a lot louder. Is that better?

CHAIRPERSON GRAHAM: Yes, that's fine.

MR. LEONARDELLI: Okay. At risk of sounding like I'm shouting, the -- I guess the main problem that's being encountered with this layout is the fourth cooling tower that extends out into the lake.

And so the question that you asked, Mr. Graham, about can some of these be placed on the western side of the property, I think it -- I think it's a valid question.

If you have a pipe that is underground in the same way that you would have a pipe that is under the lake or an outfall, it is possible to place that tower on the western part of the property, at least conceptually.

The problem is in reacting to these various different layouts that have been presented over the course of the EIS is that you're trying to show different things, different aspects, different -- trying to accommodate towers in this case and in other cases trying to accommodate reactors in different configurations, et cetera.

We don't really have all the

pieces together to do an analysis, I'd say. It's difficult to know, you know, if they don't have the four-metre infill, for example, that's shown on this diagram, where could they place that additional fill if they were created with layouts and placement of fill on their property?

So it's very difficult to do an off-the-cuff assessment and say, okay, you know, this configuration is problematic and it's going to require additional infill or not.

So I think it requires more study, and I'm not sure that all the information we need is in this one figure.

CHAIRPERSON GRAHAM: With that, I thank OPG for their presentation.

Do you have anything else to say, Mr. Sweetnam, before we go on to the next part of the agenda?

MR. SWEETNAM: Albert Sweetnam, for the record.

Some of the comments we've heard basically indicate that perhaps everybody did not have enough time to review our submission. I think it was posted yesterday.

But perhaps after people have had

an opportunity to review it further, they could ask additional questions.

From our perspective, we've actually considered the cost and benefits of the various cooling technologies appropriate for decision-making.

Further, OPG in this discussion has included the criteria used by PNNL and the CNSC.

We also know that the CNSC has identified five of nine items for aquatic impacts, which we believe implicitly weighs the aquatic effects greater than others listed.

Having said that, OPG is committed to work with the regulators, ensure that the final layout of once-through cooling water design is optimized in accordance with the CNSC recommendation.

CHAIRPERSON GRAHAM: Thank you for that, and the panel will consider all of the different aspects in working towards seeing what our decision might be.

With that, I thank you for providing answers to undertaking number 15.

And I'll now move to our next

intervenor, and that is Ms. Sharon Skelly, Citizens Against Radioactive Generators in Owen Sound, under PMD11-P1.210.

And, first of all, Ms. Skelly, we apologize for the getting -- but we've -- we try to get everything on the agenda in every day, and that was part of the agenda.

Welcome, and the floor is yours, ma'am.

--- PRESENTATION BY MS. SKELLY:

MS. SKELLY: Thank you very much and good evening.

As you said, my name is Sharon Skelly and I'm a resident of Owen Sound. I'm spokesperson for CARGOS, and that represents Citizens Against Radioactive Generators in Owen Sound, but today I'm here representing myself so that the points that I make are all on my own behalf.

I'm here today to say that I am not in favour of the expansion of this generating station, and since I sent in my initial submission, I've had to revise it because a lot of things have changed in Owen Sound and at Bruce Power.

There have been standing hearings

at the House of Commons. A lawsuit has been launched. And Bruce Power made a recent announcement about their shipment. So I've had to rewrite the whole thing, but I will read what I have and not what I submitted last night.

And I'm going to be telling you the story that I've experienced, but I'm sure that it will relate to a lot of the residents here that live around the Darlington station -- nuclear station.

And when I'm done, it will give you an idea of what happens to residents when they don't really agree with what the operators of a generating station have plans to do. And it will also tell you what the residents experienced when operators want to get rid of nuclear garbage and when, perhaps, an accident happens at that station.

So I'll start to tell you the story.

I'm not a nuclear scientist. I'm a retired registered nurse but foremost I'm a concerned citizen and I became an environmental activist out of necessity.

In 2009, I sold my house in Sauble Beach and I moved to Owen Sound. I had had enough

with wells and septic systems. I just wanted to be able to turn on my tap and expect to get clean water.

