

DARLINGTON NEW NUCLEAR POWER PLANT PROJECT

JOINT REVIEW PANEL

PROJET DE NOUVELLE CENTRALE NUCLÉAIRE DE DARLINGTON

LA COMMISSION D'EXAMEN CONJOINT

HEARING HELD AT

Hope Fellowship Church
Assembly Hall
1685 Bloor Street
Courtice, ON, L1E 2N1

Monday, April 4, 2011

**Volume 13
REVISED**

JOINT REVIEW PANEL

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International Reporting Inc.
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www.irri.net
1-800-899-0006

(ii)
ERRATA

Transcript :

Page 117, line 16

16 version. The report is P1093-RP-003ref5. It's the

Should have read:

16 version. The report is P1093-RP-003rev5. It's the

Page 188, line 15

15 MR. SWEETNAM: Arnold Sweetnam,
16 for the record.

Should have read:

15 MR. SWEETNAM: Albert Sweetnam,
16 for the record.

Page 235, line 5

5 Ontario government regulation

Should have read:

5 Until government regulation

Page 274, lines 6 and 7

6 In term of nuclear, they've stated
7 if the refurbishment of 10,000 megawatts of nuclear

Should have read:

(removed "if" from line 7)

6 In term of nuclear, they've stated
7 the refurbishment of 10,000 megawatts of nuclear

Page 275, line 20

20 directive that's been given to the OPE and lays out

Should have read:

20 directive that's been given to the OPA and lays out

Page 280.line 10

10 of the studies that maybe through the CNSC or other

Should have read:

10 of the studies that **may be** through the CNSC or other

(iii)

TABLE OF CONTENTS / TABLE DES MATIÈRES

	PAGE
Opening remarks	1
Undertaking status	3
Presentation by Dr. Marceau	9
Questions by the panel	19
Presentation by Dr. Bereznai	31
Questions by the panel	39
Presentation by Mr. Etcheverry	52
Questions by the panel	59
Presentation by Dr. Baker	70
Questions by the panel	83
Questions by the public	102
Presentation by Ms. Racansky	107
Questions by the panel	114
Presentation by Mr. Clarke	135
Presentation by Dr. Lamontagne	142
Questions by the panel	146
Questions by the public	167
Presentation by Mr. Weis	172
Questions by the panel	182
Presentation by Ms. McClenaghan	195
Questions by the panel	217
Questions by the public	239
Presentation by Mr. Ruiters	242
Questions by the panel	

(iii)

TABLE OF CONTENTS / TABLE DES MATIÈRES

	PAGE
Questions by the public	276
Written submissions and comments by the panel	286

1 Courtice, Ontario

2

3 ---Upon commencing at 9:00 a.m. /

4 L'audience débute à 9h00

5 --- OPENING REMARKS:

6 MS. MCGEE: Good morning. Mon nom
7 est Kelly McGee.

8 Welcome to the public hearing of
9 the Joint Review Panel for the Darlington New
10 Nuclear Power Plant Project.

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

14 Secretariat staff are available at
15 the back of the room. Please speak with Julie
16 Bouchard if you are scheduled to make a
17 presentation at this session, if you are a
18 registered intervenor and want the permission of
19 the Chair to ask a question, or if you are not
20 registered to participate, but now wish to make a
21 brief statement.

22 Any request to address the panel
23 must be discussed with Panel Secretariat staff
24 first. Opportunities for either questions to a
25 presenter or a brief statement at the end of a

1 session will be provided, time permitting.

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

6 A written transcript of these
7 proceedings will reflect the language of the
8 speaker. Please identify yourself each time you
9 speak to make the transcripts as accurate as
10 possible.

11 Written transcripts are stored on
12 the Canadian Environmental Assessment Agency
13 website for the project. The live webcast can be
14 accessed through the Canadian Nuclear Safety
15 Commission website and archived webcasts and audio
16 files are also available on that site.

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

20 Thank you.

21 CHAIRPERSON GRAHAM: Thank you
22 very much, Kelly, and good morning everyone to
23 another week of panel hearings.

24 I want to welcome everyone joining
25 us here in person this morning live on audio link

1 or via the internet.

2 My name is Alan Graham. I am the
3 Chair of the Joint Review Panel and with me today
4 are my colleagues, panel members. On my right is
5 Madam Jocelyne Beaudet and on my left Mr. Ken
6 Pereira.

7 --- UNDERTAKING STATUS:

8 CHAIRPERSON GRAHAM: Starting this
9 morning, we will start with this morning with a
10 review of undertakings which we do each day and
11 I'll ask our legal counsel, Mr. Saumure to outline
12 the undertakings that have been filed and the ones
13 that are due today and the direction in which we'll
14 go on those undertakings.

15 Mr. Saumure?

16 MR. SAUMURE: Thank you.

17 Do we have any representatives of
18 the Ministry of Natural Resources Ontario in the
19 room? So undertaking number 26, we will just have
20 to deal with this one later.

21 The next undertaking is number 33.
22 That was an undertaking to CNSC. The answer has
23 been filed and it's on the registry.

24 Undertaking number 38 to
25 Greenpeace. Do we have any representatives of

1 Greenpeace here today? We'll deal with this one
2 later today, sir.

3 Number 46, Ms. Sharon Howarth?

4 Number 48, it's an undertaking by
5 OPG. It's to provide percent allocation of
6 Darlington construction cost overruns.

7 MS. SWAMI: Laurie Swami.

8 I can speak to that this morning.
9 The initial cost estimate for Darlington in 1977
10 was \$5 billion. In 1981, Ontario Hydro produced a
11 definitive estimate of the cost at \$7.5 billion for
12 the project.

13 When the project was finally -- or
14 the station was brought into service between 1990
15 and 1993, the total was \$14.3 billion which is an
16 escalation of 6.9 billion over the definitive
17 estimate.

18 A large portion of the increase in
19 the costs of Darlington was attributed to decisions
20 by the Ontario Government to stop or to slow down
21 construction due to an economic slowdown at the
22 time, and the resultant interest charges at the
23 high rates of the day.

24 Interest charges were originally
25 estimated at approximately \$2 billion, but by the

1 time the project was completed, the interest
2 charges were \$6 billion.

3 At the time, Ontario Hydro was not
4 allowed to include in electricity rates, the
5 interest it was paying until the nuclear generating
6 station was actually producing electricity.

7 That being said, two events
8 occurred while Darlington was being designed and
9 built that resulted in increased regulatory
10 requirements, enhanced industry design standards
11 and Ontario Hydro initiated improvements to the
12 Darlington design.

13 The 1979 accident at Three Mile
14 Island and the 1986 accident at Chernobyl were all
15 factored as lessons learned from these events into
16 additional regulatory requirements respecting the
17 emergency core cooling system design, shut down
18 system design, containment and primary heat
19 transport pressure protection.

20 The industry's design standards
21 were also improved to address the lessons learned
22 from these two events.

23 Ontario Hydro also reviewed the
24 design and identified features that could be
25 enhanced to address the lessons learned. So there

1 was a lot of learning taking place at the time of
2 the original Darlington project.

3 It's very difficult to
4 distinguish, on the historical records, the
5 additional costs of new nuclear -- or new
6 regulatory requirements from the costs of new
7 industry design standards, and the efforts Ontario
8 Hydro undertook to independently enhance the safety
9 of the Darlington design.

10 Overall, it's been estimated that
11 design and construction costs increased from
12 approximately \$5 billion in 1981 to approximately
13 \$8 billion. The increase in design and
14 construction costs includes costs associated with
15 new regulatory requirements.

16 Thank you.

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

19 Any other ones, Mr. Saumure?

20 MR. SAUMURE: There is one last
21 one, Mr. Chair. It's number 54. It was assigned
22 to CNSC. It's with regard to the review of
23 developmental concerns.

24 CHAIRPERSON GRAHAM: CNSC, are you
25 ready to address this this morning or do you need

1 more time. What number is it again?

2 MR. SAUMURE: Number 54.

3 CHAIRPERSON GRAHAM: Fifty-
4 four(54).

5 DR. THOMPSON: Could you provide
6 the details to what 54 was about?

7 CHAIRPERSON GRAHAM: Yeah, I -- it
8 just says here, review of developmental concerns,
9 and I don't have my notes here so our counsel will
10 meet with you at the break and we'll put it on the
11 agenda for tomorrow morning.

12 Also the ones that we were
13 requiring from Greenpeace and, I believe, one of --
14 Ms. Howarth's, perhaps we can contact them.

15 The Secretariat can contact them
16 to see when those reports might be ready that we
17 have asked for or they had given an undertaking to
18 provide us, and report back tomorrow if that's
19 possible.

20 So with that, are you finished
21 with those, Mr. Saumure?

22 MR. SAUMURE: Yes, that completes
23 the list, Mr. Chair.

24 CHAIRPERSON GRAHAM: Thank you
25 very much. So the undertakings are ---

1 MS. SWAMI: Excuse me, Mr. Chair,
2 could I make a comment?

3 CHAIRPERSON GRAHAM: Certainly,
4 Ms. Swami.

5 MS. SWAMI: Undertaking 54, I
6 believe, was assigned to OPG to deal with
7 significant development reports that may have been
8 filed as a result of identification of software
9 failures. And OPG is prepared to speak to that
10 this morning.

11 CHAIRPERSON GRAHAM: CNSC, you're
12 off the hook on that one and, OPG, you may proceed.

13 MS. SWAMI: Laurie Swami.

14 I'll ask Don Williams to provide a
15 quick update.

16 MR. WILLIAMS: Don Williams, for
17 the record.

18 As part of its management system,
19 OPG monitors the performance of its software
20 program on a routine basis.

21 We have checked our software
22 program health and performance reports and confirm
23 that there have been no significant events or
24 trends that would cause a problem for OPG.

25 CHAIRPERSON GRAHAM: Thank you.

1 Panel members have any questions
2 with that?

3 If not, thank you very much.

4 So therefore, now, we are finished
5 with undertakings for today and we'll proceed now
6 to interventions and this part of the hearing.

7 And the first on the schedule this
8 morning is the University of Ontario Institute of
9 Technology which is found under PMD 11-P1.145 and I
10 believe, Mr. Marceau, you're representing the
11 institute.

12 Welcome and the floor is yours.

13 --- PRESENTATION BY DR. MARCEAU:

14 DR. MARCEAU: Thank you very much,
15 Mr. Chair.

16 My name is Richard Marceau. I am
17 the Provost and Vice President Academic of the
18 University of Ontario Institute of Technology and
19 I'm accompanied this morning by Dr. George Bereznai
20 who is our Dean of the Faculty of Energy Systems
21 and Nuclear Science.

22 I wish to thank you for this
23 opportunity to speak in favour of the Darlington
24 New Nuclear Project.

25 We live in transformative times.

1 In only two decades, climate change has graduated
2 from an extravagant scientific theory too horrible
3 to contemplate to a very real, very urgent problem
4 to which mankind has no choice but to turn its
5 attention.

6 In our lifetime, the pace of
7 change, of climate change has accelerated and it is
8 my belief and that of many informed observers that
9 the threat of climate change is the defining
10 challenge of the 21st Century in the same way that
11 international tensions were the defining challenge
12 of the 20th Century.

13 Unfortunately, too few people
14 realized the seriousness or the magnitude of the
15 impact now and in the future of climate change on
16 the world around us.

17 We have yet to come to grips with
18 the absolute necessity, the incredible urgency of
19 bringing about rapid, decisive, and fundamental
20 change in the way that we conduct ourselves
21 personally, economically and socially.

22 Let me be clear. The excessive
23 accumulation of carbon in the earth's atmosphere is
24 the greatest threat to life on earth since the ice
25 age. Present levels of atmospheric carbon have

1 already caused significant modifications in global
2 weather patterns.

3 Only this weekend, an opinion
4 leader as influential as the Dalai Lama voiced
5 concern over the accelerated melting of many of the
6 earth's glaciers.

7 We must immediately find low-
8 carbon solutions for everything that we do such as
9 the transformation of raw materials into
10 manufactured goods, the transportation of raw
11 materials, goods and people, the transformation of
12 energy resources into sustainable energy currencies
13 such as electricity and hydrogen, and the
14 transformation of these energy currencies into
15 usable energy forms.

16 Though such measures will help
17 slow down existing trends, they will not reverse
18 them.

19 To reverse climate change, we will
20 need to deplete the carbon in the atmosphere, but
21 we don't know how to do this on any useful scale
22 and most national leaders have yet to admit that we
23 even need to do so.

24 So what can we do right now?

25 Presently, one of our most

1 important energy currencies is electricity. Its
2 flexibility and scope of use are unparalleled.

3 Electricity can be transformed
4 into virtually any other usable energy form such as
5 heat, light, motion and radio waves, but its
6 greatest advantage is that it can do so without
7 generating atmospheric carbon.

8 The key strategy in reducing
9 atmospheric carbon is therefore to produce
10 electricity by resorting to alternatives to carbon-
11 based energy resources.

12 In the realm of electricity
13 generation, the nuclear power option is a
14 significant contributor to this approach, though I
15 recognize that it's not the only one.

16 For example, Ontario can
17 strengthen its transmission system and intensify
18 its interconnections with neighbouring power
19 systems to facilitate access to excess wind, solar
20 or hydroelectric power generation from other power
21 systems depending on the time of day.

22 Another useful strategy is to
23 continue to pursue an aggressive, green electric
24 power generation strategy based on wind, solar,
25 biomass and hydroelectric power to strengthen

1 Ontario's long-term energy security and liability.

2 Notwithstanding these options,
3 nuclear-based electricity generation must continue
4 to hold a very special place in Ontario's
5 generation mix.

6 Now, why is that?

7 First of all, our civilization has
8 been generating electricity for just over 125 years
9 and experience has taught us that each type of
10 electricity generating plant has advantages and
11 disadvantages that must be carefully weighed
12 depending on geography, climate, population
13 density, economics and other factors.

14 A key advantage of nuclear power
15 plants contrary to wind and solar power plants is
16 that they can function dependably 24 hours a day,
17 365 days per year. In 24-hour societies such as
18 our own, this is a significant advantage.

19 Secondly, time and again,
20 economies of scale have been shown to emerge from
21 increasingly large power plants located in
22 relatively close proximity to large urban centres.

23 The CANDU-based nuclear power
24 plant employed until now in Ontario offers
25 precisely the type of proven reliable technological

1 solution which conforms to this trend and can be
2 confidently implemented.

3 Third, Ontario possesses the human
4 capital to immediately implement additional nuclear
5 electricity generation. An extremely rare
6 commodity on a global scale and one that we too
7 often take for granted.

8 Likely, many other arguments have
9 been evoked at this table in favour of nuclear
10 power generation such as the strategic importance
11 of energy security, the economic advantage of an
12 indigenous energy economy and reduced fossil fuel
13 imports, the commercial opportunity of virtually
14 advanced technological industries, and I have no
15 wish to discount the importance of these arguments.

16 We live in a world where easy
17 access to energy and economic health translate into
18 quality of life for the peoples of all communities
19 and nations.

20 Unfortunately, as we enter into
21 the 21st Century, we must also come to terms with
22 the fact that certain notions prevalent to the 20th
23 Century are only partially applicable to the 21st
24 Century.

25 We must come to realize that a 20th

1 Century narrative based solely on national
2 interest, economic development and competitive
3 advantage is inadequate in this new century.

4 And why is this?

5 Well, the emerging threat of
6 climate change changes everything. Despite
7 scientific and official acknowledgement of this
8 threat, our present efforts are virtually
9 inconsequential.

10 Either our complacency is immense,
11 our confidence is supreme or our will to survive is
12 asleep. Clearly, it is business as usual for most
13 of humanity as if we were still in the 20th Century.

14 Now, there are understandable
15 reasons for this. Most days, our news media will
16 have us believe that the greatest threat to
17 humanity still lies in international tensions.

18 Yet again, in the Middle East,
19 nations are poised on the threshold of armed
20 conflict. However, as we sit here in this room, we
21 do so in the shadow of the greatest threat to
22 people, to nations, to life on this planet in
23 recorded history.

24 The games of geopolitics pale in
25 comparison to the implacable, to the faceless foe

1 of climate change acting neither on a human
2 timescale nor on a geological timescale, though
3 being a foe entirely of our own making.

4 Should we be calmly discussing
5 whether or not we will build a new nuclear plant at
6 Darlington when we know that here in Durham Region,
7 it is arguably one of the single, most significant
8 actions that anyone can take anywhere to slow down
9 the accumulation of atmospheric carbon?

10 Does it make sense to be
11 discussing the type of cooling technology of our
12 nuclear reactors in the face of possible extinction
13 of life as we know it?

14 Have we no sense of urgency?

15 If we love our children, our
16 grandchildren and our great grandchildren, should
17 we not be asking ourselves how quickly we can build
18 these nuclear power plants to provide our
19 descendants the precious time they may need to deal
20 with challenges that we can scarcely imagine?

21 Will they some day thank us for
22 our foresight or will they rue our generation for
23 its selfishness and lost time?

24 In my mind, it is clear that our
25 20th Century -- 21st Century focus must be that of

1 survival. Our 21st Century narrative must be that
2 of a race against time to reduce mankind's climate
3 changing carbon footprint.

4 Canada's CANDU technology is one
5 of a handful of unique technologies which can
6 contribute to this.

7 However, as Canadians often do,
8 the potential contribution is hampered from lack of
9 confidence in decision or plain inactivity.

10 CANDU technology in the Darlington
11 New Nuclear Project offers an opportunity to
12 reconcile Canada's own 20th century narrative based
13 on national interest, economic development and
14 competitive advantage with the environmental
15 survival imperative of the 21st century.

16 As I conclude these remarks, I
17 would like to share a thought that came to me this
18 weekend as I was reading an excerpt from a book
19 entitled *The Emperor of All Maladies*, by Siddhartha
20 Mukherjee.

21 I became haunted by the idea that
22 if we do not succeed in reducing humanity's carbon
23 footprint, one woman's struggle with cancer might
24 one day resemble humanity's struggle with climate
25 change.

1 Here is this excerpt:

2 "Every time her disease
3 moved, imposing yet another
4 terrifying constraint, she
5 made an equally assertive
6 move in return. The illness
7 acted, she reacted. She
8 dodged one blow, only to be
9 caught by another. She too
10 was like Alice in
11 Wonderland's Red Queen stuck
12 pedalling furiously just to
13 keep still in one place."

14 Though much remains to be done to
15 cure either cancer or climate change, to move
16 forward on the Darlington New Nuclear Project is a
17 positive action that can be taken immediately, that
18 will service all in the immediate future and that
19 will help reduce the accumulation of atmospheric
20 carbon for a long time to come.

21 Let us do everything we can to
22 avoid that future generations are not trapped, and
23 I quote:

24 "Like Alice in Wonderland's
25 Red Queen stuck pedalling

1 furiously just to keep still
2 in one place.”

3 Thank you for your kind attention.

4 CHAIRPERSON GRAHAM: Thank you
5 very much, Dr. Marceau.

6 We’ll now open the floor to
7 questions from panel members, and I’ll start off
8 with Mr. Pereira.

9 --- QUESTIONS BY THE PANEL:

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

12 And thank you for your
13 presentation and your thoughts on the way forward
14 in the face of the climate change challenge.

15 Many intervenors before us have
16 expressed similar concerns, but they have different
17 perspectives in how we should face that challenge.

18 I was interested in your comments
19 on sustainable energy currencies, and certainly
20 this panel is charged with addressing the question
21 of sustainability. That is part of the EA process.

22 In your mind, is the nuclear
23 option that you advocate a sustainable option,
24 considering the whole cycle of the nuclear
25 generation design and proposal before us?

1 DR. MARCEAU: I absolutely believe
2 that the nuclear option is a sustainable option.

3 The greatest threat, I think, to
4 our -- to life as we know it is the accumulation of
5 carbon in the atmosphere. The nuclear option does
6 not contribute to that, not in any significant
7 measure after it begins to operate.

8 The issue of -- the other issues
9 related to nuclear are issues that can be managed
10 and that have not been totally resolved yet, not
11 because there are not technological solutions for
12 them but because there are difficulties -- there
13 have been difficulties for our political leaders to
14 understand the complexity of what we are proposing,
15 and perhaps the simplicity as well, and who do not
16 want to deal with political fallout.

17 MEMBER PEREIRA: Thank you.

18 And just to take that a little bit
19 further, in this definition of sustainability, the
20 sort of issues that we need to address as a panel,
21 you know, the sort of burdens that are left to
22 future generations, and in the case of nuclear
23 power generation one of the issues is how wastes
24 from the nuclear power cycle are managed.

25 And what is being proposed is

1 have not used, we do not know where it is. So
2 there is radioactive material throughout the
3 earth's crust. It's just the difference of knowing
4 where it is as opposed to where it is not.

5 MEMBER PEREIRA: And so based on
6 that sort of philosophy, why is it that no major
7 user of nuclear power generation across the world
8 has yet advanced to this sort of solution you're
9 talking about?

10 DR. MARCEAU: I believe that our
11 political leaders are dealing with the "not-in-my-
12 backyard" syndrome.

13 What some people don't understand
14 is that there's a lot of radioactive material in
15 everybody's backyards. It's just that if we don't
16 know what's there, it's not a problem.

17 The only difference in my mind
18 between radioactive material that has been disposed
19 of, and radioactive elements that are in the
20 earth's crust, is that at least we know where they
21 are and we are dealing with it in a responsible
22 way.

23 When there are traces and perhaps
24 veins of uranium in -- and radioactive gases in
25 people's basements. We build homes in places where

1 we don't know that there are traces of radon gas,
2 and we've discovered this 20 or 30 years later. We
3 build villages in places where there may be
4 radioactive material in the ground and we don't
5 know.

6 So it's the difference between
7 knowing and not knowing. I believe that the key
8 point here is that when we dispose of radioactive
9 waste in a responsible manner, and by putting it
10 back into the ground in some isolated area, at
11 least we know where it is, and we can deal with it
12 there.

13 MEMBER PEREIRA: Many of the
14 intervenors believe that the biggest challenge is
15 effective isolation of the waste from environmental
16 stresses or corrodants for a long period of time.

17 Is this something that your
18 university does any research on, is looking to how
19 the technology of effective isolation can be
20 advanced?

21 DR. MARCEAU: Perhaps I would turn
22 to my colleague, Dr. George Bereznai, who is very
23 well versed in what is being researched at our
24 university, possibly better than I.

25 DR. BEREZNAI: George Bereznai,

1 through the Chair.

2 We do have -- one of my colleagues
3 used to work at Whiteshell AECL who has done
4 extensive work in the isolation aspects of -- of
5 radioactive waste.

6 Returning partly to your previous
7 question, I believe one of the reasons there have
8 not been a move to permanent disposal is that
9 there's a great amount of energy left in what we
10 call spent fuel. I'd rather refer to it as very
11 slightly used or irradiated fuel.

12 I believe that the long-term
13 solution to that problem Dr. Marceau indicated, of
14 humanity's need for energy, in fact lies in what we
15 are storing at the power plants perfectly safely,
16 because we have used less than 3 or 4 percent of
17 the energy in that fuel.

18 Just the same way as we didn't
19 bother using the oil sands to extract oil, how we
20 could easily pump it out of the ground in liquid
21 form, in the same way we have not yet turned to
22 using fast reactors and to reuse the -- the energy
23 still left in -- in this slightly-used fuel.

24 But the sustainability of the use
25 of nuclear power, I believe, lies in using the full

1 range of uranium and thorium of which there is
2 great amounts in the earth and certainly far beyond
3 the kind of timeframe that we have been looking at.

4 MEMBER PEREIRA: So just to take
5 that further, and that's an interesting thought
6 that you have there.

7 One option would be to store the
8 fuel, the used fuel securely for a long period of
9 time to the point where it can be reused for future
10 generation?

11 DR. BEREZNAI: Sorry, Mr. Chair,
12 indeed I did -- I had involvement in the early days
13 of the Nuclear Waste Management Organization in
14 assessing Canada's capability for this technology
15 and I believe the conclusion that was reached is,
16 in fact, an indeptive approach where we are using
17 the existing fuel storage facilities at the power
18 plants.

19 Very likely some intermediate
20 storage facilities. We are also working, to return
21 to your previous question, in terms of research on
22 the transmutation of nuclear waste, which all goes
23 back to both reducing the amount of waste, as well
24 as the half-life of the isotopes that are left in
25 the fuel.

1 So instead of heaving to face
2 these many tens of thousand or 100,000 years, we
3 are going to reduce through transmutation; A,
4 extracting more energy; and, B, reducing the
5 remaining half-lives of the radioisotopes.

6 So through the combination of
7 available technology, future research and the
8 ongoing need of humanity for energy, I believe all
9 of these things are being addressed as the need
10 arises.

