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 17

JOINT REVIEW PANEL

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TABLE OF CONTENTS / TABLE DES MATIÈRES

TABLE OF CONTENTS / TABLE DES MATIÈRES

Courtice, Ontario

--- Upon commencing at 09:00 a.m.

--- OPENING REMARKS:

MS. McGEE: Good morning everyone. Mon nom est Kelly McGee. Welcome to day 17 of public hearings 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 an intervenor and want to put a question to another presenter or if you were not previously registered and would now like to make a brief statement.

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

We have simultaneous translation; headsets are available at the back of the room.

English is on channel 1. La version française est au poste 2. The written transcripts of these proceedings will reflect the language of the speaker.

Please identify yourself each time you speak to help us make the transcripts as accurate as possible.

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

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

CHAIRPERSON GRAHAM: Thank you very much, Kelly, and good morning everyone. Welcome again to everyone joining us in person, on the live audio link or on the internet. My name is Alan Graham and I am the Chair of the Joint Review Panel. And on my right, other panel members, are Madam Jocelyne Beaudet and on my left Mr. Ken Pereira.

This morning we will start off the

morning as we have been recently, reviewing the undertakings that are due today and I would ask that this is probably or hopefully the last day of this series of hearings that any outstanding undertakings be dealt with as promptly as possible so that the panel may get on with reviewing them and working towards the next stage. So, Mr. Saumure, would you be so kind as to review the undertakings that are due today and perhaps maybe an overview of the outstanding ones.

--- UNDERTAKING STATUS:

MR. SAUMURE: Thank you, Mr. Graham. I will start with undertaking number 16, which was assigned both to EC and CNSC and it was to provide a comparative analysis of hot and cold plume releases which are representative of nuclear accidents. CNSC?

MR. HOWDEN: Barclay Howden for the record. With the Chair’s permission, we would like to deal with this undertaking right after lunch. We are just finalizing it and we will be prepared to speak to it and submit our written submission and we will be working with Environment Canada on that.

CHAIRPERSON GRAHAM: Yes, that’s

agreeable. We'll put you on for after lunch in view of the fact that we have been running quite long hours and give you time to get a presentation ready this morning for this afternoon. So you'll be the first item on the agenda this afternoon. Mr. Saumure?

MR. SAUMURE: Thank you, Mr. Graham. I will now move to undertaking number 59 which was originally assigned to Health Canada and CNSC has taken the lead. It was to provide information in co-ordination with Health Canada and Public Health Agency. It was dealt with yesterday. CNSC said they obtained the information, but they would like to speak to it this morning.

DR. THOMPSON: Patsy Thompson for the record. Undertaking 59 will be filed with the Secretariat this morning. It has been prepared in collaboration with Health Canada and the Public Health Agency of Canada. What I wanted to add was that there are maps that have been prepared by the Public Health Agency of Canada providing incidence rates of childhood leukemia by province, between 2003 and 2007.

These maps will be integrated into undertaking 59 in a couple of weeks because there

is a requirement to get approval from each of the Provinces to make this information public. And the Public Health Agency of Canada staff are working with the individual provinces and territories to get permission to include this information in the undertaking. So as soon as we have the approvals, we will update the undertaking probably in about two weeks.

MR. SAUMURE: Thank you.

Undertaking Number 63 which was assigned to Environment Canada and it was to provide analysis on the sufficiency of OPG's air emissions assessment.

Environment Canada?

MR. LEONARDELLI: Sondro Leonardelli, for the record.

We anticipate that will be submitted by noon today.

MR. SAUMURE: Thank you.

I will now move to Undertaking Number 68 which was assigned to CNSC and it's to provide S99 annual incident reporting data, including number and types of incidents reported.

MR. HOWDEN: Barclay Howden speaking.

That information will be submitted to the Secretariat this afternoon.

MR. SAUMURE: Thank you.

Undertaking Number 70 which was assigned to DFO which was to provide historical fish population and habitat data for Lake Ontario.

It was due today; it was completed. We received the documents and they are posted on the registry; they're Number 897.

Undertaking Number 71, assigned to Health Canada, which was to provide national dose registry data including discussion of risk associated with dose.

Is anybody from Health Canada available in the room? We will follow up, Mr. Graham.

Number 72, it was an undertaking assigned to CNSC to provide a proposal or information to be used to develop a proposal for a robust health study of Canadian nuclear facilities.

CNSC?

DR. THOMPSON: Patsy Thompson, for the record.

We have had internal discussions and consultation on this matter and I will read

into the record the results of those internal discussions.

The CNSC staff have listened to concerns expressed by some members of the public and non-government organizations about adverse health effects in communities living around nuclear power plants.

We have considered the evidence presented during this hearing to support the claim that people living around nuclear power plants are at risk of developing cancer, leukemia or other diseases.

CNSC staff concludes that there is no evidence in the studies quoted, for example, the KIKK and some Canadian studies conducted in Ontario, relating disease incidents with radiation exposures.

Internationally, there has been extensive evidence that ionizing radiation causes cancer, from studies of many large populations that have been followed up over time. For example, the studies related to the atomic bomb survivors, Chernobyl and many studies of patients undergoing various radiotherapy or x-rays.

There have been well over 100

epidemiological studies of patient populations linking radiation to cancer. A wealth of knowledge of the carcinogenic effects also has been derived from experimental studies of animals and cell culture.

Many human cancers have been linked to the carcinogenic effects of radiation, however, the important questions are not whether ionizing radiation causes cancer, but how much cancer is caused by radiation.

Early studies suggesting residents near nuclear installations and pre-conception radiation and childhood leukemia are the subject of substantial international investigations because of the concern they had raised.

These include extensive analysis by the COMAR, which is the Committee on Medical Aspects of Radiation Exposure in the United Kingdom, studies by UNSCEAR, Dolezal in 1994, Wakeford in 2003 and Laurier and Holt in 2008.

There had been many epidemiological studies of people living near nuclear power plants that are unable to prove any evidence that population rates of cancer or birth abnormalities have been associated with the

emissions from the nuclear power plants.

Similarly, many studies, such as case-control studies of offspring in workers with pre-conception exposures to ionizing radiation, have found no link. This is all very clearly documented in the scientific literature.

A recent case-control study of childhood leukemia, the KIKK study, near nuclear power plants in Germany, although found a relationship with distance from nuclear power plants and leukemia, still were unable to provide any evidence that this increased risk was related to radiation exposure from the plants.

Similar studies conducted around 26 French nuclear power plants and a study conducted in Britain, have not found the same findings as the KIKK study. Even the authors of the KIKK study are aware of the limitations of their findings and have concluded that radiation exposure cannot be a factor.

Turning to Canada. In Canada, there have been several studies of people living around nuclear power plants and studies of offspring of workers with pre-conception exposure.

These studies do not provide any

reason for concern. Overall population rates are similar to that of the general population and studies of workers provide no link with their occupational exposure and childhood leukemia and birth abnormalities in their offspring.

Canada has done extensive studies of workers. These studies are cohort studies which have detailed information on worker exposures, can control for risk factors related to cancer, and can follow workers over time. These studies link worker exposure to mortality. Studies of nuclear power plant workers provide no evidence that their occupational exposures are related to cancer mortality, largely because occupational exposures are so low.

In Undertaking 62 that CNSC staff filed earlier this week, presents the results of the recent analysis where worker mean total doses in workers from 1957 to 1994 were 21.4 milliSieverts.

The study concluded that workers had no increased risk of mortality from cellular cancer, from leukemia and from other causes of death, from their radiation exposures. This is consistent with other studies of nuclear power

plant workers found elsewhere in the world.

In fact, occupational doses are so low that countries such as Canada, the U.S. and the U.K. are starting to conduct international collaborative studies combining workers from several countries in order to have the sufficient statistical power to detect health effects at the very low occupational doses that workers are now exposed to. Individual country studies do not have sufficient numbers of workers because of the low levels of exposure to detect meaningful information because occupational doses are so low.

The average dose of a nuclear power plant worker in Canada is a few milliSieverts per year. In fact, their lifetime exposure for most nuclear power plants is far less than the radiation exposure they would receive from natural background radiation.

Likewise, extensive monitoring of radiation emissions around nuclear power plants indicates that nuclear power plant exposures to Canadian members of the public are approximately a few microSieverts. This is generally more than 100 times below the public dose limit.

Epidemiological studies have not

found such low radiation exposures to cause cancer. The greatest population exposure to ionizing radiation comes from natural background sources which in Canada is about 2.4 milliSieverts per year. Epidemiological studies have been unable to find observed health effects of cancer in populations below approximately 100 milliSieverts.

This exposure is far greater than any exposure any person living near a nuclear power plant is likely to receive during routine operations. Extrapolating down to zero doses using the linear no-threshold relationship should be interpreted with caution, given the substantial uncertainties in applying risks from high-dose studies to low-dose rate situations.

As described in Undertaking 59, which will be filed this morning, Canada has a high-quality public health system; risk factors for cancer are well understood.

The main reason for the increases in cancer in Canada is a growing and aging population. The main risk factors are age, tobacco, diet, are responsible for over half of all cancer deaths in Canada. Radiation from nuclear power plants contributes less than 1 percent of the

overall radiation exposure of Canadians.

The very low doses resulting from the operation of the existing Darlington plant or the proposed Darlington new build, do not justify conducting health studies in the community as the risks are too low to be observable or measurable.

CHAIRPERSON GRAHAM: Thank you very much, Dr. Thompson.

I know you have some more. I just want to say that your comments will be reviewed by the panel. We may have questions at a later date, but right now, thank you very much for that presentation. Mr. Saumure.

MR. SAUMURE: Thank you, Mr. Graham. I will now move to Undertaking No. 77, which was assigned to CNSC, and it was to review IAEA nuclear incident data, including the percentage of incidents attributed to human error. CNSC.

MR. HOWDEN: Barclay Howden speaking. We've obtained the information that comes from the incident reporting system database of the IAEA, and we will need until about April 13th to be able to assess it to provide the information. Thank you.

CHAIRPERSON GRAHAM: Yes, satisfactory. The only thing is, we'd like to get them all in as quickly as possible, so if you could get it in -- get them in earlier we'd appreciate it because we want to have -- keep the flow going well, and it would be nice to have these cleaned up before that. I note there are a couple of outstanding from Green Peace, and we're working to get those and so on, so if you could do it before April 13th, it would be appreciated.

MR. HOWDEN: Barclay Howden speaking. Staff are working on it now, and the intention is to meet the date or come in earlier. Thank you.

MR. SAUMURE: Thank you. I would now like to turn to a request that was made last night. I was following a request presented by Ms. Brennain Lloyd of North Watch, that the panel be provided with a copy of the BEIR 7 study. It was decided that a summary of the study will be posted on the registry, and a copy of the study will be provided to the panel, subject to the applicable copyright restrictions.

That's all for the undertakings, Mr. Graham, this morning.

CHAIRPERSON GRAHAM: Thank you very much, Mr. Saumure, for that. Now, we'll go to the regular business of the day, which starts off with our very first intervention this morning, which is a scheduled presentation by North American Young Generation of Nuclear. And that is found in PMD 11-P1.196 and PMD 11-P1.196A, which covers the overheads. And Mr. Peck, I believe you're the one -- the lead in this, this morning. Welcome. And if you would identify yourself each time you speak and introduce your team, it would be much appreciated. Welcome this morning.

--- PRESENTATION BY NORTH AMERICAN YOUNG GENERATION OF NUCLEAR:

MS. LAGAN: Sineaid Lagan, for the record. Thank you, Mr. Graham and members of the Joint Review Panel, Environmental Assessment Committee. My name is Sineaid Lagan, I am a licensed professional engineer with the province of Ontario, and hold a Masters of Applied Science degree in environmental engineering. My family and I reside in the Durham Region, and I am currently employed at Ontario Power Generation. I am here today to speak in my capacity as president of North American Young Generation Nuclear, Durham Chapter.

I am accompanied here today by presenters Shehab Mustafa, chapter vice president; Brian Peck, chapter public relations chair; Lianne Lees; past chapter, vice president; Lauren Corkum, and Arin Gharakhanian, both engaged chapter members.

The majority of us live in the Durham Region, and we are all employed by Ontario Power Generation, however, we are speaking to you today on behalf of the North American Young Generation in Nuclear, or NAYGN, Durham Chapter.

NAYGN is an organization, which unites young professionals who believe in nuclear science and technology and are working together throughout North America to share this passion. There are currently 91 chapters throughout Canada, the USA and Mexico. We are a vibrant group of members with either less than ten years of experience in the nuclear industry, or are under the age of 35. The NAYGN, Durham Chapter, strives to provide a balance of professional development, networking and community outreach events to our members.

NAYGN Durham members in the past have participated in public hearings for nuclear

plant licence renewals, refurbishments, and now the new nuclear project. This provides NAYGN Durham members the opportunity to present their perspective on decisions which ultimately impact their future professional development, and play an active role in the discussion about nuclear power in Canada.

Representatives of the NAYGN Durham Chapter membership will now be speaking to you about our strong support for the Darlington New Nuclear Project based on current environmental performance, strong safety culture, community involvement, and the future opportunities of nuclear power in this area.

MS. LEES: For the record, my name is Lianne Lees. I'm a Bachelor of Applied Science graduate from Ryerson Polytechnic University; hold my Canadian Registered Safety Professional designation, and am a 2010 Canadian fellow to the World Nuclear University Summer Institute of Oxford. I'm a founding member and past vice president of the NAYGN, Durham Chapter. I've been employed by OPG since September 2005. I'm currently a front-line manager in the maintenance department with a crew of between ten and 20 full-

time and contract staff. I live in Whitby with my husband and two school-age children.

Today I'll focus on the environment from our perspective as representatives for the young generation of nuclear professionals. Nuclear power provides clean, reliable, carbon-free energy to the province of Ontario. The Ontario government is committed to phase out coal by 2014, thereby reducing greenhouse gas emissions. The Ontario Energy Plan calls for 50 percent of Ontario's electricity to be generated by nuclear power. To achieve this, new investment in nuclear power is needed.

I would like to highlight to the Commission that in 2010 OPG Nuclear performance metrics of environment were better than target. Environmental emissions remain well below regulatory limits and are maintained by an environmental management program audited to ISO 14,001.

In addition OPG Nuclear communicates a strong environmental policy in supporting governance that respects legal requirements, supports environmental stewardship and engages not only OPG employees, but extends to

community involvement.

The Nuclear Waste Management Organization, NWMO, will announce a host community for a deep geological repository for Canadian used nuclear fuel. In the meantime, the nuclear industry is safely storing used fuel onsite.

Low and intermediate level waste is being safely managed, and OPG is continuously striving to minimize the amount of waste generated. The NAYGN Durham Chapter enthusiastically supports the Darlington New Nuclear Power Plant Project, and full confidence that OPG will continue to meet its internal and external environmental and sustainability targets.

MS. CORKUM: For the record, my name is Lauren Corkum. I'm a Masters in nuclear engineering candidate from McMaster University. I'm here to present NAYGN Durham's position on safety in the nuclear industry.

NAYGN Durham is supportive of the Darlington New Nuclear Project because we see the Canadian nuclear industry as one of the safest industries in Canada. As a young nuclear professional I am proud to work in an industry which holds safety as an overriding priority.

The nuclear industry is unique in that we're always sharing information with other nuclear power plants. We continuously learn from operational experience at other stations, and we participate in frequent peer reviews. We do this because it is in our best interest for every station in the world to operate safely.

From my experiences working in the industry, I know that Ontario Power Generation has continued to strive towards event-free operation, and zero injuries in the workplace. Since nuclear safety is our first priority, we adhere to principles in nuclear safety in every job that's performed, ensuring that defence in depth is maintained. Everyone is personally responsible for this.

And this strong safety culture pays off. OPG was recently awarded the Platinum Zero Quest Award from the Infrastructure Health and Safety Association. This award is the highest level of recognition a company can achieve in this program, and recognizes OPG's efforts to sustain and continuously improve their safety performance.

Also, in the 2009 CNSC staff integrated safety assessment of Canadian nuclear

power plants, each licensed nuclear power plant in Canada was given an integrated plant rating. This is a general measure of each station's safety performance. All seven plants were rated a satisfactory or fully satisfactory in this area, meeting or exceeding the industry average. Most importantly, though, the steps we take every day help us ensure the safety of our workers and all the residents of Ontario. Because of this strong safety record, NAYGN Durham fully supports the Darlington New Nuclear Project.

MR. PECK: For the record, my name is Brian Peck. I am the public relations chair for NAYGN Durham Chapter. I'm also a Master's Nuclear Engineering candidate from the University of Western Ontario.

I currently work at Darlington Nuclear Generating Station in project design and I live only five kilometres from the plant. I feel very safe living close to a large nuclear power plant because of the strong safety culture that is in place at OPG.

I'm going to spend a few minutes discussing the positive effects of the proposed new nuclear power plant on the community. This is an

extremely important portion of the environmental assessment for this project.

The first impact is on the host Municipality of Clarington. Clarington is a willing host community, which is very important for a project of this magnitude.

Around 32 percent of people working at Darlington Nuclear live in the Clarington area, plus many more in Durham region. Having employees live close to where they work provides a strong relationship between the employees and the community.

This is demonstrated every year through OPG's successful charity campaign. In 2009, OPG employees and pensioners contributed more than $2.1 million to over 1,500 registered charities.

The local community has a long history of involvement with the nuclear industry, including activities such as the site preparation, construction and operation of Darlington A.

In addition to the employment opportunities that would become available during the construction and operating phase of this project, the new project would also create

opportunities for new community initiatives.

OPG also operates a nature conservatory on the Darlington site. The waterfront trails that pass through the Darlington site are open for year-round hiking, biking and nature-watching and provide a home to over 900 different species of wildlife.

OPG's Darlington Nuclear Generating Station was selected from 146 sites across North America to receive the corporate habitat of the year award from the Wildlife Habitat Council in 2008.

This award recognizes continuous site improvement in wildlife habitat enhancement and restoration and use of lands for teaching.

In fact, in the last 14 years alone, OPG has won 9 awards in various categories from the Wildlife Habitat Council, including the prestigious William W. Howard CEO award from the council in 2009.

The council recognizes that employees at Darlington Nuclear realize the importance of their ongoing commitment to environmental stewardship with strengthening community partnerships and habitat enhancement

projects coming to fruition.

Currently, Darlington runs an outreach program for local children and their parents called Tuesdays on the Trail, which has various themes such as Bugs -- Boots and Bugs and Come Fly a Kite. This program has been highly successful, with regular attendance of 150 to 200 kids each week.

New nuclear at Darlington is expected to provide significant benefits to the community on the social and economic fronts. This project will enhance education and employment opportunities of the region and will provide developmental opportunities for local businesses.

MR. GHARAKHANIAN: My name is Arin Gharakhanian, for the record. I'm an engineer in training with the PEO, registered with PEO, and I hold a Master's Degree in Nuclear Engineering along with a Bachelor of Applied Science in Electrical Engineering.

I currently work at the Ontario Power Generation in the training department, and I will be speaking about the overall impact of the expansion of the nuclear industry on job creation.

According to a report by the

Canadian Energy Research Institute titled, “Economic Impact of the Nuclear Industry in Canada”, nuclear industry in Canada employs around 70,000 people in some 150 different firms, the majority of which are located here in Ontario.

These numbers are likely to grow as a result of upcoming nuclear refurbishment and new-build activities in this province.

The nuclear industry spends millions of dollars each year on internal training of its employees and sponsors local colleges and universities in order to ensure that current and future employees receive state-of-the-art education to meet the challenges of this industry.

Expansion of the nuclear industry in Durham Region would create great career opportunities, especially for the youth of this region. Graduates would be able to find work locally and are likely to stay within Durham Region helping the community grow and prosper.

Given the large variety of career choices within the nuclear industry, employees have the option of moving into a career that they enjoy as opposed to leaving the company they work for in search of better opportunities. This helps with

effective knowledge retention and gaining employee satisfaction within the industry.

Success of the nuclear industry in Canada depends on innovative research and technologies, support from federal and provincial governments, local host communities, and the public. The industry brings together a large number of class disciplinary fields of knowledge.

Therefore, its expansion would not only create jobs within the nuclear industry, but it would also help in expansion of all the industries that directly or indirectly support it.

This ensures that Canada stays relevant on the international stage when it comes to nuclear power plant technology.

MR. MUSTAFA: For the record, my name is Shehab Mustafa. I'm a licensed Professional Engineer with the Province of Ontario, a Master's of Nuclear Engineering candidate from McMaster University and a 2009 Canadian Fellow to the World Nuclear University Summer Institute at the University of Oxford.

My family and I reside in Durham Region and I'm currently employed at Ontario Power Generation's Pickering projects design department.

I'm here today to speak in my capacity as a founding member and vice-president of the Local NA-YGN, Durham Chapter.

To summarize NA-YGN Durham Chapter's presentation today we, as nuclear energy professionals, understand that it is an incredible privilege to utilize our knowledge, experience and professional ability to provide a service which significantly improves the quality of life of our families, friends, fellow residents of Durham Region and the citizens of Ontario.

We understand the uniqueness of nuclear power and the ability it has to provide a safe, clean, reliable and sustainable supply of electricity.

As nuclear energy professionals, nuclear safety is always our overriding priority and is a fundamental part of our nuclear safety culture.

We recognize and appreciate that the outcome of the Joint Review Panel's decision has far-reaching implications for the professional development of an entire new generation of nuclear energy professionals affecting over 150 companies in the Canadian nuclear industry and creating

several direct and indirect benefits to the host community.

Therefore, we, NA-YGN Durham, strongly support the Darlington new nuclear project. We look forward to the decision of the Joint Review Panel and thank the panel for the opportunity to present today.

We welcome any questions you may have about NA-YGN Durham's presentation at this time.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much for that presentation and the overview which you provided.

We will go now to questions from the panel members and I'll go to Mr. Pereira first.

Mr. Pereira?

--- QUESTIONS BY THE PANEL:

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

In the remarks you delivered, you spoke many times about the commitment to providing a sustainable supply of energy. In our assessment, the mandate that this panel has before it,

sustainable development is an important criteria that we must examine.

And in this context, sustainable development talks not only about sustainability in the current era, but looking forward to future generations and the legacy we leave to future generations, and calls on society to undertake what it does without leaving a legacy which is a burden to future generations.

Do you have any comments on that aspect with respect to the proposed project before us? How that will -- can be positioned as something which does not leave an undue burden for future generations?

MS. LAGAN: Thank you for the question. On behalf of North American Young Generation Durham Chapter, I will ask Shehab Mustafa to respond to your question.

MR. MUSTAFA: Shehab Mustafa, for the record through the Chair.

Regarding the question of sustainable development, the greatest challenge confronting us in the 21st century is how do we as a society address the global challenge of climate change? How do we generate power in a clean cost-

effective, sustainable and reliable manner?