And then one day I heard through the media that Bruce Power was planning to ship 16 decommissioned nuclear steam generators -- but really it’s more than that -- to Owen Sound harbour through the Great Lakes and then on to Sweden for recycling. And then they were going to ship more nuclear garbage back to Bruce Power to be stored. And I thought, “That doesn't sound good. The city won't be on side with that one,” but I was wrong.

So I started asking questions as I did -- as a few others did in the community. Had there been community consultation about this plan? What was city council’s stand on the issue? And what had city council done to stop this?

And I've learned that when citizens ask well-informed questions, they're considered a threat. I've been a called a fear mongerer, a quack, and those are direct quotes from Bruce Power’s media machine.

But not only that, as a result, I was deserving of a visit by the OPP provincial liaison team. Now, they're the ones that were at

the G-20 and at the Caledonia incidents. They met me and asked me if I knew how to have a peaceful protest and I thought, “Oh, I didn't even think of having a protest, but now that you've mentioned it,” but, no, I'm not going to have a protest. But I guess once you decide that you -- you are in opposition to things like this, your name gets on a list and that’s what happens.

And I've learned that because once I went to the media with that, I started getting all these emails from people who had been in opposition to windmills and all sorts of things and they emailed me to tell me these stories. And I thought I was living in a democracy.

So here’s the answer to the questions that I’d asked. Had there been community consultation at all? No. I had just heard about it in the media and I found it on the -- city council minutes online and it was just by chance. City council’s stand on the issue was pure complacency. They stood by the information that Bruce Power and our medical officer of health, Dr. Hazel Lin, had given them and the CNSC had been giving them. According to council, that this is precedent setting and that’s really important

because this is precedent-setting; this project is perfectly safe. The only information they got was from them and that was all okay.

So I started a citizens' group called CARGOS and we met, started petitions, asked questions, liaised with other environmental groups like the Sierra Club and -- and just other groups that we found online and locally, and we challenged Bruce Power, and we asked them questions and they didn't like that. And we pressed for public hearings and so did all the other groups and we finally did get public hearings.

We decided that we would try to get the shipment stalled by getting city council to refuse Bruce Power a heavy load permit. They had told us that they needed a heavy load permit to bring all these big bus-sized generators down this big, big hill past my house and to the harbour, that's -- that's what they needed. So we asked city council, "Well, then just don't give them the permit." Well, when they went to Bruce Power, they said, "Well, we really don't need the permit anyway. We just told you we did." So council then told us, "Well, we really don't need -- they don't need the permit anyway." So council then was

informed by Bruce Power's lawyer that if they tried to challenge them with anything legal, that our city didn't have enough money in their bank account to challenge them in the court.

Well, the public hearings were held and I was an intervenor at the CNSC and I heard a lot of misinformation, as Bruce Power calls it. And the OPP, the provincial liaison officers, they were there too.

Then the federal government called for some standing house committee hearings. The natural resources division called for that and they said they were going to look at the issue of transporting and getting rid of nuclear garbage, and we were really happy about that because we thought, "Finally." And I asked for a place on the agenda because we were a local voice; I was denied, but the only local voices that were heard were people that were in favour of Bruce Power's project, so that was more democracy in action.

Then the Sierra Club and the Canadian Environmental Law Association launched a lawsuit against Bruce Power and they claimed that an environmental assessment should have been done before they transported this -- these nuclear

generators -- decommissioned steam generators, excuse me. And that's where all this environmental assessment and guidelines come in. These are only good -- as good as the paper they're written on because if the people that they've made the agreements with say, "We're not going to do it," then you have to go to court to get them to do it and that's where we're -- why we're in the position we're in today. They made an agreement in 2006 and they're not going to go by it. Now, we have to take them to court to do it.

Bruce Power though, now that we have a court case against them, says, "I think we're going to do some more consultation with the public and especially with the First Nations group before we go ahead."

I believe that the expansion here at Darlington should not take place for these reasons. Nuclear power creates nuclear garbage. We call it waste, but that just sanitizes it, it's really garbage. And this garbage is really dangerous. It has to be disposed of, but nobody wants it. The facilities that generate the garbage don't even want it, so that's a really good sign.