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

13 CHAIRPERSON GRAHAM: Madam
14 Beaudet?

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

17 So to pursue with my colleague's
18 line of questioning, so you have the term and
19 already the line of research that you should
20 concentrate on, and if I understand well, basic
21 research on isolation of the fuel for very long-
22 term purposes, is not an area where there would be
23 concentration of research.

24 Like, there has been some research
25 in Europe, for instance, because they have less

1 space than we have here where they have to use
2 different, try different techniques to try to
3 isolate the used fuel for a very long period.

4 Do I understand correctly what the
5 line of research is being done in Canada?

6 DR. BEREZNAI: George Bereznai
7 through the Chair.

8 Yes, indeed, I believe the work
9 that had been done in Canada, which was quite
10 advanced at the time at Whiteshell, both for AECL
11 -- a lot of it was done for the Department of
12 Energy in the U.S. in terms of their plans for
13 disposal.

14 And all of this is very closely
15 monitored and collaborated internationally through
16 the International Atomic Energy Agency.

17 I believe Canada has established a
18 leadership in that research. I don't believe that
19 it is, despite many of the intervening opinions
20 that you hear, I don't believe that is a
21 significant concern.

22 There will be, quite likely, some
23 need to isolate some very small amounts, some
24 hundreds of years down the road, but I believe the
25 more immediate research is to produce the energy

1 safely, to store the fuel until such time that a
2 long-term decision is made in terms of recycling,
3 so we are not concentrating on isolation, but we do
4 have the capability to do so.

5 Our research very much responds to
6 what we see on the international scene and of
7 course in response to a hearing such as this and
8 the needs of companies and the Nuclear Waste
9 Management Organization.

10 MEMBER BEAUDET: Thank you.

11 My other question goes back also
12 to sustainable development. As you're probably
13 aware, a lot of the interventions have looked at
14 the moral or the ethics of going further with
15 nuclear power, especially with respect to having
16 the sites so close to a large population like you
17 did mention earlier in your presentation.

18 And I would like to -- I suppose
19 in the university milieu, it's very much a very
20 productive environment to discuss this type of
21 concern and I would like to hear a little bit more,
22 especially after what happened in Japan.

23 You know, what are your thoughts
24 with respect to developing nuclear in such
25 populated areas?

1 DR. BEREZNAI: George Bereznai
2 speaking through the Chair.

3 Let me first mention a very
4 personal view. I came to live in Pickering in 1972
5 when I first joined Ontario Hydro. Our three young
6 children were born in that area, went to Sir John
7 A. MacDonald, a school very close to the power
8 plant.

9 We lived in Pickering, but we go
10 to the French Emersion Program. My wife had to
11 drive the boys. A good a driver as she is, and
12 there is very little traffic especially in the '70s
13 in the suburbs of Pickering, I believe that she and
14 the children were in far more danger during those
15 short drives than being at the school or having
16 been able -- and we looked at buying a house within
17 walking distance of the school.

18 So in my 40 years involvement with
19 the industry both as an individual and as an
20 academic, I have come to believe that the level of
21 dangers we are looking at in terms of nuclear power
22 plants is very, very small in comparison to the
23 very day to day dangers that we face.

24 For example, driving to this very
25 hearing, hopefully the outcome of whatever improved

1 safety to the environment will come from this
2 hearing will outweigh the excess pollution we
3 produce by driving here and the risk to our life
4 and even everybody else by coming here.

5 In terms of the university, indeed
6 certainly the scientific and engineering community
7 concentrates on the technology. Our colleagues in
8 the social centre and the humanities and the legal
9 studies, challenge us in many ways and we do have
10 creative discussions and we work and discuss these
11 issues.

12 And I certainly share the view
13 that the problem of nuclear technology is far more
14 in the realm of social and human studies than in
15 the engineering part, so as far as living -- having
16 power plants close to large centres of populations,
17 it was always the belief of our industry that if it
18 isn't -- if it is not safe to put it next door to
19 Toronto or anywhere else, then we just shouldn't do
20 it.

21 Hiding it away is not the
22 solution. Yes, certain amount of exclusions, such
23 as a half a kilometre not to be living next to it
24 is realistic, but it needs to be and is designed to
25 be and has been operated to be safe enough to be

1 where it is.

2 As for Fukushima, again, I think
3 it has to be put into perspective of ten years down
4 the road, will humanity be remembering more the 20
5 or 30,000 people who died in the tsunami itself or
6 the fact that this one nuclear power plant had to
7 be retired a couple of years earlier than before.

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

10 CHAIRPERSON GRAHAM: Thank you,
11 Madam Beaudet.

12 Dr. Bereznai, do you have another
13 presentation to make here this morning also? If
14 you do, you -- it's my understanding was you had
15 another part in this presentation or is that both
16 your presentations?

17 DR. BEREZNAI: Mr. Chair, if you
18 allow the time, I would like to go through my
19 presentation as well?

20 CHAIRPERSON GRAHAM: Yes, we allow
21 30 minutes and you -- and your -- Dr. Marceau had
22 only used about 15, so you do have some time.

23 --- PRESENTATION BY DR. BEREZNAI:

24 DR. BEREZNAI: Thank you, Mr.
25 Chair, members of the Panel.

1 My involvement with Canada's
2 nuclear industry started in 1967 with my graduate
3 studies at McMaster University in the area of
4 computer control of nuclear power plants.

5 I joined Ontario Hydro in 1971 and
6 spent most of a 30-year career in the development,
7 acquisition and technical support of the five
8 training simulators that support the operating
9 CANDU nuclear electric generating stations in
10 Ontario, Pickering A, Pickering B, Bruce A, Bruce B
11 as well as Darlington.

12 I also worked internationally
13 helping to market CANDU reactors and sharing some
14 of Ontario's unique nuclear training in education
15 expertise. I joined UOIT in 2001 as founding Dean
16 of the nuclear engineering and science programs.

17 A unique mandate of UOIT is to be
18 market driven. In particular it was recognized
19 that while the Government of Ontario had committed
20 to having half of the provinces electrical energy
21 generated by nuclear power plants, a large portion
22 of the specialized workforce was reaching
23 retirement age, and there were no university
24 programs to educate the next generation of nuclear
25 engineers and scientists.

1 In order to remedy this shortfall,
2 and to help support the continued safe operation of
3 our CANDU units, the nuclear degree programs were
4 amongst the first ones developed at UOIT.

5 The location of UOIT in Oshawa,
6 close to the nuclear plant in Pickering and
7 Darlington, as well as the move of OPGs nuclear
8 head office from downtown Toronto to Pickering, set
9 the scene for a unique partnership, a partnership
10 that is designed to satisfy OPG's need for
11 graduates of nuclear science and engineering
12 programs, the desire of students living in Durham
13 and the GTA to gain education that leads to
14 fulfilling lifelong careers, and the university's
15 needs for linkages with industry.

16 This partnership has flourished,
17 with highly motivated students enrolling in the
18 nuclear programs.

19 OPG has provided expertise to
20 enhance course design and delivery, and has helped
21 faculty and students in furthering learning,
22 training and research that influences the
23 development of a stronger economy, more opportunity
24 for innovation, commercialization and ultimately
25 job growth for Durham, Ontario, and Canada.

1 The first graduates of the
2 bachelor of nuclear engineering program and of the
3 bachelor of science in health, physics and
4 radiation science program joined the workforce in
5 2007. And in each subsequent year, we have been
6 graduating around 14 nuclear engineers and
7 scientists.

8 UOIT has also established post-
9 graduate programs at the masters and doctoral
10 levels in nuclear engineering, as well as post-
11 graduate diplomas in nuclear technology.

12 The principal benefit to the
13 companies and institutions that hire the graduates
14 of UOIT's nuclear programs is that these men and
15 women are more job-ready and, hence, require less
16 time in new-hire training than the graduates of the
17 more traditional university programs.

18 They also bring a breadth and
19 depth of their university education that is
20 uniquely relevant to their careers in the nuclear
21 industry.

22 These engineers and scientists
23 have the knowledge and skills to continue and
24 enhance the safe and reliable operation of our
25 nuclear electric generating stations.

1 Lifelong learning is an essential
2 part of work in the high-tech companies that
3 design, operate and service nuclear power plants.
4 Engineers and scientists need to attend courses as
5 they follow various career paths and as changes in
6 technology require acquisition of new knowledge.

7 Having a university such as UOIT
8 with the full range of nuclear technology programs
9 offered is a very cost-effective way to provide a
10 specialized education that complements industry
11 training programs.

12 The delivery of post-graduate
13 courses offered by UOIT in the nuclear science and
14 engineering fields are made widely available to
15 industry personnel via distance education
16 technology that use webcasting, and also provides
17 for the archival of all the classroom lectures.

18 The digital storage and media
19 format of the lecture content is an important part
20 of managing the knowledge that is key to
21 maintaining the human expertise needed to operate
22 and service nuclear power plants.

23 These plants, as you know, are
24 designed to operate for 50, 60 or more years, so it
25 is essential to have a knowledge database in which

1 the original design information, both the what and
2 the whys, are stored and easily accessed at any
3 time and from any place.

4 Universities are traditional
5 storehouses of knowledge where research is
6 conducted to solve problems, to enhance known
7 technologies and to discover new phenomena.

8 At UOIT, we were working towards
9 ensuring that both the accumulated experience and
10 the research outcomes relevant to the safe and
11 reliable operation of nuclear power plants become
12 part of the knowledge database and that such
13 knowledge is disseminated to all those who need it
14 with the help of our expert faculty.

15 International experiences that my
16 faculty colleagues and I have are reflected in
17 UOIT's nuclear engineering and science curriculum.

18 Although we draw many examples
19 from the lessons learned during the design and
20 operation of the CANDU units, the theoretical
21 underpinnings of our degree programs are common to
22 all nuclear power plant technologies.

23 And our international education
24 and work experience ensures that our graduates are
25 ready to work on any of the reactor systems that

1 may be built at Darlington, elsewhere in Canada, or
2 anywhere in the world.

3 Now, along with the full range of
4 nuclear programs offered at UOIT, alternative
5 energy systems are also covered in our curriculum.
6 These include solar, wind, hydro, geothermal, and
7 the full range of emerging energy technologies.

8 As well, the university's
9 buildings on the north Oshawa campus are all heated
10 and cooled by Canada's largest geothermal system.

11 I think that it's also noteworthy
12 that in the last two year, student enrolment in the
13 engineering degree program that focuses on
14 alternative energies has been only about a quarter
15 of the number of students that take the nuclear
16 engineering program.

17 While students, parents and
18 guidance teachers seem to understand that energy
19 sources such as wind and solar need to make
20 important contributions to Ontario's electrical
21 energy supply, they also realize that the jobs for
22 the nuclear graduating engineers in the energy
23 industry are mostly in the traditional nuclear,
24 hydro and fossil areas.

25 It is clear to me and to my

1 faculty colleagues that in Ontario, nuclear power
2 plants will need to be the principal providers of
3 baseload electricity irrespective of the installed
4 level of wind and solar capacity.

5 As Dr. Marceau emphasized, nuclear
6 is the only viable source of baseload generation
7 that can ensure that we minimize further
8 deterioration of the earth's climate due to carbon
9 dioxide emissions.

10 And even as the government of
11 Ontario shuts down coal-burning generating
12 stations, in the absence of an adequate level of
13 nuclear power plant capacity, baseload electricity
14 demand will have to be supplied by natural gas-
15 fired power plants.

16 And while these emit less carbon
17 dioxide and a reduced level of particulate
18 pollution than coal plants for given megawatt
19 hours, the burning of natural gas to generate
20 electricity represents a major source of greenhouse
21 emissions that can only be reduced by adding to
22 Ontario's nuclear fleet.

23 It is clearly evident to me that
24 the proposed new nuclear units at the Darlington
25 site need to be constructed and placed into

1 operation as soon as possible in order to minimize
2 further fossil fuel emissions and the resultant
3 adverse effects of climate change.

4 I believe that the key finding of
5 this environmental assessment hearing should be to
6 recommend proceeding with the construction of new
7 nuclear units at Darlington so as to achieve the
8 earliest possible in-service date.

9 Thank you, Mr. Chair.

10 CHAIRPERSON GRAHAM: Thank you
11 very much for those comments in intervention.

12 r. Pereira, do you have any
13 questions?

14 --- QUESTIONS BY THE PANEL:

15 MEMBER PEREIRA: Thank you, Mr.
16 Chairman, just one question.

17 You talk about the benefits of
18 nuclear power generation with respect to reducing
19 carbon dioxide, in particular, to emissions and
20 that's true.

21 But with nuclear power, as many
22 intervenors have pointed out, there are other
23 emissions. There's the emission of radioactive
24 products such as tritium and other -- other
25 radioactive products.

1 What is your comment on -- on
2 those aspects because those in -- those emissions
3 do -- do indeed impact on the environment? Is
4 there any work done at your university to study how
5 those -- those impacts can be mitigated?

6 DR. BEREZNAI: George Bereznai,
7 Mr. Chair.

8 CHAIRPERSON GRAHAM: Yes.

9 DR. BEREZNAI: Yes, some of our
10 research involves -- especially in our health,
11 physics and radiation science program, we are
12 dealing directly with the development of better
13 measuring devices, such as those emitters,
14 including those for -- for tritium, but as well as
15 for gamma and -- and neutron radiation.

16 Through our engineering studies,
17 we are involved in ensuring that any emissions are
18 minimized. So in terms of our research and our
19 teachings at the university, we do put a great deal
20 of emphasis on those issues.

21 However, and somewhat referring
22 back to Dr. Marceau's comment, we do live in a
23 radio -- in a radiation environment. Human life
24 evolved on this earth within this well-known
25 radiation environment.

1 In fact, the level of radiation
2 intensity has gradually reduced over the millennia
3 and the regulatory limits, as I am sure you well
4 know, are set way below levels which are
5 encountered every day in terms of background
6 radiation.

7 The variations of background
8 radiation across the earth are far greater than --
9 than what additional amounts are received by human
10 beings a result -- as a result of nuclear power
11 emissions and, ultimately, is the cost and benefit
12 of all electrical generation that we need to look
13 at and -- and the -- as well as the impact, of
14 course, on the environment.

15 And I believe that while you're
16 perfectly right, there are small amounts of
17 emissions of radioactive materials from nuclear
18 power plants, I believe that the evidence,
19 especially in terms of Canada's excellent record
20 with the CANDU reactors, is such that these
21 emissions are way within normal limits of the
22 background radiation and well less than what most
23 of us accept as part of our medical treatment.

24 MEMBER PEREIRA: Thank you.

25 In talking about impacts to the

1 environment, in our mandate we look also at health
2 impacts and that is the concern of many of the
3 intervenors.

4 The concern is that releases from
5 nuclear generating stations do health -- health
6 impacts on the population at large and that is an
7 issue that has been before time and time again;
8 something that we much consider going forward.
9 Thank you.

10 Thank you, Mr. Chair.

11 CHAIRPERSON GRAHAM: Madam
12 Beaudet?

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

15 We did have interventions with the
16 workers unions and we were asking them how they --
17 for them, if it's a problem to have to work in an
18 environment where there's a new technology.

19 And I heard you mention that the
20 training for your students would permit that they
21 face the challenges if there's a new technology and
22 that I'd like you to elaborate a bit more on that
23 because they would obviously be needing further
24 training, but what is the basic education that is
25 given and how well are they prepared?

1 DR. BEREZNAI: George Bereznai
2 through the Chair.

3 First of all the fundamentals of
4 university education deal with the basic science
5 and, in this case, the basic science of radiation
6 and all the nuclear phenomena.

7 And these are common to all the
8 technologies, but the gamma ray or neutron release
9 are irrespective of the nuclear power plant
10 technology that produces that radiation if you
11 like.

12 So in terms of the impact, we do
13 research and then teach to our students. As long
14 as they understand the nature of radiation and you
15 protect against each particular type of radiation,
16 given its energy levels and its impact on the
17 living organism, that is common to all the
18 technologies and we cover these.

19 Also the international nuclear
20 community has been very free to exchange its
21 information. Virtually all the main regulations of
22 the nuclear industry are discussed and arise from
23 extensive international consultations.

24 A number of my colleagues, as I
25 have, worked overseas in other countries; have

1 worked in the other technologies and it's through
2 all of those collective experiences that we feel
3 that, you know, our students graduate, although
4 they are specialized in CANDU, they do have the
5 breadth of knowledge to go and work on a nuclear
6 power plant of any other kind.

7 MEMBER BEAUDET: Thank you. Thank
8 you, Mr. Chair.

9 DR. MARCEAU: Richard Marceau
10 through the chair.

11 I would simply like to add that
12 our graduates work for different companies, not
13 just for AECL. Some of them work for AREVA; others
14 have gone to the U.S. to study in post-graduate
15 programs and some of them are presently doing
16 doctoral studies in the U.S. after having done
17 their bachelor studies at UOIT.

18 So our graduates are quite capable
19 of working in a variety of environments with a
20 variety of technologies.

21 MEMBER BEAUDET: Thank you.

22 CHAIRPERSON GRAHAM: I just have
23 one question.

24 You mentioned that in the
25 alternate energy studies about only a third are

1 enrolled in the alternate energy.

2 In your estimation, what timeframe
3 would it take to train and install the
4 infrastructure and so on of an alternate energy, be
5 it wind or solar, to replace or to equal the amount
6 of generation that would come from the nuclear
7 power plant that's being proposed here?

8 DR. MARCEAU: Richard Marceau
9 through the Chair.

10 I will make a few comments and I
11 believe my colleague would like to make a few
12 comments as well.

13 There is a fundamental difference
14 between a nuclear option and renewable such as wind
15 and solar. They produce energy when they are able
16 to, not when we necessarily need them to, based on
17 the random nature of wind and sun.

18 So the difficulty is that one
19 needs to have base load capability if one has to
20 have power when one wishes to use it.

21 The way for renewables such as
22 wind and solar to be a viable, if I can say base
23 load contributor to any power system, is -- if that
24 is possible and that is yet to be demonstrated, is
25 for wind and sun to be able to be -- to generate

1 electricity which would then be stored in some
2 possible way.

3 Presently the best way that we
4 have to store energy is through hydroelectric power
5 in hydroelectric reservoirs.

6 There are other technologies --
7 high technology solutions for this that have not
8 all been well-demonstrated. There are -- one could
9 imagine large, large banks of batteries, but I
10 think that would be far more threatening to the
11 environment than a water reservoir or to simply a
12 nuclear power plant.

13 But the difficulty is to be able
14 to manage a power system with base load and to have
15 access to renewables. And the way that we do it
16 today is that we can vary the hydroelectric output
17 of certain power stations in Ontario to accommodate
18 the wind and solar generation.

19 Another way would be to be able to
20 have wind and solar across the nation, all of
21 Canada. That way when wind -- if you can't sell it
22 or use it when you need it and when it generates
23 it, that means that you have to widen the market.

24 And so for all of wind and solar
25 in Canada to be able to be used when you need it,

1 when it is able to generate, you need to be able to
2 flow that power across the nation, and presently we
3 do not have the interconnections that would enable
4 that to do so.

5 So we're back to optimizing
6 provincially for base load and presently in
7 Ontario, other than trying to embark on a major
8 hydroelectric generation project in the north,
9 which would not likely be enough, we have to resort
10 to nuclear for base load.

11 CHAIRPERSON GRAHAM: Thank you.
12 And hydro also requires a lot of environmental
13 impact on large reservoirs and so on.

14 With that, I will now go to the
15 floor. And OPG, do you have any questions or
16 comments to the intervenors?

17 MS. SWAMI: Laurie Swami. We have
18 no questions or comments.

19 CHAIRPERSON GRAHAM: CNSC, do you
20 have any?

21 DR. THOMPSON: Patsy Thompson, no
22 thank you.

23 CHAIRPERSON GRAHAM: Governmental
24 agencies. I understand that Environment Canada is
25 here this morning. Do you have any questions to

1 the intervenors?

2 If not, are there any
3 interventions from the floor? There are none.

4 So with that to you, Dr. Marceau,
5 and to -- the process is that if you have a
6 question, the Secretariat at the back -- you have
7 to register. If you have a question and want to
8 register -- do you have a question?

9 If you do, I'll allow this one,
10 bend the rules a little bit, but after this,
11 anybody that has a question have to register with
12 the Secretariat. If you'd go to the microphone and
13 identify yourself, sir, and the rules are one
14 question and to address the Chair.

15 MR. ETCHEVERRY: Good morning.
16 Thank you, Mr. Chair.

17 My name is Jose Etcheverry. I'm
18 a professor from the Faculty of Environmental
19 Studies of York University. And my question is on
20 regards of the statements that were made about
21 climate change. And I thank you for allowing me to
22 ask this question.

23 About two-thirds of the -- or
24 three-fourths to be more precise of the
25 anthropocentric greenhouse gas emissions that are

1 causing the problem of climate change, come from
2 the use of fossil fuels.

3 About one-fourth come out of land
4 use changes that we humans do; for example,
5 converting a forest into a pasture, deforesting an
6 area, et cetera.

7 So when we look at the energy
8 component of our emissions that are creating
9 climate change, it's important to note that out of
10 all the primary energy use in the planet, 80
11 percent comes from the burning of fossil fuels.

12 So if you look at the primary
13 energy demand, nuclear power only contributes about
14 -- less than 10 percent of all the primary energy
15 use that is required in the planet. The bulk of
16 our energy needs are satisfied by fossil fuels.

17 So it took 50 years or so to get
18 that 10 percent of nuclear power that is part of
19 the primary energy mix.

20 So the question that I have for
21 the previous speakers is, how do they envision that
22 we're going to double, triple, or quadruple that
23 contribution that nuclear power makes right now for
24 the primary energy demand? How are we going to pay
25 for it? Where are those additional nuclear power

1 plants going to be installed?

2 Because for nuclear power to
3 be a true solution to climate change, these types
4 of questions need to be answered.

5 CHAIRPERSON GRAHAM: Thank you for
6 your question and preamble.

7 Dr. Marceau?

8 DR. MARCEAU: Richard Marceau
9 through the Chair.

10 I would simply say that the 20th
11 Century trends that we have seen will need to
12 change. In the 21st Century, we're going to have to
13 get a sense of urgency to truly address climate
14 change.

15 I agree with all the comments of
16 our colleague who has asked the question. All that
17 I would simply say is that we will need a plan on a
18 global scale that includes renewables, that
19 includes hydroelectric. We will have to develop
20 all of our hydroelectric resources, those that are
21 developable.

22 We will have to -- we will have a
23 gap, and we will need to develop new nuclear and we
24 will have to develop all of these resources to
25 displace fossil fuel utilization as quickly as we

1 can.

2 When I say as quickly as we can,
3 it's going to take a great deal of coordination
4 between national governments. We will need to
5 develop technologies that will deplete the carbon
6 in the atmosphere.

7 As I mentioned in my remarks, it
8 is hard for me to say at what time scale humanity
9 will react to this tremendous challenge because
10 national leaders have yet to come together on this.

11 But I cannot map out the plan this
12 morning. That -- I can only define the --
13 circumscribe the framework.

14 CHAIRPERSON GRAHAM: Thank you
15 very much. It's recognition by national leaders to
16 -- to address -- to even acknowledge the problem, I
17 guess that's what you're saying.

18 With that, thank you very much,
19 Dr. Marceau, and thank you very much, Dr. Bereznai,
20 for coming this morning, giving us your views, and
21 good luck in your -- in your training of young
22 minds to entertain the alternatives and the energy
23 needs of the 21st and 22nd Century.

24 Thank you very much.

25 DR. MARCUEAU: Thank you very

1 much.

2 DR. BEREZNAI: Thank you.

3 CHAIRPERSON GRAHAM: I will now
4 move to an oral statement by York University
5 Faculty of Environmental Studies. Oral statements
6 I must -- I'll remind you are limited to 10
7 minutes. Following oral statements, only panel
8 members will be allowed to ask questions.

9 And I believe the presenter this
10 morning of the oral statement is Mr. Jose
11 Etcheverry, and he is Assistant Professor of
12 Faculty of Environmental Studies.

13 Mr. Etcheverry, right there, yes,
14 you were the one at the microphone a few minutes
15 ago, and welcome, and the floor is yours. And I
16 remind you to -- it's a 10-minute oral statement.

17 Thank you very much.

18 --- PRESENTATION BY MR. ETCHEVERRY:

19 MR. ETCHEVERRY: Yes. Thank you
20 very much. Good morning, ladies and gentlemen.

21 First, let me start by reading you
22 an e-mail from my colleague Dr. Daisaku Shimada,
23 which was sent a few days after the earthquake from
24 Kyoto, Japan.