In this context, in this challenge, nuclear power provides base load generation 24/7 supply stability, low cost of fuel of very high energy density and nuclear energy is one of the great power sources of our society.

It does not produce any carbon emissions and as such it addresses one of the most serious challenges confronting our society today.

As such, we believe that nuclear power should play a vital role in the base load generation and the energy mix of our province today and going forward, as outlined in the Ontario Long-Term Energy Plan.

MEMBER PEREIRA: Thank you for that response.

Do you have any comments on the challenge of managing the waste produced from nuclear generation?

MR. MUSTAFA: Shehab Mustafa, for the record, through the Chair.

The management of nuclear waste will be undertaking, and is being undertaken, by the Nuclear Waste Management Organization.

Currently we manage our low and

intermediate level waste, as well as our used fuel as per the management plan.

The adaptive phase management plan which has been developed by the Nuclear Waste Management Organization takes into consideration a technical method, as well as a management system, to ensure the equitable management of waste that's produced currently and going forward.

So as such, we believe that there are technical solutions available and the management systems are in place to effectively, safely, and viably manage and maintain the waste that is produced from our power generation in the province today.

MEMBER PEREIRA: Thank you.

I'll go on to a different topic. In your presentation references were made on a number of occasions to safety culture. To you young engineers what does that mean with respect to how work is undertaken at a nuclear generating station?

MS. LAGAN: Thank you again for the question. Sinead Lagan, for the record on behalf of the North American Young Generation and Nuclear Durham Chapter.

I will ask Lorne Corkum to respond to your question.

MS. CORKUM: For the record, Lauren Corkum.

In our training we are taught that there are many principles which help create a strong safety culture in an organization. First, everyone is personally responsible for nuclear safety.

Second, leaders demonstrate commitment to nuclear safety. Trust permeates the organization; decision making reflects nuclear safety first; nuclear technology is recognised as special and unique.

A questioning attitude is cultivated; organizational learning is embraced; and nuclear safety undergoes constant examination.

As a young nuclear professional it is our responsibility to uphold these principles which make up our nuclear safety policy to ensure the protection of our workers, the environment and the residents of Ontario.

MEMBER PEREIRA: Thank you.

And my third and final question concerns the environmental challenges that we face

in going forward with a project, the type of project that is proposed.

What do you see as the most important and most difficult challenge in terms of protection of the environment, with the construction of a new set of reactors at Darlington?

MS. LAGAN: Sinead Lagan, for the record.

On behalf of the North American Young Generation in Nuclear, Durham Chapter I will ask Shehad Mustafa to respond to your question.

MR. MUSTAFA: For the record, Shehad Mustafa.

For us we would like to outline that going forward the most important thing is that we make the right decisions at the right time to ensure that we have a stable supply of electricity that provides a cost-effective method of generation of power and does not produce any greenhouse gases, does not cause an increase in the carbon footprint that is causing global climate change.

And as such, we feel that the decision to make that should take into fact that it will take about 10 years for us to bring new

nuclear power online.

Decisions should be made in a timely manner such that we can address this incredibly pressing challenge confronting our society today.

Thank you.

MEMBER PEREIRA: Thank you

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira?

Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

It’s rare to see a pilot who is afraid of flying. And people that are afraid of flying usually one solution is to learn how to fly.

And I see that your organization provides public outreach. We have here a lot of people that have come to tell us that they have concern for their health, for their safety.

And I’d like to know what kind of activities do you do, public outreaches to get more people to come into the nuclear industry or is it also to make others understand why you feel so safe and you feel nuclear is reliable?

MS. LAGAN: Thank you for the question. Sinead Lagan, for the record. On behalf of the North American Young Generation Durham Chapter I would like to respond to that question.

The Durham Chapter strives to create opportunities for our members to become engaging, empowering, involving nuclear professionals.

We achieve this through providing opportunities to our members in three main areas; professional development, membership and networking and community outreach.

Part of our community outreach program includes educating the public about nuclear power through public hearings such as this; educating students on nuclear power and the benefits of a career in the nuclear industry; attending career fairs and we also run many charity events where proceeds go directly to local charities.

MR. PECK: Brian Peck, for the record.

I'd just like to add a couple comments as the NAYGM Public Relations Chair.

I feel that the best way for the

public to become more comfortable with the nuclear industry in general is to become more knowledgeable about how nuclear power works and what some of the risks are that come with this kind of power generation technology.

I personally take a lot of time to discuss with other members of public, friends, community members about the benefits of nuclear power. I try to explain how we control the risks of the generation and I feel that people coming to panels such as this will become more knowledgeable about the technology and will become more accommodating to its use in the future.

So I appreciate that everybody came out to learn more about the industry and we will continue to, through the Public Relations Chair, discuss with UOIT students and community members as to how this technology can benefit society and be done safety and sustainably.

Thank you.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chair.

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet.

Just one follow-up; I don’t know,

the last three weeks whether you've had any chance to follow some of the interventions but there have been a lot of people appear before us, not very comfortable about nuclear -- the nuclear industry, and rightfully so because of the recent happenings in Japan and the uncertainties that are still coming forward on a daily basis.

How does your organization and young energetic people with a lot of knowledge, how do you get that information out to the public that they understand, and understand the industry better?

Your challenge is probably greater today than what it was a month ago or two months ago just because of current events that are happening.

And listening to the intervenors that appeared before us their concerns are not getting less they're getting more. And I'm just wondering how do you deal with that as -- the future is before you not like myself or something where at my age -- but at your age, your whole future is before you in an industry that has got some major questions by a lot of the public and we've heard a lot of those people. And they've

come forward and we're going to hear more probably this morning. And I don't know -- as I said, I don't know if you've had a chance to follow some of the interventions, but there's a lot of information out there that maybe needs to be clarified to give people more solitude as to -- and comfort with regard to the industry and it's just not there right now, so would you like to address that?

MS. LAGAN: Thank you for the question. Sinead Lagan for the record. I guess in response to your question, part of our community outreach, as I mentioned, is going into schools and educating students about nuclear power and the benefits of a career in nuclear power. And I always think it's good for us to always be representative of the industry. We always let them know how we -- how we feel personally. We know that safety of the public, employees, and the environment is of paramount importance. We know all the measures in place that -- that are involved in nuclear power, the multiple barriers. We describe the redundancy in design to the youth that we speak to and we try to relay that in public forums such as this that we participate in.

CHAIRPERSON GRAHAM: As I say, I

don't know whether you followed them, but, you know, the transcripts are available and you'll see that there's a lot of concern, not only just with the people in this area, but right across the province of Ontario that there are questions out there. And, I guess, my concern is -- is that how do you -- how -- your future is in communication of communicating that, not to say which is right and which is wrong, but to -- for people to understand and I think that there is a lot of uncertainty.

And one of the big uncertainties that we've heard in the last -- in the last three weeks is nuclear waste and not everybody is excited or as sure that NWMO is going to be able to reach a decision. There hasn’t been a decision anywhere in the world yet as far as storing nuclear waste and alternates -- or the future of storing waste is still on everyone’s mind. And just to say that it’s going to be looked at by NWMO and there's going to be a whole series of hearings and so on before it becomes a reality, that still isn’t giving a lot of people comfort, so how do you address that?

MS. LAGAN: Sinead Lagan for the record on behalf of North American Young Generation

in Nuclear, Durham Chapter. I'm going to ask Shehab Mustafa to respond to you about the nuclear waste.

MR. MUSTAFA: Shehab Mustafa for the record. Thank you for that question. We understand the concern that -- that that question raises, but it’s important to -- to note that in over 40 years of commercial operation, the waste has been safely managed in an open and transparent manner and has not posed a significant risk to employees, to the public or the environment, and the waste is managed in conformance with the CNSC and International Atomic Energy Agency regulations.

In the global context, Sweden is an example that we can look towards with the long-term waste management. They, in fact, had two communities which were competing to be the sites -- willing host communities to host the nuclear waste facility.

Part of the process of management of nuclear waste requires transparency, dialogue and the opportunity for people to discuss their fears, their concerns, but it’s very important to also have a rational discourse about the benefits that are derived from power generation -- nuclear

power generation, the tremendous value that it brings to -- to our society and community, and the fact that there are number of studies demonstrating the technical options are there, technical solutions are there. Our technical understandings are backed up by extensive bodies of knowledge internationally and Sweden and Finland and France and the United States of America and Canada as well demonstrating that the technical solutions are there. We just want to ensure that the people understand that.

Part of the role that we as nuclear energy professionals will play and do play is communicating that there is technical solutions. The waste is currently being managed well. It’s being managed on site and that there is a plan that is respectful of the decisions of the Canadian public going forward.

CHAIRPERSON GRAHAM: Thank you. With that, I will now open the floor up for questions and I'll go, first of all, to OPG. OPG, do you have any questions to North American Young Generation in Nuclear?

MS. SWAMI: Gloria Swami for the record. I -- I do have one question for the -- the

presenters just in follow-up to one of the questions that the Chair asked.

We're just wondering if you can give us a sense in your community outreach program if there's a large number of people that raise concerns with nuclear power during -- during your discussions in the public?

MS. LAGAN: Sinead Lagan for the record. On behalf of North American Young Generation Nuclear, Durham Chapter, we have not really come across too much concern. I think whenever we go in, we're -- we're educating them. We're telling them about the safe solutions that we do have. We already have a safe storage solution so, no, we haven't really come across any concerns in -- in our dealings with the public.

CHAIRPERSON GRAHAM: Thank you. CNSC, do you have any questions?

DR. THOMPSON: Patsy Thompson. No, we don't. Thank you.

CHAIRPERSON GRAHAM: Government agencies? The only one I see here is Environment Canada. Do you have any questions? No? Then we will go to questions from the floor. Brennain Lloyd, Northwatch, you have the first question.

--- QUESTIONS BY THE PUBLIC:

MS. LLOYD: Thank you and good morning. Brennain Lloyd from Northwatch. Mr. Graham, I have a question through you to the presenters.

They mention that they're a willing host for Darlington new nuclear, which I assume extends for the 60 years of operation. And I appreciate they have some assumptions that the waste is going to go away somewhere else.

As they may not be aware, in Northern Ontario, we've been around that block a few times. Atomic Energy of Canada Limited's efforts to site in the 1980s high-level nuclear waste, the siting task force on low-level radioactive waste management efforts to site low-level waste in the 1990s, numerous efforts to site various wastes from the GTA in Northern Ontario. None of these have been successful.

The presenters do note in Sweden, there are two willing host communities. I would note that those are both reactor communities.

My question for the presenters is at the point that the NWMO process to find a site fails or the technical case cannot be made -- as

you've heard earlier, there are many technical issues outstanding with geological disposal. My question for the presenters are at the point of the NWMO process failing, are they then prepared to become willing hosts for the next couple of hundred thousand years for the nuclear fuel waste?

CHAIRPERSON GRAHAM: The question is to you, whoever wants to handle it.

MS. LAGAN: Sinead Lagan for the record. On behalf of North American Young Generation in Nuclear, Durham Chapter, I will ask Shehab Mustafa to respond to the question.

MR. MUSTAFA: Shehab Mustafa for the record. The waste that is being produced and has been produced for over 40 years has been managed safety on site and as per the current plan, nuclear waste management plan, the waste will be produced -- will be managed safely for at least 50 years on site.

And part of the process of the Nuclear Waste Management Organization's adaptive phased management plan allows a staged approach primarily for the reason of allowing further discussion and ensuring that the path that we are on is -- is the right one and the correct one and

there is always public support for the path. This is a key part of all of our decisions.

As far as managing the nuclear waste, it relies on the same essential principles that we use in our -- our nuclear design, which is defence in depth, multiple barriers. The -- the nuclear waste will be deposited in a deep geological repository because that's where we get our fuel from. It's been shown that that's where our fuel comes from. It's safely stored in -- in the ground.

There are a number of natural analogues that exist that demonstrate that the used fuel can be stored for many, many year safely, and that's where we get it from.

So the eventual deposition of that waste should be within a deep geological repository as shown by several conceptual studies. Several studies have shown that this is the ultimate waste disposal site and it's a safe way to dispose of our nuclear waste.

CHAIRPERSON GRAHAM: I think Ms. Lloyd's question though was if that is not -- if that doesn't happen -- she wanted her comments with regard to it being stored onsite for the next

several hundred thousand years if there isn't a depository found. I think that was your question.

MS. LLOYD: That's right.

MR. MUSTAFA: Shehab Mustafa, for the record.

The licensing and disposal of nuclear waste follows a process. So it's very important to understand the geological requirements that ensure the multiple barriers. So not only are there engineering barriers there have to be geological barriers as well that ensure that the waste is safely managed, stored, retrievable as part of the plan and continuously monitored before long-term eventual disposal.

Those studies -- if it is determined that the site is acceptable to host that, that will be factored into the discussion.

But part of the Nuclear Waste Management Organization's adaptive phase management plan is to have those discussions, to have those dialogues, to prepare and look at sites, to have a phase of technology demonstration and undertake a long-term containment strategy.

So it's contingent upon finding the existing geological barriers that are required

for a long-term waste disposal are in place.

So yes, if those sites are available and meet the requirements for the licensing requirements that are required for waste disposal, our opinion is they would be acceptable if they met the licensing requirements.

CHAIRPERSON GRAHAM: Thank you.

MS. LLOYD: Mr. Graham?

CHAIRPERSON GRAHAM: I'll let you have one more question, Ms. Lloyd.

MS. LLOYD: No, I'd like clarification. I appreciate your support in getting an answer, I don't think we got it yet.

My question is; as an organization they're on record as putting themselves forward as a willing host. They support the willing host concept for Darlington new nuclear.

My question is if and or when the NWMO process fails or it adapts itself somewhat more closely to the Swedish model which is to have the waste stay indefinitely in the reactor community, does their organization support becoming a willing host for the used fuel into perpetuity if and when the NWMO process fails? It's a simple yes or no.

MR. PECK: Brian Peck, for the record.

The nuclear waste management process follows a similar process to the new power reactor process in that a willing host community does have to be found.

Clarington is a willing host community for a new nuclear project. At this point -- I mean as a young professional I am unsure of any site that would be a willing host community for a waste repository for used nuclear fuel.

As an organization though we will support, and through discussion with the community, and discussion with the people of Ontario, the knowledge and understanding of dealing with waste and we feel that if a community becomes a willing host for a new geological repository it will rely on nuclear energy professionals to provide a better understanding of the process and what depth or what defences are in place to deal with the waste.

And at this point I don’t believe that -- I mean the fuel can be stored safely onsite for a number of years and will allow the willing host community process to be followed and a solution will be found to the waste management

problem.

MS. LLOYD: So no, answer.

Thank you, Mr. Grant.

CHAIRPERSON GRAHAM: Thank you.

Mr. Kalevar?

MR. KALEVAR: Thank you, young engineers; I am an old engineer. Sorry I can't join you but I can tell you that -- sorry, I'm Chaitanya Kalevar from ---

CHAIRPERSON GRAHAM: A question, you know the rules. This is your 77th question so I'd like you to stick to the rules, Mr. Kalevar.

MR. KALEVAR: I'm sorry, I don't count my questions because they are limited so often.

Anyway, through you, Mr. Chair, in my experience as an engineer we never found any solution for nuclear waste. I will not go there, it has been touched.

But I'm really surprised that these six people came here without a medical person on their team.

And the question remains that since radioactive bio accumulates the regulatory dose limits do not make sense as Helen Caldicott

pointed out.

So do you even understand some part of biology and can you tell how you came to the radiological limits, dose limits, can you explain radiological dose limits to us?

CHAIRPERSON GRAHAM: Ms. Lagan, do you want to direct that to one of your members?

MS. LAGAN: Thank you, Mr. Graham. I will ask Lauren Corkum to respond.

MS. CORKUM: For the record, Lauren Corkum.

I would like to highlight to the Chair that in 2009 Darlington and Pickering were at -- I believe the actual statistics are 1.8 and 0.7 microsieverts was the radiological critical dose that was monitored and -- monitored for the public.

This is well below the regulatory limit, in fact, it’s 0.1 percent of the legal radiological limit.

Also, at Ontario Power Generation we are very, very -- we take emissions extremely seriously and we apply much stricter internal targets and that is what we do and that’s our responsibility as professionals.

CHAIRPERSON GRAHAM: Thank you

very much.

Mrs. Lawson, do you have a question?

MS. LAWSON: Pat Lawson.

My question is to the senior representative here from the new build Darlington.

We would be -- those of us who are concerned would be much encouraged if you did not make, in a public forum, serious errors.

The error -- the one error I'm allowed to ask you, because of time, is your -- in the form of a question, it's about climate change and your statement that you made about the nuclear industry not causing carbon emissions.

Now, my focus is on the entire process of obtaining the fuel from the mine right up through the -- I live in the town that deals with the fuel -- to the actual way that the fuel -- that comes out of the reactors in the form of electricity.

There is huge -- my question is; please be accurate and state the carbon emissions that come from all the trucks at the mining stage right through, there is huge -- do you not agree that there is huge carbon emissions?

CHAIRPERSON GRAHAM: Thank you, Ms. Lawson.

Ms. Lagan, I think the question was cradle to grave type of operation, from the mining right through to the disposition of the fuel, spent fuel that a lot of intervenors have said that there is a carbon footprint and would like you to respond to that.

MS. LAGAN: Sinead Lagan, for the record on behalf of the North American Young Generation and Nuclear, I'm going to ask Shehab Mustafa to respond.

MR. MUSTAFA: Shehab Mustafa for the record. The generation during the mining operations do generation greenhouse gases, however, if you look at the overall lifecycle of a nuclear power generation plant, with over 60 years for the operation maintenance and field generation costs, with comparison to the other forms of base load power generation and other generation technologies, it's virtually carbon emission free. So we have to consider the overall lifecycle; we have to consider the overall extent of duration which the plant operates and there are a number of studies that have shown that overall, the impact of nuclear

power generation has the least significant impact for carbon emissions.

CHAIRPERSON GRAHAM: Thank you very much. With that, I want to thank you for coming this morning and making your presentation. On behalf of the panel here this morning, we appreciate everyone's intervention and we appreciate yours and your views towards the nuclear industry and how you are contributing. So thank you very much.

With that my understanding is the -- we go to oral statements and we have a group of oral statements this morning. And the next oral statement that is on the record is not here yet, but is on their way so we will go to the third one on the agenda which is Mr. Stephen Leahy. And, Mr. Leahy, are you in the room? Okay. So thank you very much. You people may vacate and Mr. Leahy will come forward with his oral presentation.

Remind everyone this morning that oral presentations are ten minutes in length and that questions are not permitted from the floor on oral presentations -- oral statements I mean, but are only from the panel members. So we will start off with Mr. Stephen Leahy and if you'd come

forward and introduce yourself.

Welcome this morning and we'll get you set up there in a minute, a fresh bottle of water and everything else. Okay. You're all set so -- the only bit of a question I have, Mr. -- or I would suggest, Mr. Leahy, is speak close to the microphone and not too fast for the translators.

(SHORT PAUSE/COURTE PAUSE)

--- PRESENTATION BY MR. LEAHY:

MR. LEAHY: For the record my name is Stephen Leahy. I'm an environmental journalist who resides in Durham Region.

For the past 18 years I have been covering environmental issues around the world, in Europe, Africa, South America and most recently in Japan. So my job is to go find out what happened when there's an environmental disaster, an environmental problem, to find out the root causes of these events, not just to report on what happened, but why.

And in my experience over these 18 years, much of the environmental calamities, problems that we have are a result of -- I think it could be broadly characterized as technological optimism. No one thought that a chemical plant in

India would blow up and release huge amounts of dioxins and kill thousands of people. No one thought that a tailings pond in Spain would be breached and release tons of mercury into the environment.

These kinds of accidents happen all the time. And the folks who design the systems, design the technology, design the facilities put safety measures in place and believed that these accidents were extremely unlikely; that the risks were low and the benefits were high. Over and over again this has been the case where reality has -- and events have proven them wrong. We cannot foresee everything.

The recent incidents in Japan is another example. I mean, Japan is, obviously, a country with lots of tectonic activity and the Japanese knew this. They prepared the facilities. The buildings withstood the powerful earthquake and yet it was the tsunami, of an unexpected level, that caused the partial meltdown.

So I am here to urge the panel to adopt precautionary principles. Nuclear energy is a very complex technology as you well know. In any kind of technology, the more complicated it gets,

the chances for unforeseen events increase. And as a result, I know the industry is aware of this and have put in a lot of safety systems to prevent them, but we have to be realistic and understand that no safety system can protect us from unforeseen events.

So, for instance, in the case of -- again, in the spent nuclear fuel pools, up until this point in Japan no one thought that we could ever have a loss of coolant long enough to cause a partial melt. So I'd like to encourage the panel to adopt a precautionary approach in their deliberations for this new facility.

In listening to the conversation before mine, the point about climate change was of interest to me, having just read a study yesterday that compared the various sources of energy around the world in terms of the carbon footprint. And, in fact, nuclear does have a carbon footprint based on this study at the University of Sidney in 2008, that they compare to higher carbon footprint, if you look at the entire lifecycle, than wind power and about the same as solar, certainly better than fossil fuels. So those are -- you know, so the industry and the representatives from the industry

need to be clear about their broad statements if they want to inform the public.

Just getting back to the point about technological optimism. When we design complex systems, we put in safety barriers or safety protections based on the knowledge at a particular point in time. So, for instance, at this particular point in time, it is believed that a certain level of radiation, let's say, tritium releases is not harmful, that is the conventional belief.

Five years from now or even one year from now, new medical evidence, and there is some new studies showing that lower levels of radiation actually affect certain organs more than others. So the dose response idea is being constantly reviewed so I would suggest that this panel also needs to put a, *"Best before date,"* on its deliberations given that the -- there is no build timetable that I'm aware of for this new plant. So should you not, I would hope, say, if this facility is not underway within two or three or four years, we need to review the latest information, both the outcomes from what's happened in Japan, but also the new medical data on

radiation safety and environmental impacts. So I hope that's going to be part of your findings.

My final point is that -- this is about the regulatory side of things. There isn't truly an independent panel. So, for instance, I'm suggesting that our safety panels in Canada do not have a Green Peace representative; they do not have some of the very well-informed folks here who are not professional nuclear engineers, but still have a point of view and expertise that would give, I think, an assurance to the public that we have a truly independent panel that can work together, one would hope, but at least it would provide a diversity of opinions and the assurance to the public that there are people who are looking at the industry in a critical way. I think that would be a -- it would be most helpful.

My final point; there's a recent study released by the Union of Concerned Scientists looking at the safety of the U.S. nuclear fleet, and looking at their incident logs over the last year or two, they found 14 near misses; accidents that could have been disasters.