They say it's too expensive to

store, so they either do one thing. They bully the communities where they want this waste stored to take it and ship it to or they entice communities that are in real financial -- they're in really financial hardship and they give them these incentives to take the garbage.

Like Hornepayne, I lived there, I was a nurse in their beautiful little hospital and now they've got no mill. They've got nothing and they're thinking of taking the garbage.

It’s beautiful up there. People go up there to fish and hunt. Now, they're going to bury nuclear garbage, that’s what they'll be. You know, they've got a big bear up there, you know, and people go up there. Now, they can say, “We’re the home of nuclear garbage.”

Communities where these generating stations are located, like this, and like up in Port Elgin and wherever, where I'm from, they're generally in favour of nuclear power because the jobs there are really great. The money’s good and these plants are well paying and -- and they're -- and they're good corporate citizens. You know, they'll donate to the United Way and then they'll give turkeys to everybody, you know, and for good

reason. Because when you want to ship garbage out through their harbour or when the workers, you know, experience a leak and they've got all these poor people that have been at risk with radioactive waste or -- or, you know, Tritium or whatever, you want to be in good standing there, you know. And they spend the money in the stores, you know, so it just makes good business sense. But you can't trust them to make good decisions on the residents' behalf. The case in point is the Bruce Power and the steam generator fiasco.

Now, nuclear energy facilities and their waste management and the expansion of these -- of these facilities is far too complicated an issue and too much a conflict of interest for municipal and provincial and -- and federal governments to be handling on their own. It's got to be a whole group of people working together.

And -- and, for instance, Owen Sound city council is in favour of Bruce Power's project. Well, that's a no brainer. The mayor sees no problems with the proposal and the council's going on a tour of the generating station. I went in and I said, "Well, what are you going to do?" "Well, we're going on a tour of the

plant.” Meanwhile, the mayors of the Great Lake cities, all the provinces of Quebec, cities in the U.S., all the First Nations communities, environmental groups, everybody is saying, “We don’t want the project to go ahead.”

There was no consultation with any of us residents and -- and if -- if the -- if there had been the results -- if you'd taken a poll though in Owen Sound, you'd probably get most of the residents are in favour because people work at the plant and they spend money in Owen Sound, so you -- you have to look at the demographics if you want to -- you'll never get a true reading of who’s in favour of the project and that’s why, and, of course, the charitable donations. I've got to go back to that.

But the medical officer of health may make recommendations, but the medical officer of health is not an expert of all things nuclear and, in some cases, doesn't even cooperate with the public. For example, recently Andrea Horwath of the NDP requested copies of the risk assessments that the medical officer of health, Dr. Hazel Lin, supposedly had done, and that was done through a privacy commissioner request. I've seen what she

got and they were not risk assessments or they weren't even risk assessments that you'd commission to have someone done. I haven't seen them.

Now, in all respect for Dr. Lin, maybe she’s done them by now and sent them, but at the last that I’ve read, and I think it was here by video, Dr. Lin said she had sent them, but I haven’t seen them and I don't think we’re going to see them. But I haven’t seen a scientific risk assessment that Dr. Lin did for this project. She was supposed to have done one. There is none that I’ve seen. And we’re supposed to be basing all of this data and our health on what she said.

So I recommend that governments, both provincial and federal -- and municipal levels, create a citizens’ panel to make recommendations about the disposal of garbage, about the expansion of plants, anything that has to do with nuclear power. And this panel should not be elected. It should be -- or shouldn’t be appointed, it should be elected. There shouldn’t be CEO; there shouldn’t be union members or employees of generating stations and they’re not -- they’re not an advisory. They should be meant there -- they are part of the group discussions and

the decision making.

Enough of the bullying and influence of these giants making important decisions on our behalf. This is tearing apart communities and causing great harm with no consideration for the health of the residents and the environment and it's only considering the bottom dollar.