25 "Dear Professor Jose, Thank

1 you so much for your message.
2 I really appreciate your
3 kindness. Here in Kyoto far
4 from Tohoku Region, we felt
5 the quake for a long time.
6 Rie" -- who is Dr. Shimada's
7 wife -- "and I were in Kyoto
8 at that time, and our family
9 and friends were not hurt by
10 the quake directly.
11 The damage in Tohoku Region
12 is so serious that I cannot
13 imagine how hard the victims
14 are affected. It is fear
15 that the nuclear power plants
16 in Fukushima prefecture in
17 Tohoku are under a critical
18 situation.
19 The cooling systems have had
20 problems in the Fukushima
21 nuclear power plants. There
22 are possibilities that a core
23 meltdown has happened.
24 An explosion occurred at
25 number 1 reactor on Saturday,

1 and the top of the reactor
2 building was destroyed.
3 Another reactor building has
4 also been under a risk of
5 explosion.
6 Our government and the Tokyo
7 Electric Power Company have
8 said no problem again and
9 again, but they are, in my
10 opinion, doubtful.
11 Almost 80,000 residents near
12 the nuclear power plants are
13 needed to be evacuated from
14 there. This is a situation
15 which I understand.
16 Thank you also for your kind
17 offer to organize help from
18 your faculty and university.
19 This disaster is so serious
20 that I cannot understand what
21 outsiders like you and me can
22 do for the victims in this
23 moment.
24 What I can ask you is as
25 follows: Please convey to

1 your students and colleagues
2 that nuclear power plants are
3 dangerous and are now
4 seriously endangering
5 Japanese citizens.

6 Best regards, Daisaku
7 Shimada, Ph.D., Research
8 Fellow of the Japan Society
9 for the Promotion of Science,
10 Department of Economics,
11 Doshisha University,
12 Karasuma-Higashi-iru,
13 Imadegawa-Dori, Kamigyo-ku,
14 Kyoto."

15 Dr. Shimada was a visiting scholar
16 in our faculty during 2010, and his words should
17 provide clear guidance for any decisions about
18 nuclear power here in Ontario.

19 The fact is that until the nuclear
20 disaster in Japan is under control and its lessons
21 are well-understood, we should not proceed with
22 rash decisions about nuclear commitments here in
23 Ontario.

24 These hearings are proceeding with
25 insufficient information, and therefore should be

1 postponed until all information is available.

2 We do not know exactly what
3 technology or nuclear provider is under discussion
4 here, and therefore Ontarians should wait until
5 such crucial factors are clearly specified.

6 In addition, since the human and
7 economic costs of the proposed nuclear expansion
8 are not clear, we simply cannot even weigh the
9 validity of the proposed expansion. Important
10 unanswered questions linger.

11 For example, which communities
12 will host radioactive waste facilities in
13 perpetuity? How will the multiple security
14 concerns related to nuclear be handled? What about
15 the grossly inadequate insurance and liability
16 arrangements that are currently in place in
17 Ontario?

18 This, and many other important
19 problems that have been widely discussed throughout
20 these hearings, indicate that the only reasonable
21 course of action today is to postpone any
22 discussions about nuclear until all the facts can
23 be clearly put on the table.

24 Also, the availability of superior
25 options clearly indicate that Ontario should

1 continue its paradigm shifting policy of phasing
2 out dirty, unsafe, and polluting sources of energy
3 generation.

4 The coal phase out was a very
5 important first step that should be followed by a
6 nuclear phase out.

7 Ontario can phase out all its
8 dirty and dangerous electricity generation with a
9 combination of renewable energy, smart grids,
10 storage options, low impact combined heat and
11 power, district energy, conservation and
12 efficiency.

13 These strategies can provide safe,
14 reliable power solutions, protect Ontarians and
15 their environment, and provide new economic
16 opportunities and create abundant employment
17 sources.

18 Excuse me. In the past, we have
19 quantified the great potential of these practical
20 strategies, and today, Ontarians, through the
21 implementation of world-class renewable energy and
22 conservation initiatives, are seeing with their own
23 eyes many new industries that are already
24 developing right here in Ontario.

25 A phase out of coal and nuclear in

1 favour of a transition to safe and clean renewable
2 energy sources needs to include a fair and
3 innovative compensation package for the men and
4 women that have dedicated their careers to work in
5 those sunset industries.

6 Ontario is a fair and just
7 province, and we must not leave those workers and
8 their families stranded in the past. Every
9 paradigm shift, by definition, depends on rapid
10 change, which can be difficult to understand and
11 tough -- tough for some to accept.

12 However, as the events in
13 Fukushima, Japan illustrate, the nuclear industry
14 presents too many dangers and liabilities, and we
15 cannot ignore those facts here in Ontario.

16 Better options are available.
17 Let's start today the much needed conversation of
18 phasing out polluting sources of energy generation
19 in favour of clean, safe renewable energy options.

20 Ontario is destined to be a world
21 leader in the development of safe, clean renewable
22 energy and conservation options. Our children and
23 grandchildren will thank us for creating today a
24 better present and a better future for all
25 Ontarians.

1 Thank you very much for your
2 attention.

3 CHAIRPERSON GRAHAM: Thank you
4 very much, Mr. Etcheverry.

5 We will now proceed to questions,
6 as I said, only from panel members and Madame
7 Beaudet, do you have any questions?

8 --- QUESTIONS BY THE PANEL:

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

11 I have asked the previous
12 intervenor about the type of research that they do
13 with respect to nuclear power generation and I'd
14 like to ask you the same question.

15 What is the basic science research
16 that you do? Do you do any in nuclear power? Do
17 you do any in other type of energy like renewable?

18 MR. ETCHEVERRY: Yes, I was hired
19 in the university to create a team of researchers
20 that develop renewable energy solutions all the way
21 from the pre-university to the post-doctoral level
22 and we've been very busy creating the necessary
23 elements to be able to actually teach young people
24 how to enter the renewable energy and conservation
25 industries.

1 We have a multi-disciplinary team
2 already in place made of about five faculties that
3 work on all the aspects from technological
4 development, pre-commercialization and
5 commercialization of technologies, policy
6 development, financial aspects, et cetera.

7 Our main focus is renewable
8 energy, conservation and efficiency. However,
9 several of the members of our sustainable energy
10 initiative have expertise on nuclear power.

11 For example, Dr. Mark Winfield
12 that couldn't be here today has produced very, very
13 detailed analysis and research on the entire
14 nuclear life cycle.

15 And his research has been
16 published by the Pembina Institute and it provides
17 very clear indication that the nuclear life cycle,
18 contrary to popular belief, it's laden with carbon
19 from the extraction of uranium to the construction
20 and operation of nuclear power plants, to the
21 decommissioning of nuclear power plants.

22 So a lot of people think because
23 there are no emissions of carbon coming out of
24 nuclear power plants, they are nuclear -- that
25 nuclear is carbon-free.

1 However, the uranium that we use
2 does not come by winged vessels into Ontario. It's
3 transported using fossil fuels. It's processed
4 using fossil fuels.

5 And as Mr. Pereira noted earlier,
6 there are a number of contaminants and radioactive
7 products that are needed prior to the operation of
8 a nuclear plant, during the operation of a nuclear
9 power plant and in the many, many thousands of
10 years involved on dealing with the radioactive
11 waste.

12 But to answer your question
13 precisely, our approach has been to focus on the
14 options that work in our opinion; renewable energy,
15 combined heat and power, storage, district energy.

16 That's why we're interested in the
17 generation side and in the behavioural side,
18 conservation and efficiency, and we have associated
19 ourselves with the best schools in the planet. We
20 don't mean to invent the wheel. The wheel, it's
21 already up and running in many places.

22 So, for example, we have
23 affiliations with universities in Northern Denmark
24 where they have been dealing with a hundred percent
25 penetration of wind power in that part of the

1 country.

2 Many people know that Denmark
3 derives about 20 percent of its electricity from
4 wind power, but very few people know that the
5 Government of Denmark intends to move to 40 percent
6 of its electricity needs coming from wind power by
7 the year 2020.

8 This is government policy in
9 Denmark and the university that we're associated
10 with in Aalborg, it's in the northern part of
11 Thisted in Denmark, has a specialization on how to
12 have deep penetration of wind power in the mix.

13 So we are dealing with people that
14 know how to manage the variability of wind in a
15 manner that can provide lasting solutions for the
16 people of Denmark.

17 And we are also developing --
18 recently received a grant to develop a program in
19 common with German universities.

20 I'm particularly interested in the
21 universities of Southern Germany in the State of
22 Baden-Wurttemberg where there is a nuclear phase-
23 out in place and people in that region have begun
24 very specialized in using solar power and biomass
25 solutions to replace nuclear power.

1 MEMBER BEAUDET: We've heard many
2 times the statement that wind and solar are
3 intermittent based power -- for generating power
4 and I'd like to have your comments on that please?

5 MR. ETCHEVERRY: Well, that's a
6 reflection of technological knowledge of the 20th
7 Century. In the 21st Century, advances in several
8 related areas have made it possible to do things
9 very differently.

10 An analogy that is used often is
11 the use of the internet. When many of us went to
12 university to do our Bachelors, for example, a
13 computer would occupy this entire room to make a
14 little bit of computing.

15 Now, anyone's cell phone has more
16 computing power than those university mainframe
17 computers.

18 Not only that but the other part
19 of the analogy is that the internet permits to have
20 many units co-working at the same time. So if one
21 unit is down in one part of the country or an
22 entire country is down, the internet continues to
23 offer services because there are so many users and
24 producers of information.

25 The same thing has happened with

1 the energy sector.

2 As I mentioned, advances in
3 material science, the use of renewable energy
4 systems, just in time information,
5 telecommunications, weather forecasting, et cetera,
6 allow to integrate solutions that are truly good
7 for climate protection, reliability and satisfying
8 our energy needs.

9 Nowhere is this more clear than
10 the State of Denmark. Denmark, as you are aware,
11 sits in the middle of part of one of the most
12 industrialized parts of the planet.

13 Germany, for example, it's almost
14 more industrialized than China. Until recently, it
15 exported more products than China. Only recently,
16 China exports more than Germany and the Danish
17 people have managed to have a high penetration of
18 wind power by relying on a number of strategies;
19 weather forecasting, it's very accurate in Denmark.

20 The other thing is that they're
21 very well integrated with their neighbours. So
22 Norway has a large amount of hydro electricity and
23 if you go to the website of Energy Net, which is
24 the equivalent of Ontario's IESO, you can see how
25 they do on real time, the dealing with the

1 variability of the wind.

2 So 60 percent of the electricity
3 in Denmark comes from combined heat and power
4 plants that are also hooked to district energy
5 loops.

6 So what they do is whenever the
7 wind drops, the first strategy is to use
8 hydroelectric power from Norway, but if that
9 strategy is not available due to competing energy
10 uses, for example, in Germany, they start
11 prioritizing the use of combined heat and power
12 plants that are located throughout Denmark.

13 So what they do is then they can
14 generate power that goes into the grid, but at the
15 same time, they capture the heat that the
16 generators create and that heat is stored in
17 thermal storage.

18 In essence, large coffee thermos
19 bottle; gigantic thermal bottles about the size of
20 this room which then allow you to store the hot
21 water to then be used for heating purposes or for
22 cooling purposes too in the homes and businesses of
23 Denmark.

24 By doing that, they eliminate the
25 use of natural gas, for example, for heating homes

1 and they do that through district energy loops.

2 But something that is not yet well
3 understood here in Canada is that at the same time,
4 once you have a district energy loop in place and
5 you have a manner to store hot water, you can deal
6 with the real problem of renewable energy which is
7 when you actually have too much wind in the system.

8 The problem in Denmark is not too
9 little wind. It's that often there is too much
10 wind and that's because the Danish people are very
11 energy efficient and there is many often times when
12 there is too much wind in the system and if you
13 don't have a way to deal with availability, you
14 have to waste electricity.

15 So what they've done is they've
16 built the equivalent of gigantic, electric
17 resistance systems similar to what you would have
18 in a kettle, an electric kettle.

19 So when you have a lot of wind
20 electricity, you can actually heat up the
21 electricity to warm up water, and then you can
22 store it in this gigantic storage that I've
23 mentioned.

24 It's all over the place, in
25 hospitals, schools, neighbourhoods, et cetera, and

1 that way when there is too much wind in the system,
2 the load can increase to take that wind into the
3 system.

4 Now, that is how the Danish people
5 are doing this. And this -- it's beginning to be
6 understood here in Ontario.

7 If you go, for example, to the
8 town of Markham, the town of Markham has district
9 energy on combined heat and power, but this is one
10 of the few installations.

11 We have one, ourselves, in the
12 university, but it's nothing compared to what they
13 have in Denmark. In Denmark, there's thousands and
14 thousands of these installations all over the
15 country.

16 Now, the big advantage we have
17 over the Europeans here in Ontario is that we sit
18 in the middle of two big amounts of clean energy.
19 Quebec and Manitoba have huge, huge amounts of
20 hydro power. So for the Danes it would be the
21 equivalent to having two Norways. We have two
22 Norways here.

23 So what we can do in this province
24 is -- and some of these solutions were discussed by
25 the previous speaker, is that we can do, for

1 example, pump hydro.

2 Pump hydro, basically you find a
3 geographic location that has a good location where
4 you can actually store water, when there is excess
5 wind, for example, in the system. You can store
6 large amounts of water and then run a hydroelectric
7 generator when you require that water.

8 And, for example, colleagues of
9 mine had done assessment -- geographic assessments
10 here in Ontario where there is such natural
11 features that could be filled with water, and you
12 could have, for example, 3,000, 4,000 megawatts of
13 stored water to be released when the system needs
14 it.

15 But you see, this -- it's new
16 thinking here in Ontario. This is stuff that is
17 not in place yet. For example, the feeding tariff
18 of Ontario, even though it's world-class to the
19 available renewable energy sources, it does not
20 provide an incentive for storage solutions.

21 So, for example, if you want to
22 put a wind farm or a solar system in this province
23 with storage, you will not have an economic
24 incentive to do so.

25 And not to extend my answer too

1 much, I think -- you see where I'm coming from.
2 The past does not look like the present, and the
3 future does not have to look at all like the past.

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

6 CHAIRPERSON GRAHAM: Mr. Pereira,
7 do you have any questions?

8 MEMBER PEREIRA: No further
9 questions. Thank you.

10 CHAIRPERSON GRAHAM: Well, thank
11 you very much for your oral statement and for your
12 answers that you've provided this morning;
13 certainly always appreciated.

14 So we thank you very much for
15 coming and safe travels back to where you -- where
16 you started this morning.

17 MR. ETCHEVERRY: Thank you very
18 much. Back to the university to work.

19 CHAIRPERSON GRAHAM: Back to the
20 university.

21 MR. ETCHEVERRY: Thank you very
22 much.

23 CHAIRPERSON GRAHAM: Back to work.

24 With that, the next presenter. So
25 as not to interrupt the presentation and so on, I'm

1 going to declare a 15-minute recess now, so when we
2 go into the -- into the next presentation it won't
3 be interrupted.

4 So the Chair will reconvene at
5 10:40.

6 --- Upon recessing at 10:23 a.m. /

7 L'audience est suspendue à 10h23

8 --- Upon resuming at 10:41 a.m. /

9 L'audience est reprise à 10h41

10 CHAIRPERSON GRAHAM: Good morning
11 again, and welcome back.

12 Our next intervenor is Physicians
13 or -- no, is Physicians for Global Survival, which
14 is found under PMD 11-P1.149. And I believe the
15 presenter this morning is Dr. Sharon Baker, if
16 that's -- if I'm correct.

17 Welcome and you may proceed.

18 --- PRESENTATION BY DR. BAKER:

19 DR. BAKER: Good morning, Mr.
20 Chairman, panel members, ladies and gentlemen.

21 My name is Dr. Sharon Baker. I
22 have with me two young people and a community
23 member who are also deeply concerned about the
24 future of our planet, Justin and Shawn Hertwig, and
25 Don Baker.

1 Thank you for the opportunity to
2 speak to you today. I am here as a member of
3 Physicians for Global Survival. I have been a
4 physician in Ontario for 26 years.

5 I currently work as a palliative
6 care physician consultant and site chief at
7 University Hospital, London Health Sciences Centre.
8 This includes the position as assistant professor
9 in the Schulich School of Medicine & Dentistry at
10 the University of Western Ontario.

11 I also served for 10 years as the
12 acting medical officer of health in Elgin County.

13 Physicians for Global Survival is
14 an organization concerned about global health. I
15 am sure that many of the people in this room have
16 been affected by cancer, whether directly or
17 indirectly. As a palliative care physician, I care
18 for people every day who are actively dying from
19 this devastating disease.

20 Cancer is largely preventable with
21 education about healthy lifestyle choices and the
22 elimination of toxic substances from our
23 environment.

24 As a society, Canadians have
25 raised billions of dollars to find a cure for

1 cancer. We walk, run, relay, ride and row. Well,
2 these are noble acts, and I applaud these people.
3 Still we have no cure.

4 Albert Einstein defined insanity
5 as doing the same thing over and over again and
6 expecting a different result. The insanity needs
7 to end.

8 Our approach to health care has
9 been seriously flawed. We need to move from
10 treating illness and turn our focus to prevention.
11 April is Cancer Awareness Month. Cancer can be
12 prevented.

13 Cancer in general is not caused by
14 just one thing. It is multi-factorial. It is a
15 result of a cumulate exposure to carcinogens over
16 time, referred to as the body burden.

17 Carcinogens often work
18 synergistically with one another to produce cancer.
19 Therefore the more carcinogens to which one person
20 is exposed over time, the more likely cancer is to
21 develop.

22 In order to decrease the rates of
23 cancer, exposure to known carcinogens must be
24 decreased, period. This is a societal choice.
25 Radiation is a known carcinogen. This is not

1 debateable.

2 Madame Curie, in her research,
3 taught us about radiation, including its potential
4 to be fatal. Exposure to radiation is
5 accumulative. It builds up in biological
6 organisms, including human bodies; the more
7 exposure, the greater the likelihood of getting
8 cancer.

9 Humans are constantly exposed to
10 low levels of radiation in the environment, some
11 that can't be controlled. Attention needs to be
12 directed to what we can control.

13 Radiation toxicity is
14 accumulative. There is no safe level of radiation
15 exposure. As physicians we recognize this. We
16 weigh the risks and benefits when ordering x-rays,
17 mammograms, CT scans and radioisotopes. We try to
18 limit exposure to decrease the risk of cancer and
19 genetic defects.

20 The assignment of acceptable risk
21 is completely arbitrary. This approach has more in
22 common with the game of chess or rolling a dice
23 than actual science. Increasing the global burden
24 of radioactivity increases the incidents of cancer.

25 Nuclear technology increases

1 humanity's collective exposure to radiation. The
2 increased risk is not limited to emissions from
3 nuclear reactors themselves. It is also the
4 accumulation of all the risks of exposure from
5 processing uranium, the mining, milling and
6 handling and the management of toxic wastes from
7 all these processes.

8 Choosing to expand nuclear
9 technology, and thus the global burden of
10 radioactivity is like determining that it is
11 acceptable that some people are expendable.

12 That person might be your
13 neighbour, someone in this room, or an impoverished
14 Aboriginal that you will never meet. Choosing
15 nuclear power puts a sweep of the pen to someone or
16 some people's destinies. I would not want to live
17 with that responsibility.

18 The negative impact that uranium
19 mining has upon the environment is gargantuan. The
20 fossil fuel requirements for mining, milling,
21 refining, enriching, and transport of uranium ore
22 are enormous, however, I will only discuss the
23 health risks of radioactivity here.

24 Uranium miners are exposed to
25 multiple levels of excess radiation. This includes

1 a radioactive gas called radon 220, which is a
2 decay product of uranium. When this is inhaled it
3 increases the risk of lung cancer.

4 In the early 20th Century, a number
5 of people, primarily women, were employed to paint
6 numbers on watch styles with radium-enriched paint,
7 so the numbers would glow in the dark.

8 The women would lick the brushes
9 so that the numbers would be precise. They
10 believed that what they were doing was safe.
11 However, many developed painful bone cancers called
12 osteocarcinomas or leukemias from this radioactive
13 material.

14 The same radium is also in mines
15 and can be adjusted via the dust with the same
16 result in cancers that these watchmakers faced.

17 The mining of uranium ore results
18 in a destabilized radioactive environment. When
19 mines are abandoned, the water that has been pumped
20 out often re-enters the mine contaminating the
21 groundwater.

22 Milling, extracting the uranium
23 from ore, results in further increase of exposure
24 and production of radioactive waste products.
25 These waste products or tailings require safe

1 isolation from the environment.

2 In the post-World War II era in
3 Canada, the sledge was often deliberately dumped
4 into our lakes, contaminating the groundwater.
5 Accidental dumping also occurs as in the 1984 spill
6 of 100 million litres of contaminated liquid at Key
7 Lake, Saskatchewan.

8 Currently industry is
9 experimenting with ponds and hoping the experiments
10 don't fail. These tailing ponds will be
11 radioactive essentially forever. We cannot let our
12 hunger for power to be used to excuse leaving a
13 toxic mess for our children to inherit.

14 The uranium mining industry has
15 still not effectively addressed the issue of
16 contamination that resulted from mines that have
17 been abandoned.

18 For example, contamination remains
19 a problem in the rural community of Deline and the
20 Dene Nation of the Northwest Territories and
21 Eldorado at Uranium City in Saskatchewan.

22 Developing more uranium mining
23 when the unconscionable contamination of the past
24 has not been addressed is a travesty of social
25 justice.

1 An extensive amount of uranium
2 mining and milling in Canada is done on Aboriginal
3 land, usually without consultation. This is a
4 health issue, a human rights issue and a Native
5 rights issue.

6 Nuclear reactors themselves are
7 not innocuous. They are a risk factor for
8 increasing background radiation. Workers are
9 exposed to low dose radiation. The arbitrary figure
10 that has been chosen by many nuclear power
11 facilities is acceptable for worker exposure, and
12 one year is equivalent to 400 chest x-rays.

13 The issue has been studied
14 extensively in Europe. A 15-country collaborative
15 study among workers in the nuclear industry
16 demonstrated that this type of lose-dose radiation
17 exposure resulted in a risk of developing cancer
18 that was equal or greater than the risk of the
19 survivors of the atomic bomb in Japan.

20 Furthermore, living near a nuclear
21 reactor has been shown irrefutably to increase the
22 risk of children of developing leukemia. This has
23 been studied extensively in Germany. The closer
24 children lived to a nuclear reactor, the more likely
25 they are to develop leukemia before the age of five.

1 There are other toxins in the
2 environment, which can cause leukemia, such as
3 pesticide exposure. Observing clusters of children
4 who have suffered from other toxic exposures does
5 not negate the dangerous effects of living near a
6 nuclear reactor.

7 In fact, the findings of increased
8 incidents of childhood leukemia are expected. Their
9 parents are more likely to work in the reactor. The
10 chronic radiation levels that they are exposed to
11 can affect their sensitive germicides resulting in
12 genetic damage.

13 In addition, water containing
14 tritium was released by nuclear power plants into
15 the environment both by planned events and
16 accidentally.

17 On March 16th of this year, 73,000
18 litres of demineralized water was released into Lake
19 Ontario when a pump seal failed at the Pickering
20 Nuclear Power Plant. Tritium is dangerous. It
21 binds with oxygen in water.

22 For biological organisms including
23 humans, this radioactive water, is indistinguishable
24 from normal water and it becomes incorporated into
25 every cell in the body.

1 Tritium has a half-life of 12
2 years. Meaning it can do damage over a long period
3 of time. Moreover industry data shows spikes in the
4 local measurements of radioactivity when reactors
5 are open for refuelling.

6 Nuclear power generating plants
7 also produce radioactive waste that must be stored
8 and guarded essentially forever.

9 Again, the need and greed for
10 power does not justify leaving a radioactive
11 inheritance for generations to come.

12 While my focus today has been on
13 cancer, we must not forget that accumulative
14 exposure to radiation also causes other illnesses.
15 It contributes to genetic damage, birth defects,
16 autoimmune dysfunction, diabetes, and heart disease.

17 The issue cannot be effectively
18 addressed without mentioning the possibility of
19 human error. Accidents happen. With all our
20 marvelous, fail-safes and backup plans, planes still
21 crash. The Space Shuttle Challenger disintegrated
22 and patients die from human errors.

23 While accidental leaks of
24 radioactive water are relevantly common, serious
25 accidents also happen. There was a significant

1 meltdown of a reactor in Rolphton, Ontario in
2 December 1952.

3 We have also experienced very
4 serious accidents at Three Mile Island in
5 Pennsylvania in 1979; Chernobyl in 1986; and Tokyo
6 Marui, Japan in 1999. And now our hearts go out to
7 the people of Japan.

8 The accident in Fukushima that
9 began on March 11th is devastating. It humbles us to
10 realize that nature can be relentless and that
11 manmade fail-safes can and do fail.

12 People have already died because
13 of this nuclear disaster. Many more will become ill
14 and die. The global burden of radioactivity has
15 increased forever.

16 While I conclude that the serious
17 risk to public health and human life from nuclear
18 technology is indisputable, if doubt did exist, we
19 would still be ethically required to follow the
20 precautionary principle.