It is a fact that we also have incidents, accidents of a minor nature in the CANDU

system in Ontario.

I mean -- and I think it's important for the public and for the industry itself to be open about these things and have a discussion about what has been done, what could be done to improve the safety of the system.

I think that will be the end of my presentation.

CHAIRPERSON GRAHAM: Thank you very much for that perspective.

I'll go to panel members.

Mr. Pereira, do you have any questions?

--- QUESTIONS FROM THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman.

Just a reaction to some of the points raised in this presentation.

The last issue you spoke about, about near misses and the need to learn from that experience, we've had undertakings that we've placed on intervenors and also on different government departments and on Ontario Power Generation to review the record of operating experience.

And, indeed, we have been informed that the nuclear industry does this as a routine matter, reporting on significant events at nuclear generating stations, not only in Canada but also in the international community.

In fact, I think we heard earlier on -- I don’t know if you were in the room -- but this afternoon the CNSC will be presenting information from the International Atomic Energy Agency looking at certain types of incidents.

In fact, I think the one they might be reporting on concerns human error.

And so this is a very valuable way of improving safety performance, so you make a very valid observation.

Your suggestion as well on a best-before-date type of consideration of incorporating new knowledge, like after we’ve written our report, to make that a requirement to update the basis for the recommendations is a very good recommendation. It’s something that we will consider as we write our report.

The precautionary principle is certainly a principle that is fundamental to the sort of exercise we’re undertaking.

In your work as a journalist, environmental journalist, what are the issues that you identify as being the dominant causes of failures or accidents, besides the reliability of systems, are there any other aspects that you think that you have learned from the many years of reporting on environmental problems?

MR. LEAHY: Stephen Leahy, for the record.

Yes. I think it's the operational side of things where costs are to escalate, shortcuts are done, some safety procedures are not followed anymore.

The recent incident in -- again, in Japan, there was many, many cases of the company falsifying its safety records over the years, and there was quite a scandal in Japan about that.

So, you know, it's the operational side. Sometimes the design part is done quite well, but when it comes to the operational side and the maintenance because the costs are often -- end up with compromising safety.

MEMBER PEREIRA: Complacency and economic pressures, I guess.

Thank you very much.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd like to come back to your concern or the point that you've raised with the precautionary principle.

This principle is sometimes used in the wrong context and in Canada, as you probably know, precautionary principle doesn't mean that you don't go ahead with a project because there's some uncertainties. You can go ahead.

And the precautionary principle is to put in place a follow-up program that would revise if the uncertainties become true, the mitigation measures.

And I'd like to hear a bit more about that.

MR. LEAHY: Stephen Leahy, for the record.

Okay. Let me give you an example, the nuclear waste issue. There is an assumption here by everyone in the industry that the nuclear

waste problem will be solved.

You know, is that a precautionary approach? Because I don't believe it would be because we don't know.

There is this implicit assumption that we'll figure it out, and the industry is a -- it's a marvel of technology and human ingenuity, but that doesn't mean we can figure everything out.

And I think that's something we have to guard against. And that's where the precautionary principle helps us, reminds us, that we can't figure out everything and we can't account for all things.

So then it comes back to, I think, one of your points earlier about risk. Then we have to make a value judgement based on our perception of the risks. And in order to do that in a fair and open way, we need a lot of public discussions so that folks understand this is the risk we're running with this particular technology.

And I'm not so sure that the education and that discussion at the public level has been anywhere near what it needs to be.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

And thank you, Mr. Leahy, for your comments and answers to the questions from my panel colleagues. Thank you very much for coming.

With that, I'm going to declare a 15-minute break. And when we come back, I understand that Mr. Polanyi is here or near here, and we'll hear that oral statement when we come back.

So Chair will resume at 20 minutes to 11.

--- Upon recessing at 10:19 a.m./

L'audience est suspendue à 10h19

--- Upon resuming at 10:35 a.m./

L'audience est reprise à 10h35

CHAIRPERSON GRAHAM: Well, welcome back, everyone, and welcome the new group that has just come in.

And the next on the agenda is Michael Polanyi with his oral statement.

And the oral statements, the way they work for the benefit of those that have just come and joined us, they are of a duration of no more than 10 minutes. Questions are not permitted

from the floor, but are permitted from the panel members.

And with that, we welcome you and ask you to proceed with your statement.

Two other things I should say. Keep close to the microphone and don't talk too fast because we have simultaneous translation, and if you're talking fast the translators have a hard job of translating.

So very -- that's it, so whoever is speaking for Michael Polanyi, please proceed.

--- PRESENTATION BY MR. POLANY:

MR. POLANYI: Hello, Mr. Chairman.

My name is Andrew Polanyi. I've come here today with youth from several Toronto schools to discuss the issue of nuclear power.

I understand that before you make the decision to approve this Darlington nuclear plant, you are supposed to have talked to all people which this plant might affect.

So will you reach out and talk to youth before making your decision?

It's our future, and the generations to come which this plant might affect and who will bear the cost and risk of nuclear

waste and possible accidents or technical problems in the future.

Young people will live with the radiation emitted from the plant. We are the ones who will suffer the most tax and live with the risks of accidents for the longest.

Do you have the right to make this decision when it will only benefit our electricity supply for around 30 years, but the nuclear waste will never go away?

I urge to require that OPG consult with youth in their high schools and communities before allowing OPG to impose the risks and damages of another nuclear plant.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much.

Any of your other group wish to speak, you have a couple of minutes more. If you don’t, I will first go to my colleagues, and I will ask ---

MEMBER PEREIRA: I think they have some ---

CHAIRPERSON GRAHAM: Oh, you do? Sure. As I say, you have some extra time, so

identify yourself and please speak.

MR. PAUSEY: Hello, Mr. Chairman.

My name Bowen Pausey, and today we are all here to talk to you about the lack of information given to youth on the Darlington nuclear plant.

We as the youth of Toronto community would like to know why we haven't been informed? It's hard enough for the youth to get here, the only way would be driving which mostly all of us can't do.

Why haven't the youth been informed on this nuclear plant and why is it so inaccessible for youth to get to the hearing?

The youth of Toronto are going to be having to pay off the plant and dealing with the waste in the future, so why is our future being wasted?

Thank you.

CHAIRPERSON GRAHAM: Thank you.

Anyone else?

MS. SHIDFAR-MAKENNA: Hello, Mr. Chairman, my name is Roya Shidfar.

As you know, recently Japan was hit by a massive earthquake and tsunami. The damage

to the Fukushima Nuclear Plant has made for a devastating situation across the country and beyond.

Can you imagine an accident or natural disaster causing something like this to a nuclear plant in our community? This could possibly have many short- and long-term effects on us, the youth. We should begin to think differently about past mistakes.

Renewable energy sources such as wind turbines and solar power are much more cost-efficient and environmentally friendly.

We should put all our efforts in sustainable resources. We recommend that you take a hard look at other sources of energy. Nuclear power creates radioactive waste for what we have not found a way to safely manage or store.

As of 2000, Canada’s had 35,000 tonnes of highly radioactive nuclear waste and nowhere to put it. This means huge costs and risks for many future generations to deal with our waste.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much. Next?

MS. McMAHON: Hello, Mr. Chairman.

My name is Becca McMahon.

A few years ago I went to Japan and stayed there with my mom's friend. Her daughter, Honor (ph) and I became good friends.

Now, since the earthquake, I am very worried about her and her family. If we put that nuclear plant and we could have the same problems here as they're having in Japan and we all won't be safe.

Shouldn't the earthquake and tsunami in Japan teach us a lesson to stop putting the plants in?

Thank you.

CHAIRPERSON GRAHAM: Thank you.

Next?

Hello, my name is Sive Pausey, and I'm going to be reading the youth petition.

No new Darlington Nuclear plant. We, the undersigned youth, urge the Joint Review Panel not to approve the construction of four new nuclear reactors at Darlington, Ontario.

We do so because as youth we will shoulder the greatest burden of paying for the $25 billion plant through a lifetime of high hydro rates and taxes.

We will face the greatest health risks from exposure to radiation, and the risk of a nuclear accident like the one in Chernobyl that killed tens of thousands of people.

We will be responsible for trying to find a way to safely store radioactive waste which is hazardous for thousands of years.

We have not been consulted in our schools or communities about the decision to build a new nuclear plant. We have been misinformed by government and industry who portray nuclear energy as clean, emission-free and affordable, and we believe that Ontario's electricity needs can met more safely and more cheaply through energy conservation and renewable energy.

Mr. Chairman, may I give you this paper?

CHAIRPERSON GRAHAM: Yeah, well, you keep it and when you get finished we'll have someone pick it up from you, and we appreciate -- but we will accept your petition but after you get done speaking. I think you have one more speaker?

MS. PAUSEY: Thank you.

MR. BASKARAN: Good morning, Chairman and panel, my name Ashwin Baskaran and I'm

a high school student from Scarborough.

To continue on what has already been said, our greatest concern is that nuclear energy is detrimental to our health.

In 2007, Greenpeace released a report criticising the regulatory limit on tritium in Canada, a radioactive carcinogenic isotope of hydrogen, and a bi-product of our nuclear reactors.

Canadian limits for tritium in drinking water are among the most lax in the world. Compared to the European Union’s 100 becquerels a litre, we’re at 7,000 Becquerels and steadily increasing as the levels of tritium increase. Solving the problem for the levels is not by increasing the limits to make it a lethal amount.

We cannot filter this from our water because it is a part of our water, and where water goes tritium goes, and its beta decay can mutate our DNA and cause carcinogenic effects.

Apart from that, there still remains the plethora of dangers posed by the low-level radiation ionizing from the nuclear plants. We have learned from disasters such as Chernobyl as well as the less obvious but long-term problems of disposal of mine wastes and mill tailings and the

ecological impacts of this technology.

We have also learned from the human health effects of low-level radiation exposure on workers in the nuclear industry, most recently summarized by the Biological Effects of Ionizing Radiation VII Report.

A proliferation of nuclear power plants inevitably means more nuclear workers and more residents exposed to this ionizing radiation with increased health risks attendant to this exposure.

None of this health -- none of this, the health of our generation and the planet, should be compromised for what we youth have been told is clean and cheap.

The annual 2011 Energy Outlook Report by the Energy Information Administration shows that by 2016 nuclear energy will cost about $114 per megawatt hour, whereas geothermal and biomass are slightly less. Wind and hydro will reach even cheaper at $85 to $95 per megawatt hour.

And the claims on the cleanliness of nuclear energy are not valid, even when there is no accidental mass contamination of our entire planet. Up to 366 hundred thousand tonnes of

carbon dioxide are produced every year in Canada from nuclear plant construction and the related process alone. And having uranium dust in our air from mining is not so much preferable to carbon dioxide.

As a whole, we, the youth of Ontario, have been neglected in the decision-making process that primarily affects our lives and the generations to come. We will be the ones responsible for the dangerous waste management of nuclear energy production, and we will be the ones to suffer the consequences of the smallest unforeseen malfunction.

Therefore, we kindly request that we be consulted with on a regular basis, that we are kept well-informed through presentations in our schools and communities, and that we’re integrated into the whole process and not disregarded or, even worse, misled.

We thank you for your time and for taking our words into consideration despite our age. We hope that you take into account all of the risks that will be posed to our lives, and ultimately make a sound decision with human health being the top priority.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much. Are there any other ones? No?

If not -- you don't have to apologize about your age. It's the fact that you're here this morning and speaking of what your concerns are is what is important for this panel, and I -- we all appreciate the orderly and respectful way in which you presented your views this morning.

And I've got to remind you, you know, this is webcast around the world, so other youth if they're watching and not the school or something, will be also seeing what you're doing, so you are getting the message out and I think that's important.

So I'll go now to members of the panel.

Madame Beaudet, you're first, if you have some questions?

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

I'd like to understand a little bit more about the petition and I was wondering if

one of you could explain how many schools have signed. What is the level, is it only high school, is it just Toronto, which areas in Toronto? I wonder if someone could explain a bit more, please.

MR. BASKARAN: Ashwin. We had about 180 petitions to date. It was signed by 180 people, and the limits on the petition were anyone under 20. So it would be ranging from elementary school students to high school students to even some university students.

We don't have data on where the regions where the people are from, but that was in the form that they had to fill online. So if you'd like, you could check that. We have the information.

MEMBER BEAUDET: I think that it would be -- well, just to know if it's just from Toronto. Did you do it over the province, any school in the province, or it's just the city of Toronto?

MR. BASKARAN: Most of the people who signed were from Toronto.

There are some from others. Because it was posted on-line, it was available to anyone.

MEMBER BEAUDET: Yeah, that's sufficient information and thank you. Thank you for coming.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Mr. Pereira?

MEMBER PEREIRA: Thank you for your presentation. It's certainly very interesting and refreshing to see what you presented in such a responsible fashion and some very clear points.

One of the concerns that came up more than once was why you were not consulted since this this development will impact on your future.

In the information presented to us on consultation, Ontario Power Generation did on many occasions tell us about the outreach to schools, in going after the schools, sharing information on nuclear power in schools, I believe, in the Durham region, but the -- I'm not sure whether that extended to consultation.

I'll invite Ontario Power Generation to comment on the concerns being expressed here with respect to information and consultation of the new generation?

MS. SWAMI: Laurie Swami, for the record.

I will ask Jennifer Knox to speak to that. She's a public affairs representative from Darlington.

MS. KNOX: Jennifer Knox, Public Affairs Manager at Darlington Nuclear.

OPG works with our peers in the electricity industry and educational professionals to ensure that teachers and students have information they need to meet the requirements of the Ontario Education Curriculum.

On opg.com we have information for teachers and students between grades 5 and 8 and grades 9 to 12 and, in addition we have school kits that are distributed across the province for grades 1, 6 and 9.

We work closely with partners at Scientists in the School for schools in the Durham Region and across the province, as well as an organization called Let's Talk Science. And through those school programs, we also get information into the school.

As far as feedback and information from students, we have a number of venues for

students to contact us and are always welcome to visit the Information Centre for further -- to get further information.

Thank you.

MEMBER PEREIRA: Thank you, Mr. Chairman?

CHAIRPERSON GRAHAM: Just one -- yes, go ahead, Alexander is it? Yes, press it.

MR. POLANY: Andrew, for the record.

About those packages, I'm not sure if I ever received one of those from 1 to 3. I just got out of grade 6 and I'm not sure, I don't think I ever received a package about nuclear energy and power plant.

Thank you.

CHAIRPERSON GRAHAM: Thank you.

That was exactly what I was going to say, that every day of one's life is a lesson learned. And perhaps today is lessons learned for OPG, in that maybe you should think about rechecking your communications, rechecking your involvement in getting information out to not only the Durham Region, but other parts of Ontario.

And especially we have a petition,

which I'm going to accept shortly, that is going to indicate certain schools that have not had that information. And I would suggest that there is a challenge here and these young people have brought a very orderly challenge to the industry.

Just before, or a couple of intervenors before, we had a submission from North American Young Generations in Nuclear. And I don't know if any one of them are here yet, but I think that would be good lessons learned for them to see how young people are showing concern and showing a demand for more knowledge about a very important part of the electrical grid of Ontario, but also a very important part of their future.

They've got a long life to live ahead of them and it would be very important that this -- your North American Young Generation, your organization, help and work with not only OPG but with the industry to make sure that the right knowledge is out.

And, hopefully, you'll be challenged and you will be challenged on some of the things that these young people and other young people here in Ontario or across Canada feel that they need answers for.

So I think you've made your point this morning. You've made it very, very orderly and very well, and I thank you very much for coming.

I'm going to -- much of the rules all tell me that I can't do this and I can't do that, but do you want to bring that petition up? Thank you very much.

And we'll share it with OPG and others that may want to contact -- because it will be put on the web and it will be part of the documents that go with this hearing.

So do you want to have the last word? Very good. Yes, go ahead.

MR. POLANY: They also said, OPG said that a lot of the information would be available on the internet to students, but I would just like to comment how not every student has a computer.

Thank you.

CHAIRPERSON GRAHAM: A very valid point.

Thank you very much for coming and thank you for sharing your views, your concerns. And as future people that will work in the industry

or work in other aspects of the industry or -- of industry, not the industry, but of industry.

Thank you for your participation and your observations. A safe trip back.

We -- I understand -- pardon me?

MEMBER PEREIRA: They just want a photo-op.

CHAIRPERSON GRAHAM: Oh, sure thing, wants a photo-op. Just sit there for a moment. Sure, yeah. Do the rest of you want to come around in the back? We'll take a minute and do that.

Mr. Kalevar, you're too old to be in that picture. You can take a picture, but you're too old to be in that one. Thank you.

MR. POLANY: Thank you once again.

CHAIRPERSON GRAHAM: And I might say that you're welcome to stay and watch some of the proceedings this morning.

The only thing is I need the table for the next presenter but, other than that, we want you to stay and see how these proceedings work.

Next on the agenda, which is -- I'm altering it a little bit to accommodate

the next oral statement who cannot stay with us the whole morning, and I'm going to call upon Mr. John O'Toole to come forward to make his oral statement, please?

Good morning, Mr. O'Toole. And as I said, perhaps you weren't here, it's 10 minutes for oral statements. Questions will come only from the panel members.

And I'll just ask two things, speak slowing and into the mic so that the translation system is able to pick it up and follow along and the next -- our other official language.

So with that, welcome, and the floor is yours?

--- PRESENTATION BY MR. O'TOOLE:

MR. O'TOOLE: Thank you, Chair, and panel members for the opportunity to speak this morning.

A little bit of a biographical background. My name is John O'Toole. I'm the MPP for the area and my riding is called Durham. It includes Uxbridge, Scugog and Clarington And I've been in that position for just over 15 years. And I'm a parent of five children, all grown children of course, and I have five grandchildren and two

more on the way. Many of them live within our area.

I would only say that it's a real privilege to present to the panel this morning. In fact, I would consider it a duty.

I really have four points to briefly put before you to represent my community effectively, the first point being the community support for the new-build project is as a willing host.

Durham and Clarington have been proud home to Pickering and Darlington Nuclear for over 40 years. The new-build project will continue this long tradition of energy investment in Clarington, Durham and, in fact, Ontario. It's important to note that electricity is primarily a provincial responsibility for the decision of what power sources to use; whereas, I understand the federal role, the AECL, and this commission is important objectives that we hear today.

Energy is the backbone of the -- of our economy and currently half of Ontario's baseload capacity is supplied by nuclear power. Darlington alone provides 20 percent of Ontario's electricity needs. And again, I'm privileged to

present and represent Durham Riding for over 15 years and it’s home to many skilled -- skilled people, as well as administrative people, in the industry right straight through to the university level.

It’s rather humbling this morning to follow two groups of young engineers from OPG as well as the young students that just presented here. It’s great to see the amount of participation in this discussion as well.

You've heard from the Clarington Board of Trade, who recently has reaffirmed that 3,200 skilled jobs and 1,500 operational jobs could be created. This is an important economy issue. And further, that over 7.5 billion would boost the local economy and generate during the construction a further 860 million in annual economic impact, not to mention the jobs on an ongoing basis. Total income in Clarington will increase total household income between 150 to $250 million. Durham certainly is an energy capital for Ontario.

Municipal, regional and community stakeholders have all expressed their support for this project as willing hosts. The Region of Durham stated on June 1 last year, and I quote:

> “Durham Region, as an experienced and informed nuclear host community, is a willing and supportive host for the new build Darlington project.”

Former Mayor Jim Abernethy said that Clarington is, and I quote:

> “Both proud and supportive of the province of Ontario’s decision to select Clarington to be the home for nuclear new build in Ontario.”

And the panel has already heard also from Mayor Adrian Foster on how OPG has built a relationship of trust with Clarington and how Clarington was deeply involved in this process through the peer review of the environmental impact assessment. Clarington was supportive of the environmental impact assessment and, indeed, supported the recommendations of the assessment which led the council to passing a resolution that spoke of their support of the project.

In his presentation to you, Mayor Foster concluded by stating, and I quote,

"Clarington is proud to be a nuclear host community."

Not only has there been support from local government, but also from the community at large. The Clarington Board of Trade, the Durham Home Builders Association, Lakeridge Health, Mosport Raceway -- and all stated publicly their support for the project. Many qualified individuals have commented. Elaine Garnett, the president of the Clarington Board of Trade stated, and I quote:

> "The Clarington Board of Trade is proud to have a strong nuclear presence in our community with OPG, Ontario Power Generation nuclear station. We continue to work with our local business as they prepare to capitalize on the many opportunities that refurbishment and new build at Darlington will bring to Clarington, Durham and, indeed, Ontario."

Durham is truly the energy capital in Ontario. In fact, in 2005, the Durham Strategic Energy Alliance was formed as a non-profit body composed of business, government and education institutions. The goal of the Alliance is to advance energy initiatives and address energy concerns in Durham and, in fact, in Ontario. The Durham Strategic Energy Alliance supports the Darlington project. Michael Angemeer, former chair, stated, I quote:

> "That Durham Strategic Energy Alliance is supportive of nuclear generation in Clarington and Durham Region. We believe that clean baseload nuclear power provides an opportunity for more stable communities from an environmental and economic point of view."

It goes on:

> "Durham College is already an established and important facility producing well-educated, skilled people at

all levels."

The University of Ontario institution has embraced the pursuit of nuclear excellence. UOIT is the only university in Canada that offers an honours undergrad degree dedicated to the study of nuclear energy and OPG is a big partner in that. UOIT and OPG are strong partners in the Durham economy.

Not only do business and educators support this project, so too do our health professionals, those who count on to provide the frontline health care in Durham. Kevin Empey, the president and C.O. of Lakeridge Health said, and I quote:

> "The relationship between good health and a strong economy and community is undeniable. The benefits of solid job growth and expanding education and apprenticeship opportunities will help make Clarington and Durham even more prosperous and healthier and a place to live and to work."

Our government supports this project. Our businesses support this project. Our educators support this project. Our professionals support this project. And today I want to be very clear and state on behalf of our leader -- my leader and Opposition Leader of the PC Party of Ontario that we support the project. The Darlington refurbishment and new build project are important to Clarington, Durham, and Ontario, and you might argue for Canada.

My second point is nuclear safety is an environmentally-friendly -- nuclear power -- pardon me, is a safe environmentally-friendly generally carbon-free source of Ontario's future.

And yesterday, I was privileged in the Legislature. The Japanese Ambassador to Canada, His Excellency Kaoru Ishikawa, presented to the Legislature, which is a highly unusual situation. Each of the members of the Opposition parties were also allowed to respond. There was general support and understanding and appreciation and sympathy for the conditions in -- in Japan. We've endeavoured and expressed our sympathy to the community in Japan who are facing devastation from the earthquake and subsequent tsunami.

The nuclear facility and their backup systems were overwhelmed by these twin catastrophic events. We will, I'm sure, learn much from the Japanese experience and I am certain we will continue to learn from it through the reviews.