There are alternatives for sources of energy. We don't need any more nuclear and we certainly don't need to expand the existing generating stations to make more garbage that people are going to have to bury under beautiful pieces of landscape and then put in Owen Sound Harbour and take it down past my house. I also believe that concerned citizens should not be viewed as suspects under the law and their privacy shouldn't be violated and had to be visited by the police, just for challenging Big Brother at some nuclear plant or windmill consortium because you spoke out; it's just not right. But they can monitor your phone calls and your computer and I know that. They can just monitor my calls now because I questioned.

So that's what happens when you

speak out and it'll be happening here when the residents say they don't want it. So that's -- that's all I have to say, but I don't think it's a good idea. We've got enough garbage; we've got enough nuclear; let's look at other things. And when people speak up against it, they have a right to speak up against it and when they do it with respect, respect them back. Thank you.

CHAIRPERSON GRAHAM: Thank you very much, Ms. Skully or Skelly I guess it is, not Skully. Thank you very much for your presentation. Thank you for the overview with regard to steam generators, but as you appreciate, we can't speak about it because it's legal -- because it's before the courts, but certainly you have covered some other issues that I'm sure -- we may have some questions and I'll go first of all to Madam Beaudet.

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman. As you know, OPG has done an extensive communication program about the project. And I'd like to ask OPG if the concerns that are brought about when you have meetings or open houses, do you follow -- I think you have a document that

indicates the concerns brought about and how it was included in the environmental impact assessment. Can you give more details, please?

MR. SWEETNAM: Albert Sweetnam for the record. I'll ask Donna Pawlowski to address this question.

MS. PAWLOWSKI: Donna Pawlowski for the record. Good evening. We have two things: We have a sequel or comment database and an issue management database that we used throughout the -- up to five years now that we've been communicating and consulting about this project. And so whenever an issue or a comment was made, we would enter it into our database and follow up with appropriate action. Generally it was to respond to a query or a question, an explanation or clarification. Sometimes we had to go back and do some additional work and provide additional information. So we would make sure that every comment we received was responded to in some way or format.

MEMBER BEAUDET: And the concerns, do you have a list where you have proposals or recommendations on how certain aspects of the EIS should be done differently? Do you also have a record that -- what you have changed? You know,

for instance, this issue was proposed and it was included in the EIS, do you have a record of that?

MS. PAWLOWSKI: Donna Pawlowski for the record. In the chapter 4 of the communications and consultation technical support document, we describe how we -- the type of information we received and how we used it in the environmental assessment or how we would consider it in further work. And of course, the most significant one that we point to is the community concern with respect to cooling towers, but we also received feedback on the EA methodology, the criteria to be used in the significance assessment, the projects to be considered in the cumulative effects list of projects. So there are many areas where we received community feedback.

I'll also just add another point that I don't think we've raised before, but remember that this is probably the fifth environmental assessment we've done in Durham Region in the past ten or twelve years. And what we do is build upon each environmental assessment. We aren't starting from scratch. And so oftentimes we're meeting with the same community in all instances as well, so there really is a collective

view of the community over the past ten and twelve years, that's reflected in this environmental assessment.

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

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet. Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman. I just would like to make an observation. We hear about -- we understand the anxiety you've gone through with this particular experience in your community, but we have heard from many intervenors here at these hearings, about the experience with the Darlington new reactor project, and there have been many intervenors from the community who support the project, and some who don't, who are against the project and do not wish this project to be implemented in their -- in their region.

But we've not heard of anyone who has talked about being intimidated or harassed in any way in the course of the interaction. It's -- all we've heard about is an opportunity to consult or to offer their views and there've been no issues brought to us so far. The hearings do continue for

a few more days -- for a couple more days, about the sort of experience you've had. Thank you.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira. Two other points I'd like to make. First of all, this environmental assessment will cover the complete lifecycle of the plant including nuclear waste. I'm not going to comment on the others whether they did or they did. But this one will and their mandate is to cover the complete lifecycle and that is for a very long time. So that is covered that way.

The other -- just the other question I had because we've -- we've had interventions that have talked a lot about alternate power, alternate means of generating electricity. And a lot of times it's been cited about wind and solar and so on. And you've mentioned at least three times, I made a note, about opposition to wind. Is there opposition to wind in some areas?