21 The precautionary principle states
22 that if an action or policy has a suspected risk of
23 causing harm to the public or to the environment, in
24 the absence of scientific consensus that the action
25 or policy is harmful, the burden of proof that it is

1 not harmful falls on those taking the action.

2 You have seen that there are many
3 scientists that conclude that nuclear power is
4 unacceptably dangerous. We must implement the
5 precautionary principle. Nuclear power must be
6 phased out.

7 This is the same approach that led
8 to banning cosmetic pesticides in Ontario and many
9 other provinces.

10 Beyond error, particularly since
11 911, we have lived with the fear of a terrorist
12 attack. This raises a seldom mentioned point, the
13 astronomical cost of security.

14 It doesn't take a rocket scientist
15 or a nuclear physicist to do the math. Guarding
16 nuclear reactors and nuclear waste costs society
17 enormously more than protecting wind towers and
18 solar farms.

19 The risk of a terrorist attack is
20 low. Nevertheless over one hundred million dollars
21 is spent annually in this province on special
22 weapons and tactical forces to protect nuclear power
23 plants and the valuable nuclear bomb-making material
24 contained within.

25 The nuclear power plant at

1 Darlington is protected by a Nuclear Division of the
2 Durham Regional Police Force. This plant, as
3 Pickering was in January 2010, is to be transferred
4 to the Ontario Power Generation Nuclear Security
5 Branch.

6 The Bruce Nuclear Generating
7 Station is protected by a privately owned and
8 operated, highly trained tactical force, larger than
9 the police force of many large Ontario cities.
10 These tactical team salaries, the extensive high
11 level of training and the expensive equipment
12 results in costs that are exorbitant.

13 The extreme cost of Military
14 presence cannot be justified when no other form of
15 power generation requires even a fraction of this
16 defence cost.

17 While the probability of a
18 terrorist attack on a nuclear reactor may be low
19 today, the future is unknown. Public funds are
20 better allocated to health care, education and
21 employing people to fix and repair existing
22 environmental problems.

23 Every dollar wasted on a expanding
24 and protecting nuclear technology is a dollar
25 diverted from the development of true green energy.

1 In conclusion, nuclear power is
2 costly. It is costly to human health, the
3 environment and the taxpayer. Nuclear power is a
4 cancer on society. It increases the global burden
5 of radioactivity and human exposure to radiation.
6 Radiation causes cancer.

7 Developing nuclear power will
8 contribute to untimely deaths. Now is the time to
9 turn our attention to prevention. Nuclear power
10 should be phased out, not expanded.

11 Thank you.

12 CHAIRPERSON GRAHAM: Thank you
13 very much, Dr. Baker, for your presentation this
14 morning.

15 We will now go to questions from
16 intervenors -- or pardon me, from panel members,
17 and Mr. Pereira, your questions?

18 --- QUESTIONS BY THE PANEL:

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

21 I'll just start with the hazards
22 in uranium mining and the legacy of waste in the
23 uranium mining industry.

24 Turn to CNSC staff and ask for
25 your assessment of what standards we have in place

1 for protection of workers in the environment in
2 uranium mining?

3 But I'd also like you to address
4 the legacy of abandoned mines and where that stands
5 now in terms of impact on our environment.

6 MR. HOWDEN: Thank you, Barclay
7 Howden speaking.

8 I'll speak to the legacy mines and
9 then I'll ask Dr. Thompson to speak to the
10 standards that modern uranium miners are regulated
11 under.

12 In terms of the legacy mines,
13 there is a history of legacy mining within this
14 country for uranium mining.

15 And in the year 2000 when the
16 *Nuclear Safety and Control Act* was enacted, CNSC
17 launched a program called the Contaminated Lands
18 Evaluation and Assessment Network Program, called
19 the Clean Program.

20 The focus of that was to examine
21 all radioactive contaminated sites in Canada
22 including any of the legacy mines.

23 In 2004, the Commission staff
24 reported to the Commission on the status of the
25 work.

1 The intention of that was to
2 ensure that any legacy sites that weren't under
3 regulatory control were then -- were put under
4 regulatory control because not all of them were,
5 and that once under regulatory control that
6 remediation measures that hadn't been done or were
7 needed to continue to be done, were to be done.

8 So that was put in place and all
9 of those sites are under licence.

10 There's only two sites not under
11 licence right now, the Gunner and Laredo sites in
12 Northern Saskatchewan. The province of
13 Saskatchewan has taken responsibility for those and
14 have assigned it to the Saskatchewan Research
15 Council, who have submitted applications to bring
16 those two facilities under licence.

17 One of the sites, the Gunner site,
18 is under an order from the Canadian Nuclear Safety
19 Commission to complete some preliminary demolition
20 work which was focused more on conventional health
21 and safety because of the old structures that were
22 there and the work is continuing.

23 The Governments of Canada and
24 Saskatchewan and the Government of Canada for the
25 Northwest Territories have been putting up funding

1 under a legacy funding program, which is renewed
2 every five years.

3 In terms of the modern mines, I'll
4 ask Dr. Thompson to speak to the requirements that
5 the miners work under.

6 DR. THOMPSON: Patsy Thompson, for
7 the record.

8 I'll speak to the standards both
9 from an environmental point of view, because that
10 would be of relevance for members of the public,
11 and then address the standards in place for
12 workers.

13 In terms of the standards in place
14 for both managing emissions, both to the atmosphere
15 and to the receiving environment in terms of liquid
16 effluent, the standards in place are resulting and
17 detectable at levels of radionuclides and the
18 metals associated with mining such as arsenic,
19 nickel, selenium and molybdenum close to the point
20 of discharge.

21 But as we move away from the first
22 hundreds of metres and perhaps to a kilometre or
23 two from the site, the levels quickly go down to
24 natural levels with very little signature from the
25 mining activity.

1 The Saskatchewan Government, in
2 collaboration with Environment Canada, the CNSC and
3 the environmental quality committees that were set
4 up following the Joint Review Panels in the mid-
5 90s, embarked in what was called a cumulative
6 environmental effects monitoring program because
7 the panel had asked a question, would several mines
8 operating in the Northern Saskatchewan together
9 lead to cumulative environmental effects?

10 And that program ran for a number
11 of years and at none of the cumulative effect
12 stations that had been monitored, there was no
13 detectible impact from any of the mines.

14 So gradually the program moved
15 closer and closer to individual mine sites because
16 we could not detect the footprint, if you like, of
17 the mining activities.

18 The CNSC has recently put on our
19 website, a document that provides data on radon
20 levels around -- on and around mine sites and the
21 data that has been collected through years of
22 monitoring programs, indicates that radon levels on
23 the boundary of mine sites, are at levels naturally
24 found in the Canadian environment where there are
25 no uranium mining activities.

1 So the levels of radon being put
2 out by mine activities are low and quickly, within
3 a few kilometres of the mine sites, are not
4 detectible from natural levels.

5 The Saskatchewan Public Health
6 officials have also done surveys of the health
7 status of Northern communities in Saskatchewan and
8 have documented that the mines have not resulted in
9 health effects to Northern communities and have
10 documented a positive effect of mining because of
11 higher incomes and better health status that comes
12 with higher incomes.

13 In terms of the standards for
14 uranium miners, the standards are -- the dose
15 limits are in place for other nuclear workers and
16 that's 50 millisieverts in a year and 100 over a
17 five-year period.

18 And there again, the requirements
19 for ALARA to keep doses as low as reasonably
20 achievable have resulted in doses to modern-day
21 miners that are in the level of fractions of
22 millisieverts to a few millisieverts. And so the
23 doses have been very low.

24 As a recommendation from the Joint
25 Review Panels in the mid-90s where several mines

1 were being reviewed under federal and provincial
2 legislation, there was a recommendation from the
3 panel to look at the potential health effects of
4 mining on modern miners.

5 And the study that was done was a
6 feasibility study to see if it would be possible to
7 detect health effects in miners at the low doses
8 and the good radiation controls that are in place
9 in modern mines.

10 And that study showed that the --
11 of the -- I think it was around 23 or 25,000
12 workers that would be involved in mining during the
13 period called the modern mine era, that the
14 incidence of lung cancer would not be detectable in
15 relation to lung cancer because of either radon in
16 residential -- in their homes or cigarette smoking.

17 And so the regulatory framework in
18 place around new mines has resulted in a high level
19 of protection to workers and very low discharges to
20 the environment.

21 CHAIRPERSON GRAHAM: Thank you for
22 that response.

23 And it leads into a point raised
24 by the intervenor concerning a study in Europe on
25 workers in the nuclear industry and health impacts

1 that were identified in an analysis of their
2 exposure to radioactivity in their work.

3 Now, we have over the past two
4 weeks had a number of questions on health effects
5 and I believe there are a number of undertakings to
6 provide us with -- provide the panel with
7 information on health studies on -- and also on the
8 KIKI study and, you know, putting those all into
9 context.

10 Is this study on the impact on
11 workers in the European nuclear industry a
12 different one from what we've talked about before
13 and could you just comment on, you know, where that
14 fits in with the other studies?

15 DR. THOMPSON: Patsy Thompson, for
16 the record.

17 I believe that study refers to the
18 International Agency on Research on Cancer study of
19 the nuclearpower plant workers. That study
20 included the Canadian cohort.

21 And the study did find when the
22 Canadian cohort was included that the risks were
23 significantly elevated and were higher than the --
24 the statement here, than survivors of the atomic
25 bomb in Japan, where we have developed our

1 radiation protection standards.

2 The study also clearly says that
3 when the Canadian cohort was removed, the risks
4 decreased to non-significant and were aligned with
5 the atomic bomb survivors.

6 And so following that finding, the
7 CNSC, in collaboration with other Canadian
8 organizations, undertook to reassess the Canadian
9 cohort because we wanted to understand if our
10 workers were actually at higher risk and -- and if
11 that was the case, that something needed to be done
12 about it.

13 That study has been done and from
14 a question from Madame Beaudet, I believe last week
15 mentioned that the actual report is not finalized,
16 but the study has been peer reviewed.

17 And if it would be of assistance
18 to the panel, what we could do is extract the
19 portions of the peer review, the research that has
20 been done for the CNSC that relates to nuclear
21 power plant workers, and provide that as an
22 undertaking because that new work shows that
23 Canadian workers are not at risk.

24 MEMBER PEREIRA: I think we would
25 welcome that as an undertaking, Mr. Chairman.

1 CHAIRPERSON GRAHAM: We'll give
2 that an Undertaking number 62. And the time?

3 DR. THOMPSON: Patsy Thompson, for
4 the record.

5 We could provide it for Thursday.
6 And so it will be the portions of the study that
7 relate to nuclear power plant workers, OPG workers
8 mainly, New Brunswick Power and Hydro Quebec.

9 CHAIRPERSON GRAHAM: Okay, that's
10 very good; as noted. Thank you, Mr. Pereira.

11 MEMBER PEREIRA: Just one more
12 question and this is on the issue of
13 bioaccumulation of radiation impacts on people.
14 CNSC again, looking for your assessment of the
15 nature of this risk in exposures to radiation?

16 DR. THOMPSON: Patsy Thompson.

17 When we assess radiation risk,
18 part of the radiation dose calculation includes
19 consideration of the lifetime dose associated with
20 an intake -- or an exposure to either internal
21 radiation or external radiation. So it's that way
22 in which we take into account the fact that
23 radionuclides will stay in the body for a long time
24 and may lead to long-term exposures.

25 MEMBER PEREIRA: Thank you. Thank

1 you, Mr. Chairman.

2 CHAIRPERSON GRAHAM: Thank you,
3 Mr. Pereira.

4 Madame Beaudet?

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

7 To follow on this line of thought,
8 I'd like to know when studies are done with
9 children, is the protocol the same as you would do
10 -- you would -- like you say you -- you have the
11 projection of how long, you know, it would stay in
12 the body, et cetera.

13 When the studies would be done
14 with infants, how is it adjusted? What is the
15 methodology to -- you can't consider them as small
16 adults. It has to be a different approach and is
17 there a different approach?

18 DR. THOMPSON: Patsy Thompson, for
19 the record.

20 Yes, there is a different
21 approach. The physiological models used to
22 calculate the -- there are two components to
23 calculating a radiation dose.

24 One is the exposure and then is
25 the -- the transfer -- the transition between, for

1 example, becquerels taken into the body and
2 transferring that to a dose.

3 And so the physiological models
4 that take into consideration the amount of
5 radioactivity that would be taken into a body are
6 adjusted for different age groups, different
7 infants, young children and teenagers.

8 And when we do the assessments, we
9 take into consideration, for example, the higher
10 breathing rates of young children, the amount of
11 food that they consume from essentially sources of
12 information that Health Canada puts out, for
13 example.

14 The CNSC has done studies of
15 lifestyle and food consumption n, for example,
16 northern Saskatchewan, in Aboriginal communities,
17 so we have a good assessment of what people eat and
18 in what quantities.

19 And there's a requirement for OPG
20 and other licensees to do site-specific surveys so
21 that we have good information in terms of people's
22 lifestyles and what the exposures are and so the
23 physiology of infants and young children is taken
24 into consideration.

25 CHAIRPERSON GRAHAM: I believe,

1 Dr. Baker, you may want to respond and then go to
2 back to Madame Beaudet.

3 DR. BAKER: Oh, sorry, thank you.

4 Just a brief comment is that one
5 of the problems in developing any study, when you
6 have a -- your outcome is largely affected by how
7 you do the study and by who designs the study, and
8 that is something we certainly can see within the
9 pharmaceutical industry and within the tobacco
10 industry, that people within the industry can
11 certainly get a different outcome based on what
12 they're hoping to find.

13 And one of the problems with
14 studies that we've had, particularly in Canada, is
15 that there hasn't been input into the design of the
16 study by other people outside of the industry,
17 other scientists and -- such as palliative care
18 physicians who are seeing a different response.

19 As a palliative care physician, I
20 know that we are not asking people about their
21 exposures, so I think when we're looking at a
22 study's design, we have to be improving our study
23 design.

24 In addition, certainly looking at
25 the children that have suffered from leukemia in

1 Europe, we have had no similar design at all in
2 this area to that and people -- there have not been
3 the same type of levels of exposure measurements
4 done in Canada that have been peer reviewed prior
5 to any study.

6 And peer review studies that I'm
7 aware of certainly haven't been included with the
8 medical community as well as people within the
9 industry.

10 CHAIRPERSON GRAHAM: Thank you.
11 Madame Beaudet?

12 MEMBER BEAUDET: Thank you.

13 If we go further on reflection of
14 this, the references listed in the written
15 submission, I believe some of these studies were
16 covered by other intervenors. And I think with the
17 other undertaking that you're preparing, it would
18 be good to make sure that you review -- you already
19 have sent in as an undertaking, I think, 30, a
20 review of the studies that were done.

21 I think it would be good to also
22 advise the panel on these different studies that
23 are referred, whether they are included in your
24 review or to what extent is it meaningful to look
25 at these studies that are suggested in the written

1 submissions? Is that -- is that clear?

2 DR. THOMPSON: Patsy Thompson, for
3 the record.

4 Yes, but for clarification, the
5 BEIR VII, we have talked about ---

6 MEMBER BEAUDET: Yes.

7 DR. THOMPSON: --- but BEIR VII
8 doesn't say that there's no safe level of
9 radiation.

10 What it says is that the
11 scientific evidence still supports the linear no-
12 threshold relationship and that's the relationship
13 that CNSC uses to make regulatory decisions.

14 And the other references are the
15 -- in relation to the KIKK study, but we can make
16 sure that we reference them again.

17 MEMBER BEAUDET: Thank you.

18 Now, my other question -- but
19 first, I'd like to thank the young people for being
20 here. I think it's a statement in itself.

21 I was interested in your written
22 submission when you referred to -- as a body-
23 burden. When you establish, for instance, a
24 national park where you'd have -- for instance, in
25 Africa where you want to protect certain species,

1 you always evaluate the territorial capacity of
2 each type of animal and then you sort of adjust the
3 number of acres that you would need, depending on
4 the animals you have.

5 When you look at windmill farms,
6 for instance, you'll try to see the capacity that
7 can be integrated in terms of tourism and physical
8 impacts. I mean, we have all kinds of different
9 tools to sort of establish, you know, what can be
10 done and what cannot.

11 And here I was wondering with this
12 definition here of body-burden, has there been any
13 research to sort of establish what as we humans --
14 and I think we are more important than trying to
15 see the capacity of a territory to animals.

16 Is there any quota or research
17 that has been done in this field?

18 DR. BAKER: There certainly have
19 been research -- has been research done in to body
20 burden in the sense of that we know that it's the
21 more you have, as far as carcinogens, the more you
22 are likely to get cancer. And many toxic materials
23 have been studied.

24 But as far as exactly how within
25 each individual a cumulative effect takes place,

1 we're still in the infancy of that type of study.

2 For example, if you look at
3 someone who is a smoker, and lives in a home that
4 has radon, the extra amount of radiation that it
5 might take to be the straw that leads to cancer,
6 might be significantly less for that person than
7 for someone without that environment.

8 So when we use those as
9 justifications to not study it, we're actually
10 avoiding looking at the straw.

11 So for each individual we don't
12 know exactly what the straw is, and I think those
13 are huge areas of lack in our research that we
14 have.

15 We know it's accumulative. We
16 know that for each individual, there is an amount
17 of radiation that will cause cancer, and we know
18 that the difference can actually be the other
19 toxins in your environment.

20 They're very hard to measure, but
21 I think we could absolutely do a better job of
22 understanding the body burden per person than we do
23 now, and I think that's an important area of
24 research to develop.

25 MEMBER BEAUDET: I'd like to go to

1 CNSC, because you did try to compare incidents. I
2 think there's a study that compares incidents of
3 cancer from nuclear with other types of cancer.
4 And I was just wondering if this aspect has ever
5 been looked at or is being researched.

6 DR. THOMPSON: Patsy Thompson, for
7 the record.

8 Yes, on -- I can't remember if it
9 was last Friday or Saturday, where we did talk
10 about the work that was done by Health Canada to
11 look at the various risk factors and where
12 radiation fit into those risk factors.

13 There's also been work done by the
14 United Nations Scientific Committee on the Effects
15 of Atomic Radiation, looking at whether radiation
16 exposures in combination with various chemical
17 carcinogens would have an additive synergistic
18 effect or not.

19 And that report clearly showed
20 that for lung cancer radon and smoking is
21 synergistic, and so the risk is higher than
22 additive.

23 But for other substances there
24 isn't a lot of data available, but the data
25 available did not indicate that there was an

1 additive effect.

2 But it's certainly an area that
3 would require more research. There is some
4 research being done for non-human species, they're
5 easier to study in the lab, where we've looked at
6 combinations of -- of various toxics and toxics and
7 radiation.

8 And the -- in general what we find
9 is that there's very few combinations that are
10 synergistic. Many of them are additive, some of
11 them not, but -- and so the prudent approach is
12 usually to consider that when you have more than
13 one substance to which an organism is exposed to
14 that additivity is usually a conservative
15 assessment.

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

18 CHAIRPERSON GRAHAM: Thank you.
19 Thank you very much, Madam Beaudet.

20 OPG, do you now have any questions
21 to Dr. Baker?

22 MS. SWAMI: Laurie Swami.

23 No particular question. However.
24 I noted that the intervenor mentioned that we open
25 our reactors for refuelling, and we had discussed

1 this earlier. And I just wanted to reconfirm for
2 information that for refuelling purposes CANDU
3 units are refuelled online.

4 So we don't -- as a similar
5 process in the US, where they shut down and remove
6 fuel and -- and put fuel back in, that's not the
7 process that we use in Canada. No other questions.

8 CHAIRPERSON GRAHAM: Thank you.

9 CNSC?

10 DR. THOMPSON: Patsy Thompson.

11 No, thank you, no questions.

12 CHAIRPERSON GRAHAM: Government
13 departments, Environment Canada are here, any other
14 government departments?

15 If not, we have two questioners
16 from the floor. Anna Tilman is the first one, and
17 Mr. Haskill is the second.

18 Ms. Tilman, would you like to
19 propose your question, please, to the Chair?
20 There's someone coming behind you there, to help.
21 It's a little high.

22 --- QUESTIONS BY THE PUBLIC:

23 MS. TILMAN: Thank you.

24 From the International Institute
25 of Concern for Public Health, my question actually

1 is for CNSC because I fail to understand some of
2 the comments that were made by Dr. Patty Thompson
3 in terms of the safe dose, including the BIER
4 report. I'll be as specific as I can.

5 In terms of studies for children,
6 do you follow children for more than one
7 generation? Like, do you follow them -- we were
8 talking about exposure, leukemia causes, but the
9 latent effects of exposure can mean that the
10 effects don't show for another generation, for 20
11 years.

12 So how long have you followed
13 children that might be exposed earlier?

14 CHAIRPERSON GRAHAM: Thank you,
15 Ms. Tilman.

16 Dr. Thompson?

17 DR. THOMPSON: Patsy Thompson, for
18 the record.

19 I can speak to information that is
20 actually in the BEIR XII report, that has just been
21 referred to, and that report includes information
22 from 30,000 children who were born of survivors of
23 the atomic -- the atomic bomb survivors.

24 And of those 30,000 children, it's
25 been several -- more than one generation since the

1 -- the parents were exposed, and of those 30,000
2 children, there has never been hereditary effects
3 observed in the children born of survivors of the
4 nuclear bomb.

5 CHAIRPERSON GRAHAM: Thank you.

6 The next questioner is Mr.
7 Haskill, representing the Families against
8 Radiation Exposure. Mr. Haskill, welcome this
9 morning.

10 MR. HASKILL: Thank you, Mr.
11 Chairman.

12 My name is Sanford Haskill, and
13 you've already said where I'm from. I'd like to
14 apologize for my little friend from Just One World;
15 the stagecoach broke down and he's not going to be
16 here until later.

17 My question, sir, I would like you
18 to direct to the good doctor, please. We had the
19 LIN (ph) come to our municipality and give us a
20 talk the other night, and they stated that diabetes
21 in the area that takes in Pickering, Darlington and
22 the nuclear facility in Port Hope, had the highest
23 rate of diabetes anyplace in the province of
24 Ontario.

25 And my question, sir, I would ask

1 you to put on to her is, does tritium have anything
2 to do with the high rate of diabetes in our area?

3 We have McDonald's in our area,
4 and my wife and I travel all over this province and
5 I see McDonald's all over. So I don't think it's
6 eating habits in our area that's causing this
7 problem, and I would like her to answer that
8 please.

9 CHAIRPERSON GRAHAM: Thank you
10 very much, Mr. Haskill.

11 Dr. Baker?

12 DR. BAKER: Thank you very much.

13 Yes, if you look at the eating
14 habits in this area, I don't think they are
15 substantially different from eating habits in the
16 rest of Canada or Ontario particularly. And, yes,
17 we do know that radiation and tritium exposure
18 increases the risk of diabetes.

19 So while it wouldn't prove a
20 causal link, it certainly would be evidence to
21 support that people who are living with potential
22 risk of having tritium -- higher levels of tritium
23 exposure are certainly more likely to get diabetes.
24 And the fact that we're finding this would be
25 evidence to support that it's from that.

1 CHAIRPERSON GRAHAM: That's fine,
2 Mr. Haskill? Okay.

3 With that, I want to thank Dr.
4 Baker for coming this morning. I want to thank her
5 for the young people joining her. It's significant
6 to your presentation, and we look forward also to
7 some of the information that is going to be coming
8 forward from CNSC with regard to the studies you
9 referred to, which have been brought up, as my
10 colleagues have said before, and we're waiting and
11 working on information.

12 So with that, thank you very much
13 for coming, and safe travels back to your homes.

14 DR. BAKER: Thank you very much.

15 CHAIRPERSON GRAHAM: Now, I need a
16 little direction here, because my understanding is
17 we have another presenter.

18 Oh, I'm sorry, I thought there was
19 -- oh, yes, it's -- we still have another one yet,
20 I'm sorry. One of our oral presenters is not here
21 yet, and I thought it was the next one, but it
22 isn't.

23 We have two -- we're supposed to
24 have this morning, two participants of each are
25 registered to make oral statements, and I remind

1 you only the panel members can do the -- will ask
2 questions after those oral statements. And I would
3 also hope that they would -- the oral statements
4 would be confined to the 10 minutes allowed.

5 And I believe the next or the
6 first oral statement that we have is Ms. Racansky?
7 I believe that's the name. If I'm incorrect --
8 would you like to come forward and come to the
9 table and we'll hear your oral presentation?

10 I believe the oral statement does
11 contain some overheads and that's what we're
12 getting ready for now.

13 --- PRESENTATION BY MS. RACANSKY:

14 MS. RACANSKY: Good morning.
15 Libby Racansky, resident of Courtice, university
16 educated teacher in sciences. I will be speaking
17 on behalf of FOF.