All of us here this morning understand that safety and reliability are of paramount importance with any nuclear project and I am confident that our new build CANDU reactors will adopt the best world-class designs and safety standards. They always have. For over 30 years, CANDU reactors have continued to operate without significant events. The experts agree that Darlington is a safe and optimal location for the new build.

The Canadian Nuclear Safety Commission in March of this year stated, and I quote:

> "The CNSC, as the Canadian nuclear regulator, is confident about the safety of Canada's fleet of nuclear reactors regarding seismic activity. The CNSC assures Canada that nuclear power

plants located in Canada are amongst the most robust design in the world and have redundant safety systems to prevent damage in the case of earthquakes."

In their response to the Japanese earthquake, OPG studied the effects of seismic activity in Darlington. They stated, and I quote:

"A number of expert studies have confirmed that South Durham Region has a low seismic hazard. Our reactors are robust in design and are able to withstand large seismic events. In fact, the two most recent earthquakes had no impact on our operations."

And finally, OPG, Ontario Power Generation, assessed the emergency preparedness plan on the site in 2009 and concluded, and I quote:

"The results of the evaluation show that the

current nuclear emergency preparedness program applicable to the Darlington nuclear generating station site is broad, flexible, detailed and robust."

We know that we must have the most robust safety redundancies in the world and Darlington has the history of performance to prove it. I live here. OPG knows that they must demonstrate continually to our community that this project is safe and operated safely.

Number 3, Ontario's energy future. We all need to understand where Ontario's power comes from and where it will come from in the future more importantly. Ontario Power Authority, OPA, most recent supply mix report from 2005 gave a picture of where the supply mix of electricity would be coming from. In that report, nuclear was 51 percent, renewable including hydro was 23 -- hydroelectric -- was 23 percent, gas 7 percent, and coal 19 percent. When we look into the future to 2025, the picture looks like this: nuclear 50 percent, renewable including hydro 43 percent, gasification 1 percent and gas 6 percent.

And i-STAT note as well that it's so important, the aspect of energy management and conservation. The decision has been made that Ontario's energy future will be mixed with nuclear as a foundation.

Nuclear play the biggest role in our electricity generation and continue to play the biggest role in our electricity generation as we move into the future. We just simply must do it safely.

While our reliance on new innovative forums of renewable energy will change in the coming decades our reliance on nuclear base load will not.

Even with Ontario's push into green energy through the feed-in tariff program nuclear will still make up the backbone of our supply. Most exports, even the OPA have recognized, that renewables would be composed, perhaps less than 5 percent.

The recent OPA Long-Term Care Energy Plan, delayed, indicated by 2030 nuclear will still supply 46 percent of our power generation.

The Ontario government's own plan

calls for the establishment of the new build at Darlington when they stated in their plan, and I quote:

> "The government is committed to continuing to use nuclear for about 50 percent of Ontario's energy supply."

The capacity of 12,000 megawatts will produce that amount of energy. The remaining nuclear capacity of 10,000 megawatts at Darlington, Pickering and Bruce will be under refurbishment and remodernized.

The remainder of the nuclear capacity of Ontario will need for its projected demand about 2,000 megawatts and this will be made up by the new nuclear at Darlington.

On Monday the Joint Panel heard from the Canadian Environmental Law Association that OPG has not yet submitted an adequate environmental assessment and has not demonstrated that the new facilities are necessary. To which OPG responded that their options are limited by directives from the Ministry of Energy and the provincial government.

Yet, the Ministry of Energy's

Long-Term Energy Plan, and indeed our economic economy, explicitly calls for new nuclear at Darlington. It would be a shame for us to see adverse consequence of Ontario's energy future because of the government not doing its homework.

Our Ontario economy's future is tied to our ability to have enough power and ability to have enough power is directly tied to our support for this project.

And I can assure you once again that our opposition party is committed to the refurbishment and the new build at Darlington. I would not want anyone to be ambiguous about that.

And number four point is the need for transparency in all forms of energy generation.

And finally, I want to move on to the final point which I admit which is for the transparency and the whole issue of cost.

We need to have an open and transparent discussion on electricity costs. This has arised out of Bill 150, the *Green Energy Act* that the McGuinty government, through the feed-in tariffs often referred to as FIT program is subsidizing electricity production and has bound the government and the taxpayers of Ontario to

subsidize certain types of power for at least the next 20 years.

Keep in mind that the private sector producers of wind, solar and other renewables put up the capital. They only get paid when they produce electricity.

I might add that renewable energy generated through solar, wind specifically, are commonly referred to by the experts as intermittent or non-dispatchable power sources.

Renewable power ---

CHAIRPERSON GRAHAM: Mr. O'Toole, if you could soon wrap up, your 15 minutes -- I generally allow 10 but if you could wrap it up we'd appreciate it.

MR. O'TOOLE: Would you give me another minute, I only have one page left?

Thank you very much.

Under the current microfit program price is for biomass is 13.8 cents per kilowatt hour; onshore wind is 13.5, that's certainly -- it's now currently on hold; rooftop solar is 80.2 cents per kilowatt hour; ground modded solar is 64.2 cents per kilowatt hour; water power comes in at 13.1 cents per kilowatt hour and nuclear costs

are not that clear.

Remember, nuclear fossil fuel generation plus hydro generation have served Ontario and indeed the economy well for years.

High cost energy, like those from feed-in tariff programs hurt those who can least afford it and affordability of electricity is an important government policy, in fact, they regulate it.

What we are saying that were open and honest discussion about the true costs from build operation decommissioning, this is very important.

The bottom line is; how much will Ontario be willing to pay for safe, reliable electricity in the future, electricity indeed, energy will be an important part of the discussion globally in the future.

Governments, institution and the private sector engaged in the development of safe, reliable, and affordable alternatives, complete financial transparency will allow the public to understand the choices in the new carbon-free global economy.

And I want to thank the panel for

this opportunity to speak and represent you on behalf of my constituents in the riding of Durham.

Thank you very much.

CHAIRPERSON GRAHAM: Thank you, Mr. O'Toole.

Questions from panel members? Mr. Pereira?

--- QUESTIONS BY THE PANEL

MEMBER PEREIRA: Thank you, Mr. Chairman.

One of the concerns that has been quite frequent in the interventions before us is the impact of the nuclear industry on health of workers and the public in Canada.

In your 15 years as an MPP has this been an issue that you've faced in talking to your constituents over the years?

MR. O'TOOLE: No. In fact we, quite frankly, have never really had any major concerns. In fact there haven't been any major out -- or events in Durham in the 30 or 40 years -- I was a counsellor and a regional counsellor prior to serving provincially and as a willing host there's a fair amount of open and transparent communication between -- not just OPG but the educators and --

persons that may have other points of view -- but have never been raised when the extent -- the health care community is a very important commenter on this and I do meet with them regularly.

MEMBER PEREIRA: That's good to hear that because we have had intervenors, some doctors have come before us and members of the community, not necessarily from Durham but from further afield who have expressed concern about the long-term effects of radiation, including tritium in drinking water but also low level doses of radiation.

But this is not -- from what you say, this is not something that you have encountered.

MR. O'TOOLE: With your permission, I would say I'm not a scientist nor am I generally qualified to comment except that as a recipient of constituent's concerns I would always pass those on to either the Ministry of Health to get them a significant response that would be viable.

But you know, if you look at in society today, with CT Scans and MRIs, all of which expose people to a certain amount of risk and there

are some background issues which have been brought to your attention here, I think we need to stay on top of it and well informed and educated.

And I think one of the presenters earlier this morning made the point that as medicine and science and nanotechnology and those things advance we'll certainly be more able to detect early, diagnose early, all these other things.

So you know, it's an important part of the whole equation.

MEMBER PEREIRA: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Madam Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

We had several interventions commenting that the unit should be built somewhere else because here you have close by, large populations and also the lakes -- the five lakes but this region is very much an area where people would have water activities and have cottages by the lake.

And I was wondering how do you

respond to comments like that?

MR. O'TOOLE: Well, it is a beautiful area, I'm privileged to represent Lake Ontario. I'm a sailor and I enjoy the water and we're very fortunate -- the growth and population probably is a comment on how the vast majority of people are comfortable and confident in nuclear as part of Ontario's base load for the strong economy we have.

And I quite frankly believe that it's surprising how well they are in the community, and I look at Pickering more so than Darlington. Darlington the population is somewhat removed by he 401, sort of separating the major population base from the operation.

But I heard one of the young engineers this morning say that he lives less than five kilometres. I myself and my older children use it for biking, cycling on the trails. So I mean it's integrated into the community and more so even in Pickering. And that degree of comfort and the open communication that OPG tries to present -- and I'm not just here as some pony for OPG, I'm saying that truly, my impression in public service is that they're comfortable and quite happy as a

willing host community. And we're a rolling and thriving area of the province of Ontario so it's -- every community has it challenges.

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

CHAIRPERSON GRAHAM: Thank you, Madam Beaudet. Mr. O'Toole, thank you very much for your presentation this morning.

MR. O'TOOLE: Thank you for the opportunity.

CHAIRPERSON GRAHAM: And good luck in your endeavours.

MR. O'TOOLE: Right on. Thank you.

CHAIRPERSON GRAHAM: The next presenter -- the next oral statement, pardon me, this morning is going to be Jaison Gibson and it's listed here as the Blacklab and I think there's a reason for that and maybe we'll hear the reason. Anyway, Mr. Gibson, welcome and welcome your general manager or assistant.

MR. GIBSON: My daughter, Matese.

CHAIRPERSON GRAHAM: Yeah, bring the mike -- they don't pick up anything on the transcript unless that little red light is on so we

want you to have -- maybe introduce your daughter again so we'll have that.

--- PRESENTATION BY MR. GIBSON:

MR. GIBSON: For the record I am Jaison Gibson and this is my daughter, Matese, and we are both residents of Clarington. As I say, I'm a father, I'm a farmer, I'm a previous active OPP officer injured in the line of duty and I'm not here representing the OPP. It's been a number of years since my accident, but I took a life oath to serve and protect and I still stand behind that as an individual.

I live on a beautiful farm with my family. It's a short distance away from here. We have a nice stream that goes through. There hasn't been hunting in 20 years. The animals are thriving and we're thriving, however, there is a back negativity to this. Both my parents have had cancer. There's cancer around the neighbourhood and there could be a number of reasons for this, the spraying of crops, the nitrates, but also the presence of OPG. But, you know, without OPG and the electricity, our life wouldn't be as easy and fulfilling as it is. And I thank them for that. They've been running their operations, you know,

fairly smoothly for, like, the previous presenter said, for 40 years.

However, there are a few things that make me feel a little bit uneasy. I witnessed the -- I guess it was the licencing renewal at the Holiday Inn a few years ago for OPG. And the one thing that keeps sitting in my mind is the previous Chairman, I believe it was the previous Chairman, said, you know, why does OPG have to be brought into the 21st century kicking and screaming.

Now, that, as a citizen, doesn't make me feel very confident that in the future energy needs and waste storage are going to be met. There's a big black eye in the nuclear industry and it's called Port Granby and that's a short distance outside of Port Hope and I think there's ongoing problems with Port Hope. And to start a new build with an ongoing problem and I guess seepage into Lake Ontario, I can't imagine where we would get our fresh water if that huge body of water is contaminated?

And I can't imagine where I'd rather live, if I had to leave. If I heard the sirens going, if I was able to hear the sirens going, where do we citizens go? And in fact,

accidents happen when you least expect that and from my previous employment with the OPP, I can attest to that. I wasn't prepared to be hit by a car, but yet I was. I was following all the procedures correctly and that is a big question as a citizen, where do we go if something happens?

And I'd like very much for my children to be able to raise their children on the family farms and, you know, I'd like to provide fresh food to the local people as best I can in a way, by allowing them to share the farm. Since I have been injured, I can't be a typical farmer so I've been reaching out and I've been experimenting and this is where the Blacklab part comes in.

Soon after my accident, I realized that it's not enough just to rebuild yourself, you have to rebuild what's around you. And taking a good look at what's around, a lot needs to be rebuilt. As far as energy goes, you know, nuclear is probably a quick fix to get a mass amount of electricity out to a great number of people. However, it's a quick fix and it's easily controlled.

I see greater opportunities for more than just a few thousand people if we get into

solar. Farmers can harmonize that with growing crops; there's a great many fields that are available. There's no reason why these fields have to be fenced off and it's just for solar. I think that's a problem. We need to look at how we're doing things and adapt and we have to adapt quickly.

Now, as far as guaranteeing the safety, we pretty much can't guarantee the safety as a species for more than three years. I think that's pretty much the warranties on a vehicle or this or that. Thousands of years, I don't think anyone in this room can really honestly say that we can guarantee for thousands of years everything is going to be fine. The world is changing. We as a species need to change with it and we need to get up to speed quickly.

Now, if there is going to be a lot of money put into nuclear, my opinion is that basically Clarington has become a nuclear reservation in that we don't have a choice, but we live on that reservation. So are we entitled to some status to live in the shadow of this nuclear potential threat if you look at what's happening in Japan? You know, that is something in the back --

it should be on the back of every thinking person's mind.

You know, we live in an age where things are pretty extravagant. We have many, many different forms of electrical appliances and much of it is not really necessary for our basic needs and it comes back to the individual. We have a responsibility to not be so extravagant in the future, not just only to conserve, but you know, to cut back what we have and use things properly.

There's so many aspects; people have two or three cars; they've got dishwashers; they've got all these different things to supposedly make life easier, but one mistake, one incident and it's just too high of a price to pay to leave our homes and never return. And that cannot be guaranteed that it won't happen.

So I think that if there is going to be major money put into this, it should be into safety to make sure that as much as possible there won't be the worse case scenario of everyone has to leave. And it's interesting that even the sirens that they have set up around the nuclear plant have solar panels on them. You know, when a solar panel breaks, people go to the store and buy another one

or they order another one. When a nuclear plant breaks, and we've got to flee for our lives or move out. And depending on what's occurred, come back, hopefully, but you know that's just way too big of a risk.

And I love where I live and I love the people around me and it's just way too big of a risk. And I'm sorry for repeating that, but it -- it is. When there's other options available, why are we sticking to one of the most dangerous?

Like, I understand that they can concentrate a lot of power into one method and get it out, but if more farmers and more people were able to utilize solar, and I -- I'm not a huge fan of wind. Like everything we do as a species, we like to go big, big, big, but maybe nature has the answers. Leeds are probably the best solar collectors. They're small and plentiful and they trickle charge.

There probably won't be, you know, a huge change from nuclear unless we will it, as a people. We have to get behind it; put the proper research and development into better battery technology, better solar receptor technology, and that will happen if there is a push to move that

way because there's a competitive edge to our economy that if people are buying it, well, they get better and more proficient about supplying it. And that's what I hope comes from this hearing here, is that at least a portion of this money will seriously go towards renewable.

And the other thing is, we today are the minority, the people alive today are the minority. There's a never-ending wave of new generations coming, and we can't just think it's all about us. There has to be some real thoughtful and long-term thinking done. You know, it would be great for the economy to have $30 billion put into a project in Durham Region. No doubt, but in the future we've got to think past that.

And if we can spread that out, you know, farmers adding and harmonizing solar panels into their operations, solar harvesting, every structure we have basically needs to be future-fitted. I like to use that word instead of retrofitted. If we can future-fit everything, well that's huge. That's a billion dollar industry waiting to happen. All the trades people working on every structure that exists.

But other than that, you know, I

love this community and I want what's best for it, and I know there's a lot of other people too that want what's best, you know.

And perhaps we need to be electing more accountable officials that are really in tune with the community, not just lobbying for big business and the corporate interests.

Thank you very much.

CHAIRPERSON GRAHAM: Thank you very much for your oral presentation, oral statement and your sincerity.

Now to go to questions from panel members.

Mr. Pereira?

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman, and thank you for that presentation and your concerns, and identifying ways forward with that commitment to mega-projects or projects which you perceive to be risky.

We did have officials from the Ontario Ministry of Energy here yesterday, talking about the rationale that they had for seeking a mix of renewables, conservation, and nuclear. And their planning going forward nuclear is --

continues to be a major part of the -- what they plan for generation of electricity in the years ahead.

They're certainly looking forward. They are looking at renewables and conservation and energy efficiency, which are all points that you bring up.

So as far as this panel is concerned, we're looking at the proposal to have a nuclear generating facility and to see whether that would have a significant impact on the environment and, if it does, what can be done to minimize that impact.

But the points that you make are very valid ones, and many other the intervenors have made the same point. They're concerned about accidents and about risk to health and to the environment, all of it.

Thank you very much. Thank you, Mr. Chairman.

MR. GIBSON: Thank you.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr.

Chairman.

I think you bring an interesting point in saying if something happens where do we go?

We did have a session on accidents and procedures to be followed in case of evacuation, and one question was how many people in transit centres, how many of them and for how long they would stay, and they say about 20 percent would not find friends or family that they could move to.

When we look at the radiological risks in normal operation -- and I'd like to go to CNSC on that -- the requirement is always doses be as low as reasonably achievable. But when you do the review, there's a review guide that is called "Effects of the Project on the Health and Safety of Persons during Normal Operation", you look, there are different criteria that you have to evaluate the effect.

And you've mentioned on many occasions that it should not exceed one milliSievert, the annual equivalent dose. To skin, should not exceed 50 milliSieverts.

I was wondering if you could go

over that because one of them is the annual equivalent dose of the lens of the eyes does not exceed 15 milliSieverts. There are different aspects here in this document that we haven't covered. We've done it more in the general fashion, but I don't know if you have the document here with you, but I'd like to review with us the four criteria that you do for the evaluation, please.

DR. THOMPSON: Patsy Thompson, for the record.

We don't have the document, but these criteria appear to be taken from the Radiation Protection Regulations, and the Radiation Protection Regulations set different limits depending on the sensitivity of various organs or tissues to radiation.

And, for example, the limits to the lens of the eye are to protect against damage such as cataracts that happen at fairly high doses of radiation, whereas limits to workers, for example, the one millisieverts limit and the 50 millisievert for workers is to protect against the probability of developing cancer.

So the limits are set to protect

different tissues and different sensitivities. Lens of the eye, the skin doses, are to prevent effects that are referred to as deterministic, that will happen for sure if you exceed a certain dose, whereas the limits of one milliSievert for members of the public and 50 milliSieverts are called for probabilistic risk affects, so cancer and the increased incidents of cancer with doses.

So those are the various criteria that we have in place. But the most important criterion is to keep doses as low as reasonably achievable, and that is why members of the public around Darlington, the public dose limit is 1 milliSievert, which is 1,000 microSieverts, but the actual doses to members of the public are less than 10 microsieverts.

And similarly for workers, the public -- the limit for workers is 50 milliSieverts annually, and the average dose to workers is in the range of natural background radiation.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Thank you very much for coming.

Thank you for your sincere comments. Thank you for bringing your daughter. Reminds me of a couple of granddaughters I have roughly the same age and haven't seen for three weeks and hopefully will see them shortly.

So you're allowed the last comment.

MR. GIBSON: Thank you.

One thing I forgot to mention, St. Marys Cement, pretty much right beside, does heavy blasting twice a week, which shakes. I used to live temporarily in Aspen Springs, a rural -- or not a rural -- a bedroom community right beside both facilities, and the house would shake.

Now, what are the long-term effects of that with the nuclear reactors there? You know, it's something as a citizen, you know, that's it's pretty -- pretty big if it shakes your house, you know, and other people noticed that as well.

And the other thing is, I feel really, terribly bad for what's happened in Japan, and I would never want that to happen here.

Thank you.

CHAIRPERSON GRAHAM: Thank you for

your comments.

With regard to St. Marys Cement, several -- the panel has, through several information requests, obtained further information on their blasting, and also it's been discussed here at least on two different occasions in the last three weeks with regard to the effects and so on.

So we're very much aware of that and we're very much taking that in -- that aspect also into our considerations when we do deliberate.

So thank you very much for coming, and safe trip back, and good luck in your ventures and to your daughter.

MR. GIBSON: Can I mention that there's an event in the Beaches in Toronto at Yoshi's Sweets. It's a fundraiser for the people of Japan, and it's on Queen Street right in the heart of the Beaches. It's on -- it'll be April 10th, Sunday.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much for that information.

The next oral presentation is Stephanie Rutherford.

Stephanie, would you come forward, please?

--- PRESENTATION BY DR. RUTHERFORD:

DR. RUTHERFORD: Good morning. For the record, my name is Dr. Stephanie Rutherford, and I'm a professor in Environmental and Resource Studies at Trent University.

I want to thank you for the opportunity to present my views to the panel. And also I know it's probably been a long three weeks, and I will attempt to be brief.

I am not representing Trent University with my views here today, but the fact that I am a professor matters very much to my presentation because a large part of the reason that I asked to be an intervenor is because I teach courses in environmental studies to a new generation of students.

One of my courses is environmental politics and policy, which is clearly relevant to these proceedings.

But more importantly for what I want to say here today, is the fact that I also teach environmental ethics.

In my reading of the Environmental

Impact Assessment, there is clearly a good degree of politics and policy, but I would call on the panel to consider the ethical dimensions of the Darlington new build as well. Something that, in my view, should be part of the EIA process, but is often neglected.

It is on this issue that I will focus my comments.

The ethical issues that are embedded in OPG's Environmental Impact Assessment, quite frankly, disturbed me.

In my view, the impact assessment is leaving out potential impacts. Specifically, I'm concerned that OPG doesn't consider the long-term impact of nuclear fuel waste that the new reactors, particularly the design that uses enriched uranium, will generate.

However, whatever the design of the proposed reactors, the impact assessment does little address how nuclear fuel waste will be managed.

The answer provided by the EIA is that the Nuclear Waste Management Organization will be responsible for nuclear fuel waste, with the end result being its deposit in a deep geological

repository as part of the accepted approach of adaptive phase management.

Crucially, the NWMO persists with this approach, although it has been rejected by more and more jurisdictions as a safe option for nuclear fuel waste disposal, most recently by the Obama administration with reference to Yucca Mountain.

The uncertainties associated with disposal in this manner, particularly with generation III reactors that were not part of the NWMOs consultation, are inherently problematic.

Even if we accept that APM is an acceptable solution to current stores of nuclear fuel waste, producing more and potentially more damaging wastes should not be part of this management plan.

Uncertainties abound. Are there any new risks associated with this fuel waste? How will they be managed by NWMO? And what will all of this cost?

These are the medium-term questions that OPG fails to address in their Environmental Impact Assessment.

If we simply look at this case for

deep geological deposit in Northern Ontario, the approach that NMWO [sic] favours, the ethical issues surrounding it are immediately apparent.

That Northern Ontario, in particular First Nations populations, should be asked to take nuclear fuel waste into their communities represents an entrenchment of a longstanding system of environmental injustice.