MS. SKELLY: In Gray County there's a lot of opposition to wind; in certain pockets of Gray County. Some are in favour and some are in opposition to it. Dr. Lin thinks that wind power is very dangerous, but nuclear power is

fine. Nuclear waste is fine; wind power will kill you. It's going to give you all these brain problems, but it just doesn't make sense so I don't understand it at all. It makes no sense.

But I had one other thing to say, we -- you made the perfect point. We're in a town where -- this is a nuclear town. You're not going to find a lot of people in opposition to expanding a nuclear plant in a nuclear town. If you maybe had this -- this hearing in -- somewhere in -- maybe in the middle of -- I don't know, Toronto, you may not have had a lot of people coming in here saying, hey, I'm in favour of expanding a nuclear facility. I'm just saying, pick your demographics. You might find it in a different way. It's all in how you look at it, you know. It's -- if you bite the hand that feeds you, you know, it's not very smart, I'm just saying.

CHAIRPERSON GRAHAM: Well, thank you for your observations. We've had in excess of 200 -- I think yours is number 210 -- 210 interventions.

And I can assure you they haven't all been in favour of nuclear power. There's been a considerable amount, and we appreciate those the

same as we appreciate everybody's view, because we take everybody at -- at the sincerity in which they come forward.

You've come a long way tonight, and we appreciate the fact that you have come to express what you believe is your views and the views of many of your neighbours.

With that now the process goes, I go OPG. Do you have any questions/comments?

MR. SWEETNAM: Albert Sweetnam, for the record, we have no questions, but I'll ask Donna Pawlowski to make a quick comment.

MS. PAWLOWSKI: Donna Pawlowski, for the record.

I would just like to note that in the consultation program that we put in place we also -- not only did we start very early in the process, back in 2006, and ensure that we had regular updates, at least bi-annually if not quarterly, an extensive mailing list, regular updates to committees, councils, all of the people that were -- expressed an interest in the project.

We also sought comment throughout the regional study area, which extended as far east as Cobourg, as far west as the city of Toronto, and

up to Markham in the northeast and Peterborough and Lindsay in the north -- sorry, Markham in the northwest and Peterborough and Lindsay in the northeast.

So we did go far and beyond the host community to ensure that people were aware of the project, had the ability to input into the EA study and raise any issues or concerns.

CHAIRPERSON GRAHAM: Thank you for that.

CNSC, there was a question with regard to scientific risk assessment by the Chief Medical Health Officer of Ontario. I'm not sure whether you want to clarify that. I'm not aware of that and I wonder if you want to clarify that, and also do you have any other comments?

DR. THOMPSON: Patsy Thompson, for the record. We have no questions for the intervenor.

In terms of the work of the medical officers of health, I have no comment on what might have been done in relation to the steam generator project.

CHAIRPERSON GRAHAM: No, I'm referring to this project.

DR. THOMPSON: For this project, the information that we have is the studies that have been done by the Durham Region Medical Officer of Health, and those studies have been discussed quite extensively over the last two or three weeks, and the work will likely continue moving forward in collaboration with the regional authorities.

CHAIRPERSON GRAHAM: Thank you.

Federal government employees -- or federal government agencies; I'm not if Mr. Leonardeli is still on. Are you there, Mr. Leonardeli? Okay, he's not. So I take it that there are no interventions from governments.

Our information coming back and forth here for Blackberry is not telling us that there's any intervenors, but I see Mr. Kalevar is walking back and forth, so I presume he'll have a question. Is that correct, Julie? Okay. Mr. Kalevar, the floor is yours.

And just before I do, I've got to remind you, you have to obey the rules, and the rules do not qualify people to be clapping when other people are intervening. And you know that, and I haven't said anything before but you've done it on at least six occasions in the last three

days, and that is not the rules of this procedure and we want the rules to be obeyed. We respect every question you give, and we ask that the Chair be respected also.

Mr. Kalevar.

--- QUESTIONS BY THE PUBLIC:

MR. KALEVAR: Thank you, Mr. Chair once again. Chait Kalevar for just one more.