18 Thank you for giving me this
19 opportunity to speak on the project. We are a
20 local environmental organization. And apart from
21 our fears and worries about this project that you
22 have already heard from other presenters, we have
23 concerns that were not yet addressed by the EIS.

24 Even though the OPG listed all the
25 other projects in the area in their study, we were

1 hoping that their study conclusions on our current
2 air quality would be considered by the OPG to
3 evaluate their impact cumulatively on their host
4 community.

5 To our disappointment, the OPG
6 study is concentrating only on their site. We
7 understand that the OPG workers deserve protection,
8 but what about those of us living in close
9 proximity of the project?

10 As you can see on this slide, our
11 community was identified by the EA for an
12 incinerator that is a neighbouring project to the
13 OPG, the poorest air quality in Ontario.

14 Together with future 407 highway
15 extension and even with a smallest release of
16 nitrogen dioxide or other contaminants, especially
17 NOx, the OPG construction that will take many
18 years, our airshed will become unbearable.
19 Healthcare costs may outweigh the economic gain.

20 Our doctors during public meetings
21 on the incinerator claimed that we have one of the
22 highest rates of respiratory problems in Ontario
23 now.

24 Nitrogen dioxide plus other
25 contaminants released from the OPG site, especially

1 during construction using different kinds of heavy
2 machinery, will not remain confined to the site
3 itself.

4 Wind speed -- with the wind speed
5 coming mostly from the west, Bowmanville will be
6 most affected. With the east wind bringing rain,
7 Courtice and Oshawa will take the brunt. And
8 lately with climate change, the wind speed becomes
9 more sporadic. In addition, Lake Ontario may be
10 affected by these releases.

11 Our community, for which our
12 politicians signed a Host Community Agreement for
13 us, really needs the panel's attention.

14 Protection of our airshed should
15 be addressed by the OPG study, if they claim that
16 they are in good relations with our community.

17 The poor air quality contributes
18 to the poor water quality in our surface water
19 bodies.

20 The future 407 east link; this
21 link will run through the area of two highest
22 degree of sensitivity with high water table. There
23 are two provincially significant wetland complexes
24 and will remove many hectares of wildlife habitat.

25 The OPG will use this link and our

1 wetlands and our wildlife may suffer even more. No
2 mitigation or contingency plan is proposed.

3 The loss of habitat, especially
4 the grassland and shrubland, is of concern to us as
5 well. If the other projects especially along the
6 lake will remove this habitat, no cumulative
7 impacts on this species and species at risk are
8 noted by the OPG.

9 Each project is just concentrating
10 on their site and site specific impact on these
11 species. There is no biodiversity approach in this
12 study for species to survive.

13 With 98 percent of Ontario
14 grassland, 80 percent of its forest and 70 percent
15 of its wetlands lost, it is time to take action.

16 I could give you examples of how
17 this unsustainable approach affects our largest
18 industry in Clarington; agriculture.

19 Helpful species to farmers are
20 replaced by invasive and/or non-native species of
21 flora and fauna as well.

22 Also, a natural habitat attracts
23 tourists that are now staying at Darlington Park.
24 Our tourism may suffer for the lack of natural
25 attractions.

1 We are particularly worried about
2 bank swallows that used to be so abundant along the
3 lake and in their natural habitat for the same
4 reasons mentioned previously.

5 DFO screening report 2005 for the
6 area close by the OPG site sewage treatment plant
7 identified 1,450 swallows. NNR considered this
8 colony as significant and the largest in Durham
9 Region.

10 Environment Canada's comments 2011
11 on the new build is mentioning only 1,224 swallows.
12 How many will be nesting there this year and after
13 the construction?

14 With substantial soil removal at
15 the site and complete changing hydrology as the OPG
16 states, the nests may not survive at all.
17 Artificial habitat will not attract people to visit
18 Clarington.

19 Conclusion: there are so many
20 unknown items in this study and we were hoping that
21 our community would deserve special attention so
22 that these items will be addressed and dealt with
23 and that our concerns may be included as part of
24 the mitigation as well.

25 We are respectfully requesting all

1 involved in this study, especially the panel, to
2 recommend to reduce to the depth of soil
3 extraction, no lake infill should be considered in
4 order to protect the swallows and the lake water
5 quality.

6 I don't know if you have my
7 excerpt from *Engineering Dimensions*. It's called
8 "How our Energy Future Affects our Water Future".
9 It's very excellent read on -- especially on OPG.

10 Instead of just stockpiling the
11 fill anywhere, a step or terrace berm using this
12 soil all around the northern OPG site should be
13 created and reforested.

14 Also, habitat should be created
15 for some misplaced species. Monitoring and upkeep
16 on natural or created areas should be required.

17 We have bad experiences with OPG
18 mitigation and follow-up on past projects. GLOCA
19 should receive some monetary contribution to
20 reforest to Stury (ph) and Black Creek.

21 The continental uplift of the Lake
22 Iroquois shoreline should be included in seismicity
23 study.

24 Why all this? Trees cannot only
25 absorb carbon dioxide to filter dust but can remove

1 other unknown contaminants as well.

2 This could help to improve our air
3 and water quality. This way, the OPG site could
4 appear esthetically to our visitors and locals.

5 Lastly, most of the site habitat
6 could be protected.

7 Why should the Lake Iroquois
8 shoreline be included in the seismicity study? The
9 green colour on this map depicts the Lake Iroquois
10 shoreline, the former beach of today's Lake
11 Ontario. This lake was created during Wisconsin
12 glaciation and it was carbon dated to approximately
13 at 12,000 years old.

14 The glaciers retreated and melted.
15 Its water poured directly into marine waters of
16 Saint Lawrence and also caused significant erosion
17 around the edge of Niagara Peninsula.

18 Later, the Lake Iroquois' water
19 dropped and its water retreated to today's Lake
20 Ontario shoreline. This glacier formation
21 continental uplift continues.

22 Kingston is rising at the rate of
23 about 30 centimetres per century with respect to
24 Toronto.

25 Will the Niagara Escarpment become

1 the lake Ontario new shoreline and the whole GTA
2 will be flooded? Will the mighty Saint Lawrence
3 become dry? Nobody knows because studies of this
4 glacier formation were not completed.

5 This formation is about three
6 kilometres away from Darlington Plant. Therefore,
7 any land shift or uplift could affect this plant
8 itself.

9 And my last slide, OPG EIS, page
10 35, "Other Likely Effects". The OPG considered
11 impacts from other projects and concluded that,
12 quote:

13 "Consideration of the
14 overlapping projects did not
15 result in increased residual
16 adverse environmental effects
17 from the project."

18 How it possible? Thank you.

19 CHAIRPERSON GRAHAM: Thank you
20 very much for your presentation.

21 We will now go to questions from
22 the panel members. Madam Beaudet, do you have
23 questions?

24 --- QUESTIONS BY THE PANEL:

25 MEMBER BEAUDET: Thank you, Mr.

1 Chairman.

2 My first question would be to OPG
3 and it's about the Lake Iroquois shoreline. I was
4 wondering if that was considered? I believe in the
5 licence to prepare a site, there must have been
6 some assessment with ---

7 MS. SWAMI: Laurie Swami, for the
8 record.

9 I'll ask Dr. Vecchiarelli to
10 respond to your question.

11 DR. VECCHIARELLI: Jack
12 Vecchiarelli, for the record.

13 In the site evaluation studies, we
14 considered the region 150 kilometres around the
15 site including all known seismic sources within
16 that region factored into the seismic hazard
17 analysis.

18 MEMBER BEAUDET: And that includes
19 specifically Lake Iroquois shoreline?

20 MS. SWAMI: Laurie Swami.

21 We're just checking the file to be
22 absolutely correct in our answer. Maybe we can
23 come back to that through the questioning if we
24 could.

25 MS. RACANSKY: Excuse me, Mr.

1 Chair, can I say something?

2 CHAIRPERSON GRAHAM: Yes, you can.

3 MS. RACANSKY: I was part of all
4 the meetings and I was always, you know, like
5 asking for this inclusion, but unfortunately it is
6 nowhere in the EIS study.

7 MEMBER BEAUDET: It's possible
8 it's not in the EIS study, but there are also
9 documents with the licence to prepare a site.

10 Have you looked at those documents
11 as well?

12 MS. RACANSKY: No. No. Last time
13 OPG when they replied to me, I was asking the
14 question during the seismic discussion and so on,
15 so OPG replied something in relation to the Lake
16 Ontario shoreline, that's what -- not -- I didn't
17 mean, it was Lake Iroquois shoreline, not Lake
18 Ontario shoreline. So they didn't even reply.

19 MEMBER BEAUDET: So ---

20 CHAIRPERSON GRAHAM: I'm just
21 going to say, we should give this an understanding.

22 MEMBER BEAUDET: Okay.

23 CHAIRPERSON GRAHAM: And -- you
24 can answer right now, can you, Ms. Swami? Okay.
25 If you can, that's fine.

1 MS. SWAMI: Laurie Swami.

2 Dr. Vecchiarelli will provide an
3 answer.

4 DR. VECCHIARELLI: Jack
5 Vecchiarelli, for the record.

6 So I'm just confirming that in the
7 Part III Site Evaluation Report on Seismic Hazard
8 Analysis, we have addressed the effect of Lake
9 Iroquois shoreline.

10 MEMBER BEAUDET: Can you give the
11 reference so that the intervenor can access the
12 document, please?

13 DR. VECCHIARELLI: Jack
14 Vecchiarelli, for the record.

15 So the -- this is the summary
16 version. The report is P1093-RP-003rev5. It's the
17 Part III Seismic Hazard Analysis Report, Site
18 Evaluation submitted with the licence to prepare a
19 site application.

20 MEMBER BEAUDET: Okay. That's
21 with the licence to prepare the site not the
22 technical support documents?

23 DR. VECCHIARELLI: Correct.

24 MEMBER BEAUDET: That reference
25 you can find on the registry because they have also

1 been posted on the registry and possibly you can
2 check. And then if you have more questions, come
3 back to us.

4 The other aspect that you have
5 touched is the visual impact of the natural draft
6 cooling towers with assimilation of the plume, I
7 believe, which is on page 2, one of the pictures of
8 your presentation.

9 We are supposed to have further
10 details of the possibility of plume abatement and I
11 believe OPG is coming back on Wednesday on that.
12 So I think we'll leave the discussion of this
13 aspect when they have their presentation.

14 What I would like to look at now
15 is the air quality. And we did get some
16 information about what was done with air quality
17 outside the site and maybe OPG can just briefly
18 inform us again about what has been done with the
19 air quality?

20 I know for the particles, when
21 site preparation is happening, you will have a dust
22 abatement program, but I think we should look at
23 more of the exceedances with SO₂ and NO_x, if you
24 could refresh our memory on that, please?

25 MS. SWAMI: Laurie Swami.

1 Our air quality specialist isn't
2 here today, but I will ask Dr. Don Gorber to
3 provide a summary of the work that was completed.

4 DR. GORBER: Don Gorber, for the
5 record.

6 I'm president of SENES Consultants
7 Limited and I was a manager on this project. As Ms.
8 Swami indicated, I am not the air person, but let
9 me briefly summarize what was done on the air
10 quality aspect.

11 We did look at the air emissions
12 coming from construction or primary particulate,
13 but also other aspects such as NOx and SOx and we
14 looked at those impacts. And we also looked at
15 accumulative effects as you indicated.

16 We looked at what was coming. The
17 major source is Highway 401, which produces a
18 significant amount of all of those chemicals. We
19 looked at the new incinerator in the area. We also
20 looked at future construction of Highway 407
21 connection with regards to that.

22 The details of this are in the
23 technical support document on atmospheric
24 environment assessments of the environmental
25 effects.

1 And the conclusion from this is
2 that the overall impact, although there are a few
3 exceedances, they are not significant exceedances
4 and they can certainly be controlled and there are
5 no residual environmental effects due to this.

6 MS. RACANKY: Can I ask this
7 gentleman --

8 CHAIRPERSON GRAHAM: You're not
9 supposed to, but yes.

10 MS. RACANSKY: Okay. As I
11 understand we have already exceedances plus. As
12 far as I was learned in elementary school, one plus
13 one plus one plus one equals four, not one plus
14 something equals nothing. So I'm very confused.

15 Our whole community is very
16 concerned about cumulative impacts. And it's only
17 our politicians that they agree because they think,
18 you know, there will be economic gain and we are
19 losing on health wise -- health side, sorry.

20 CHAIRPERSON GRAHAM: Perhaps we'll
21 try and get some clarification.

22 Madam Beaudet will go further.

23 MEMBER BEAUDET: Yes, I'd like to
24 go first to CNSC on this, please, Mr. Chairman,
25 with the PMD 1.3 on page 93 for the non-

1 radiological emissions related to atmosphere.

2 It is said that OPG did limit
3 monitoring in 2007 and with respect to operations
4 releasing hazardous substances, OPG's operation are
5 not continuous and the sources of these
6 contaminants are used for emergency purposes.

7 And I'd like to get more
8 information on that and there's no recommendation
9 from CNSC with respect to air because, well, first
10 of all, we discussed already for dust. There will
11 be plume abatement, but with conventional emission,
12 you know, you say that there is sufficient data at
13 this time, but we know that there will be
14 exceedances.

15 So how would we deal with that?

16 (SHORT PAUSE/COURTE PAUSE)

17 CHAIRPERSON GRAHAM: CNSC?

18 DR. THOMPSON: Patsy Thompson, for
19 the record.

20 My understanding from the
21 information that was provided through OPG and our
22 specialist assessment of the information was that
23 the -- there is an expectation that there will be
24 infrequent or some exceedances infrequently, but
25 not of a nature that would be -- to cause potential

1 health effects.

2 In the requirement for a follow-up
3 monitoring program, what we normally do with
4 follow-up monitoring program is identify triggers
5 that would require further mitigation measures
6 should the data demonstrate that the levels of --
7 for example, the example is PM10 and PM2.5.

8 If the levels monitored would be
9 higher than predicted, then there's a requirement
10 for the licensee at the time to take further action
11 to mitigate.

12 MEMBER BEAUDET: But this would
13 come, if I understand well, when you do the
14 licencing -- the license for -- to operate, when if
15 there's a need to reduce emission, it would have to
16 be done with the License to Construct, or you would
17 ask later on for some retrofits?

18 MS. THOMPSON: Patsy Thompson, for
19 the record.

20 Those exceedances are associated;
21 for example, the particulate matters with the site
22 preparation construction phases, and so the -- the
23 activities that generate particulates are not
24 associated with things that are already built.

25 And so there's a requirement under

1 the license for the follow-up monitoring program
2 when we develop the -- the requirements for the
3 monitoring programs for the follow-up program,
4 there's a requirement to -- for the program to be
5 able to verify the predictions.

6 And if the -- for example, the --
7 in relation to PM10 and PM2.5, the exceedances
8 would be more severe or more frequent, then OPG
9 would have already identified actions and a follow-
10 up program that would be implemented to take
11 corrective measures.

12 MEMBER BEAUDET: Yes, I -- for us,
13 we understand that the Licence to Prepare a Site,
14 that there are mitigation measures proposed and
15 therefore they will work.

16 What I'm talking about here is
17 SO2, for instance, and there's no proposal to
18 reduce that. Even if it's occasional emission,
19 still -- and possibly I'd like to have Environment
20 Canada to comment on that because in their
21 submission, they do refer to air emission.

22 They also say it's sufficient at
23 this time because there's no technology proposed,
24 and they can't go any further in the analysis for
25 the conventional emissions.

1 I'd like, if possible, if
2 Environment Canada is present to come to the
3 microphone and instruct -- educate us a bit more on
4 their position.

5 MR. LEONARDELLI: Sandro
6 Leonardelli, for the record.

7 We have to look at this in terms
8 of the different project phases. So some of our
9 analysis is based on the operating phase. So when
10 we talk about, you know, there's a lack of a
11 specific design, those -- that type of analysis
12 pertains to the operating phase.

13 The environmental assessment
14 documents showed that the greatest impact to
15 conventional air quality, so we're talking about
16 SOx, NOx, particulate matter, is during the
17 construction phase.

18 So we made recommendations in
19 terms of operating practices -- sorry best
20 management practices during the construction phase,
21 so for dust control, which relates to particulate
22 matter, and to reduce vehicle emissions of NOx and
23 SOx during smog days.

24 So to the extent possible, the
25 recommendation is that they limit the use of heavy

1 machinery during those episodes so as not to
2 further exacerbate the -- or to further impact upon
3 the air quality. So those recommendations were in
4 regards to the construction phase.

5 Now, in terms of Ms. Racansky's
6 specific concern, perhaps her concern is related
7 strictly speaking to Courtice. If it's in relation
8 to Courtice, you have to look geographically at the
9 -- at the location of Courtice to the actual
10 facility where the operations are going to occur
11 and then look at the prevailing winds.

12 If my geography is correct,
13 Courtice is approximately -- it's roughly north of
14 the existing -- of the proposed project site. Am I
15 correct? Can I get a nod of somebody's head?

16 The -- if that's the case, the
17 winds from the south are fairly infrequent -- occur
18 fairly infrequently, and so it would be unlikely
19 that you would have the prevailing -- you would
20 have winds dispersing contaminants towards
21 Courtice.

22 From a broader perspective of
23 general air quality impacts within the region, her
24 concerns are quite valid in the sense that it does
25 need to be assessed, and there is a potential for

1 worsening air quality during the construction
2 phase.

3 But the prevailing winds will tend
4 to distribute that only -- on a more frequent basis
5 to certain areas than other areas. So one has to
6 look at that aspect as well.

7 So if the concern is strictly
8 related to Courtice, it's less of a concern because
9 of the prevailing winds, but more generically for
10 the region, you know, there are issues with air
11 quality during the construction phase, and so some
12 mitigation measures have been proposed.

13 MEMBER BEAUDET: I'd like to use
14 the ---

15 MS. RACANSKY: Could I ---

16 MEMBER BEAUDET: Oh, sorry.

17 MS. RACANSKY: Could I just add to
18 some -- to the speech?

19 CHAIRPERSON GRAHAM: Ms.
20 Racansky --

21 MS. RACANSKY: Courtice is located
22 northeast, not northerly directly to the station.

23 CHAIRPERSON GRAHAM: Really, we're
24 -- the way oral statements are is that only the
25 panel members can ask questions. I did allow one.

1 We're trying to get this through
2 the panel so it's clear in their mind, so, really,
3 I have to refer back to Madame Beaudet and EC -- or
4 Environment Canada for -- to getting these answers.

5 MEMBER BEAUDET: I'll use the
6 opportunity to -- of having Environment Canada with
7 us this morning and also ask about their position
8 on radiological emissions.

9 You say on page 45 of your
10 submission that it's still ongoing. Can we take
11 this as an undertaking to hear when you're going to
12 be ready to submit your comments?

13 MR. LEONARDELLI: Oh, Sandro
14 Leonardelli, for the record.

15 Yeah, most of the review was --
16 was conducted. In terms of what was ongoing, that
17 was in relation to those two specific IRs, which
18 I've raised questions over the course of the
19 hearings over the last two weeks in regards to, and
20 there have been undertakings in relation to that.

21 So one of them had to do with the
22 ground water Tritium, which has -- which was
23 released, I believe, on Thursday or Friday of last
24 week, so that's out. We have not evaluated it,
25 haven't commented on it yet, but we intend to do so

1 over the next few days.

2 The other issue had to do with wet
3 dry deposition of radionuclides. So that would
4 effect, for example, soil concentrations over time
5 of -- of radioactive substances.

6 So we spoke in terms of the cesium
7 -- I believe it was caesium 137 values. There's a
8 prediction that was provided in the EIS document in
9 regards to that for Oshawa, but it wasn't provided
10 for other areas.

11 And so we had some questions
12 around the wet dry deposition, but to put some
13 perspective on that, that's a finer point within
14 the overall analysis of atmospheric dispersion of
15 the radionuclides.

16 In terms of the bigger picture,
17 Environment Canada felt that the analysis was
18 adequately done, that the bounding values that were
19 used were -- was an appropriate approach to use.

20 We can't comment on the values
21 themselves. I mean, CNSC would have reviewed the
22 bounding values to say, yes, these are conservative
23 values.

24 So based on the -- based on their
25 approval of the bounding values as being

1 conservative, the actual dispersion modeling that
2 was done would have been a valid exercise.

3 So these two remaining issues, IR-
4 268 and 269 are finer points within that overall
5 analysis, and we'll be issuing comments on that
6 shortly.

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

9 CHAIRPERSON GRAHAM: Some
10 clarification, Madame Beaudet. Do you want another
11 undertaking there, or are they -- are they covered
12 in existing? Because if you do, we'll give it a
13 number and we'll go forward.

14 MR. LEONARDELLI: Well, we've
15 already indicated -- sorry, Sandro Leonardelli, for
16 the record.

17 We've already indicated that we'd
18 be providing a sufficiency review of the -- of the
19 two responses that were recently provided on those
20 questions now.

21 So we'll be getting our comments
22 on the record sometime this week.

23 CHAIRPERSON GRAHAM: Is that
24 sufficient?

25 MEMBER BEAUDET: Yes.

1 CHAIRPERSON GRAHAM: Okay, thank
2 you.

3 So I'm not clear. Did we do that
4 in an undertaking or it's an undertaking that's
5 already on the record or that's what I believe it
6 is; is it?

7 We don't have it as such. So just
8 to clarify things, I'm going to put -- give it
9 Undertaking number 63 and -- so that you will be
10 given clarification later this week on those
11 issues.

12 MR. LEONARDELLI: That's fine.

13 CHAIRPERSON GRAHAM: Okay, very
14 good. So that's undertaking 63 for Environment
15 Canada.

16 CHAIRPERSON GRAHAM: Mr. Pereira?

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

19 I would like to follow with
20 Ontario Power Generation on three of the
21 recommendations from the intervenor and they all
22 concern fill.

23 The first one says:

24 "...using fill to create a
25 berm around the northern site

1 of the OPG site."

2 Second point:

3 "...reducing the depth of
4 soil extraction."

5 And third:

6 "...a recommendation that
7 there be no lake infill."

8 Would OPG like to comment on those
9 recommendations?

10 MS. SWAMI: Laurie Swami.

11 The question of a berm on the
12 northern part of our property has been identified
13 as a soil stockpile, sometimes referred to as an
14 onsite landfill. This material, to the extent we
15 can, will be used, if you would, to create a berm.

16 The landfill that we've talked
17 about is not strictly a municipal landfill as one
18 would traditionally think of it. It is simply a
19 place to place the soil on our property. So we
20 fully intend to do that and I believe the
21 intervenor referred to naturalization opportunities
22 that would come with that.

23 And when the project is finished,
24 OPG has committed to do naturalization around the
25 northern portions of our property to return it to

1 similar usage that we would see today, but further
2 north.

3 On the -- reducing the depth of
4 the excavation, I believe, was the second question,
5 if I have it correct. We are looking to minimize
6 the amount of excavation, if possible, recognizing
7 that we have to bring the property to grade for the
8 power block and the other facility.

9 Should we have cooling towers, we
10 would have to do further excavation further to the
11 east of the property to enable the cooling towers
12 to be built. That's just the feature of the
13 cooling tower program.

14 And with no lake infill, we've had
15 a lot of discussion during this hearing about lake
16 infill. And OPG, at our first presentation,
17 discussed the use of up to two metres of lake
18 infill and we have specific needs for that
19 property.

20 Some of it is flood protection.
21 Some of it is ensuring that the distance from our
22 facilities to the lake edge and some of it is for
23 construction lay down areas and things of that
24 nature.

25 So there is use for that and as

1 we've talked about a lot, OPG has indicated that if
2 we had two metres of lake infill, once-through
3 cooling water would be sufficient for the site.

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

6 CHAIRPERSON GRAHAM: Thank you
7 very much, Mr. Pereira.

8 Ms. Racansky, I thank you very
9 much for your oral presentation. Hopefully, you'll
10 be able to get the references given by OPG with
11 regard to the document you were looking for.
12 Hopefully, that will assist you. And thank you
13 very much for coming this morning and giving us
14 your oral statement.

15 The next on the agenda for an oral
16 statement is Mr. Jim Harris and my understanding is
17 that Mr. Harris is not here. Also, it's my
18 understanding that there's indication that he's not
19 coming today and he's not rescheduled.

20 We run on a very tight schedule
21 and the Chair wants to hear from everyone possible,
22 but I have to remind everyone, when we slot someone
23 in that it's of the essence that they -- in the
24 fairness to all other intervenors that they come
25 and present themselves so we will do our best to

1 accommodate Mr. Harris at another time.

2 With that I will declare, I guess,
3 it lunchtime and the Chair will reconvene at 1:30
4 with Natural Resources Canada on deck for the first
5 presentation.