Those who have benefitted the least from the provision of energy from Darlington will be asked to pay the most in terms of the potential for catastrophic accidents.

This is certainly not considered among the potential impacts associated with the Darlington new build as outlined in the Environmental Impact Assessment.

And yet it is exactly this kind of deliberation, asking deeper questions about who benefits from and who pays for environmental harm, that should be the basis of this process in Ontario as it was with the EIA’s precursor, Justice Berger’s decision on the Mackenzie Valley Pipeline Project in 1974.

But I also think that we can frame the issue of nuclear fuel waste in another way but

we, as Ontarians, would leave this potentially toxic legacy to subsequent generations without adequately attempting to forestall its possibility seem, not only unwise but patently unethical.

Too long have we foregrounded the short-term politics of convenient energy generation rather than dealing with the fact that we need to re-imagine the provision of energy, from the mining of resources through to its transmission via an inefficient grid. We have a real opportunity to do something different, to be more forward-looking in how we think about and provide energy.

However, the fact that there is no possibility to discuss the alternatives to nuclear, especially wind and solar, immediately limits the conversation that can be had around Darlington.

Why is a discussion of what might be safer, cheaper, and the use of -- and greener technology completely excluded?

Moreover, there’s no real articulation of how conservation might fit into this question.

If, as the Ontario Government has emphasized, conservation “is a vital part of the plan for our sound energy future”, then why doesn’t

it factor into a discussion of the presumed need for additional power that the Darlington new build would provide?

To ignore both of these alternative approaches, which together would likely achieve Ontario's energy needs in a less harmful way, would seem to violate not only the spirit but also the requirements of the EIA process.

Moreover, to alleviate one environmental problem by creating another seems to be poor planning.

I refer here to the notion that nuclear power is green, the saving grace that climate change needs.

While I agree that nuclear is cleaner, at least in terms of greenhouse gas emissions from tailpipe while certainly not in the mining, transport and processing of uranium that eventually goes into the reactors, it is cleaner in some sense than nuclear -- than coal-fired power plants.

I would recommend that we need to be a little bit more imaginative.

This does not have to be a Coke or Pepsi debate, if you will.

Instead, the EIA process should be open to considering the full range of possibilities for energy provision in Ontario.

But what the OPG EIA does by excluding the possibility of talking about alternatives is hamstring energy provision in Ontario, tying it to an expensive and harmful technology for at least the next 30 years.

First Nations' wisdom tells us to consider the seventh generation, to contemplate the impacts the decisions we make now will have on those who are to come in the future. This is a kind of intergenerational responsibility, a longer view of the legacy our decisions will have.

If we take the notion of seventh generation seriously, we must consider more than what the EIA suggests.

The impacts of storage of nuclear waste and the effects of tying our energy future only to nuclear are central to this kind of analysis.

Unfortunately, the way OPG has conducted this environmental assessment confines our ability to ask these sorts of questions and in doing so, to some degree, limits the possibility

not only of a more sustainable economy but an environment as well.

In conclusion, I ask the panel to require OPG to consider all the potential impacts associated with the Darlington new build.

As such, I request that the application for a licence be denied until OPG can answer these pressing questions, particularly around the provision of safe storage and disposal of the nuclear fuel waste that Darlington will produce and what the potential is for replacing the Darlington new build with alternative forms of energy and/or conservation measures.

With this, I respectfully submit my request to the panel.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much.

I'll go directly now to panel members.

Madame Beaudet?

--- QUESTIONS FROM THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

We had interventions underlining

the ethical aspects of this project. There's one -- well, of course, especially regarding to waste but also to the liability of the operations in case there's an accident.

Many have brought forward the fact that the *Liability Act*, the amount is not sufficient. And others have said that it should be the polluter that pays.

And I'd like to hear a bit more of your comments on that, please.

DR. RUTHERFORD: Thank you for the question.

I mean, I think certainly to echo the sentiments from some of the earlier speakers as well that any kind of consideration around questions of liability or nuclear fuel waste or however -- you know, whatever the risks are associated with nuclear, needs to take into account the precautionary principle and the polluter pays principle, and that these should be entrenched across environmental legislation, and it should be something that is sort of de rigueur. You know, it should be the basis of how we make these kinds of decisions.

And so I would certainly suggest

that the polluter pays model needs to be greatly enhanced.

Does that answer your question?

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

Just carrying on on that polluter pays concept, in the case of the nuclear waste, we have informed from the -- or information presented to us that Ontario Power Generation and all of the other operators of nuclear power reactors required under the *Nuclear Fuel Waste Act* to set aside segregated funds for eventual long-term management of fuel waste.

And they are required to do this over a period of time, so that provision is made for the estimated cost of managing the waste, the disposal concept, so this is already in place and so that -- that's based on the concept of disposal, but until that concept is approved, the fuel waste is likely to be held on site at the Nuclear Generating Facility.

In terms of the consideration of

other options, we did have the Minister -- Ontario -- Assistant Deputy Minister here yesterday talking about the considerations in going for an energy mix. And I don't know whether you were involved in providing input because there was some consultation that the Ontario Ministry of Energy did in developing this strategy and so that -- that is a consideration that's gone on before.

As far as this panel is concerned, we're looking at the environmental impact of the nuclear generation -- generation option, so we take your input, your comments and we'll consider them in arriving at our conclusions from our review in preparing our report. Thank you.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira. And thank you, Dr. Rutherford, for your presentation this morning and as all oral statements or interventions and so on, the panel takes everyone into consideration, I assure you, before we come to a final conclusion. Thank you very much.

The next on agenda is Mr. Bill Donnelly. Mr. Donnelly, would you come forward, please? I have Crossby Dewar Inc. is in brackets, so, yeah, fresh water there, so help yourselves.

And, as I've said, speak directly into the mic and slowly, so the translators can -- can pick it up. Thank you very much. The floor is yours.

--- PRESENTATION BY MR. DONNELLY:

MR. DONNELLY: Thank you. Good morning. My name is Bill Donnelly and this is Clayton O'Brien. We are here to represent Crossby Dewar Inc. A Canadian owned, Ontario based company that is a service provider to the nuclear industry.

Our company has participated in the construction, maintenance and refurbishment of Ontario's nuclear fleets since the 1960s. We are an employer of over 600 Ontario Residents and have an excellent reputation for safety and quality. The continued success of our company and the stability of our employees and their families are directly linked to the future of the Ontario nuclear industry.

I'm here today to give you a contractor's point of view on the importance of Darlington new-build to the future of Ontario.

Why building in Darlington be as good for Ontario? The most obvious reason is that our existing power generation infrastructure is aging. This combined with future growth will

require that additional generating capacity is attained and nuclear is still the most practical option for Ontario's base load needs.

The development of alternative power generation will continue to be an important factor in our future energy mix, but the land requirements and capacity factors of these technologies prohibit them from being a practical base load in Ontario at this time, but there are -- but there are many less obvious reasons why we should build Darlington B.

It will allow Ontario to continue to benefit from the nuclear industry. How do we benefit? As a province involved in nuclear power generation, we gain the benefit of global expertise, innovation and continuous process improvements that would not be possible in other industries.

Ontario's nuclear plants are subject to audits and peer reviews from international organizations that look at the best practices of nuclear operators worldwide.

OPG's plant managers and senior staff are members of these audit teams and they participate in the assessment of nuclear facilities

around the globe. The knowledge and experience gained from these reviews, lead to constant improvements in the operation and maintenance of nuclear facilities.

The knowledge and experience gained through this global expertise finds its way into other sectors of our province. As a contractor, I'll give you the example that I'm most familiar with.

I can tell you firsthand that nuclear leads the way when it comes to safety. Not just in plant operation, but also in construction and maintenance activities.

Contractors and workers brought into OPG's nuclear facilities to provide services go through extensive training. Individuals are taught skills and behavioural habits that are effective in reducing injury and accidents.

Supervisors attend the most rigorous training of all. They learn superior skills in techniques that enable them to properly plan work, identify hazard and manage the behavioural habits of the workers.

Compare the safety performance of building trades that perform work in both nuclear

facilities and the general construction industry and you'll see the difference.

Conventional hazards are identical in both industries including working at heights, hoisting and rigging, electrical contact and operation of equipment.

The difference is how safety is managed. The performance of each sector is the proof. The Ontario construction industry average since 2000 is 5.6 fatalities per 100,000 workers.

The nuclear industry has had zero fatalities in that same period, which includes two major refurbishment projects, Pickering A return to service and Bruce A restart involving multi -- major multi contract to work forces.

Crossby Dewar achieved 2.5 million hours without a loss time injury on the Pickering Project. And proudly we are approaching four million hours without a loss time injury on the Bruce Restart Project. This is a major milestone for our organization.

When it comes to all injury rate, that is medical attention and loss time injuries combined, the nuclear industry performance is approximately one tenth of the industry average.

As an example, Crossby Dewar's all injury rate over the last three years is .68 injuries per 200,000 hours worked. While the general construction industry has -- as a whole is 6.64 injuries per 200,000 hours worker.

How does this impact Ontario outside of the nuclear plants? Well, these same contractors, supervisors and workers also perform work in our industrial, commercial and institutional industries.

Skills, safety programs and work habits are transferred to these other industries effectively and continuously raising the safety performance across the province. Excuse me.

Why building in Darlington be as an opportunity for Ontario? High-skill, High-paying jobs in a high-growth industry with limited competitors.

The recession and cheaper labour sources in emerging economy such as China and India have greatly reduced Ontario's manufacturing sector. Global population growth and emerging economies will continue to increase demand for power generation. Environmental concerns such as global warming and economic concerns through supply

and demand will continue to necessitate a transformation from out dependency on fossil fuels.

The land requirements and capacity factors make solar and wind impractical in many regions of the globe. We have to conclude that nuclear power will play an ever increasing role in the global supply mix.

We must recognize the opportunity that has been presented to us by past generations of Canadian and Ontario nuclear workers. We are a supplier of the nuclear technology that has a globally proven track record of safe and efficient operation dating back to almost half a century.

The CANDU design is regarded as one of the safest in the world. The recent events in Japan will put even more emphasis on the need for reactor designs with redundancy and depth in their safety systems.

Governments depending on nuclear power generation to meet their forecast demands will be looking for the safest designs with proven safety performance to instill confidence in their citizens.

The global nuclear renaissance is providing us with an opportunity to create

high-paying, highly skilled jobs for Ontario residents, but this will require AECL to be successful at capitalizing on export opportunities.

The future of AECL, along with Ontario substantial nuclear industry is intertwined with the construction of Darlington B. Consideration must be given to maintain Ontario's nuclear knowledge and expertise developed over the last decade. At the onset of the Pickering refurbishment there was a shortage of nuclear experienced engineers, construction managers and tradesmen as a major nuclear project had not been undertaken since the construction of Darlington.

The Pickering and Bruce refurbishments and the efforts to design the ACR1000 have developed a substantial nuclear qualified workforce for our generation. Expediting the Darlington units would provide the workflow required to maintain this workforce; not building Darlington D -- sorry B, we'll find much of this expertise leaving Ontario for other opportunities and negate much of the time, effort and financial resources expanded by Ontario Power Generation, AECL and the Ontario contractors involved for preparing for preparing for this project.

This is a defining moment for Canada's nuclear industry. We must show the potential foreign buyers of our technology that Ontario embraces low-cost, low-emission nuclear power generation and that we have confidence in our home-grown reactor design. We must continue Ontario's legacy of safe and efficient nuclear power generation and continued involvement in the nuclear supply chain to ensure we leave our future generations the same opportunities that preceding generations provided for us. Thank you.

CHAIRPERSON GRAHAM: Thank you very much, Mr. Donnelly. We'll now go to panel members for questions. Madam Beaudet?

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman. Thank you for your presentation and bringing up the figures about the number of accidents and the different industries, the comparison of the different industries. I think it was interesting.

I'd like to come back though on one item you're brought in front of us, saying that wind power isn't practical in most parts of the globe and that you feel nuclear power generation

will increase in the future.

MR. DONNELLY: I personally believe it will increase. Ontario's blessed with a vast area where we have the land resources to put up the solar panels and the wind power, and we should continue to do that. But due to the amount of land that is required and the capacity factors, because it's not always windy; it's not always sunny, they don't make for a good base load option. I believe there's other parts of the globe that don't have the same resources that Ontario has as far available land so that is what I meant by that comment.

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

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

MEMBER PEREIRA: Thank you, Mr. Chairman. And thank you for your presentation. You do present some very impressive numbers of safety rates in terms of work on site. Are there any concerns that your employees have about working in a nuclear environment? Is that a thing that comes up in your discussions with your staff?

MR. DONNELLY: The employees'

concerns are usually -- you'll find the concerns when they first come to work at a nuclear plant. And once they go through the OPG training on the radiation protection, they're very clear in the training about what the effects of radiation will do, and how to protect yourself from the consequences of that. And it -- it makes the employees confident then that they're -- they have the proper protection to go on and do the work.

What we usually find with employees who -- that have -- they're new into the nuclear industry and they're coming from other industries, is it's almost more of a concern to get them into the safety culture of working at a nuclear facility. They see a lot of times the safety controls as barriers to getting a job done and I used to, in my training, I would refer to these statistics and make them realize that the safety procedures are what gets you home at night safely.

MEMBER PEREIRA: Thank you. And in your response you referred to the safety culture. Could you say -- tell us a bit more about what you see as essential elements of that culture that helps ensure the safe outcomes?

MR. O'BRIEN: Clayton O'Brien responding to that question. Some of the cultures taught to me over the 20 years of being in the industry, some of the core principles taught to every employee entering OPG, are conservative decision-making; star principles; stop, think, act review; safety basics, like questioning attitude, procedural adherence; three-way communication; proper planning. If you're unsure, back out, ask questions, don't rush into anything; do it right the first time. That's some of the cultures that are taught from OPG to all contractors coming in there.

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

CHAIRPERSON GRAHAM: Thank you very much, Mr. Pereira. And to you, Mr. Donnelly and Mr. O'Brien, thank you very much for coming this morning and giving us your oral statement in which, as I've said before, the panel reviews all oral statements, all interventions and all -- everyone that's involved before making a decision. Thank you very much and have a safe trip.

Is Mr. Dundas -- is he here from the Leeds Country Observer? If he's not, we will

remove that from the record because that was an oral statement for this morning. And before we adjourn for lunch, I want to say that the first on the agenda this afternoon will be Dr. Thompson with her presentation or her follow-up from her undertaking. And then we will go to the regular ones, which I think Green Party of Ontario is the next one. So with that I declare it lunch hour and the Chair resumes at 1:30. Thank you very much.

---Upon recessing at 12:27 p.m.

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

MS. MYLES: Good afternoon everyone. My name is Debra Myles and I'm the panel co-manager. Welcome back to the last session of this part of the public review hearings for the Darlington New Nuclear Power Plant project.

Secretariat staff are available at the back of the room. Please speak with Julie Bouchard if you're scheduled to make a presentation today and have not already spoken to Julie. Please speak to Julie as well if you want permission of the Chair to put a question to a presenter that is making an intervention. Opportunities for questions 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 everyone in the room, please silence your cell phones and other electronic devices. Mr. Chair.

CHAIRPERSON GRAHAM: Thank you very much, Debra, and good afternoon everyone. Before we go to the first presenter, I believe Mr. Howden, you and Mr. Newland have a short clarification or short statement with regard to one of the undertakings.

MR. HOWDEN: Yes, Barclay Howden for the record. It's undertaking number 16, which is to provide a comparative analysis of hot and cold plume releases which are representative of nuclear accidents. So Dr. Newland is going to provide a bit of information on that and then we will be submitting a written -- more fulsome written undertaking. So Dr. Newland.

DR. NEWLAND: Thank you, Mr. Howden. Dave Newland for the record. As part of OPG's environmental impact statement and licence to prepare a site application, analysis was performed to examine the possibility -- of the possible off-site consequences of a severe accident. In doing this analysis and looking at the results, it is

important to keep in mind the overall objective of this analysis, which is to demonstrate that the off-site emergency planning provisions are in place are compatible with the potential consequences of such severe events.

So first of all, I'll outline the conservatisms that have been incorporated into the baseline analysis. The underlying analysis employs a number of modeling assumptions to ensure that the predictions are conservative and appropriate for emergency planning. So the selected event is one of very low frequency of between one and 100,000 years and one in one million reactor years. The largest possible radioisotope inventory is used, the plan parameter envelop limit is and EPR core, the largest core, at the maximum permitted burn-up. And that maximizes the radioisotope inventory.

No credit is taken for onsite mitigation as would be expected in a real event. There are severe accident management guidelines. Fourthly, it was modeled as a continuous three-day plume. No off-site protection actions were assumed to take place, such as sheltering or evacuation. And finally, the doses were calculated for the most critical group, and were calculated over a period

of seven days.

In addition there were two other key assumptions that were used that are not necessarily conservative. The first is that it was a cold release. In other words, it was a release at ambient temperature conditions. And secondly, mean meteorological conditions were used.

So Environment Canada made some observations with respect to meteorological effects, specifically the possibility or the impact of a hot plume, and the fact that there could be shoreline fumigation effects. And so CNSC took this undertaking to work with Environment Canada and OPG to provide a sensitivity analysis.

So hot plume -- plumes were considered at temperatures of 100 and 300 degrees Celsius. Shoreline fumigation was considered, and more conservative weather conditions were considered in OPG’s analysis.

The sensitivity analysis was performed for the small release frequency rather than for the large release frequency because it is the small release frequency that sets the requirements for the short time off-site evacuation response.

So I'll just briefly summarize what the -- what the results of the analysis are. So for both the -- the baseline, the hot plume and the fumigation sensitivities for the lower protective action limit, the evacuation response is the same. In other words, evacuation would be required out -- up to two kilometres. And at the higher protection action limit there would be no action required.

In addition OPG did some analysis of what they refer to as 95th percentile predictions, and for that one for the lower protective action limits, there would be a requirement to evacuate out to three kilometres, and so there was an increase there. And at the higher PAL there could be a requirement to evacuate up to one kilometre.

So the results of the analysis show that the off-site response is relatively insensitive to the plume temperatures used, and that shoreline fumigation at those plume temperatures was not a consideration.

It is recognized that these sensitivities are examples and that others could be selected such as hotter plumes and other weather

patterns that could produce different variances. So while high temperature plumes could be possible, these would be expected to be of limited duration and would not contribute significantly to the three-day plume because of that.

It is also recognized that other localized weather patterns such as plume trapping could also occur, producing localized radiological effects. While such effects are possible, the effects are not expected to have a significant impact on the overall emergency evacuation plans, given the many other conservatisms that have been employed in the analysis.

So in final conclusion, the analysis to date is sufficient for this point in the project to demonstrate the suitability of the site. At the time of a licence to construct when the technology is defined we could require further analysis to support the emergency planning assumptions. Thank you.

CHAIRPERSON GRAHAM: Thank you very much, Mr. Newland. And if there's no questions, then we will start today's presentation, this afternoon's. And we have as the first one, the Green Party of Ontario, under PMD 11-P1.170.

And the submission has been filed, and Mr. Schreiner, the leader of the Green Party of Ontario. The floor is yours. Welcome.

--- PRESENTATION BY MR. SCHREINER:

MR. SCHREINER: Thank you. I appreciate the opportunity to be here. Chairman Graham and members of the Joint Panel, and all participants today, I appreciate you giving the Green Party of Ontario the opportunity to present our views on the new reactors at Darlington.

I especially want to acknowledge and thank all members of the Joint Review Panel for the time and effort you've put into these hearings. It is an important public service.

Green Parties around the world have in part emerged out of our concerns for the health, safety and environmental consequences of nuclear power. As leader of the Green Party of Ontario, I certainly share these concerns. I'm also deeply concerned about the significant financial costs of nuclear power and the inflexibility of nuclear generated electricity. All of these concerns could have profoundly negative consequences for our economy, our communities and our quality of life.

I'm also concerned about the scope -- that the scope of these hearings do not consider alternative ways of meeting Ontario's long-term energy needs. As a result I do not believe that the panel has adequate information to assess the financial economic environmental health and safety costs associated with the proposal to build new nuclear facilities at Darlington. How can we properly plan without an open transparent and comprehensive examination of all costs, risks and alternatives. It can't be done, and Ontarians deserve better.

At this very moment Ontario is in the middle of its planning process. As you know the province has never completed an integrated power system plan. Although a draft long-term energy plan was introduced in 2010, the Ontario Power Authority must still develop a formal plan and have it approved by the Ontario Energy Board. I believe it is premature to proceed with an environmental assessment until the planning process is completed. Alternatives have been fully explored, and the need for new reactors clearly and transparently demonstrated.

I empathise with you, Mr. Chairman

and members of the panel, for you have a difficult job and you're being asked to perform it with one hand tied behind your back. If I were in your shoes I would find this unacceptable. Indeed it is my understanding that you've instructed Ontario Power Generation to provide an analysis of alternatives, and I hope this is done in an open and transparent and comprehensive way.

The Ontario Green Party believes that the province needs a long-term sustainable energy plan that will provide a safe and affordable and reliable source of energy with the flexibility to adapt to emerging technologies.

The proposed new nuclear reactors at Darlington will not achieve these objectives. Instead, this proposed project will lock Ontario into an expensive, inflexible form of energy generation and will undermine efforts for conservation efficiency in Ontario's growing renewable market.

Given the colossal time and cost overruns associated with every nuclear power project to date in Ontario, the Green Party believes it is irresponsible to invest in new nuclear generation at this time. In fact, Ontario

electricity ratepayers are still paying for the massive cost overruns from previous nuclear installations.

In 1999, the Ontario government broke Ontario Hydro into five companies. In order to keep Ontario Power Generation solvent, a $30 billion stranded debt was transferred to the Ontario Electricity Financial Corporation; $19.4 billion of this debt was related to the unfunded liabilities associated with the cost overruns and poor performance of Ontario's nuclear power plants. We continue to pay this debt on our electricity bills. As a matter of fact, we have paid almost $20 billion to service Ontario's nuclear debt, yet we still owe almost 15 billion. Nuclear power has proven to be a poor financial investment.

Despite claims by the nuclear sector that they have learned from past mistakes, the current refurbishment at Bruce Nuclear Generating Station is once again way over budget and behind schedule. The current situation at Bruce repeats Ontario's historical experience with nuclear energy. On average, the real cost of Ontario's nuclear projects have been 2.5 times greater than the original cost estimates. As a

small business owner turned politician, I think I can safely say that no business owner or investor would put their money into a technology that in its history has never delivered on time or on budget.

Right now there is a cloud hanging over these very hearings due to the cost associated with the new reactors at Darlington. The minister of energy in June of 2009, indeed, postponed the procurement process for the new reactors at Darlington when he experienced sticker shock at the $26 billion price tag for the proposed two new reactors. As a result, the province has passed the buck, asking the federal government for additional subsidies to fund the project.