Through you, I want to bring it to the intervenor that in Toronto we have considerable effort being spent to bring the G20 protest and the civil liberties issue to the fore.

So maybe she's isolated out there in Owen Sound. She might want to get in touch with Canadian Civil Liberties Association.

I just thought since she's the first one to come with that experience and she's outside of Toronto, I thought I should bring it to your attention.

CHAIRPERSON GRAHAM: Thank you. I didn't think that was a question. I took it as a suggestion.

And with that I thank you, Ms. Skelly, for coming tonight. I thank you for coming a long distance and providing us with your overview

as it pertains to this facility and the way you feel towards getting information out to the general public. Thank you very much and have a good, safe trip back.

The next intervenor tonight is Stephen Cornwall -- Cornwell, I should say, and that is the last one of the evening. It's under PMD 11-P1.235.

Mr. Cornwell, if you would like to come forward and give us your presentation, we'd be very glad to hear it.

There's a computer left up here, I don't know whose that is, so -- it's ours, okay.

So you're all set. We'll give you time to get ready and make your presentation. I think there should be a clean bottle of water and a clean glass there somewhere also.

--- PRESENTATION BY MR. CORNWELL:

MR. CORNWELL: Thank you, Mr. Chair, for the opportunity to speak. My name is Steve Cornwell, for the record. I'm an intervenor in these proceedings and I'm going to speak tonight about why OPG's -- or why the proposed project should not go ahead, past the assessment and -- past the assessment phase.

The Joint Review Panel should not recommend the licensing of new reactors at the Darlington site for at least two reasons.

One, project information as provided by OPG violates the basic principles of the *Sustainable Development Act* of 2008, a major preamble of the *Canadian Environmental Assessment Act.*

And, two, because the public participation process has been discredited due to noncompliance with the *Canadian Environmental Assessment Act* during these proceedings.

As you are aware, sustainable development is defined in the development -- or *Sustainable Development Act*, I should say -- as:

> "Development that meets the needs of the present without compromising the ability of future generations to meet their needs."

As you're also aware, this definition of sustainable development is listed as a guiding principle in the guidelines for the environmental impact statement of this project.

The onus is thus on Ontario Power

Generation to demonstrate that the project will use natural, social and economic resources in an ecologically efficient manner that meets the needs of present and future generations.

And yet, OPG's work to prove that the project complies with the legally entrenched definition of sustainable development is clearly not adequate in terms of the long-term storage of waste.

To date, OPG has deflected the question of how to effectively store waste positing that long-term waste storage is the responsibility of the industry-run Nuclear Waste Management Organization.

However, the NWMO acknowledges in choosing a way forward that there's uncertainty regarding how storage systems will perform over the thousands, though many say millions, of years needed for waste to no longer be dangerous to humans, non-human, water and the environment.

Moreover, whatever small and uncertain amounts of analysis that have been performed on nuclear waste storage has only accounted for the waste of one of the four potential reactors being proposed.

Now, since the end of EMO is apparently responsible for dealing with the waste of the project and the organization does not seemingly have the knowledge needed to address said waste, information that has been produced by the Proponent does not comply with the *Sustainable Development Act*. That is to say, if safe storage of waste is not certain, then OPG cannot guarantee that hazardous waste materials will not impact the safety of future generations' natural resources.

Though safe, long-term storage of waste has largely been placed out of the scope of this project, OPG does not comply with the *Sustainable Development Act* and therefore it's susceptible to legal challenges now and at different stages of the operation. For these reasons the panel should not recommend licensing of the project.

What's more, to date this environmental assessment has not acted in accordance with the requirements of the *Canadian Environmental Assessment Act*, specifically, the CEAA has not permitted early and meaningful involvement for intervening groups.

The panel's allowance of multiple

potential reactors in the process has led to unspecific overviews of the site layouts and reactor designs. And because three or perhaps four reactors of the CANDU 6 is indeed allowed into the process have been proposed, working in concert with the finite resources of the intervening groups. Meaningful public participation has been placed at risk.