6 Thank you very much.

7 --- Upon recessing at 12:02 p.m. /

8 L'audience est suspendue à 12h02

9 --- Upon resuming at 1:31 p.m. /

10 L'audience est reprise à 13h31

11 MS. McGEE: Good afternoon. My
12 name is Kelly McGee. I'm the panel co-manager.

13 Welcome back to today's second
14 session of the public hearing of the Joint Review
15 Panel for the Darlington New Nuclear Power Plant
16 Project.

17 Secretariat staff is available at
18 the back of the room. Please speak with Julie
19 Bouchard if you are scheduled to make a
20 presentation, if you have a question you'd like to
21 ask, or if you're not currently registered but
22 would like to make a brief oral statement.

23 Opportunities for questions or
24 brief statements will be made available subject to
25 time constraints.

1 Please identify yourself each time
2 you speak so that our transcripts can be as
3 accurate as possible and as a courtesy to others in
4 the room, please silence your cell phones and other
5 electronic devices.

6 Thank you.

7 CHAIRPERSON GRAHAM: Thank you
8 very much, Kelly, and good afternoon everyone.

9 Our first presentation this
10 afternoon is from Natural Resources Canada under
11 PMD 11-P1.9 and PMD 11-P1.9A.

12 And I believe we have Mr. Clarke
13 here from NR Canada, along with Dr. Maurice
14 Lamontagne, and Mark Hinton, I believe, is joining
15 us by telephone conference perhaps.

16 So if that's the case, Mr. Clarke,
17 the floor is yours.

18 --- PRESENTATION BY MR. CLARKE:

19 MR. CLARKE: Yes, thank you very
20 much, Mr. Chairperson, members of the Joint Review
21 Panel.

22 I am John Clarke. I am the Acting
23 Director for the Environmental Assessment Division
24 of Natural Resources Canada.

25 As you said, with me here in

1 expertise in our sciences builds and maintains an
2 up-to-date knowledge base of our land mass.

3 Specific to this environmental
4 assessment, NRCan doesn't have a decision-making
5 role, but we are participating as a federal
6 authority pursuant to section 12.3 of the *Canadian*
7 *Environmental Assessment Act*.

8 This means that NRCan provides
9 scientific and technical information that's
10 available within our department. It means we do
11 not conduct independent research or technical
12 studies specific to this environmental assessment.

13 For this project, NRCan focused on
14 hydrogeology and groundwater and seismic hazards
15 and our comments to the Joint Review Panel through
16 our participation in this federal review team
17 throughout the EA process.

18 NRCan's expertise also assists
19 other federal departments in assessing the
20 potential environmental effects of a project within
21 their area of expertise.

22 So the first area I'll take you
23 through is hydrogeology groundwater. Sorry, for
24 hydrogeology, NRCan staff reviewed the Proponent's
25 submission to assess whether, in accordance with

1 EIS guidelines, the Proponent had adequately
2 characterized the current groundwater conditions in
3 the study area and assessed the effects that the
4 project might have on the quantity of groundwater
5 available.

6 And I'll emphasize, NRCAN provides
7 technical review comments on the quantity of
8 groundwater available; that is, the level of
9 groundwater -- level of the groundwater table in
10 wells in the study area and how that groundwater
11 interacts with surface water features.

12 Following the review of the EIS
13 and the associated technical documents, NRCAN
14 requested additional information from the Proponent
15 generally within three areas.

16 First, how the Proponent
17 represented their data on the current geological
18 conditions of the site that were relevant to
19 groundwater?

20 We also sought clarification on
21 the project scenarios, using the assessment of
22 potential changes in the groundwater table.

23 And third, NRCAN requested more
24 detailed information on the scope and nature of the
25 proposed follow-up program that the Proponent was

1 planning to use to confirm or refute the
2 predictions of groundwater level change in the
3 environmental assessment.

4 The conclusions in our technical
5 review following the receipt of the additional
6 information from Ontario Power Generation, we found
7 -- our review found that we need additional
8 clarification on the base line information -- the
9 information provided was sufficient and we
10 considered that information request to be resolved.

11 Similarly, with respect to
12 scenarios that could potentially lower the
13 groundwater table in the study area and NRCAN found
14 the responses appropriate, although we did note
15 that impacts on groundwater on wetland function was
16 within the domain of other -- other federal
17 departments to consider.

18 With respect to the follow-up
19 program, while the Proponent was not able to
20 provide significant additional information, we did
21 recognize that the follow-up program, while it
22 wouldn't be fully finalized while the environment
23 -- before the environmental assessment was
24 completed, it would be developed by the Proponent
25 and reviewed and approved by the regulator at a

1 later date in keeping with the obligations under
2 the *Canadian Environmental Assessment Act* and
3 wherein NRCAN has the appropriate expertise and
4 NRCAN can participate in the technical review of
5 the design of the follow-up program or under review
6 of elements -- or review of elements of the results
7 of such a program.

8 With respect to seismic hazards, a
9 topic that NRCAN presented to this panel on already
10 once, specific to our review of the Darlington
11 nuclear power plant and NRCAN's review considered
12 the Proponent's submission to assess in accordance
13 with the EIS guidelines, whether in the description
14 of the effects of the environment on the project,
15 the Proponent had considered earthquakes that were
16 an appropriate size in magnitude to declare for
17 environmental assessments.

18 And NRCAN seismologists do not
19 consider whether the structures have an appropriate
20 design to -- have been appropriately designed to
21 withstand an earthquake.

22 Rather, our department's expertise
23 is focused on assessing whether the Proponent has
24 considered an appropriate catalogue of earthquakes
25 and a potential geological feature that could act

1 as potential sources of earthquakes.

2 NRCAN's review found that the EIS
3 and associated licencing documents provided a
4 comprehensive analysis of the seismic hazard
5 considerations for the project since we didn't have
6 any substantive issues with respect to the EIS or
7 with the analysis presented and NRCAN didn't submit
8 any information requests during the environmental
9 assessment.

10 So our conclusion follows that the
11 -- that the EIS and supporting documents considered
12 appropriate range of seismic events and much as we
13 said with hydrogeology, if requested by a
14 responsible authority, NRCAN could participate in a
15 technical review of the results of any follow-up
16 program.

17 This concludes my presentation for
18 today.

19 NRCAN of course, during the
20 presentation on March 22nd, there were questions
21 from one intervenor on the topic of lineaments in
22 Lake Ontario, whether those were related to faults
23 and whether those faults were directly related to
24 seismicity.

25 And we've been following -- we

1 weren't here on Thursday last week, but following
2 the hearing transcripts, we see that this -- the
3 same question was raised by another intervenor in
4 this matter.

5 And we spoke with our CNSC
6 colleagues and I think what I'll do is I'll turn
7 the floor over to Dr. Lamontagne just to provide a
8 bit of context on lineaments and what they mean.

9 And perhaps after Dr. Lamontagne
10 is finished, the panel can consider whether or not
11 it requires additional information on that topic.
12 It might be something best served through an
13 undertaking to Natural Resources Canada. Thank
14 you.

15 CHAIRPERSON GRAHAM: Thank you,
16 Mr. Clarke.

17 Dr. Lamontagne?

18 --- PRESENTATION BY DR. LAMONTAGNE:

19 DR. LAMONTAGNE: Yes, I wanted to
20 give just an overview of lineaments and what they
21 represent, what they mean in fact.

22 A lineament is a very general
23 term, very general earth science term that means
24 that it's a linear feature that we can see in
25 topography or in the geophysical fields such as

1 general and in some cases it could be billions of
2 years of age.

3 So this being said, then you have
4 the seismicity. As we discussed when I was here a
5 couple of weeks ago, most of the earthquakes occur
6 at depths and very often -- well, the majority of
7 them occur between five and 25 kilometres of depth.

8 So when you have these linear
9 features at the surface and then you have the
10 seismic activity at depth, the two aren't
11 necessarily correlated because between the surface
12 and the depths at which these earthquakes occur,
13 there could be a lot of things happening
14 geologically.

15 So the linear features could have
16 a depth. It could go -- and it's -- it's not
17 because you show, for example, a map of epicentres,
18 that is to say the earthquakes on the map that is
19 -- and then you show the lineaments, the two don't
20 necessarily match because you have the three -- the
21 third dimension that intervenes.

22 So we have to be very careful when
23 it's time to correlate earthquake epicentres and
24 lineaments. During the last 15 years there's been
25 a lot of recording of earthquakes around Lake

1 Ontario to detect these earthquakes and bring the
2 third dimension.

3 Then what was found was that a lot
4 of these small earthquakes, in fact, were not
5 happening maybe on the major lineaments, but
6 probably on the smaller ones that weren't as
7 evident and they were -- it was hypothesized
8 continuing at depths under the lake.

9 So when it's time to correlate
10 lineaments and earthquakes, I would say that you
11 have to think about the depths of these
12 earthquakes, the small size of the earthquakes
13 also. When you have only magnitude 3, does it mean
14 it's necessarily on the major fault?

15 And it's not only on the fault
16 that you would necessarily see at the surface. And
17 also there's this big question mark about the
18 continuity of the lineaments when you go at depths.

19 So these are the few things we
20 have to keep in mind when we talk about lineaments
21 and earthquakes. So it's not a straightforward
22 business.

23 CHAIRPERSON GRAHAM: Thank you for
24 that.

25 Now, we will go to questions from

1 the panel members, and, Mr. Pereira, I'll go to you
2 first.

3 --- QUESTIONS BY THE PANEL:

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

6 Dr. Lamontagne, thanks very much
7 for that clarification on lineaments because we did
8 get questions from a number of intervenors about
9 lineaments, about alleged faults under Darlington
10 and about the faulting in the Rouge River.

11 And among those interventions,
12 there were references to the work done by Dr.
13 Wallach a number of years ago.

14 In your estimation then, the
15 lineaments that are in the vicinity of Darlington
16 and the Rouge River Fault do not contribute to any
17 change in the hazard assessment that has been done
18 and has been reported?

19 DR. LAMONTAGNE: In the case of
20 the Rouge River Fault, it was shown that the -- the
21 fact that

22 here was a motion was related to
23 glacier movement. So it was not a tectonic fault
24 in a sense, that the movement seen on the fault was
25 not due to an earthquake, but was due to the

1 presence of glacier that would have pushed part of
2 it and it was fairly well-documented.

3 And that's why in the documents
4 that I read about the seismic hazard, they said
5 that the Rouge River Fault was not considered
6 anymore as a potential source for earthquakes.

7 Other lineaments were considered
8 in the documents I had in terms of defining the
9 seismic hazard but because the seismic activity is
10 fairly mild, necessarily the end result was
11 relatively low to moderate seismic hazard for
12 Darlington Inc., even if these lineaments and their
13 seismic potential was included.

14 MEMBER PEREIRA: And with respect
15 to the claim that there are faults in the vicinity
16 of the Darlington Station that could be a hazard,
17 what's your opinion on that?

18 DR. LAMONTAGNE: Maurice
19 Lamontagne, for the record.

20 Again, I would say that the --
21 it's very -- there are faults in the Precambrian
22 basement everywhere in a sense, but they're not
23 necessarily active and they -- the fact that they
24 exist is a state of fact in the Precambrian Shield
25 there everywhere.

1 And the approach used by
2 seismologists who define the seismic hazard is not
3 to consider these faults to be active. It's more
4 or less the seismicity budget in the region that
5 defines the seismic hazard more than the existence
6 of faults in the region because they are
7 everywhere, these faults.

8 MEMBER PEREIRA: Thank you.

9 I'll switch to the other area of
10 your -- in your mandate and that's the hydrogeology
11 and groundwater aspect in the assessment completed
12 by NRCan.

13 Did you look at the proposed
14 monitoring program that Ontario Power Generation
15 has described in the submissions?

16 MR. CLARKE: Yes, John Clarke, for
17 the record.

18 I'll ask Dr. Hinton to answer that
19 question, but I presume that your question is
20 referring to the monitoring program as laid out in
21 the Environmental Impact Statement, correct?

22 MEMBER PEREIRA: That is correct
23 and an assessment of whether the program proposed
24 is rigorous enough to fully characterize
25 groundwater behaviour in the new site.

1 MR. CLARKE: John Clarke, for the
2 record.

3 Dr. Hinton, if you're on the line
4 perhaps you could answer?

5 DR. HINTON: Yes, this is Marc
6 Hinton, M-A-R-C H-I-N-T-O-N. Can you hear me
7 correctly?

8 MR. CLARKE: Yes.

9 DR. HINTON: Yes.

10 CHAIRPERSON GRAHAM: Go ahead,
11 your response, Dr. Hinton?

12 DR. HINTON: Oh, okay. Thank you.

13 Yes, I did look at the proposed
14 monitoring program and overall what the guidelines
15 had stated included a lot of details about what was
16 to be included in the EIS, like proposed monitoring
17 locations, what parameters would be measured at
18 those locations, and the frequency of measurement
19 of the different parameters including water levels
20 and water chemistry.

21 And that information is not in the
22 EIS. And I pointed that out that it's not in the
23 EIS, that level of detail, but often, I mean,
24 the -- previously I mean, in different EAs,
25 sometimes there is various levels of -- of detail

1 in follow-up programs.

2 And obviously in this case,
3 although the details aren't placed right out front,
4 we're more than happy to work with the -- with the
5 panel or with the Proponent to review that follow-
6 up program to make sure that all the details are
7 there.

8 I mean, there obviously are a lot
9 of groundwater monitors on site and there has been
10 a lot of background measurements on them, but
11 obviously what gets monitored in the future and
12 whether additional monitors are required would be
13 things that we would consider as -- that I would
14 consider as well.

15 So I'm -- I'm more than happy -- I
16 don't know if you require any more detail. Maybe
17 I'll stop there for now.

18 MEMBER PEREIRA: Thank you.

19 I'll go to Ontario Power
20 Generation and ask, when does Ontario Power
21 Generation plan to provide the detail on what their
22 monitoring program will comprise. I would presume
23 that that would be prior to -- the first licensing
24 stage.

25 MR. SWEETNAM: Albert Sweetnam,

1 for the record.

2 OPG is committed to a monitoring
3 program and a follow-up program. And these
4 programs would -- will be developed in conjunction
5 with the regulator and the different agencies that
6 are impacted. And this program would be in place
7 before we actually started any site work.

8 MEMBER PEREIRA: So I presume that
9 will be before preparation of the site, under
10 licence?

11 MR. SWEETNAM: Albert Sweetnam,
12 for the record.

13 It is one of the requirements in
14 the Licence Handbook. So this would have to be
15 done before we were to be allowed to start any
16 portion of the work on site.

17 MEMBER PEREIRA: I'll turn to the
18 CNSC.

19 Is your understanding of what is
20 intended here clear as to when this -- the
21 monitoring program will be launched, so that we
22 have an appropriate baseline before any site work
23 is done?

24 MR. HOWDEN: Barclay Howden, for
25 the record.

1 Yes, it is and we have two
2 controls on that licence condition, 10.1, which is
3 the follow-up program, and licence condition 1.1,
4 which prevents any site preparation work until all
5 the appropriate measures are in place.

6 And if you look at the Licence
7 Conditions Handbook, you'll see it's an extensive
8 array of work that has to be done, not only by OPG,
9 but by their contractor as well. And there is a
10 requirement for OPG to review the contractor's work
11 and then we will review that review, so yes, it is
12 clear.

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

15 DR. THOMPSON: If I could add that
16 CNSC staff recommendation number 7 that is captured
17 in the staff's PMD on the EIS, specifically speaks
18 to groundwater, follow-up monitoring requirements.

19 One element is preconstruction and
20 the other element is preoperations and during
21 operation.

22 CHAIRPERSON GRAHAM: Thank you,
23 Dr. Thompson.

24 Now, I'll go to Madam Beudet.

25 MEMBER BEAUDET: Thank you, Mr.

1 Chairman.

2 I would like to go a little bit
3 further on the follow-up program on the
4 hydrogeology components.

5 OPG gave some indication in the
6 information -- in response to the information
7 request, 160, Appendix 2, attachment A. And here
8 the -- NRCan is mentioned in this document for
9 monitoring terrestrial environment components, but
10 when we look at the document, there is no mention
11 of NRCan for groundwater flow and quality.

12 And I would like to hear from
13 NRCan because you did raise that point when there
14 was the sufficiency analysis done. Your
15 comment -- and for information, it's letter May
16 28th, 2010.

17 And you said that given the minor
18 nature of the predicted environmental effects, it
19 is likely that an appropriate follow-up program can
20 be readily developed, but you don't mention exactly
21 what you feel should be contained in that program.

22 And my question is, what -- to
23 your satisfaction, what are the elements that the
24 program should contain with respect to the
25 hydrogeology components, especially dewatering and

1 ground flow?

2 CHAIRPERSON GRAHAM: Mr. Clarke?

3 MR. CLARKE: John Clarke, for the
4 record.

5 I'll start the answer and then,
6 Dr. Hinton, maybe you can take over. NRCan's
7 comment, I'm sorry, I believe you are referring to
8 what's IR number 62 from NRCan.

9 MEMBER BEAUDET: 160.

10 MR. CLARKE: Okay. Perhaps my
11 numbering system is different, but I think you're
12 quoting from our letter of -- quoting from our --

13 MEMBER BEAUDET: Yeah, sorry, the
14 letter refers to IR62 I think, indeed.

15 MR. CLARKE: Yes.

16 MEMBER BEAUDET: But OPG
17 have -- did provide later on in the year,
18 a -- well, some more details about follow-up
19 programs with all the different components of EIS
20 whether it's terrestrial, radiological, et cetera.
21 And there was -- part of it was on the hydrogeology
22 components.

23 And when you read that document --
24 maybe you can take it as an undertaking and check
25 when you have the document with you -- that you are

1 mentioned as one of the -- not authorities but
2 consulting stakeholder for terrestrial
3 environmental components but you are not there for
4 the hydrogeology components.

5 And so for me it would be
6 important -- maybe it can be added, but also,
7 obviously, I would like to know what you would like
8 to see if you are not consulted. We have to know
9 what you feel would be satisfactory for you.

10 MR. CLARKE: Thank you. John
11 Clarke, for the record.

12 So you're correct, I don't believe
13 we have comments on the IR 160 response. To be
14 clear, our comments in IR 62 were in reference as
15 to whether or not the information in the
16 environmental impact statement met the EIS
17 guidelines; so we weren't setting requirements that
18 were above and beyond that. We were just reviewing
19 the EIS against the guidelines that had been
20 published.

21 And, no, NRCan wouldn't -- as
22 we're not a regulatory authority, we wouldn't be
23 typically in a position where we would tell a
24 proponent what parameters they should or should not
25 be reviewing. We would review what they proposed

1 and provide comments back.

2 So if there is new information on
3 the record in this IR 160 that Dr. Hinton hasn't
4 seen, then certainly that is something we could
5 undertake to review and to see if there's any gaps
6 still available.

7 Dr. Hinton, are you aware of --
8 are you aware of this additional detail which
9 Madame Beaudet is referring to?

10 DR. HINTON: No, I haven't -- I
11 haven't read IR 160, so I can't comment on that
12 right now.

13 Madame Beaudet did mention in
14 closing her question that she had a particular
15 interest in dewatering and, I guess, with respect
16 to dewatering issues -- I mean the dewatering came
17 up mostly in the context of concern for sustenance
18 and so on. So I didn't look -- we didn't look at a
19 geotechnical perspective; so we didn't -- that
20 would be more from CNSC's interest.

21 But if they are interested in
22 having us look in more detail at, you know, any
23 groundwater flow indications to dewatering, we're
24 happy to provide comments on that, but we wouldn't
25 be commenting on any sustenance issues.

1 MEMBER BEAUDET: No, I -- I would
2 appreciate it if you -- if you do comment on the
3 groundwater flow and -- and if you would look at
4 this document and -- and tell us what would be the
5 elements that should be considered.

6 And my request is based on -- on
7 the fact that you are not included on -- on the
8 list of people that would advise CNSC. I know they
9 have experts there too, but it's always better to
10 compare different expertise, please.

11 CHAIRPERSON GRAHAM: So we'll give
12 that Undertaking number 64, and that is regarding
13 IR 160, with regard to groundwater flow and also
14 other elements; is that right, Madame Beaudet?

15 MEMBER BEAUDET: Yes.

16 CHAIRPERSON GRAHAM: So just a
17 question to NRCan. When would you report back on
18 that?

19 MR. CLARKE: It's John Clarke, for
20 the record.

21 Having not seen the document, I
22 don't want to -- if the panel can give us a week, I
23 think that would probably -- does the panel -- is
24 that still within the panel's mandate to accept a
25 response within the next seven days?

1 CHAIRPERSON GRAHAM: Is that
2 satisfactory, Madame Beaudet? Thank you very much.
3 We'll put it down then for Monday next. Thank you.

4 Thank you.

5 Go ahead, Madame Beaudet.

6 MEMBER BEAUDET: Maybe I already
7 have my answer by what we've just heard. I don't
8 remember the name of the person on -- on the phone.
9 Who's on the phone?

10 MR. CLARKE: Hinton, Dr. Hinton.

11 MEMBER BEAUDET: Dr. Hinton. In
12 your written submission on page 4, the first
13 paragraph, you say that NRCan found that from the
14 groundwater perspective, the response provided was
15 appropriate and NRCan did not comment on the
16 related potential effects to the wetland function,
17 which were considered insignificant by the
18 proponent.

19 You're not commenting because you
20 agree with the judgment of the Proponent or because
21 you feel that you don't anticipate any problems?

22 MR. CLARKE: John Clarke, for the
23 record.

24 The comment with respect to we
25 don't comment on wetland function -- I think this

1 panel's heard previously about the federal wetlands
2 -- federal wetland policy. It discusses wetland
3 functions in terms of they provide for habitat for
4 animals, habitat for birds.

5 Those are all areas that are
6 within the expertise of other federal departments,
7 so NRCan wouldn't see -- doesn't have expertise in
8 those subject matters in terms of wetland function.

9 NRCan has a hydrogeologist who
10 reviewed water levels, so we work as part of a
11 federal family with the Canadian Nuclear Safety
12 Commission and other -- other departments because
13 we have areas of expertise they don't.

14 So we're able to provide advice
15 saying that the Proponent has correctly -- or has
16 adequately predicted changes in water levels within
17 the wetland.

18 But in terms of whether or not
19 those changes in water levels in turn have effects
20 that are of interest to another federal department
21 is again -- I'll take migratory bird habitat as an
22 example -- we wouldn't -- we wouldn't take to
23 comment on that. We'd leave that for the subject
24 matter experts of Environment Canada to speak to.

25 MEMBER BEAUDET: Okay. I needed

1 this clarification because the wetlands are
2 disappearing and are going to be recreated, so I
3 wasn't so sure what -- exactly what you meant by
4 that statement.

5 I would have a question regarding
6 site preparation to CNSC. In their PMD 1.3, page
7 98, there is a recommendation 19, bullet point
8 number 5:

9 "Assessing the potential
10 settlement in the quaternary
11 deposits due to the
12 groundwater drawdown caused
13 by the future St. Marys
14 quarry activities. The
15 effect of the potential
16 settlement on the buried
17 infrastructures in the
18 deposits should be assessed
19 during the design of these
20 infrastructures."

21 I don't know if NRCan had a chance
22 to review CNSC PMD and if you have any comments or
23 anything you would like to add to this
24 recommendation?

25 MR. CLARKE: John Clarke, for the

1 record.

2 I'll ask actually Dr. Hinton to
3 explain whether this recommendation falls within
4 the areas that he reviewed.

5 DR. HINTON: I have read the
6 groundwater aspects of the PMD. I was just trying
7 to follow here and I'm not sure exactly which
8 recommendation you're talking about from -- this is
9 -- did I get this right? This is the 11 P-1.3; is
10 that right?

11 MEMBER BEAUDET: That's correct,
12 and it's recommendation 19 on page 98.

13 DR. HINTON: Okay, let me just get
14 there. Okay.

15 MEMBER BEAUDET: Bullet number 5.

16 DR. HINTON: One, two, three,
17 four, five. Okay. And you're specific -- like
18 that again is outside of -- that's more a
19 geotechnical issue that's outside of my expertise
20 in terms of the -- in terms of the potential
21 settlement. I mean I can comment on potential
22 drawdown, but not in terms of the potential
23 settlement.

24 MEMBER BEAUDET: NRCan has
25 expertise on this?

1 MR. CLARKE: John Clarke, for the
2 record.

3 The expertise we brought for this
4 review was in hydrogeology, strictly speaking, and
5 in terms of water level and, of course, Dr.
6 Lamontagne is seismicity.

7 MEMBER BEAUDET: Do you have any
8 comments then on this point -- on this
9 recommendation?

10 MR. CLARKE: John Clarke, for the
11 record.

12 No, we do not.

13 MEMBER BEAUDET: Thank you.

14 Dr. Hinton, you said you would
15 have comments on watering aspect?

16 DR. HINTON: I can always comment
17 on any assessment of the dewatering, whether -- you
18 know, whether I agree and, like, the modeling
19 results on the dewatering.