Given the current uncertainties surrounding the future of Atomic Energy of Canada Limited and the uncertainty around the procurement process, I believe it is premature to proceed with these hearings. Further complicating the cost issue is the lack of sufficient data for decommissioning costs, waste disposal, containment costs, and liabilities associated with accidents. This, combined with the uncertainty of construction costs, has led to wide variances in cost estimates for generating electricity using nuclear reactors.

In surveying estimates from a range of sources, including Moody’s Investment Services to the Ontario Clean Air Alliance, I've seen cost estimates ranging from 15 cents a kilowatt hour to 37 a kilowatt hour while acknowledging that the OPG and the Ministry of Energy suggests lower costs at eight cents a kilowatt hour. At this point, we simply don't know and we won't know until all costs are internalized into the price we pay for nuclear-generated electricity. I don't believe this project should proceed without an independent assessment of all costs associated with nuclear power.

If this project does proceed, two important cost considerations should be taken into account. One is the polluter pays principle as it relates to liability. The Green Party believes that the federal nuclear liability legislation should be changed, removing the $75 million cap on -- for nuclear. In doing so, we can ensure that the nuclear industry lives by the very important principle that institutions should be held responsible for their actions.

Second, we believe that the province of Ontario must protect our pocketbooks

with a legislated guarantee prohibiting OPG from passing cost overruns on to ratepayers and taxpayers. By doing these two things, we could at least put other forms of power generation on a financially even playing field with nuclear power.

The Green Party believes it's essential to explore alternatives to nuclear. Nuclear is an inflexible supplier of baseload power, requires billions in capital investments, and needs a long time to deploy. This means that nuclear makes it difficult for Ontario to adjust to changes in demand, to use renewable sources of power, or to take advantage of more affordable forms of power generation that will emerge from innovative new advances in technology. Committing billions to new nuclear also decreases incentives for less expensive options such as conservation and energy efficiency.

Given how important this is, I would like to explore some alternatives with you because, fortunately, there are less costly, less risky and more sustainable ways to meet our electricity needs.

The lowest cost option is to invest in energy efficiency and conservation.

Energy efficiency and conservation should be the top priority in any financially responsible long-term energy plan. Demand reduction is far more cost effective and financially responsible than constructing new capacity.

Since the summer of 2006, our peak demand for electricity has fallen by seven percent and it is forecast to fall by a further six percent in 2011. Ontario has consistently over-estimated demand and Ontario residents, to their credit, have consistently exceeded conservation targets, yet our electricity consumption per person is still 35 percent higher than neighbouring New York State.

Clearly, we have a huge untapped potential to reduce demand by aggressively pursuing energy efficiency and conservation and at a cost of 2.3 to 4.6 cents a kilowatt hour, energy efficiency and conservation provides the best bang for our buck, helping reduce our hydro bills by decreasing demand and, at the same time, significantly reducing the amount of money needed to invest in new generating capacity. Conservation and energy efficiency provides sustainable long-term savings.

That said, Ontario will need new sources of generating capacity and there are

affordable alternatives to new nuclear. Hydroelectricity, for example, is a less expensive, reliable and clean source of power. Ontario can immediately negotiate hydro imports from Quebec. Current transmission capacity between Ontario and Quebec could displace up to 75 percent of the power expected from the Darlington rebuild, for example, at approximately one-third the price.

Last year, Hydro Quebec's exports to the United States exceeded the total output of our Pickering nuclear generating station. According to the *National Energy Board Act*, Ontario has the right to import electricity from Quebec at the same price that Americans are paying; however, our imports from Quebec are minimal. This doesn't make sense. Furthermore, Ontario could and should explore completing grid connections to Manitoba, in addition to expanding our capacity with Quebec, to create an east-west corridor that will facilitate the availability of inexpensive hydro imports.

Ontario also has additional hydro resources that should be explored within the province. The last independent electricity system operator plan that was suspended anticipated 3,000 to 5,000 megawatts of additional hydro capacity in

Ontario. These sources are not contained in the most recent draft long-term energy plan and should be considered.

Another low-cost option to meet our electricity needs is to simply stop wasting natural gas. Most large buildings and factories in Ontario use natural gas to provide heat. Instead of allowing waste heat to flow unused up our chimneys, why not use it to provide two services, heat and electricity, known as combined heat and power. Combined heat and power plants can have an overall energy efficiency of 80 to 90 percent, which is much better than the 33 percent efficiency of a nuclear reactor. As a result of their very high efficiency, combined heat and power plants can meet our electricity needs at a cost of approximately 6 cents a kilowatt hour.

Depending on whose numbers you trust, this is approximately less than one-third of the projected cost of generation from new nuclear reactors.

Additionally, with prudent investments in capacity, transmission, grids, storage, technology, and research, Ontario could generate all of its extra energy needs from other

renewable resources.

This approach provides more flexibility, security, and avoids expensive investments in new nuclear.

A number of alternatives, including biomass, biogas, wind, solar, landfill gas, present Ontario residents, businesses, and communities with a range of renewable options that can be appropriate to meet their energy, economic, and environmental needs.

Renewables provide a great opportunity to transition Ontario’s energy system from one that is top down, bureaucratic, and centrally managed with a few large generating plants to one that is vastly more distributed with a variety of producers, both large and small, supported by a modern smart grid transmission system.

Moving to a decentralized distributed system presents the opportunity to democratize energy generation in Ontario and create a system where all Ontarians have an opportunity to become self-sufficient green energy producers and entrepreneurs.

This will not happen in Ontario if

we lock ourselves into large scale centralized nuclear generation.

In addition to the financial burden that new nuclear will place on Ontario ratepayers and taxpayers for years to come, nuclear energy has serious consequences for our health, safety, and environment.

And I know the panel has heard about these risks from knowledgeable and qualified scientists and experts.

So consequently on this topic, I just want to say that I've had the opportunity to meet personally with people whose lives have been negatively affected by uranium mining, refining, and enriching.

Beyond the very public tragedy unfolding before us in Japan, many people quietly live every day with the negative consequences of our use of nuclear energy.

These risks need to be explored and understood in a transparent and thorough comparison with other forms of energy generation, some of which I've suggested.

In addition, nuclear power creates radioactive waste which is dangerous for hundreds

of thousands of years. There is no publically accepted way of dealing with this waste. We are merely punting the problem to the future, putting it on to the backs of our children.

We are already seeing and experiencing the problems with disposal as exemplified by the controversy surrounding the shipping of contaminated parts out of Bruce Nuclear overseas through the Great Lakes.

With this in mind, I believe we owe it to our children and future generations to explore thoroughly all of the financial, economic, environmental, health, and safety costs and risk associated with building new nuclear generators.

This exploration must be conducted in an independent, open, and transparent way that compares nuclear power to all other options.

In conclusion, I believe it’s time for a safe, affordable, and responsible approach to electricity generation that invests in the future, not the past.

Building new nuclear is too expensive, risky, and inflexible.

Given nuclear power’s history of financially irresponsible cost overruns and the

lack of public protection in the face of possible catastrophe, the Green Party believes that investing in new nuclear power is an inexcusable and irresponsible allocation of public resources and risk.

The proposed Darlington project should not proceed without a full and thorough public review and an assessment of all project costs against other energy options.

For all these reasons, I request that OPG's proposal to build additional reactors at Darlington be rejected.

Thank you for your time and consideration of my remarks.

CHAIRPERSON GRAHAM: Thank you very much for those remarks.

And we'll now go directly to panel members, and I'll go first to Madam Beaudet.

--- QUESTIONS FROM THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

I have a few points that you have brought before us to look at.

The ministry -- the Ontario Ministry of Energy has done a consultation on the

long-term plan.

And we had an intervenor yesterday that went onsite and counted how many intervenors there were. And for her, she felt that decision cannot be taken on about 345 people.

So I'd like to hear from you. I think people have very busy lives, and these are complex issues.

How do you see another consultation, as you said, regarding all the technologies?

There has been already an opportunity to do that.

MR. SCHREINER: There certainly has been an opportunity for comment on the long-term energy plan. It was actually a very short time frame, if you'll recall.

I don't have the exact dates in front of me, but I believe the proposed plan was introduced in November of 2010, and the comment period closed in early January of 2011.

So I think a more thorough consultation process would have had a longer window of opportunity and would have conducted public hearings around the province because, as you know,

the plan is an $87 billion plan that has significant implications for the future of this province. And I think a wider consultation would have been appropriate on that plan.

Additionally, as you know, the plan hasn't been reformulated into an integrated system plan to go before the OEB yet. So it does seem a bit premature to be holding these hearings until that plan is completed.

MEMBER BEAUDET: We're not doing a consultation on energy policy here. We're reviewing a project. And so I was trying to --

MR. SCHREINER: Sure.

MEMBER BEAUDET: -- to understand where you are situating us.

MR. SCHREINER: Yeah, sure. I appreciate that.

Would you like me to respond to that or --

MEMBER BEAUDET: Yes, please.

MR. SCHREINER: Sure.

I think it puts you in a challenging situation. And I don't want to speak for you obviously. But I would think it would put me in a challenging situation in your position to

make a decision on this particular project not knowing how it fits into a larger plan particularly when there are other options available. And it would seem appropriate to me to be able to explore the economic, the environmental, the health, the safety risks associated with all of those options when making a decision on this particular project.

MEMBER BEAUDET: And I believe that's what we're doing with all the interventions we had in the last three weeks.

MR. SCHREINER: Right.

MEMBER BEAUDET: The second point is about the liability associated with accidents.

And you said that -- and other intervenors have mentioned it also -- that 65 million is not sufficient, and we should remove the cap. But your other position talks about polluter pays principle.

And I'd like to hear a little bit more. If the liability is not with the taxpayers, how do you consider that, you know, the companies, like other industries, should pay for any damage; is that what you mean?

I'd like to hear a bit more of your comments on that, please.

MR. SCHREINER: Sure, yeah.

So other forms of power generation, so whether it's wind or solar or biomass or gas or what have you, carry liability insurance.

Nuclear isn't required to. So it makes it much more challenging to, one, assess risk because I would make the case that probably some of the best people, the most qualified people to assess risk in the world are people in the insurance sector. That's what they do for a living.

And so with other forms of power generation, they're able to assess risk, and that risk is paid for through their insurance.

Because the nuclear industry is not subject to the same requirements to carry liability insurance, that risk is placed on to the backs of taxpayers, essentially, and I don't think we have an adequate system for assessing that risk.

And I think a more -- it would be a more even playing field to compare nuclear to other forms of power generation if all of those costs were internalized in the process.

MEMBER BEAUDET: I would like to

go to OPG on that and ask for their comments, please?

MR. SWEETNAM: Albert Sweetnam, for the record.

The *Nuclear Liability Act* talks about the potential -- how you deal with the potential effects of an accident that impacts off site.

On site, for our equipment, our site, our staff, we carry our own liability insurance that actually covers everything that's on site. Off site, there is a $75 million limit under the Act that we would be responsible for.

At present, there is a bill that was going through the House in its second hearing, Bill C15, which envisages the change from 75 million to 650 million. And OPG has spoken at the committees in Ottawa in support of this change, so we would support the higher change.

Unfortunately, the election was called and the bill never went through, so our position is that we support the change and the liability from 75 to 650.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you Madam Beaudet.

Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman.

Many intervenors have brought up the points you have raised considering alternatives and different strategies in place of nuclear generation and nuclear power.

As Madame Beaudet has noted and you perhaps know, the Assistant Deputy Minister of Energy was here yesterday.

MR. SCHREINER: Okay.

MEMBER PEREIRA: And we talked about many of these alternatives. And coming out of that discussion, Ontario Power Generation and the Minster of Energy are going to provide more information on consideration of alternatives, which would then be input to our environmental assessment.

But in his discussion, he talked about the options of hydroelectric connections to Quebec, to Manitoba, and also to Newfoundland.

MR. SCHREINER: Right?

MEMBER PEREIRA: And what were the

issues that, you know, impact on a decision to go those routes. There are certain considerations there. He also talked about renewables and how renewables are considered energy efficiency initiatives.

And a number of these options that you present, you presented more information of what went into the Ministry of Energy's decisions on energy mix. So that might be useful for you to look at, the transcripts, because that would perhaps indicate how far the province has gone in trying to go down that alternative route.

And on balance, then, the decision he made -- they made -- was that they would stick with 50 percent nuclear for now.

You did make a comment on the cost of decommissioning and waste, long-term management of waste. As you may probably know, the operator's nuclear generating stations are required to fund up front the cost of decommissioning and management of waste. And that is a condition of the licences that they hold, and segregated funds have been set up to fund those costs.

And so there is a provision for coverage of those costs. And those, from what

we've understood from information provided by the CNSC, those costs are revisited -- cost estimates are revisited at a certain period of -- related to licence renewal, perhaps about ever five years depending on the license and the cost, the segregated funds increased based on current understanding of what the challenges are and to take account of inflation.

So a number of the issues that you raised have been addressed and we have received information that we can consider in conducting our environmental assessment review for the proposal to build new nuclear reactors.

And that's what we're looking at, the environmental impact of a proposal and application from Ontario Power Generation to build new nuclear reactors. Thank you.

Thank you, Mr. Chairman.

MR. SCHREINER: But if I could just respond, I think it's fantastic that you're having the opportunity now to explore some of these alternatives and I think it's -- I commend you for asking OPG to provide that information.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

I'll go to the floor -- no, first of all, I'll go to -- yes, the floor and I'll ask OPG if they've any questions?

MR. SWEETNAM: Albert Sweetnam, for the record.

No questions. Thank you.

CHAIRPERSON GRAHAM: CNSC?

DR. THOMPSON: Patsy Thompson, similarly no questions. Thank you.

CHAIRPERSON GRAHAM: Thank you.

Government agencies, which I don't see any this afternoon. Environment Canada are here? Oh, yes.

MEMBER PEREIRA: But they have no questions.

CHAIRPERSON GRAHAM: No, you don't have any questions? Fine.

Okay, then we'll go to the floor. And Brennain Lloyd, Ms. Lloyd of Northwatch, you have the first question?

--- QUESTIONS BY THE PUBLIC:

MS. LLOYD: Thank you, Mr. Graham, Brennain Lloyd from Northwatch.

Just as a point of information before my question, I've noticed that the panel has

interest in the long-term energy plan consultations, and just as detailed for the record, the consultation period was November 23rd to December 7th -- sorry, to January 7th, which was 45 days including the Christmas holiday.

It was preceded by an online survey. I know we filed our response in September 2010. I am not aware of efforts on the part of the Ministry of Energy to engage the public in those.

We found the one by our regular monitoring of the Environmental Bill of Rights Registry and the second by another interested party sending us an email to alert us of the online survey.

We certainly did participate in both of those opportunities. As I know a number of other intervenors have, although you haven't asked many of the ones who I know, in fact, did participate. So just following up on your interest.

My question is further to the presenter's comments about nuclear waste and concerns about its long-term management. And I wanted to follow up on a comment by Canadian Nuclear Safety Commission.

On day 11, CNSC made a comment which by my listening didn't really follow from the previous presentation, but they made a remark that -- stating that ion exchange resins are not incinerated at the Western Waste Management Facility.

I haven't been able to find a description of ion exchange resins anywhere in the evidence, so I'm wondering if the CNSC could share with us their source for that statement and if that referenced document could be either identified or added to the record?

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

Mr. Howden, do you ---

MR. HOWDEN: Barclay Howden speaking.

That was from information provided by our waste specialist. I'd have to ask them for that reference. That was from their knowledge, unless OPG has that information handy.

CHAIRPERSON GRAHAM: OPG, do you have any -- can you clarify this or make an answer, Ms. Swami?

MS. SWAMI: Laurie Swami, for the

record.

We will have assessed the wastes that are possible from our operations in the waste technical support document, but I believe that the conversation that took place, as I understand day 11, was with respect to the ongoing operation of our incinerator at the Western Waste Management Facility, and that facility is both -- it will have a certificate of approval under the Ministry of Environment, but it is also regulated by the CNSC and there are specific waste acceptance criteria that are established for the various streams that we have.

And so that would be the reference that I believe that the CNSC would have been aware of.

CHAIRPERSON GRAHAM: Some clarification, Mr. Howden.

Is it a document and if it -- that you could undertake to provide? Could you give us a little clarification?

MR. HOWDEN: Barclay Howden speaking.

I'll have to check with our waste folks on whether it's drawn from a particular

document. I think they were speaking from their experience of doing inspections at the site, so I'll have to check on that.

CHAIRPERSON GRAHAM: So to expedite this, I'm going to give it an undertaking, Undertaking Number 78.

And if it isn't a document, then CNSC will tell us that and give us the references which they spoke from. If it a document, we'll get it as an undertaking.

CHAIRPERSON GRAHAM: Is that all right, Ms. Lloyd?

MS. LLOYD: Thank you, Mr. Graham.

I think there are two points to this. One is OPG hasn't described their management of this part of the waste stream in their evidence.

Two is CNSC has made to date an unsupported statement about that component of the waste stream. There is -- you know, there is -- there are reports available in the public domain around ion exchange resin management, including incineration, including peer review documents, IAE documents, I think that we need to have supporting documents available if Mr. Howden's remark is to remain on the record.

CHAIRPERSON GRAHAM: We'll clarify that, ask Mr. Howden when he -- with this undertaking -- to clarify what documents are available and what can be done, and they'll check the transcripts of what you're saying today and what you're asking today and see if that can be followed up.

Do you have another question?

MS. LLOYD: A-11, page 189.

CHAIRPERSON GRAHAM: Thank you very much.

MS. LLOYD: Thank you.

CHAIRPERSON GRAHAM: I'm going to ask you just to stay there for a second if Mr. Schreiner doesn't mind.

You had -- or my understanding was that you had asked for some information early on in the process and you haven't got it yet.

Now, I just want to say that if it is referring to undertakings, we're not going any further because we've given our ruling on undertakings. But my understanding is from my Co-manager here that it is not that, that it is in reference to a document that Ms. Swami had referred to and so on.

Would you clarify that and maybe put your question to see if we can get that resolved, since this is coming near the end and we want to get things cleaned up?

MS. LLOYD: Yeah, that's right. Thank you, Mr. Graham.

You might recall back on day two when there were presentations being made that -- around the vulnerability of the proposed new nuclear power plant to extreme natural disturbances.

And the presentations made by the agencies and the Proponent focused very much on seismic events. And we had asked some questions with respect to other extreme weather events, natural disturbances, particularly tornadoes and hurricanes.

Ms. Swami referred me to Document 105 in the registry. I looked at that. That was the licence to prepare the site, and then I looked at the -- the next document down was the nuclear safety considerations which was one of the supporting documents. The next document down was with respect to site boundary considerations. That was, I believe, on day four.

CEAA staff assisted by providing that document because I hadn't been able to locate it in the registry, and I was also referred to the updated plant parameter envelope.

I've reviewed all of those documents. I find references to tornadoes, a single reference -- two single references to hurricanes. I don't find the fulsome discussion that I think is required, that I think you need to have in front of you, about the vulnerability of the facilities to those extreme weather events.

And I think there are two factors -- and this goes back to our discussions, day two, three, four -- around both the resilience of the operation in the face of those extreme weather events and the reliability of the essential power services. And those discussions -- I could detail for you what I did find.

CHAIRPERSON GRAHAM: No, I think we're okay.

MS. LLOYD: I didn't think you'd like that.

CHAIRPERSON GRAHAM: And I think Madame Beaudet would because I know that we have had -- when IRs were being prepared and so on,

there was considerable discussion.

So, Madame Beaudet, would you like to just clarify that because I believe we have a lot of that information?

MEMBER BEAUDET: In the documents, “Licence to Prepare a Site”, there’s some documents that are part of the submission and also additional documents and supplementary documents.

And OPG can confirm that, but there has been -- there’s a section or a document within this list that refers exactly to flood protection and studies of extreme weather, et cetera.

I don't know if you have the exact number, but the Secretariat also could provide you with that reference. But we do have -- received a document regarding that aspect.

CHAIRPERSON GRAHAM: I’ll ask the Secretariat to try and work with Ms. Lloyd to see if we can get the clarification that Madame Beaudet is referring to because, as I say, I remember very distinctly that it was done, so we’ll try and assist you.

And OPG, I guess, do you want to make another comment, Mr. Sweetnam?

MR. SWEETNAM: Albert Sweetnam, for the record.

Before we address the issue on tornadoes, just to add some clarity to the previous question on the resins. We have included the ion exchange resins in our nuclear waste management TSD and it's mentioned in several sections; in section 1, in section 3 and section 4. That's one clarification.

The other clarification is the comments made about the province's consultation on the long-term energy plan.

For clarity, there were public stakeholder and online consultations that were conducted from September 21st to November 18th. This included 40 stakeholder sessions and over 2,500 online responses. And after that, on -- the long-term energy plan was issued in draft on November the 23rd for a 45-day posting during which the public, again, had the opportunity to comment.

On the tornado issue, I'll ask Dr. Dr. Jack Vecchiarelli to address this.

DR. VECCHIARELLI: Jack Vecchiarelli, for the record.

Just to provide the reference for

the fulsome discussion regarding tornadoes and other meteorological hazards, since you found -- or since reference has been made to the Nuclear Safety Considerations Report, I'll refer the intervenor to Reference 5 in the Nuclear Safety Considerations Report, which is the reference to the Part IV site evaluation document concerning evaluation of meteorological hazards.

CHAIRPERSON GRAHAM: Thank you, OPG. Thank you, Ms. Lloyd.

MS. LLOYD: If I'm recalling the right part of that document, I think what it discusses is the probability, not the consequence.

And I think it's an 8.7 tornado is estimated per year and I don't recall the hurricane. I think the hurricane, there was a reference to an NRC document and there was a reference to Hurricane Hazel and that was it for the hurricane or tropical cyclone discussion.

CHAIRPERSON GRAHAM: Mr. [sic] Vecchiarelli, would you like to clarify a little further and then we'll have to go on to another questioner.

DR. VECCHIARELLI: Jack Vecchiarelli, for the record.

So just to clarify, we've identified that a Fujita Scale 4 tornado is something that would be considered appropriate as a design basis threat to the site, and that would be considered in greater detail in the construction licence stage and it is part of the plant parameter envelope, it's bounded for Fujita Scale 4 tornado.

And so the main point is that the new build designs are expected to withstand at least an F4 tornado and that is captured as a bounding magnitude tornado in the plant parameter envelope.

CHAIRPERSON GRAHAM: Thank you, Ms. Lloyd.

MS. LLOYD: I was aware of that, we'll leave it at that. Thank you.

CHAIRPERSON GRAHAM: Thank you very much. We've tried to accommodate you wherever we can.

The next questioner is Mr. Haskill.