That is to say if the intervening groups do not know which reactor is going to be used, then it is quite difficult to offer additional information in the process.

Moreover, that the CANDU 6 was introduced as a potential reactor in the project only weeks before the announcement of the EA deadline violates the requirements of the involvement -- of the early involvement, I should say, for intervening groups.

This is particularly troubling since using the CANDU 6 reactor, which has significantly different design implications in the three other reactors. Also, since the CANDU 6 produces less power than the other -- the three other designs, it has implications on the need for the project.

These implications, and there are many more, require time to research in accordance with the principles of *Canadian Environmental Assessment Act*.

Again, since this EA is not fully complied with the principles of the Canadian Environmental Assessment Act, the panel should not recommend that this project goes any further. Thank you.

CHAIRPERSON GRAHAM: Thank you very much for you presentation. We'll now go to questions from panel members. Mr. Pereira?

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman? Yes, I understand the issues you raise. One of them is a concern about opportunity for the public and intervenors to fully assess the scope of the project because of the use of multiple reactor choices, which are not identified which choices are their preferred once and their late inclusion of the CANDU 6 design.

And I think as I explained to an earlier intervenor, the approach adopted was to define a plant parameter envelope and not to identify particular reactor design. And the

environmental assessment and the impact statement provided by Ontario Power Generation was intended to examine the environmental impact of -- of technology that will be within that envelope of parameters.

And so any reactor that fits within that envelope would be covered by the assessment and that is what Ontario Power Generation explained a short while ago in response to a previous intervention, so I think I believe a number of intervenors have raised this question and we, the panel, have indicated that what we have been looking at is the environmental impact of a facility that is represented by a parameter envelope.

So the environmental impact of the accident analysis that -- a response to that envelope. The releases from a technology within that envelope rather than a specific design and that -- Ontario Power Generation's desire is that to leave the option of selecting a technology to a later stage. And the -- the requirement that applies to them is that they would -- whatever they select would comply with that envelope.

So in that sense I think it has

been made clear from the guidelines and from the various communications that have gone back and forth is that that is what intervenors responding to and what we are responding to, an environmental assessment that -- that flows from a parameter envelope as opposed to a specific design.

I would like to invite Ontario Power Generation to expand on that again, and you did it a while ago, but for the benefit of this intervenor, could you go through that again as to what your intentions are with respect to the Environmental Impact Statement that you've provided?

MR. PETERS: John Peters for the record. The plant parameter envelope provides that framework for the assessment, which is what Mr. Pereira has indicated. And from our perspective, the plant parameter envelope is a -- is a bounding envelope for which we are committed to -- to adhering to and we have specifically said when we actually have a reactor technology selected by the province, and OPG has an ability to go forward and undertake the detailed design, we will come back to the Canadian Nuclear Safety Commission and demonstrate that the actual reactor as specifically

designed for our project site will comply and be bounded within the plant parameter envelope.

And so that will come as appropriate through the various licensing stages as soon as we can. And I think that is very clear from the -- from everything that we've said on the record.

MEMBER PEREIRA: Thank you for that confirmation of your -- the course of action you plan to take.

With respect to sustainable development, we hear the point you make. Many other intervenors have made the same point and this is an issue that we, the panel, will be considering and addressing as we move forward in our review and in drafting a report. Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira. Madam Beaudet?

MEMBER BEAUDET: I would like to come back to what you underlined that because the AC6 was added further, you consider that there is no meaning for public participation.

I would like to understand a bit more because is it in terms of not enough time? Because this was added in August and then

the -- the letter is showing that we had enough information to go ahead with public hearing was issued in December, so the public would have had several months to look at what was submitted or is it because you didn't -- you didn't have any money left?

I would like to understand a bit more from -- I know other people have brought this issue up, but maybe you can explain why you -- why you say that there is no meaning for public participation when you have several months to comment on this?

MR. CORNWELL: Thank you. Steve Cornwell for the record. As I understand it, intervenors were given a lump sum of $150,000 if I'm correct on that?