20 The -- the future St. Mary's
21 quarry activities was not an issue that was
22 directly addressed by the Proponent in the modeling
23 -- in the groundwater flow modeling. So that is
24 not currently in any of the documents as far as I'm
25 aware.

1 MEMBER BEAUDET: Do you recommend
2 that it should be included?

3 DR. HINTON: That was more a
4 recommendation that came from CNSC -- sorry, Mark
5 Hinton. That was a recommendation that came from
6 CNSC, I believe, in this document and, again,
7 that's more from the geotechnical concerns from a
8 -- from, you know, impacts on -- on biota or -- or
9 water quantity.

10 I don't see it as being a great
11 concern in the sense that -- I mean Darlington
12 Creek, when they -- when they actually -- the
13 future of St. Mary's quarry activities are actually
14 going to be right where -- like they're going to
15 have to re-route Darlington Creek and they'll be
16 quarrying out a lot of those -- a lot of those
17 areas.

18 So in terms of the landscape, I
19 mean, the landscape won't, in fact, be there
20 anymore. It'll be quarry pit.

21 So -- and, you know, with the
22 groundwater flow generally being towards the lake,
23 there are not a lot of impacts from more the, you
24 know, the biota or the human point of view whereas
25 the -- the concerns, I think, raised by CNSC were

1 primarily from the geotechnical point of view.

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

4 CHAIRPERSON GRAHAM: Mr. Pereira,
5 do you have anything else?

6 Then we will now go to
7 participants. OPG, do you have any questions, to
8 NRCan?

9 MR. SWEETNAM: Albert Sweetnam.
10 No questions.

11 CHAIRPERSON GRAHAM: CNSC, Mr.
12 Howden, do you have any questions?

13 MR. HOWDEN: No questions, but
14 just one comment. Barclay Howden speaking.

15 In terms of the Licence Conditions
16 Handbook on Groundwater Flow, yeah, we have noted
17 that the main agencies are the CNSC and the
18 Ministry of Environment for Ontario, mainly for
19 storm water.

20 But in terms of the development of
21 the follow-up program, recommendation is that there
22 be a multi-stakeholder input to this, and we expect
23 that the federal agencies would be part of those
24 stakeholders plus lots of other people.

25 MEMBER BEAUDET: Yeah. I -- I

1 realize that, but I was surprised not to see NRCan
2 for the groundwater flow, that's why I asked the
3 question.

4 MR. HOWDEN: Well, this thing
5 that's being proposed is draft at the moment, so it
6 can be adjusted. Thank you

7 CHAIRPERSON GRAHAM: Thank you,
8 Mr. Howden.

9 Mr. Leonardeli, you have -- for
10 Environment Canada, you have a question or comment?

11 MR. LEONARDELI: It's -- it's a
12 comment in response to Madame Beaudet's question
13 about the wetlands impact, so Sandro Leonardeli,
14 for the record.

15 The OPG assessment indicated that
16 -- that four hectares of wetlands would be impacted
17 onsite, but those are the ones that we've
18 previously discussed during the hearings as being
19 the ones that would be recreated, and we're
20 satisfied that they can recreate those wetlands.
21 They were originally created by OPG to begin with.

22 As for the offsite impact from the
23 groundwater drawdown, OPG predicted that about one
24 hectare of wetland on the west side of the St.
25 Mary's Cement property would experience some

1 drawdown.

2 First of all, just to be clear,
3 this is not the Raby head-marsh, which is that
4 larger marsh area at the edge of the lake.

5 However, this one hectare of
6 wetland, it's considered a low-quality mineral
7 meadow marsh that's dominated by reed canarygrass,
8 and it doesn't provide any important wetland
9 functions.

10 It dries up in the summer months
11 every year and it's likely to succeed, that is, to
12 develop into more upland habitat that it already
13 shows characteristics of. So we don't have any
14 concern over that.

15 Furthermore, the Least Bittern
16 that was identified as potentially being in that
17 area would not be impacted by this -- this change
18 in that wetland succession to upland habitat
19 because the existing one hectare of wetland there,
20 doesn't provide any habitat for that species. It's
21 the wrong type of wetland habitat.

22 MEMBER BEAUDET: Thank you for
23 this information.

24 MR. LEONARDELI: You're welcome.

25 CHAIRPERSON GRAHAM: Thank you.

1 Now, we go to questions from
2 intervenors, and we have two. And we'll close it
3 at that. Joanne Bull, you have two questions. And
4 Joanne's with Lake Ontario Waterkeepers. Ms. Bull.

5 --- QUESTIONS FROM THE PUBLIC:

6 MS. BULL: Hello. Thank you, Mr.
7 Chair.

8 My first question is, we heard a
9 general overview of lineaments. Can we have a source
10 or a point to the specific report that was done on the site about lineaments
11 under the potential Darlington site?

12 CHAIRPERSON GRAHAM: NRCan?

13 MR. CLARKE: John Clarke, for the
14 record.

15 We had offered -- we had offered
16 at the outset of this, of Dr. Lamontagne's
17 discussion there to -- to provide an undertaking to
18 the panel with some more information on lineaments,
19 including a list of references for studies.

20 If the panel so thinks that would
21 be of value, I think rather than try to explain
22 these, you know, the list of studies, again
23 verbally, that if we could provide that as an
24 undertaking to the panel, say, by next Monday,
25 again, with the other undertaking, that perhaps

1 would help solve this recurring question.

2 CHAIRPERSON GRAHAM: That would be
3 helpful, I believe. So if we could give that
4 Undertaking number 65 and we'll try and get that
5 information for you, Ms. Bull, for next Monday.

6 Do you have another question?

7 MS. BULL: Yes, thank you.

8 In response to an undertaking last
9 week, we were told that the maximum ground
10 acceleration for the U.S. plants at Point Perry and
11 Nine Mile Point are what those numbers were.

12 Can we just have a comparison with
13 the numbers for the existing Pickering and
14 Darlington plants?

15 CHAIRPERSON GRAHAM: Pardon me,
16 CNSC, can you -- I think you did give something on
17 that if I remember, but anyway, can you provide us
18 with any further clarification?

19 MR. HOWDEN: Barclay Howden
20 speaking.

21 We provided the information for
22 the new build. We'll have to undertake that, to
23 provide that information. We should be able to
24 have it fairly quickly.

25 CHAIRPERSON GRAHAM: Okay. That

1 was just for the new build that you provided --

2 MR. HOWDEN: Yeah.

3 CHAIRPERSON GRAHAM: Yes, okay.

4 MR. HOWDEN: So this is for the
5 existing Darlington and Pickering plants, yeah.

6 CHAIRPERSON GRAHAM: So we'll give
7 that Undertaking number 66 to CNSC. He'll get that
8 undertaking for you. And next Monday also?

9 MR. HOWDEN: Barclay Howden
10 speaking.

11 I think we can -- I think we could
12 have that by Thursday, before we close up.

13 CHAIRPERSON GRAHAM: Thank you
14 very much.

15 MS. BULL: Thank you.

16 CHAIRPERSON GRAHAM: The next one
17 is Theresa McClenaghan with CELA.

18 Ms. McClenaghan?

19 MS. McCLENAGHAN: Thank you.

20 Thank you, Mr. Chairman.

21 My question is for Dr. Lamontagne
22 with respect to the comment that the Rouge River
23 Fault was due to glaciations.

24 And I'm wondering, Mr. Chairman,
25 if he can advise as to approximately how long ago

1 that glaciations episode would have been, and over
2 the past 100 to 200,000 years, how many episodes of
3 glaciations there has been in this region?

4 CHAIRPERSON GRAHAM: Dr.
5 Lamontagne?

6 DR. LAMONTAGNE: Okay. When we
7 talked about the -- the glaciations effect in the
8 Rouge River Fault that would -- I'm not exactly
9 sure the exact date, but in general we're talking
10 about 10,000 years ago that the glacier front
11 slowly retreated in this region.

12 I'm not sure if it's 11,000 or
13 12,000, but that would be in that ballpark. I can
14 certainly look for this information.

15 And then you were asking about how
16 many glaciations in the last 100,000 years? My
17 impression would be that there would be one, but
18 again, I can double-check and come back with this
19 exact information.

20 CHAIRPERSON GRAHAM: Ms.
21 McClenaghan, would you want that further clarified?

22 MS. McCLENAGHAN: Yes, I think
23 it's important, Mr. Chairman, because we're talking
24 at this hearing about the ability of the waste
25 material to remain onsite over that kind of time

1 frame.

2 CHAIRPERSON GRAHAM: Okay. Then
3 we'll give that Undertaking number 67 to NRCan to
4 provide the information, and timeframe next Monday?
5 Okay.

6 Okay. Thank you. And that's 67.

7 If that is all the questions from
8 the floor and from my colleagues, my colleagues are
9 very good with that, so thank you very much, Mr.
10 Clarke, Dr. Lamontagne, and also Dr. Hinton, on the
11 line, I thank you very much for your participation
12 this afternoon, in providing us this -- this
13 additional information.

14 We now go to oral statements. And
15 my understanding is we have an oral statement from
16 the Pembina Institute, and that is going to be done
17 by telephone conference. And that is as indicated
18 in PMD 11-P1.213. And that's an oral statement.

19 The rules of the oral statement
20 are that they're --only questions from panel
21 members are permitted, and the time frame is
22 approximately ten minutes. And Mr. Tim Weis, I
23 believe, is the director of renewable energy and
24 efficiency is going to do that presentation on
25 telephone conference.

1 Mr. Weis, are you there?

2 MR. WEIS: I am, yes, can you hear
3 me?

4 CHAIRPERSON GRAHAM: Thank you
5 very much, and you may proceed, sir.

6 --- PRESENTATION BY MR. WEIS:

7 MR. WEIS: Great. Thank you for
8 the opportunity to present today.

9 My name is Tim Weis, and I'm the
10 Director of Renewable Energy and Energy Efficiency
11 at the Pembina Institute.

12 My background is mechanical
13 engineering.

14 I have a Bachelors from the
15 University of Waterloo and a Masters of Mechanical
16 Engineering from the University of Alberta and I'm
17 a professional engineer registered in the Province
18 of Alberta.

19 The Pembina Institute where I work
20 is one of Canada's largest energy think tanks, and
21 we're focussed on sustainable energy solutions.

22 We have over 55 employees ranging
23 from British Columbia to Ontario, and we focus on
24 oil and gas development, climate change, and
25 renewable energy development.

1 We were founded over 25 years ago
2 after one of Canada's worst industrial accidents,
3 which was a sour gas well blowout just outside of
4 Drayton Valley, Alberta.

5 And I think it's worth noting that
6 just last month there was another sour gas well
7 explosion where 12 workers were injured.

8 While it's not as significant as
9 the one that founded the institute, I think it's
10 important to remember that industrial accidents
11 still happen even in well-established and highly
12 regulated industries.

13 My focus, however, today -- or my
14 focus today is on sustainable energy development,
15 and in particular I'm interested in renewable
16 energy, and that's why I'm here.

17 The Pembina Institute has also
18 published numerous reports that are publically
19 available on how Ontario could be replacing its
20 nuclear fleet with long-term sustainable
21 electricity choices, and we've also intervened as
22 members of the Green Energy Coalition at the
23 Ontario Energy Board.

24 I apologize for not being present
25 today in person in my home province, but I live and

1 work in Edmonton and I'm not able to travel this
2 week, but I do appreciate the opportunity to speak
3 today because the issues that are being discussed
4 are not only of national importance, but there's
5 also a significant add to the discussions of
6 nuclear energy that's happening out here in the
7 prairies.

8 In fact, Alberta and Saskatchewan
9 recently conducted two nuclear inquiries in their
10 respective provinces. Alberta decided they would
11 not block nuclear development but insisted that no
12 taxpayer dollars would go towards this development.

13 In Saskatchewan, one of the key
14 recommendations from the nuclear consultations was
15 the public -- well, one of the key recommendations
16 coming out of the nuclear consultation was public
17 desire that alternatives, notably renewable energy,
18 be considered in nuclear's place, and that's really
19 what I want to talk about today is the need for
20 alternatives to nuclear to be examined.

21 I'm particularly interested in
22 examining renewable energy alternatives, but a
23 federal environmental assessment ought to consider
24 realistic viable options as part of the
25 precautionary approach.

1 Our written submission to this
2 panel predates the long-term energy plan of
3 Ontario, although it's worth noting that the full
4 integrated power systems plan has not been
5 developed or adopted based on that long-term energy
6 plan.

7 Nonetheless, the fact remains, in
8 our submission, that we outline that Ontario has an
9 abundance of renewable energy options that are
10 capable of replacing the generation that's proposed
11 in the current nuclear proposition.

12 Our submission outlines one of the
13 many possible portfolios that is capable of meeting
14 these needs, and it's certainly not the only one
15 that can do so.

16 The portfolio that we've put
17 forward is one of a mix of on-shore wind, off-shore
18 wind, solar photovoltaics, hydro biomass, landfill
19 gas, combined heat and power, as well as additional
20 demand management and conservation, all of which
21 would be above and beyond the current target set
22 out within a long-term energy plan.

23 The question that's always raised
24 when such a -- when such a switch is proposed is,
25 is this a reliable supply? I'll answer that by

1 starting off with quoting the federal -- the Chair
2 of the Federal Energy Regulatory Commission in the
3 United States, John Wellinghoff, who on April 22nd,
4 2009 at the United States Energy Association Forum
5 said:

6 "If you can shape renewables,
7 you don't need fossil fuels
8 or nuclear plants to run all
9 the time, and, in fact, most
10 plants running all the time
11 in your system are an
12 impediment because they're
13 very inflexible. You can't
14 ramp up or ramp down a
15 nuclear plant, and if you
16 have instead the ability to
17 ramp up and ramp down loads
18 in ways that can shape the
19 entire system, then the
20 concept of baseload becomes
21 an anachronism."

22 While Mr. Wellinghoff's statement
23 is predicated on the improbability to manage loads
24 and dispatch renewable energy, the technologies to
25 do so are available today given our advances in

1 Smart Grids and power storage.

2 It is also important to remind
3 ourselves that there is an inherent redundancy in
4 any electrical system.

5 Ontario's power system equally
6 needs to be able to handle a non-availability of
7 the proposed nuclear power plant because it will be
8 down for scheduled maintenance as well as
9 unforeseen events, whether they're natural or due
10 to mechanical or electrical failures.

11 Building a suite of alternatives
12 also has several key advantages over a large
13 centralized nuclear power plant. Firstly, it
14 distributes our generation capacity. This improves
15 the redundancy of the overall system and reduces
16 its susceptibility to losing a massive single
17 source of power.

18 A suite of alternatives also has
19 the important advantage of being built
20 incrementally over the next decade. Such a
21 commitment to a large storage system, such as a
22 nuclear reactor, is basically an all or nothing
23 approach.

24 Let's say there will be no energy
25 available from that plant until approximately ten

1 years from now, at which point it will all come on
2 line at once.

3 However, if we were to build a
4 portfolio of alternatives, they can be built in
5 much smaller increments, starting almost
6 immediately and ramping up over that same period of
7 time.

8 This incremental approach to
9 construction means that the pace of development can
10 be adjusted as new information becomes available
11 and is more flexible in that sense.

12 It's not hard to believe that
13 there are many things about Ontario's electricity
14 system and the demand a decade from now that we
15 don't understand today.

16 With the way the resources exist,
17 Germany, which is a country just over a third the
18 land size of Ontario, has over 27,000 megawatts of
19 wind energy capacity and over 17,000 megawatts of
20 solar capacity already installed and operating.

21 So the capacity for what we're
22 talking about in terms of meeting the long-term
23 energy supply as well as what would be incremental
24 to replace the Darlington -- proposed Darlington
25 plant is already superseded in a country that is

1 significantly smaller than Ontario.

2 So it's not really a question of
3 whether the resources exist because clearly they
4 do, it's a question of, is this -- such a portfolio
5 compatible with Ontario's electricity needs?

6 I've seen no such studies to
7 indicate it's not compatible, and there are already
8 jurisdictions in Europe that are operating at much
9 higher levels of renewables.

10 The same question, I think, could
11 be asked in reverse and is the output of a nuclear
12 power plant compatible with Ontario's needs?

13 There's never been a justification
14 as to why nuclear needs to remain at approximately
15 50 percent of Ontario's supply. There's also no --
16 to my knowledge, there's no technical reason why a
17 50 percent level should be chosen.

18 In fact, as we've seen in recent
19 years, there's been major ups and downs and peaks
20 and valleys in Ontario's demand, and such
21 situations have sometimes resulted in baseload
22 surplus.

23 This situation can be exasperated
24 by additional must-run technology such as wind
25 power as nuclear plants have little or no ability

1 to load follow. So how the 50 percent number has
2 been derived has never been made public.

3 Finally, the question of long-term
4 sustainability needs to be considered by this
5 panel.

6 Renewable energy has experienced
7 marked growth on the order of 30 percent in the
8 last two decades, but really leads to a massive
9 boom in the last five years with 2008, 2009, 2010
10 being the first years that renewable energy
11 investment outpays the investment in traditional
12 energy sources.

13 The United States and China are --
14 have now both surpassed Germany as leaders in wind
15 energy, and countries, states, and provinces are
16 looking to integrate higher and higher proportions
17 of renewable energy into their system.

18 This is relevant because
19 information as recent as five years ago about the
20 state of renewable energy technologies is
21 effectively considered out of date.

22 Things have been changing very
23 quickly, not only in terms of how advanced the
24 technology is itself, but how jurisdictions are
25 able to integrate it into their grids.

1 Ontario laudably has one of North
2 America's most aggressive renewable energy
3 strategies. However, this strategy may be limited
4 by the choices that are put on to the grid because
5 they end up competing with renewable energy.

6 Developing a new nuclear plant may
7 not only impede the growth of truly renewable
8 sources by making their integration more difficult,
9 but it also locks us into look long-term -- sorry
10 -- it also locks in significant capacity into the
11 grid and effectively puts the ceiling on renewable
12 energy development for many decades to come.

13 This, in fact, limits or at least
14 slows the long-term transition sustainability in
15 Ontario's electricity sector.

16 To sum up, it's clear there are
17 viable alternatives to the proposed nuclear -- to
18 the proposed Darlington stations that have not been
19 adequately considered.

20 Furthermore, there's no technical
21 justification as to why 50 percent of Ontario's
22 electricity supply needs to remain from nuclear
23 supply indefinitely, which, thus far, has been
24 constituted as the need for this project.

25 The Pembina Institute would submit

1 therefore that the environmental assessment is
2 incomplete without consideration of viable
3 alternatives.

4 Thank you.

5 CHAIRPERSON GRAHAM: Thank you
6 very much, Mr. Weis, for your oral submission.

7 Now we will go to -- oral
8 statement, I should say -- we'll go to panel
9 members, and I'll first of all go to Madame
10 Beaudet.

11 --- QUESTIONS BY THE PANEL:

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

14 I'd like to look with you at two
15 things. The first one, and I'm referring here to
16 your written submission, PMD 1.213, there's no page
17 number so I'll refer to the section; section 203,
18 Development of Generating Capacity, and also
19 section 3.1, which is your proposed alternative
20 with respect to wind, solar, and hydro, et cetera,
21 power to replace nuclear.

22 What I'd like to know is, in these
23 figures, for instance the ones about wind power
24 that are already contracted or to be contracted,
25 it's the same with the bio-energy. The megawatts

1 he had given don't include utilization factors; is
2 that correct?

3 MR. WEIS: The megawatts
4 themselves don't, but the terawatt hours per year,
5 on Table 4, would include the utilization factor.

6 MEMBER BEAUDET: You say Table 4?

7 MR. WEIS: Yeah.

8 MEMBER BEAUDET: Which section is
9 that?

10 MR. WEIS: Three point one (3.1_.

11 MEMBER BEAUDET: Okay. Yes, I've
12 got it. Okay. So in here you have the utilization
13 factor for -- especially for wind power. We know
14 it's usually in the range of 32.6 to 33.

15 So in fact, you did provide for
16 more wind turbine -- or turbines to contract what
17 you really need and what is the capacity that you
18 can use?

19 MR. WEIS: Yeah. You would
20 definitely need more installed capacity in terms of
21 megawatts in order to reach the same output in
22 terms of energy.

23 MEMBER BEAUDET: Because on -- if
24 you look at section 23 what you have here is about
25 10,920 megawatts and if you use the 32.6 percent

1 you end up with only 3,560 megawatts and I'm trying
2 to understand how, on Table 4, you have 6,500
3 megawatts.

4 So what you say is that we should
5 increase whatever we have planned here for wind
6 power, there's a need to include part of this
7 additional 5,503 megawatt of onshore and 30
8 megawatts of offshore wind that are waiting for
9 approval.

10 Is that where you take the
11 surplus?

12 MR. WEIS: Well, you saw this
13 information is a little bit out of date now because
14 some of it preceded the long-term energy plan as
15 well as the hold we've seen on offshore wind.

16 But what we're suggesting here,
17 which is still true, is that this portfolio is
18 available in terms of capacity it's available which
19 would be above and beyond what is projected in the
20 long-term energy plan.

21 MEMBER BEAUDET: What I'm trying
22 to get at here is to have an idea of how many
23 windmill turbines that you'll have to add on land.
24 I mean, if we are thinking here of, let's say, two
25 megawatt turbines for onshore winds, you'd probably

1 need half of what -- the megawatts you have there;
2 some would be smaller; some would be bigger. So
3 we're look into the range of, let's say, 4,000 wind
4 turbines onshore?

5 MR. WEIS: Onshore that would be
6 the range, yeah. And again, to put that in
7 context, Germany has over 20,000 wind turbines
8 installed in a country about a third of the land
9 mass of Ontario.

10 MEMBER BEAUDET: Yeah, but the
11 percentage of offshore in Germany and Denmark is
12 quite significant?

13 MR. WEIS: There are some
14 offshore, but the majority are still onshore.

15 MEMBER BEAUDET: Thank you.

16 My other point is referring to --
17 your figure 2 and that's section 21 and also in
18 section 25. Figure 2, I'd like to -- you to
19 comment on -- you can see on this figure how close
20 the annual peak demand and the total energy for,
21 let's say, you're predicting for the years 2013,
22 2014, there's hardly a safety margin there. I'd
23 like you to comment on that, please.

24 MR. WEIS: Sorry, I'm not --

25 MEMBER BEAUDET: Figure 2. If you

1 look at the figure, you have the actual peak demand
2 and here it seems to be weather corrected. And
3 when you look at the annual peak demand and the
4 total annual energy that is available --

5 MR. WEIS: Those are on two
6 different axis on the --

7 MEMBER BEAUDET: You would have in
8 -- between the year 2012 and 2016, wouldn't you say
9 you would have a problem of a safety margin of what
10 would be required in the peak demand with what is
11 produced?

12 You say somewhere that there's a
13 possibility of backing up -- with bio-energy and
14 solar. Now, I think what we are talking about at
15 the present, I'm not saying the future, we can look
16 at other things, but usually the backup is with
17 natural gas or -- you propose that it should be
18 backed up with bio-energy, which I would like you
19 to define, and solar.

20 How do you -- how do you ensure
21 that this safety margin is sufficient?

22 MR. WEIS: Okay. There's --
23 there's a number of different questions I guess.
24 The first in terms of figure 2, that graph is taken
25 from the ISO, Independent System Operator in

1 Ontario, and it doesn't really show a safety margin
2 on either axis because those are two separate --
3 those two lines correspond to two different things.

4 ne is the annual peak demand and
5 the other is the annual energy. They haven't
6 overlapped; you can tell by the way the axis are
7 drawn there, but they are actually two independent
8 numbers. So that actually doesn't have to do with
9 what we're suggesting in this case.

10 But in any event, you're right
11 that natural is very likely to be a key source of
12 backup. I think where solar would be an advantage
13 is because solar coincides nicely with Ontario's
14 peak, which tends to occur on very hot days, hot,
15 sunny days in the summer when air conditioners are
16 running and so you're going to get a solar -- solar
17 to match that peak output very well.

18 So in that case you're not backing
19 up wind, you're actually generating on the grid.

20 MEMBER BEAUDET: With the safety
21 margin, when you have to look at all the wind
22 projects, for instance, that are on the table,
23 they've been contracted, but they haven't been
24 built yet and the EIS hasn't been prepared. I'm
25 just trying to see where would be the gap.

1 Obviously, there will be so your
2 answer would be at the moment, the backup would
3 have to with probably natural gas.

4 But I think to complete that, I'd
5 like to go to OPG because there's an interesting
6 point brought up in section 2.5, second paragraph,
7 which says that when you have a shutdown of nuclear
8 plant, for example, 5,000 megawatt of capacity were
9 taken offline in April and May, 2009 for operations
10 and maintenance.

11 So you would have periods where,
12 you know, there would be the -- the production
13 capacity is lowered by -- here it would be 25
14 percent?