MR. HASKILL: My name is Sanford Haskill and I represent FARE, and a citizen of Norththumberland County.

I'd like to make a few statements

and you've let other people have verbal diarrhoea and I would like that afforded to me at this time. And I have a question when I'm done, sir.

As you know, I think you will get the understanding that I say what I think, and this time I'm talking from the heart within me and not where the plutonium is.

Mr. Chairman, I'd like to thank you for getting this building for us to have this hearing in. It's been a fabulous facility; whoever is responsible I would like to thank them for that. I've been to a number of hearings, as you know, and I think this is even better than the 13th floor on Slater Street.

I would also like to thank the staff of the CNSC and CEAA and these ladies behind me. They've been wonderful to us. We may not have liked their answers, but at least they tried to accommodate the people. And I would like on behalf of all the intervenors, which I've talk with a great number of them, we would like to thank you or whoever is responsible for this.

And I'd like to thank OPG for their presentations. I don't think they were well enough prepared, but that's their responsibility

not mine. And, again, I want to thank you on behalf of all the people.

The only one criticism I have, there is no public transportation to this building, and we had Mr. O'Toole and Mayor Foster here and I think they're God in this area and there's no reason why they can't get the Go Bus to stop out here every hour so that the people can get here and we would have more people here.

Now, I will get to my question, sir, and thank you for letting me suffer through that.

I'm not clear on the procedure you three people are going to make. Are you going to meet, just you three, to come up with a decision or is OPG, CNSC and CEAA going to be with you when your decision-making is going on?

CHAIRPERSON GRAHAM: Well, the process -- and I have some closing remarks, but the process is not finished yet by any means.

We are giving intervenors 20 days or 25 days -- 20 days to respond to what they've heard, after all of the or after most of the undertakings are in. Those will be sent to us, we will meet on that.

We are going to meet with OPG and

the CNSC on the security issues because that is a big part, we have to meet with them and then we will decide the next steps.

But the process is, is to wait until the undertakings are finished then go and give the time period required by intervenors who want to give closing comments -- I guess that's the word I'm looking for, and then after that we will review those, along with other things.

But in no way we are closing the door on any of the process until we feel, and my colleagues are comfortable, that we have all of the information we require to then start working on a decision.

MR. HASKILL: Thank you.

A further question, Mr. Chairman, at what date, roughly, would you figure your decision will be rendered?

CHAIRPERSON GRAHAM: I can't answer that. We're not even there yet, this 17 days or whatever it's been, is part of the process. We've been at it 18 months so far and I really can't answer when the panel will issue its report.

MR. HASKILL: But would you think it would be within two months, you must have some

idea?

CHAIRPERSON GRAHAM: Once we close the record, which we're not there yet, then we have 90 days to write a report.

MR. HASKILL: That's what I wanted to hear.

CHAIRPERSON GRAHAM: I wasn't following.

But we are not near ready to close the record. And then we will have a report; we submit that to the Government of Canada, the Minister responsible, and they will make their decisions on that.

MR. HASKILL: And could I ask one further question?

CHAIRPERSON GRAHAM: Yes.

MR. HASKILL: Where or is it possible to appeal your decision?

CHAIRPERSON GRAHAM: You may -- there's always a way to appeal but we haven't made a decision yet so I don't -- you can't appeal it yet because we haven't made up our mind.

MR. HASKILL: I'm waiting -- I wanted to know if and when you do make up your mind is there some -- talk to your gentleman beside you

there -- I guess I'll call him ---

CHAIRPERSON GRAHAM: There's the Federal Court, always -- the court of last resort is the Courts of Canada, so the Federal Court. So yes there is always a way to do that.

MR. HASKILL: But there's no way that you can appeal it without going to Court what you're telling me?

CHAIRPERSON GRAHAM: We can always review our decision if we want to as we go along but really the ultimate end is the Federal Court.

I'd like to just change it a little bit, just on one thing, one point you made. My co-managers worked very closely with the Mayor of Clarington here and Mr. Foster was the one that brought the co-managers back a long time ago.

We were looking -- we wanted to meet in this area, we wanted to meet in Clarington because that's the host community and we needed enough room to accommodate in the manner that I wanted to conduct these hearings, we wanted to do it in such a way that everyone was comfortable.

Other than the transportation this was really the only facility that was available and to Hope Fellowship for making this available, I

think there's -- a lot of credit has to go first of all to the owners of the building but my co-managers Ms. McGee and Ms. Myles and to the Mayor, they worked out the details.

And it has worked out very well, other than the transportation issue which I realize -- we've heard about that before.

So thank you for your comments.

MR. HASKILL: And I applaud you for doing that, sir, and God bless you back to New Brunswick.

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

Mr. Kalevar, I think you have a question?

MR. KALEVAR: Well, I will not repeat what Mr. Haskill has said because it will just take your time.

But I have two questions, if you will permit; my question is, of course, to the intervenor through you.

I'm Char Kalevar for Just One World, for the record.

In Canada there must be at least 10 million cars and each car carries a liability of

about a million. Ten (10) million times a million sounds like 10 trillion to me. So really the liability for -- the nuclear liability should not be 600-some million or something, it should be in the neighbourhood of 10 trillion.

The liability of a nuclear plant is more than the liability of all the cars in Canada. That's what I'm basically saying.

And so I hope the *Liability Act* -- I'm asking now, through you to the ---

CHAIRPERSON GRAHAM: Your question, that's all -- I'm just waiting for the question.

MR. KALEVAR: Would Mr. Schreiner support a liability of $10 trillion for the nuclear plants that are planned?

CHAIRPERSON GRAHAM: Mr. Schreiner?

MR. SCHREINER: I would support the insurance industry making that decision because I think they're the most capable of making it, rather than have it be a political decision which is what it is right now and one of the reasons I think it's so low.

CHAIRPERSON GRAHAM: Mr. Kalevar,

I think you had one other question?

MR. KALEVAR: Yes. And my second question is; since yesterday the Green Book came out with the carbon tax, when Green Party of Ontario comes out with the Green Book will it include tax on nuclear waste?

CHAIRPERSON GRAHAM: Mr. Schreiner?

MR. SCHREINER: I'm not prepared to answer that at this point but I'm happy to have that conversation with you as we proceed though that process.

Thank you.

MR. KALEVAR: I have written a letter to the Chief of Police and the Chiefs of the fire departments a few days ago, I haven't received any reply, I would like to file this letter with you ---

CHAIRPERSON GRAHAM: You file that, yes, with the secretariat back there and we'll review it. You can't file it with me -- with the secretariat. If you have some information then we'll put it on the web.

Thank you very much for your questions and we appreciate -- always appreciate

your questions, Mr. Kalevar.

MR. KALEVAR: Thank you very much.

CHAIRPERSON GRAHAM: Now, I think the last questioner is Ms. Lawson.

And somebody put their hand up, maybe you'd file with the secretariat back there so I know who is going to speak.

Ms. Lawson, do you have a question?

MS. LAWSON: Thank you. Pat Lawson.

This is a question for Mr. Schreiner. Since the Ontario Environmental Assessment Agency plays a huge role in this hearing I wonder if you know, Mr. Schreiner, why there has been no formal discussion, that I have heard, and I have to back up and say, I've been able to come here for five days only, out of the whole hearing but I've never heard a proper discussion of alternative means of supplying power, other than going the whole nuclear route.

And I'm wondering if you know the reason for this?

CHAIRPERSON GRAHAM: Mr. Schreiner, over the period of time we have

discussed alternate means, I don’t know if you followed the process but if you would like to respond. I’m not sure whether you can but if you want to attempt it that’s your prerogative.

MR. SCHREINER: I was just going to say that I can’t speak for the Ministry or any of the Ministries on why that discussion has or hasn’t taken place, other than to say that I feel that, at least, I presented some viable alternatives for the panel to consider and for the Ministries to consider.

Thank you.

CHAIRPERSON GRAHAM: We thank you for that, Ms. Lawson.

MS. LAWSON: Thanks.

CHAIRPERSON GRAHAM: Thank you.

One more, and I don’t have the name, I apologize ---come to the phone -- microphone and identify yourself and --

MR. LEISTNER: Hi. I am Raymond Leistner and I'm requesting that the calculations be scrutinized carefully, in particular, the eight cents per kilowatt hour estimate. I believe it was based on an 85 percent capacity factor, which would mean the reactor is operating at full-rated output

85 percent of the time. Fifteen percent would be unscheduled and scheduled maintenance.

Yesterday I learned that when the sun is shining or when the wind is blowing, these reactors will actually be operating at a reduced power; therefore, the 85 percent number is -- might be in error. And if that number needs to be reduced, then the price estimate of power must be increased above eight cents per kilowatt hour, so perhaps there are other errors in the calculations that have been presented by people and they should be carefully scrutinized.

CHAIRPERSON GRAHAM: Thank you. I'll take that as to the Chair and that, yes, we will. We are going to review all of the information that’s been provided to us. You talk 85 percent. Yesterday, there was an 80 percent figure and then there was another percentage, so these are all things that the panel will review as we go along, so thank you very much for your observation.

OPG would like to respond. Ms. Swami, if you want to, go ahead.

MS. SWAMI: Laurie Swami for the record. I -- I believe the intervenor was

referring to a conversation that we had with respect to the refurbishment costs, at which time we have estimated what the costs would be based on a range of capacity factors and we have taken into consideration a range. It's not just one number. And the intent is to understand if it -- if it could be higher or lower. And what I said was that the -- we have a high confidence that after refurbishment, the costs would be less than eight cents per kilowatt hour. I didn't provide an exact figure.

As we go through further cost estimating that will be presented at the Ontario Energy Board, all of those factors will be considered going forward. So I think when deliberating all of the costs that have been presented, the costs that we present go forward to the Ontario Energy Board, where that is examined in detail.

CHAIRPERSON GRAHAM: Thank you very much. Mr. Schreiner, thank you very much for coming. Thank you very much for your participation and your interest in these hearings.

The next two registered -- the next two registered ones on my list are oral

statements and, as everyone knows, oral statements are limited to 10 minutes and only questions from the floor -- from the panel are permitted. And my understanding is that Mr. Doug Anderson, I believe, from the Durham CLEAR -- Durham CLEAR, which is the Citizens Lobby for Environmental Awareness.

Mr. Anderson, welcome and the floor is yours. As I've said -- maybe you've heard me say it and I don't want to be repetitious. Speak as close to the mike as possible and not too fast for the benefit of the translation.

--- PRESENTATION BY MR. ANDERSON:

MR. ANDERSON: Well, thank you very much for allowing me to speak to you today. This is -- I must say, as -- as somebody else previously said, this is a far cry from the provincial environmental assessment process. This is much better. You actually sound like you're listening which is a -- which is a change.

As -- as I've been introduced, I'm Doug Anderson. I'm the president of Durham CLEAR. The reference in your thingamajig as -- as to the definition of CLEAR, you left off the last word, which is responsibility, so it’s Citizens Lobby for Environmental Awareness and Responsibility, and

that pretty well expresses our purpose and our mandate.

The organization was formed fairly recently because there was a need for a broadly-based permanent environmental organization here in Durham region. We -- we needed some -- an organization which was in a position to react to environmental issues as and when they arose. All too frequently environmental fights are lost because the structures that are necessary to mobilize an effective fight are absent and by the time citizens get organized, it is already too late.

I have to admit that I have not been following these hearings as -- as we have been focused almost entirely on the garbage incinerator -- sorry, it's an energy from waste incinerator proposed just down the street. We consider that -- that incinerator a far more serious and much more immediate threat to the health of Durham region citizens.

Nuclear energy is a reality in Durham region and has been for almost 50 years. In that 50 years, the population has grown dramatically and residents generally are clearly

unconcerned. Many of those residents work in the nuclear industry. It's one of the largest employers in the region and most of these people are proud of their industry and think of it as highly responsible from an environmental point of view. Indeed, there are many environmentalists who are pro-nuclear primarily on the basis that it does not produce greenhouse gases.

There are few subjects which divide people so starkly as nuclear energy, in which people will cite the very same data to support opposite views; thus, proponents will speak of the very few serious accidents in the world as evidence of how safe nuclear is versus the opponents who will cite those same accidents to show how dangerous it is. The same health studies are used by both sides to prove opposite points of view. It is virtually impossible to find anything on nuclear energy that is free of bias.

Fifty years in though, it can be said that the dire warnings from the anti-nuclear lobby have, at the very least, been exaggerated. Having said that, however, Durham CLEAR opposes any new nuclear at Darlington for several reasons.

Whether existing nuclear plants

should be refurbished should be based on cost effectiveness. If they can be replaced with renewable sources of power for less than the cost of refurbishment, then they should be shut down.

Our reasons for opposing new nuclear are several. The first is need. We are not convinced that there is a need for new nuclear. New nuclear plants have been on the urgent to-do list of the Ontario government for at least 20 years, but they keep getting pushed forward because the urgency never materializes. Consumption of power has not risen as fast as expected and has actually levelled off and dropped in the last few years.

The economic slowdown has been a factor in this, but people and businesses have discovered with the help of numerous government and private programs that the cheapest power is the power you don't use. Conservation works and there is still huge amounts of power that we can save.

The apparent urgency for new nuclear is driven in part by the decision of the Ontario government to phase out coal power. We strongly support this decision. The epidemiology of coal power generation is very clear with

hundreds of premature deaths every year from the air pollution-related diseases. The health effects from coal power in Durham region are almost certainly greater than from the two nuclear plants, even though those coal plants are more than 50 miles away.

Air pollution is one of the major reasons why we are so strongly opposed to the garbage incinerator here. The emissions from that incinerator will have a very similar profile to a coal plant with the addition of dioxins and furans which come from burning plastics. Clarington already has one of the most polluted airsheds in the province largely due to St. Mary's Cement, which is right in this area as well.

So without coal or nuclear incineration, where will our power come from? As indicated earlier, we believe the need is exaggerated, but, regardless, we believe that there is ample opportunity to expand alternative non-polluting energy sources like wind, solar, water and some of the others that -- that Mike Schreiner mentioned. I'm sure that you have heard numerous submissions on these and I will not dwell on them. They are -- the experts are -- are not with -- with

us.

The next -- the next reason we oppose the -- the nuclear plants is cost. While nuclear in the past was often portrayed as -- as cheap energy, these -- this impression was -- was driven by -- by a lack of including costs of planning, construction, decommissioning, waste disposal, and -- and the list goes on. Experience indicates, however, that nothing is more expensive than nuclear. The inability of the nuclear industry to produce anything on budget or even close is a huge concern. No industry other than the military has a poorer record of cost overruns, subsidies and bailouts, and that doesn't even cover the still unresolved matter of disposal of nuclear waste which governments will be responsible for forever.

Our last concern is low-level radiation. While we acknowledge the controversy on this subject, we believe in the precautionary principle. The human body has a certain capacity to resist an unhealthy environment. We were designed by natural evolutionary forces to live in a world in which we are constantly exposed to a range of environmental challenges, including

background cosmic radiation and numerous toxic chemicals. These challenges damage our bodies and we were given a finite capacity to repair that damage. When we pass those limits, we get sick.

While the damage from chemical pollution is different from radiation and it's different again from infections from a host of bacterial and viral agents, our resistance to each is overlapping, and our susceptibility to fend off any of these is affected by exposure to the others.

I know of no health studies that look at the total toxic load from all sources and the impact on health. Such studies would be useful, and Clarington would be a good place to start them because we have a great many challenges here.

Many people in Durham Region are at or near those toxic limits. Durham Region has one of the highest levels of asthma in the province, and while that is due to air pollution, and it's doubtful that nuclear plants play any direct role, these things are all additive. A person who is unhealthy from asthma has less resistance to disease from other sources.

We believe that the Ontario and

Durham Region need to recognize that nuclear energy is a sunset industry. The recent events in Japan have, once again, soured the public perception of nuclear power and countries everywhere are reconsidering their plans for new plants, and Ontario should too.

The money that would have been invested in a new nuclear -- new Darlington reactor would be better spent on developing better sustainable energy alternatives.

Thank you.

CHAIRPERSON GRAHAM: Thank you very much for your comments.

Now, I'll go to panel members.

Mr. Pereira.

--- QUESTIONS BY THE PANEL:

MEMBER PEREIRA: Thank you, Mr. Chairman.

I'll start with your comment on health effects from multiple stressors, and not just focusing on nuclear but focusing on other toxic elements in the environment.

I wonder whether CNSC staff can comment on that; whether there's been any work to look at those aspects?

DR. THOMPSON: Patsy Thompson, for the record.

There was a lot of work done when research was being done on PCBs, dioxins and furans and the family of chemicals in that group, and models were developed to assess exposure to that family of chemicals together, and risk factors were based on the additivity of those exposures. There's also some research that has been done for multiple exposures to metals, for example.

One of the issues with conducting or considering multiple exposures to chemicals from a human health point of view is that not all chemicals affect cells and organs in the same way, and they don't all have the same endpoint. And so care needs to be taken that we add things that can be added.

And so from a human health point of view, risk assessments where there's a clear mechanism and the dose can be added for specific diseases or endpoints has been done, but it's not often done in environmental risk assessments, but some research has been done.

For exposures to non-human biota, it tends to be a bit simpler because we tend to

look at endpoints such as mortality or effects on reproduction, which are sort of looking at total exposures and total body burdens.

And so there has been research in that area as well, but that work isn't often integrated into risk assessments, except at the end when we have risk quotients for individual chemicals and we tend to add them.

MEMBER PEREIRA: Thank you.

And I'd just like to comment on some of the points and observations you made.

You talked about residents in the region having different viewpoints on the same issues, with some being very pro-nuclear and some being fearful of nuclear and others being concerned about health impacts and some saying there's no impacts.

And we found that in our -- over the past three weeks as we've had intervenors come here, that the views are very polarized when we're talking with people from the region and from further afield, that it seems like there's two camps on the same issue, and we're trying to sort out what the feeling of people are and also to listen to the science and the -- and the experience

from the government departments on different aspects.

But it's good to hear from the public and environmental organizations on what their feelings are, but it's good to get recognition from a group such as yours that there are differences and that people do feel strongly on these issues one way or the other. That's very valuable input. Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: You've got to get the mic on. I'm sorry, go ahead, sir.

MR. ANDERSON: Yeah, my observation, and I've been involved in both environmental issues and end up -- had a lot of contact with the nuclear industry many years, and there just simply isn't any middle ground anymore. The middle ground has just simply disappeared. Everybody -- it's one side or the other, and it's hard to find anybody who takes a neutral position.

CHAIRPERSON GRAHAM: Thank you for that.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

You said that your organization is Citizens Lobby, the title for Environmental Awareness. And you are -- you say that you are concerned with certain aspects like pollution.

Just -- you must have looked a bit at the documents and there's a proposal -- there was a proposal by Health Canada that during the site preparation if there were exceedances of particulates and other source of pollution for air pollution, that there would be committee and they should have a dust management program, et cetera.

And I was wondering if these issues have been discussed by your members?

MR. ANDERSON: I can't say that we have had discussions. You know, clearly -- I mean, there's a issue with -- a lot of environmentalists have a problem with a lot of government processes, and the difference is between the intention and the execution very frequently. I mean, you can say you're going to monitor something or other, but does it actually take place in the final analysis. And that's something you don't know at the time, but there's a lot of suspicion, let's face it. With justification.

A lot of things just don't happen

the way they're supposed to happen. And, frankly, I'll tell you, the incinerator's an example of that.

Lots of promises, but, you know, when you look at the fine print, they're going through the C of A process right now, and we're reading the C of A and there just isn't -- it is -- what they promised to do in the environmental assessment just isn't in the certificate of approval in their application there, and now we're fighting that one. So ---

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much, Madame Beaudet, and to you, Mr. Anderson, thank you very much for your observations and your statement.

Now, my indication here is that we have one more oral statement, and that is by Ms. Julia McCrea, and Ms. McCrea, the floor is yours.

--- PRESENTATION BY MS. McCREA:

MS. McCREA: Good afternoon, Chair and panel members and other participants. My name is Julia McCrea. I'm a citizen and resident in Oshawa, the nearest city to the proposed site. I'm

also a secondary teacher and a proud member of the Ontario Secondary School Teachers' Federation.

I care about the environment and I have actively participated in a number of progressive environmental organizations and activities.

I care about the future environment we are creating for the children, young people and citizens, not only here in Oshawa and Durham Region where we have two large nuclear facilities located, but also in the broader context of Ontario and Canada.

We are all here reviewing a proposal for the expansion of nuclear power generation facilities at the Darlington nuclear facility in Clarington. This is a project operated by Ontario Power Generation, OPG, a Crown corporation of the Ontario government

The review of this facility, which was proposed by the provincial Liberal government in Ontario, was directed by the recent federal Conservative government's Minister of the Environment and Canadian Nuclear Safety Commission as required under the current relevant federal legislation.

The purpose is to carry out an environmental assessment of the complete lifecycle of the project and to review a licence to begin site preparation.

I'm here to provide my views on the implications of the proposed project and the environmental effects of the project. I'm aware that my comments may echo those of other speakers.

My concerns. Number One: This environmental assessment is fundamentally flawed in at least six ways. One, we are not considering the use of any other renewable or alternative energy sources, such as hydro, solar, wind, geothermal energy production to meet our future energy needs.

Two: The reactor technology for producing the new nuclear power in this project has not been identified.

Three, the whole nuclear fuel cycle is not being considered, from the extraction and refining of uranium fuel to the manufacturing of fuel rods to the transport of the nuclear fuel to the end waste storage of the toxic nuclear waste produced in power generation in the reactors to the end decommissioning of old reactors, in terms of the risk to citizens and the many environments

where these activities take place across Ontario and Canada.

Four: The possibility of damage to this proposed nuclear facility due to natural disasters, such as that caused by the recent earthquake in Japan, has not been included.

Five: The possible risks to the environment, not only affect Canadians, but also Americans and potentially others internationally who share the Great Lakes' watershed with us, who are downstream of potential leaked radiation into Lake Ontario, and who are downwind from radiation released into the atmosphere from this site.

International pollution can have detrimental effects on the atmosphere, oceans, rivers, aquifers, farmland, the weather, and biodiversity.

Transboundary, environmental impacts, health risk assessments, and how to mitigate them have not been included in this analysis.

Do we not have international obligations to consider here?

Six: There is a lack of long-term perspective health studies, bio-statistical, and

epidemiological health studies in Ontario and Canada around each of the already existing nuclear facilities involved in the nuclear fuel production cycle let alone this proposed facility.

Why is this public process being allowed to continue in light of these flaws and facts?

My second concern: Is nuclear power the best we can do for our future energy needs?

In the light of the facts of, A, the declining availability of fossil fuels, oil, coal, and gas and of uranium resources; and, B, the rising costs of these fuels to the consumer; why are we continuing to pursue the most expensive option, nuclear energy?