CHAIRPERSON GRAHAM: That was done through CEAA and I'm not sure how much it was. I don't have it right here with me. There was a figure and you could be -- you could very well be right, but I'm not sure.

MR. CORNWELL: My understanding is that money was distributed at -- towards the end of 2009 and with that money, considering that this process was supposed to be six months long without

delays, the intervenors were understandably moving quickly to get consultants in line to work on the specific issues that were outlined at the beginning of -- at the beginning of the EA, you know the information that we had at the time.

Now, when the reactor design, the CANDU 6 was introduced in August, many of the intervenors had -- the intervening groups, I should say, had already spent the majority of that money, so there was no opportunity for meaningful consultancy in it, as well as the -- as well as the fact that I believe up until -- I mean it wasn't clear to me up until a few weeks ago that the CANDU 6 was even fully being as addressed and assessed in these hearings.

And there is some confusion as to whether or not it would be included in this and I think that's a problem fundamentally with the transparency and just how the information was delivered.

MEMBER BEAUDET: It could be how the information was delivered, we don't know, but the thing is it was made quite clear, I would say, you know, beginning of September. We did get an update of the plant parameter envelope and all the

details from OPG and that was on the Registry several months before we decided to go ahead with a public hearing.

MR. CORNWELL: Oh?

MEMBER BEAUDET: Anyway thank you for your testimony. I understand a bit more now. Thank you.

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet. OPG do you have any questions?

MR. SWEETNAM: Albert Sweetnam for the record. No questions, but just a quick comment, if I may?

CHAIRPERSON GRAHAM: Yes.

MR. SWEETNAM: The intervenor has indicated that OPG's proposal does not comply with the *Sustainable* -- the *Sustainable Development Act* and therefore it's susceptible to legal challenges now and at different stages of operation.

I would just like to clarify that the purpose of the *Federal Sustainability Development Act 2008* is to provide a legal framework for developing and implementing a federal sustainable development strategy.

It's only binding on the Federal Government, and it does not apply to OPG.

And the new nuclear project at Darlington proposal could not legally be out of compliance.

The EIS guidelines require the proponent to consider the extent to which the project contributes the sustainable development and specifically to consider effects on biological diversity and capacity of renewable resources and to be available to meet future needs.

OPG's developed a framework to assess the sustainability of the project that was grounded in the shared values of the communities within which we will be operating.

The results show that the project will enhance the sustainability from both a social and economic perspective and maintain it from an ecological perspective.

Thank you.

CHAIRPERSON GRAHAM: Thank you.

CNSC, do you have any comments or questions?

DR. THOMPSON: Patsy Thompson for the record.

No questions.

But I would have a clarification

on the PMD235, the -- on the fifth paragraph, the Nuclear Waste Management Organization is identified as the regulator.

I just want to clarify that any project for used fuel disposal that NWMO would come forward with, they would either be the proponent or the licensee.

The Canadian Nuclear Safety Commission would be the regulator.

CHAIRPERSON GRAHAM: Thank you.

Government agencies or participants?

If not, intervenors? Julie, anybody?

You're shaking your head.

Mr. Cornwell, we're going to let you have the last comment, if you have any.

MR. CORNWELL: No, not -- not tonight.

I just thank you for the opportunity to speak, and, yeah, good luck with making your decision as the last information comes through on Friday.

CHAIRPERSON GRAHAM: Thank you.

We're not finished on Friday.

We’re finished here, but there’s still a lot of work to do.

As I said, sorry to take you off guard, but the rules don’t permit intervenors to have the last word, but I have been doing it. That’s why.

So, anyway, thank you very much, and I appreciate your intervention and as all of them will be carefully considered as we go forward, and it is going to take some time yet, but thank you very much for coming tonight and sharing your views.

With that, I thank everyone for today.

I understand that this probably the end of our agenda for today, so I want to thank everyone for coming and participating and especially CNSC and OPG for coming and giving some clarification with regard to undertaking 15.

And, again, I guess tomorrow is a morning off, afternoon and evening. So we will resume at 1:30 tomorrow afternoon.

Thank you very much, and we’re adjourned for the day.

--- Upon recessing

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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