There is a huge legacy of debt and public expense that has already been created by the construction and operation of the existing nuclear facilities in Ontario.

There are other important public needs that need to be addressed from universal childcare to quality comprehensive heath care and housing for elders.

It’s time for less expensive, less

risky alternatives and energy conservation measures to meet our current and future energy needs.

My third concern: Nuclear power generation in Ontario and elsewhere has huge risks to the health of the surrounding population, from the release of radioactivity into the environment damaging air, water, soil, flora, fauna, and food.

Look at what's happening in Japan as a result of the recent earthquake and tsunami damaging the Fukushima nuclear reactor.

The history of the Chalk River reactor, Bruce nuclear power facility at Kincardine, and of nuclear power -- Pickering nuclear power facility show that there have been leaks that impact both workers, the environment, and everyone downstream or downwind.

The Durham Nuclear Health Committee has already identified elevated levels of human cancer in the area of the existing Darlington nuclear energy operations.

While these cancers cannot be directly linked to the power plant, the correlations of cancer incidents with nuclear facilities, nuclear radiation, and even coal-burning power facilities has been documented in

numerous scientific studies.

See the victims of Hiroshima, Nagasaki nuclear bombs, Nevada nuclear testing site, Chernobyl nuclear power plant accident, Three Mile Island nuclear power plant accident, and nuclear plant workers' occupational health.

A previous very prominent speaker here, Dr. Helen Caldicott, was very persuasive about the evidence of health risks to the surrounding populations. As she pointed out, the long-term studies of cancer incidents and other health effects on workers and the population surrounding nuclear facilities still need to be done.

How can we proceed with new and expanded facilities when we lack the scientific data and evidence of health risks around the existing nuclear production facilities?

My fourth concern: My concerns are foremost for our children.

As a teacher, I taught in a high school that was within the 10-mile radius of the Pickering nuclear facility in Durham Region. And I've worked with two of the school boards potentially directly impacted by this proposal.

Schools and school boards have nuclear emergency response plans.

As teachers, we have to be prepared for a nuclear accident in which potassium iodide KI pills would be distributed to students to protect them from the immediate risk of radiation to their thyroid glands.

We also have to prepare for evacuation to places of safety.

Parents registering with the local school boards are requested to sign documents authorizing the administration of KI pills in the case of nuclear accident.

We would not be preparing and parents would not have to sign for KI pills unless there is a reasonable risk of nuclear accident.

The lawyers and insurance experts for school boards put these measures in place because of the specific health and emergency risks that have been identified.

There are four school boards that are in the immediate vicinity of the existing and proposed nuclear site. They are the Durham District School Board, the Durham Catholic District School Board, the Kawartha Pine Ridge District

School Board, and the Peterborough Victoria Northumberland and Clarington Catholic District School Board. There are a lot of children who are affected.

Perhaps you cannot imagine the constant background stress associated with the possibility that a nuclear plant down the road from the school where you are working in will have an accident releasing radiation and the subsequent potential horrors that would present for children and their families.

This is a constant, latent, and a manifest aspect of our curriculum as teachers.

How far away do schools, students, and staff have to be to be free from nuclear radiation and accident risks?

Why are we putting our children, our students at risk?

My fifth concern: This proposed power plant will expand an already unsightly nuclear power plant on the beautiful Lake Ontario shoreline next to the popular Darlington Provincial Park, two environmentally significant wetlands at McLaughlin Bay and the Oshawa Second Marsh, proximate to civic waterfront parks in Oshawa,

productive agricultural lands in Durham, and vibrant cities in Oshawa and Bowmanville.

My sixth concern: Our local economy does need good jobs. The taxpaying public wants to see good jobs created with our tax dollars, but we want jobs that produce clean energy free from the health and environmental risks associated with the proposed nuclear project.

Seven: Whose interests are being served by this environmental assessment and the future development, that of Ontario Power Generation and the current Ontario Liberal government or the much broader public interest?

The flaws that I've noted in the environmental assessment suggest that the broader public interests have not been fully assessed or served.

As a citizen concerned about our children, our health, and our environment, I ask that the questions I have raised and the area of study that I've indicated be included, be studied, and be addressed by the panel.

In the ideal scenario, this proposed nuclear power expansion by Ontario Power Generation will be stopped.

The federal government that we, the citizens, are now in the process of electing in Canada and the provincial government which we will be electing here in Ontario in the fall also need to reconsider, stop, or abandon this project, go back to the drawing board, and come up with a new plan.

We collectively need to develop the scientific, technological, and medical studies to support decision making in favour of alternative, renewable energy generation projects based on primary concerns for keeping our children, our young people, and all our citizens risk free and adequately cared for by our public services, including energy production.

This should be our number one priority. We want a healthy environment that has no risks of nuclear radiation or of any other conventional form of pollution being added to our water, air, soil, flora, fauna, and food.

We must stop damaging our biosphere in which we humans are the major change agent.

I urge you to consider not only those of us who are closest to the plant, but also

the best interests of citizens of Ontario and Canada who must pay now and into the future for our energy needs. The potential costs of this proposal are not only financial, but also to the lives, health and environment of our children, workers, our families and citizens.

Thank you for bringing these hearings to Durham Region, near Oshawa, close to those of us most directly impacted by this proposed project.

For the record, I'm opposed to the new nuclear power development and thank you for your time, attention and consideration.

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

We'll now go to panel members and I'll ask Madame Beaudet if she has any questions.

--- QUESTIONS BY THE PANEL:

MEMBER BEAUDET: Thank you, Mr. Chairman.

Indeed, there are lots of issues that you have brought up that were covered by other intervenors, but you have a unique expertise as a teacher.

And we did get two other

interventions that -- I don't think they were teachers, but one of them was concerned as a parent, having his house outside the 10-kilometre zone of evacuation, but having his children in a school within that 10 kilometres. And another person wondering how children could be evacuated efficiently because he felt there were not enough buses since you have different opening school times, so that there can be fewer buses moving all the children.

And I'd like to know for you and -- because you did bring up the emergency response plan and your concerns, to what extent the children are aware? Do you do exercise evacuations for probably other purposes, not just from an accident from the nuclear plant. And if you do, do you do it with the children? How does it work exactly?

MS. McCREA: At the present time, I don't work with one of the school boards in the immediate area. I work in the York Region District School Board so teachers routinely -- we practice several different kinds of emergency procedures in the case of fire; in the case of intruders with weapons; in the case of environmental disasters of some sort or weather emergencies.

But here, when I worked with the Durham District School Board, sort of annually sometimes -- and procedures may have changed -- you needed to review the process for a nuclear emergency if you were in the zone that would be immediately affected.

So it’s, as I said, it’s part of a manifests(inaudible) curriculums. Students have to be made aware of the risk; they have to practice the drills; teachers have to practice the drills. We have to be familiar with the -- and consider, you know, the problems or scenarios that could occur should an evacuation become necessary in the administration of KI pills be necessary in the event of a nuclear emergency.

MEMBER BEAUDET: And that would include even where you’re working now for the KI pill?

MS. McCREA: No, in my current board that’s -- we’re outside of the range, depending on how serious the disaster is. I don't know how big the range would be, but they don’t include it in their planning, to my knowledge.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Madame Beaudet.

Mr. Pereira?

MEMBER PEREIRA: Thank you, Mr. Chairman. I don't have any questions for you, but I will comment on some of the points you raised.

You commented on the risks to health from the nuclear industry in the region and many intervenors have brought that question up and we, as a panel, have obtained input from different participants.

And it's an issue that we are going to pay some attention to as we assess the input we have received.

And we've asked for a number of undertakings from different departments, government departments, on health and they have provided those to us. A lot of those are posted on the CEAA website. And so we have received a lot of input on health and risk to health from the nuclear industry.

So we'll certainly be paying some attention to all of this input going forward.

You also commented on the adequacy of the EA process we followed, whether we have

received the input required or submissions required to have a valid environmental assessment.

Some of the perceived deficiencies we have addressed through the consultation process and through requiring additional input from participants. And, again, that will be something that we will look at as we undertake our review.

So you made some very good observations and many of these have been identified to us before in some areas. In fact, we do have input that may not be evident to all of the intervenors, but has already been submitted to us.

But thank you for identifying those to us and certainly these are all matters that we will consider going forward. Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much, Ms. McCrea, and thank you for your thoughts and your presentation, oral statement.

With that, I'm going to call for a 15-minute recess simply because we have a few things to wind up at the end.

We have the written -- the balance of the written interventions to read into the record, and maybe questions.

Then I think I will go to my two colleagues on the panel for a question or so that they may have and some closing remarks.

So we'll declare a 15-minute break and we'll be back at 25 after 3.

Thank you very much.

--- Upon recessing at 3:06 p.m./

L'audience est suspendue à 15h06

--- Upon resuming at 3:21 p.m./

L'audience est reprise à 15h21

CHAIRPERSON GRAHAM: Welcome back, everyone. And would you please take your seats so we can wind up.

The next thing I have on the agenda is to -- we have a few, 7 or 8 or 10, written interventions that were not dealt with prior to today, so I will ask my Co-manager, Debra, to read those and then I'll refer to my colleagues for comments.

--- WRITTEN SUBMISSIONS AND COMMENTS BY THE PANEL:

MS. MYLES: Hello everyone. Debra Myles, Panel Co-manager.

So I'm just going to read the PMD or Panel Member Document number and the author for these written submissions.

The first one is PMD 11-P1.89, A. Carol Anderson.

PMD 11-P1.91, Jan Heynen.

PMD 11-P1.93, Mandy Newby.

PMD 11-P1.94, Melanie Beaudoin.

PMD 11-P1.102, Jay Macpherson.

PMD 11-P1.103, Tim Seltzer -- Seitz, excuse me.

PMD 11-P1.121, Canadian Manufacturers and Explorers.

I'll verify -- we'll check on that to see whether that really is explorers or should be exporters.

Okay. A correction on that, PMD 11-P1.121 Canadian Manufacturers and Exporters.

PMD 11-P1.184, Robert Williams.

PMD 11-P1.191, Rena Ginsberg.

PMD 11-P1.194, Ira Rabinovitch.

Mr. Chair?

CHAIRPERSON GRAHAM: Thank you, Debra.

I believe that is all of the -- or the balance I should say of the written submissions, which we received and I'll go to Mr. Pereira.

Do you have comments, Mr. Pereira, on any -- one or any of these?

MEMBER PEREIRA: Thank you, Mr. Chairman. I'll do it in three groups.

The first group is P1.89, Carol Anderson; P1.91, Jan Heynen; P1.93, Mandy Newby; P1.94, Melanie Beaudoin; P1.102, Jay Macpherson; P1.103, Tim Seitz; and P1.191, Rena Ginsberg.

And all of this group of intervenors have concerns over the hazards that will arise from the project, concerns about safety, about waste, about the preference for non- -- for renewable energy, concerns about CO2 burden. Terrorist attacks. And so generally overall, no support for the project.

The next one is P1.184 from Robert Williams. His view is that fusion energy generation would be acceptable, but fission brings risks, various risks including accidents, cost overruns, spills, leaks and waste, but if there was -- his view is that if we were going for a fusion reactor, that might be acceptable. So he doesn't support the current proposal.

P1.194 doesn't support the proposal because of concerns of a cost overrun,

spills, tailing wastes, but he also expresses doubts whether the process we are going through is objective. He doubts very much we'll come up with -- with this decision, which is -- which will be objective, and he believes that we will just say yes to the proposal regardless of what evidence is brought before us.

And, finally, P1.121 from the Canadian Manufacturers & Exporters. This is a group that is involved in the industry and they support the project. And their view is that the approval is for generation capacity, which will be reliable and provide the supply that will drive the economy of the region and provide for stable supply of energy that will enable success in Canadian manufacture and export.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you, Mr. Pereira.

Madame Beaudet?

MEMBER BEAUDET: Thank you, Mr. Chairman.

PMD 11-P.121, Canadian Manufacturers & Exporters, also consider that nuclear power is a clean source, an important

source of clean energy.

And four PMDs that are against the project, P1.93, P1.94, P1.103 and P1.194 also underline the legacy of waste to future generations.

And I have no questions, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much, Madame Beaudet.

Now, we are kind of going a little bit off schedule here, but just to wind up matters. I think my panel colleagues may have had one or two questions of clarification.

And I'll go to you, Madame Beaudet, first if you have any that you would like to -- clarification on to either the Proponent or to CNSC?

MEMBER BEAUDET: I would like to go to CNSC.

They did a consultation to -- for the -- as the duty of the Crown to consult Aboriginal groups.

And in the light of the different presentations that we received here, I'm thinking of First Nation, the Saugeen First

Nation -- sorry, the Saugeen Ojibway Nations. Because for the license to prepare a site, we have to take position whether the consultation of Aboriginal groups was adequate and I would like to hear your comments on that?

Because this particular group was not part of the original list that you had and I just want to ensure that we have completed our duty.

DR. THOMPSON: Patsy Thompson, for the record.

The process that was used for Aboriginal consultation has been described and the position of CNSC staff is presenting the CMD that the Aboriginal consultation has been adequate and the duty has been met for this project.

And I will ask Andrew McAllister to provide the details, specifically with regards to the Saugeen Ojibway Nation.

MR. McALLISTER: Andrew McAllister, for the record.

You are correct, Madame Beaudet, we did not -- they were not on our distribution list.

CNSC has been engaging in

consultations with the Saugeen Ojibway Nation on the deep geologic repository project, which is ongoing up in the Bruce. We did note their concerns that they raised during these hearings.

Our analysis and research, when we first put it together, our distribution list did not identify them. And that analysis was based on what the Proponent, OPG, had done; the previous experiences that CNSC has had with the Aboriginal groups in the area, along with those of other federal departments.

We noted that their concerns that they raised were with respect to the storage of waste. The Western Waste Management Facility up in the Bruce is a licensed facility to store the waste in the interim, and we noted that the transportation of waste to the Western Waste Management Facility from the Darlington project amounts to approximately four to six truck shipments a month and can -- and that this facility can accommodate that.

And we should also further note that should any changes be required to the Western Waste Management Facility licence for any reason, as per CNSC’s protocol around Aboriginal

consultation, we will consult with the Saugeen Ojibway Nation and any other interested groups.

MEMBER BEAUDET: Thank you.

Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Mr. Pereira, do you have anything to follow up on?

MEMBER PEREIRA: Thank you, Mr. Chairman. I'll follow up also with CNSC staff.

We have reviewed your Panel Member Documents, two of them submitted, and we have a question whether having considered what has gone on in these hearings whether any additional recommendations you would be -- want to offer us at this time?

And, in particular, we would like to focus on malfunctions and accidents, given that we are looking at a stylized release scenario. And given what's happened recently, events in Japan, whether there is any recommendations that you might want to make on that issue?

And the second one is out-of-core criticality. Again, you know, we have the possibility of enriched fuel being -- used fuel being stored on site, and whether there is any issues there that we should be addressing, given

the concerns and issues that have arisen with the recent experience in Japan and beyond that? There may be other reasons why you might want to make recommendations to us.

So I'll leave that to -- do you want to react to that; maybe comment on that?

MR. HOWDEN: Barclay Howden speaking.

In terms of additional recommendations, we don't have further recommendations to make to you. We're satisfied with the recommendations that have been made.

With regards to your specific comments about malfunctions and accidents, we've identified within the EA the type of issues that needed to be looked at, recognizing that once a technology is chosen and if OPG goes ahead with an application for a licence to construct, that the fulsome review of the design, with a full safety analysis which includes probalistic safety analysis, deterministic analysis, the -- against the design-basis accidents and beyond design-basis accidents including on the security side, the design-basis threats and beyond design-basis threats.

We're of the view that the regulatory framework is robust, with RD337 designed for new nuclear power plants being the anchor for that, recognizing there's other documents that we use.

I would like to reiterate that from the Japanese event, our view from the site suitability of the Darlington site has not changed, however, we did indicate that any lessons learned from the event that could impact reactor designs we would expect to be incorporated in to any work that they do.

There is an international work already started on lessons learned, and we would expect that to be incorporated.

In terms of out of core criticality, we have very clear regulatory requirements. We've been using up to now the American standard, but in the past three months we have a Canadian standard on out of core criticality. So we think that sets a very a very high bar and a very clear expectation that the Proponent would have to meet.

As well in Canada, although the power plants don't deal with enriched fuel, Canada

has a lot of experience with enriched fuel at the Chalk River site, which has an in-depth criticality control program. So, from a regulatory standpoint, there's a lot of experience with that, so we've very confident that our recommendations are robust.

MEMBER PEREIRA: Just to confirm, you're talking about licensing, but our requirement is to consider all the -- at a high level what should be considered on that environmental assessment, which is for the whole cycle, from licence to construct to abandon.

MR. HOWDEN: Yes, thank you. Yes, the EA looks at the whole life of the plant, which goes through the licence to construct, licence to operate, and ultimate decommissioning. We're satisfied that the information presented on malfunctions and accidents and out of core criticality, and all the other issues that have been presented, that are bounded by the information that has been presented.

With our recommendations that we've made to you, which we hope the panel will take into consideration, we feel that there's nothing further to add.

MEMBER PEREIRA: Thank you.

MR. HOWDEN: Thank you, Mr. Chairman.

CHAIRPERSON GRAHAM: Thank you very much, Mr. Pereira, and I thank both you and Madame Beaudet for the dedication that you've shown over the last three weeks in your questioning, and gaining of information that is needed for us to go forward.

We've now reached an important milestone on these hearings in the life of Joint Review Panel. We have no more oral presentations, no more written submissions, and no more interventions at this time.

And before I have my closing remarks, which are going to be brief, I'm wondering if OPG has anything they would like to say. And you didn't know I was going to do that, but…

MR. SWEETNAM: Albert Sweetnam, for the record.

We didn't know you were going to do that, but we prepared for it.

CHAIRPERSON GRAHAM: That's why I did it that way.

(LAUGHTER)

MR. SWEETNAM: And I have short

version and a long version and, since we've been sitting for almost three weeks, I'll take the short one.

Chairman Graham and Members Pereira and Beaudet, we would like to thank you for the very fair and equitable way in which you've conducted the panel. We'd like to thank the secretariat, the CNSC, the intervenors, the public, and the facility.

I think -- for me personally, it was my first hearing, and it was quite a good experience. It was an opportunity to -- everybody to have their voice, and you allowed everybody to have their voice, and I think that's the purpose of the hearing.

I think it was well-received by everybody. You appeared -- even though you're sitting a little higher than us, you appeared very accessible to all. I think that was a very positive thing.

So OPG has provided an extensive and robust environmental impact statement, which has detailed all of the possible areas of environmental effects and describe the appropriate mitigations. The EIS and the 28 technical support

documents, the responses to the IRs, and additional materials provided through the course of this hearing, leads OPG to the same conclusion, that the Darlington new nuclear project will not result in significant adverse environmental effects.

The federal and provincial government agencies and other participants have also shared with you their views, that the project is unlikely to cause significant adverse environment effect.

OPG has listened carefully throughout these proceedings to all participants, however, no one has tabled evidence to the contrary.

OPG has committed to ensuring the safety of the project as it proceeds. We have reviewed and committed to the majority of the recommendations made by the government agencies.

OPG has a record of project management successes on which we will build as we prepare the site and eventually construct and operate the new nuclear facilities.

Safety is a fundamental basis of our business and each and every person working for OPG is committed to its achievement.

I will hold my management team, our employees, and everyone involved in the Darlington new nuclear project, responsible for the achievement of a high level of safety performance.

Thank you again, and have a safe trip home.

--- CLOSING REMARKS:

CHAIRPERSON GRAHAM: That's my phrase. Thank you very much, Mr. Sweetnam.

So now I guess I have a few comments also, and that will wind it up.

Today marks the review panels' 17th day of public hearings, and the 18th month of review and assessment of Ontario Power Generation's proposed new nuclear power project here in Darlington.

We have reached these important milestones with the assistance of many, many people, and I can't go on and name every one, but they're both the ones that are seen and the ones that unseen.

I would like to start by thanking the residents of Clarendon, and its neighbouring communities, for making us feel welcome. We didn't see very much of the communities, based on the time

we were sitting here, but, nevertheless, we were welcome and we do appreciate that.

I would also like to single out our gracious hosts from Hope Fellowship Church for what they've been able to provide, just a superb job at a facility that I think is has accommodated everyone every well.

I would also like to take this opportunity to acknowledge the hard work and long hours of many people behind the scenes who have made sure that such things as webcast, simultaneous translation, daily written transcripts were available the following day. All of those things in this whole procedure ran smoothly.

I want to thank my co-managers, Debra and Kelly, for keeping me straight. I've given them a little more grey hair at times, with some of the things we do, but I want to thank them for helping myself and my panel members.

The panel would like to thank the hundreds of people who have contributed to the review by writing to us, either by writing, by appearing in the past 17 days, or simply just watching and listening and seeing how this process unfolds, and to all these people I thank them very

much for their participation.

When I was given the rules of the procedure for the hearing, I felt that there had to be a change to reflect a more open process and hopefully that this process that we adopted today -- or adopted the last 17 days, has made the process a little more friendly, a little more -- a way in which everyone is treated equally, no matter whether you're the grandmother worried about your grandchildren or the skilled lawyer that is used to being in court, and so on. Everyone was treated equally.

I hope this works as a template for CNSC in other hearings, as they go forward, t0 be -- to give it more of a human approach. And with that, I hope that this process has worked well for everyone.

Throughout this public hearing I've made it clear that the panel will continue to ask questions and collect information until we have everything necessary to carry out our duties and write our report to the federal government.

We will receive a few outstanding undertakings over the next two weeks, and I think they're pretty well cleaned up, there's only a

couple left, and we will hold an in camera hearing in Ottawa in early May to discuss security matters in relationship to this project and the licence to prepare a site.

We will announce the 20-day deadline for he submission of final written comments from the hearing participants. The panel and only the panel -- and I maybe wasn't clear with Mr. Haskill -- the panel and only the panel will then received and consider these final comments. When we are satisfied that we have all the information that we need to prepare our report, we will close the record for the environmental assessment.

The panel will then have 90 days to write and deliver our report to government. The report will be made available to the public and any further actions by the panel under the *Nuclear Safety and Control Act* will be subject to the federal government's decision on our recommendations in the report.

At the outset we anticipate and welcome a wide-range of opinions and observations, a healthy, respectful and extensive collection of information has inspired each of us to pursue these

objectives.

I want to especially thank my panel members who have contributed both directly and indirectly to this review.

Our work is by no means done and our deepest appreciation to everyone that has participated, and my phrase, may everyone have a safe trip home.

Thank you very much.

(APPLAUSE)

CHAIRPERSON GRAHAM: And I guess I'm supposed to adjourn. So we adjourn and thank you everybody for participating.

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

L'audience est ajournée à 15h45

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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