15 MR. SWEETNAM: Albert Sweetnam,
16 for the record.

17 Those figures would not be
18 referring only to the OPG's capacity. This would
19 be the nuclear capacity across the entire nuclear
20 fleet, which would include Bruce as well.

21 I don't have the specifics for
22 April and May, but in anticipation of -- there was
23 a major building -- a vacuum building outage that
24 was done at Darlington, and in order to take out a
25 vacuum building, you have to take all four units

1 down. This happens once every 12 years and this
2 happens at all of the CANDU plants.

3 So any time you take down a vacuum
4 building and this is basically for inspection and
5 checking that everything works in it because
6 there's a dousing system inside the building. You
7 take that down and you have to take the entire --
8 all of the units that are connected to that vacuum
9 building down.

10 So this would have been a once in
11 12 year occurrence. It would have been done in
12 conjunction with the planning of the overall
13 province so it would not be something that would
14 have placed the province in jeopardy.

15 This would have been planned at a
16 time where there was available capacity from other
17 units or from outside of the province to take care
18 of the outage period to take these -- to check on
19 these vacuum buildings.

20 The other thing I would like to
21 just to put a small comment in is about -- is that
22 the intervenor had indicated that the nuclear power
23 plants cannot ramp up and down.

24 The plans that Ontario is looking
25 at for the new build, will have the capacity to

1 ramp up and down because Ontario recognizes this
2 need, especially the fact now that Ontario is
3 adding through, the Green Energy Plan, a large
4 amount of wind and solar.

5 We were -- Ontario recognizes the
6 need to have these plans -- have the capacity to
7 ramp up and down unlike the present generation of
8 plants, so the designs that are being contemplated
9 will have the capacity to ramp up and down.

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

12 CHAIRPERSON GRAHAM: Mr. Pereira?

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

15 I am trying to understand table 2
16 and table 4 and looking at how we go from table 2,
17 onshore wind and you have 2,100 megawatt and 5.1
18 terawatt hours per year.

19 And from what I understand you
20 said the backup for that, when there is variable
21 capacity factor issues, it will be combined heat
22 and power. In other words bringing in gas
23 generators, so that -- do you see the proportion of
24 the backup?

25 When you go to table 4, the

1 onshore wind has gone up by a factor of three, but
2 the combined heat and power terawatt hours per year
3 is virtually the same, so where is the backup in
4 table 4?

5 Because the rest of the generation
6 figures are almost the same as table 2, so there is
7 something that I don't follow in the logic of how
8 one would compensate for the variability and
9 onshore wind in table 4.

10 MR. WEIS: Thank you, yes, some of
11 that backup would have to be born by the existing
12 grid in the same way that any current generation
13 has inherent backup with an existing system.

14 MEMBER PEREIRA: So there's a
15 difference in logic in table 2 and 4? There is a
16 switch in the logic of how -- how this -- how there
17 would be a balance?

18 MR. WEIS: In neither case
19 would -- are we proposing that these mixes would be
20 100 percent without requirement of backup from the
21 grid.

22 MEMBER PEREIRA: Well, in trying
23 to make a case and present figures, there should be
24 consistency in running through the report because
25 if there isn't, then all of the tables are suspect

1 because you have to -- the reader has to go through
2 all of them and figure out the logic in each case,
3 which doesn't make a very convincing presentation
4 for us as a Panel because now we got to try and
5 figure out what exactly each table means on its
6 own, so I'll leave that with you to think about.

7 If we go to table 2.6, and I don't
8 understand the column of 2010 for the -- why is the
9 price of nuclear 20 cents per kilowatt hour when
10 nuclear is at -- I'll go to Ontario Power
11 Generation and ask, is that a figure that -- that
12 doesn't seem to fit with the figures that Ontario
13 Power Generation has provided to us? Ontario Power
14 Generation?

15 MR. SWEETNAM: Albert Sweetnam,
16 for the record.

17 I think you're looking at table 3.
18 I think maybe where that 20 cents is coming from is
19 at the bottom of table 2, which would then take you
20 back to the statement, AECL's 2009 nuclear RFP
21 winning bid, which we have previously said on the
22 record that, first of all, AECL did not have a
23 winning bid, they had the only compliant bid.

24 And, secondly, this number is
25 erroneous. It was stated in the newspapers and it

1 has been refuted by Infrastructure Ontario on
2 several occasions.

3 And in terms of the actual cost of
4 nuclear power to the Province of Ontario from OPG.
5 OPG is the lowest cost provider of electricity in
6 the province.

7 And as stated by the Assistant
8 Deputy Minister when he was here, the cost of
9 nuclear from OPG is approximately 5.5 cents.

10 MEMBER PEREIRA: So thank you, Mr.
11 Sweetnam. So there's some major inconsistencies
12 between what the Minister -- the Assistant Deputy
13 Minister and OPG says and the cost quoted for price
14 of nuclear.

15 And further I have a problem
16 understanding the tables 2 and 3 and perhaps others
17 because I haven't checked -- cross-checked the
18 others in terms of trying to understand the case
19 being presented by -- in this document, but I'll
20 take that at face value. Thank you.

21 MR. WEIS: I'll quickly respond to
22 that. Table 2 and 3, the assumptions underline
23 both. Are consistent with each other in the sense
24 that, as I said, neither would be without not
25 requiring balancing from the existing grid, which I

1 would argue is the same for any new generation
2 that's going to need backup from the existing grid.

3 The reason for the discrepancy
4 that the 5.5 cents per kilowatt hour has currently
5 contracted out, it is not consistent with what
6 we're going to see going forward in new build. I
7 think it's just erroneous to suggest that current
8 prices reflect what a new build would be.

9 The number that's been quoted in
10 the paper while there has been some people refuting
11 it, no one has suggested what the actual number has
12 been in its place, so that is the best number that
13 is publicly available.

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

16 CHAIRPERSON GRAHAM: I guess my
17 questions have been clarified. Thank you very
18 much, Mr. Weis, for your telephone conference/oral
19 statement. And thank you very much for that.

20 And I will proceed to another part
21 of our agenda today. And that I believe we are
22 going to ask Environment Canada to comment on the
23 question by Madam Beaudet on wetlands. Did you --

24 MEMBER PEREIRA: He did --

25 CHAIRPERSON GRAHAM: It has been

1 done? Rerun, sorry, about that. All right then.

2 Now we will move to the next --
3 our next intervention, which is the Canadian
4 Environmental Law Association under PMD 11-P1.116
5 and, Ms. McClenaghan, you have the floor. You're
6 on
7 with -- as the executive director and counsel, and
8 I believe you have Richard Lindgren also with you.
9 Welcome and the floor is yours.

10 --- PRESENTATION BY MS. McCLENAGHAN:

11 MS. McCLENAGHAN: Thank you very
12 much, Mr. Chairman. Thank you for the opportunity
13 to present this submission today.

14 As you do know, my name is Theresa
15 McClenaghan, Executive Director and Counsel with
16 Canadian Environmental Law Association, and Richard
17 Lindgren as senior counsel with Canadian
18 Environmental Law Association.

19 And I'll call our association CELA
20 as most do. CELA was established in 1970 to
21 advocate for and use laws to protect the
22 environment. And in 1978, we became an Ontario
23 Legal Aid Speciality Clinic.

24 Our priority areas of focus
25 include energy sustainability, environmental

1 health, access to environmental justice, which
2 includes participation rights in environmental
3 decision-making and land use, including waste and
4 environmental assessment issues.

5 And we provide a range of services
6 in our work including summary advice, client
7 representation, law reform and public legal
8 education on environmental law.

9 The written report we submitted to
10 you dated October 7th, 2010 was prepared for Safe
11 and Green Energy Peterborough at their request.

12 They asked us to assess their
13 question as to whether there was an obligation on
14 the proponent, OPG, to consider a functional
15 different alternative to the project of building
16 new reactors at Darlington and, if so, whether that
17 obligation has been met.

18 Today we will address the
19 following points, that the purpose of the project
20 and the need for the project were not properly
21 described.

22 That functional alternatives to
23 the project were not included in the Environmental
24 Impact Statement, which I may refer to as the EIS.

25 Furthermore that the EIS did not

1 even meet the EIS Guidelines issued by the
2 responsible authorities in respect of the
3 Darlington New-Build Project. That these are
4 required by the CEAA as matters of law and
5 therefore the project should not be approved.

6 We further will argue that the
7 alternative means analysis is premature and
8 incomplete. And there is an insufficient basis on
9 which the Joint Review Panel should recommend
10 proceeding with the project at this time.

11 So the context for the Joint
12 Review Panel's consideration is the purposes of the
13 CEAA and these include several things, but among
14 those, they include ensuring that projects are
15 considered in a careful and precautionary manner,
16 ensuring that projects do not cause significant
17 environmental effects, and promoting sustainable
18 development to achieve or maintain a healthy
19 environment and a healthy economy.

20 So what was required? We begin
21 with a brief outline of what the OPG was required
22 to do. In determining whether this proposal is
23 consistent with the purposes of CEAA and whether to
24 recommend that it should proceed or not, the CEAA
25 sets out some requirements mandatory in law for the

1 Joint Review Panel to consider as a joint review
2 panel specifically.

3 Some of these factors that the
4 Joint Review Panel must consider include the
5 following: the purpose of the project under
6 section 16(2); any other matter relevant such as
7 the need for the project and alternatives to the
8 project that the responsible authority or the
9 minister may require to be considered in section
10 16(1)(e), as well as alternative means of carrying
11 out the project that are technically and
12 economically feasible and the environmental effects
13 of those alternative means.

14 On the second point dealing with
15 alternatives to and need, we would note that the
16 EIS guideline did, in fact, outline other matters
17 required to be considered and among these is the
18 requirement that the OPG describe the need for the
19 proposed new nuclear plant.

20 We excerpted section 7.1 of the
21 EIS guideline on page 9 of our submission. As
22 noted, OPG was to clearly describe the need for the
23 proposed new nuclear power plant, define the
24 problem or opportunity the project is intending to
25 solve or satisfy, establish the fundamental

1 justification or rationale for the project,
2 describe the purpose of the project by defining
3 what is to be achieved by carrying it out, describe
4 the need and purpose from the perspective of the
5 project proponent and provide context for the
6 consideration of alternatives, which we'll discuss
7 in a few minutes under later sections of the EIS
8 guidelines. We will argue none of this was done by
9 the OPG as proponent.

10 So starting with -- starting with
11 need, it is a well-accepted and long-standing
12 principle of good EA planning and practice that
13 where a project creates risk of environmental harm,
14 the onus is on the proponent to prove that the
15 project is actually needed.

16 Put another way, it is not in the
17 public interest to proceed with a risk-laden
18 project for which there is no demonstrable public
19 need.

20 So we turn first to this issue of
21 whether the OPG has properly described the need.
22 The OPG has described the purpose and the need as
23 being to fulfil the Ontario minister of energy's
24 June 2006 directive, which we quoted on page 3 of
25 our submission, noting that that submission was

1 done before the 2010 directive.

2 As noted earlier, that directive
3 has never been manifested in an approved integrated
4 power system plan to this date.

5 Another directive was issued on
6 the eve of this hearing just as we were filing this
7 report. It sets out direction for nuclear baseload
8 power with up to two reactors, 2,000 megawatts, at
9 the Darlington site and deals with other matters.

10 So the question that arises is,
11 can a provincial minister's directive constitute a
12 purpose within the meaning of CEAA? Can its
13 existence legally excuse the OPG from the
14 requirement in CEAA to consider the need for the
15 project?

16 And later in our remarks, we'll
17 ask a similar question which is, can the existence
18 of the directive legally excuse the OPG from the
19 requirement in CEAA to consider functional
20 alternatives to new reactors?

21 We would note initially that
22 description and evaluation of the need for a
23 project and alternatives to the project are
24 cornerstones of good environmental assessment.

25 This is why Parliament has

1 entrenched these factors as mandatory
2 considerations in CEAA. This is particularly true
3 for large-scale projects such as this which are
4 referred to review panel proceedings.

5 In our opinion, where a proponent
6 has failed or refused to prove need for a project
7 or to conduct a rational traceable and credible
8 evaluation of alternatives to the project and their
9 impacts, the panel's only option is to recommend to
10 responsible authorities that the undertaking or the
11 project not be permitted to proceed even under any
12 recommended terms, conditions, and follow-up
13 programs.

14 That is, fundamental aspects of
15 the mandatory requirements of the CEAA, namely,
16 need and alternatives to the projects have not been
17 assessed and demonstrated by OPG in this case.

18 As you know, the EIS states it was
19 prepared by OPG at the direction of the province of
20 Ontario and was consistent with the IPSP. However,
21 as you've heard from others, including from the
22 ministry of energy, the IPSP proposed by Ontario
23 Power Authority in 2006 was never approved.

24 In fact, the hearings before the
25 Ontario Energy Board to approve it were suspended

1 and never resumed following a 2008 directive by the
2 then minister of energy to reconsider the amounts
3 of conservation and renewables under that plan.

4 There is no formal Ontario energy
5 plan available to provide the need for this
6 Darlington new build proposals.

7 It's important to note that we
8 still, even to this date today, do not have an
9 approved IPSP under *The Electricity Act* in the
10 province of Ontario.

11 Although the province did some
12 further consultation in the summer and fall of
13 2010, and the minister has issued another
14 directive, this is only an interim stage.

15 The next step, as I've been
16 advised by the Ontario Power Authority and you
17 heard, is that they will imminently commence public
18 and stakeholder consultation on the potential
19 components of a new IPSP this spring.

20 Their goal is to finalize a new
21 integrated power system plan which they hope to
22 file with the Ontario Energy Board, the OEB, by
23 late summer of 2011. At that point, the OEB will
24 hold hearings to approve the plan as it is mandated
25 to do under *The Electricity Act* in Ontario.

1 The Ontario Power Authority has
2 advised me that they expect the OEB hearing to take
3 approximately one year, although that process will,
4 of course, be up to the OEB.

5 Only at the end of that process
6 and only if the OEB approves the plan would there
7 be an approved integrated power system plan or IPSP
8 in Ontario.

9 Accordingly, at this point today,
10 the content of the IPSP is not known as it has not
11 yet been prepared, made public, and filed with the
12 Ontario Energy Board. And the Ontario Power
13 Authority is just about to solicit input on it.

14 As you heard earlier in the
15 hearing, when the OEB holds its hearing, you will
16 be required to consider not just consistency with
17 the minister's directive, but also that it is
18 economically cost-effective and prudent under *The*
19 *Electricity Act*.

20 So, as I say, there is no formal
21 energy plan yet in existence in Ontario under the
22 Ontario legislation and no such formal energy plan
23 available for this EIS to be consistent with.

24 The proponent's further direction
25 of purpose and need as intended to fulfil the

1 minister's directive is itself circular reasoning
2 that removes any meaning from section 16(2)(a) of
3 the CEAA.

4 Despite the provision in the EIS
5 guidelines that need is to be stated from the
6 perspective of the proponent, this does not
7 translate to the proposition that the business
8 mandate or directive of its provincial shareholder
9 should limit the description of purpose and need
10 which are legally required under the CEAA.

11 Failing to properly describe the
12 purpose and need will unduly skew or constrain the
13 alternatives to analysis required by the Act.

14 This would effectively render the
15 CEAA process meaningless, leaving only a potential
16 effects mitigation exercise as opposed to a
17 credible and comprehensive environmental assessment
18 that focuses on sustainability.

19 We contend this is not consistent
20 with the EIS guidelines or the Act itself to state
21 the purpose as being to comply with the minister's
22 directive.

23 This does not define the problem
24 or opportunity that the project is intended to
25 solve. Obviously, the fundamental justification or

1 rationale should rather be stated in terms of
2 electricity need and the underlying services being
3 provided by that electricity need in the province
4 and there should have been robust information on
5 that need in the EIS for review by the panel.

6 The types of questions that should
7 be evaluated in considering the need for the
8 project should include whether the specified
9 baseload generation capacity is required and
10 whether it is required specifically for nuclear
11 generation or whether it is even required to have
12 50 percent of the electricity system be of the
13 baseload variety and what other options there are
14 for reliability.

15 As noted in the Greenpeace
16 presentation some days ago, which included data
17 from the "Renewables are Doable" report issued this
18 past summer by Greenpeace, Pembina Institute and
19 CELA, demand projections have varied over time.

20 However, an evaluation of need
21 would include an assessment of the projected demand
22 for electricity such as is conducted on an ongoing
23 basis by the IES, so the Integrated Electricity
24 System Operator in Ontario. This information was
25 not included in the EIS.

1 This brings us to the next point
2 dealing with alternatives to the project that the
3 EIS did not seriously consider any alternatives to
4 a new nuclear generating station at the Darlington
5 site.

6 The EIS dismissed the do nothing
7 alternative and the option of other sites as well
8 as the option of other forms of generation as
9 inconsistent with the Minister's directive. There
10 was no further exploration of those other options
11 in the EIS and they were not evaluated adequately
12 or at all.

13 The EIS guidelines, however, at
14 section 7.2, explicitly required OPG to describe
15 functionally different ways to meet the project's
16 need and achieve the project's purpose.

17 It specifically required
18 identification and discussion of other technically
19 and economically feasible methods of producing
20 electricity other than the construction and
21 operation of the OPG Darlington new nuclear power
22 plant that are within the control or interests of
23 OPG.

24 And where a claim is made that the
25 alternatives are contrary to Ontario's formal plans

1 or directives, the EIS said this was to be
2 identified.

3 Furthermore, according to the EIS
4 guidelines, this description of the functional
5 alternatives to the project must be done -- and
6 this is a quote:

7 "...to a level of detail
8 which is sufficient to allow
9 the Joint Review Panel and
10 the public to compare the
11 project with its
12 alternatives."

13 OPG's inadequate description of
14 the purpose and need for the project is
15 additionally important to this issue of the
16 alternatives to analysis as well.

17 This is because the starting point
18 for a proper EI/EA exercise is a well-defined,
19 accurate and appropriate statement of the purpose
20 of the project.

21 The statement of project will,
22 among other things, significantly influence the
23 range of alternatives to that should be
24 systematically identified and evaluated by the
25 proponent.

1 This will pinpoint a preferred
2 project that is both needed and that contributes
3 more fully to sustainable development and causes
4 fewer adverse environmental effects compared to
5 other options.

6 So can the Minister's directive as
7 to the -- as being the alleged purpose or need for
8 the project, legally excuse the OPG from the
9 requirement in the CEAA and the EIS guidelines to
10 consider functional different alternatives to new
11 reactors.

12 We say no for the following
13 reasons: Consideration of functional alternatives
14 to the project, other ways to provide for need, is
15 required not just as a matter of good EA practice,
16 but also pursuant to the CEAA; its operational
17 policy statement and the EIS guidelines as we've
18 reviewed.

19 A reasonable range of functional
20 alternatives to the project would include
21 alternatives to the project such as conservation,
22 demand management, renewables generation and other
23 forms of services such as combined heat and power.
24 These were not considered in the EIS.

25 A reasonable range of alternatives

1 to the project should have been identified,
2 evaluated and considered as to the significance of
3 their environmental effects. This includes
4 cumulative effects of each option including the do
5 nothing option. Adverse environmental effects, as
6 you know, include effects beyond the biophysical
7 including effects on health and socio-economic
8 conditions among other.

9 As outlined in CELA's written
10 submission, and as was described in the Pembina
11 Institute's report to SAGE, Safe and Green Energy,
12 Peterborough, there are relevant and highly dynamic
13 factors in the Ontario energy policy context at
14 present.

15 Among other things, these include
16 the introduction of the *Green Energy Act*, the huge
17 responses to the feed-in tariff program, renewable
18 energy, the MicroFIT program for renewable energy,
19 the previous standard offer contracts for provision
20 of renewable energy and in addition there was
21 ongoing natural conservation and demand management
22 as a normal function of businesses upgrading over
23 time to newer equipment, as well as considerable
24 programming underway on conservation and efficiency
25 in the province.

1 These options should have been
2 considered in the EIS as functional alternatives to
3 the proposal for up to four nuclear generating
4 reactors.

5 So the EIS failed to situate the
6 project within the context of current energy policy
7 in Ontario even though it claimed to be based on
8 such policy. But it should have situated the
9 project in that context in describing both the need
10 and then the alternatives to the project.

11 Many matters pertaining to Ontario
12 energy policy have changed significantly since the
13 2006 directive and proposed IPSP which started this
14 process. But these changes were not evaluated in
15 respect of the need and alternatives.

16 OPG failed to describe the *Green*
17 *Energy Act* and these other opportunities.

18 These types of issues are expected
19 to be explored in the IPSP which is to be developed
20 and filed this summer.

21 As early indicated, that type of
22 process resulting approved IPSP would no doubt
23 provide much of the information about electricity
24 services, needs and alternatives which is currently
25 absent from this EIS.

1 Simply put, in the absence of any
2 credible or reliable evidence on need, the panel is
3 not in any position to make an informed judgment on
4 whether environmental impacts can be justified in
5 the circumstances.

6 Both the statute and the EIS
7 guidelines were clear about the requirement to look
8 at need and functionally different alternatives to
9 the Darlington new build project.

10 However, need was inappropriately
11 addressed by way of circular reliance on the
12 Minister's directive and alternatives to the
13 project were dismissed and not examined.

14 Accordingly, the Joint Review
15 Panel has not received essential information which
16 is necessary to its decision in the EA.

17 I have a brief comment on the
18 alternative means before turning to our conclusion.

19 Dealing with alternative means,
20 once the alternatives to analysis was completed,
21 then OPG should have selected a preferred project
22 which in practice could be a mix of different
23 options instead of a single discrete option based
24 on that analysis, and OPG should have then
25 conducted an analysis of alternative means as

1 required in section 16.2(b) of CEAA such as siting
2 location, reactor designs, cooling towers and other
3 matters, again with public input.

4 At that point, the site specific
5 details regarding construction, operation,
6 mitigation, monitoring and decommissioning could be
7 developed, again with input and consideration of
8 the implications of each operational option.

9 For this reason alone, in our
10 opinion, the review panel cannot and should not
11 recommend that the project be permitted to proceed.

12 There is simply insufficient
13 information and an appropriate level of detail to
14 reach the conclusion that the project will not
15 cause significant adverse environmental effects or
16 that such effects can be justified in the
17 circumstances.

18 Terms and conditions attached to
19 the subsequent licences cannot fix this fundamental
20 flaw in the EA process.

21 Before the review panel can
22 properly defer technical details to responsible
23 authorities in future licencing decisions, the onus
24 was on the proponent to demonstrate that it's
25 environmental assessment met all applicable CEAA

1 requirements and that the project met CEAA's
2 objectives regarding sustainable development.

3 Because the proponent failed to do
4 so on both counts, it would be unfair,
5 inappropriate and unlawful to leave critical design
6 details to be addressed post this environmental
7 assessment.

8 The requirement under the statute
9 to deal with need is required to be done now and
10 cannot be done later. Similarly, the evaluation of
11 alternatives to must be done at this stage of the
12 EA. It will not be relevant at later stages of the
13 project.

14 So in conclusion, in this case the
15 mere existence of a ministerial directive does not
16 objectively demonstrate a need for a facility of
17 this size, scale, capacity, timeframe, lifecycle
18 and impacts as proposed by OPG.

19 Aside from whatever evidentiary
20 weight should be accorded to the statutory
21 directive, its existence is not determinative of
22 need and does not satisfy the federal EA
23 requirements under CEAA.

24 Rather, the onus was on the OPG to
25 provide persuasive relevant evidence that the new

1 reactors are actually needed over the planning
2 timeframe.

3 However, not only has OPG failed
4 to do this but it is premature given the lack of an
5 approval of an IPSP yet in Ontario.

6 And furthermore, the evidence that
7 is before this panel is that there is insufficient
8 demand and sufficient supply of electricity and
9 related services from other alternatives as you
10 have heard from many intervenors, including Green
11 Peace, Pembina, OSEA and others.

12 And I think the point on this is
13 that there are many options which could supply the
14 needed mix of electricity, but they weren't
15 examined at all by the OPG.

16 CELA therefore requests that the
17 Joint Review Panel recommend against proceeding
18 further with this project based on the EIS before
19 you for these distinct reasons.

20 Firstly, for noncompliance with
21 CEA and EIS guidelines. Number 1, the EIS did not
22 properly describe the need or purpose contrary to
23 the CEA and the EIS guidelines. And Number 2, the
24 EIS did not properly describe or consider
25 alternatives to the project contrary to the CEA and

1 its EIS guidelines.

2 Secondly, inadequate information
3 is before you to recommend proceeding with the
4 project. The EIS and the environmental assessment
5 as a whole lacks sufficient information to find no
6 significant adverse affects given the lack of
7 choice of the means to carry out the project, such
8 as the preferred reactor technology.

9 Based on all of the evidence
10 before you from the hearing and the evidence
11 submitted, you must conclude that there will be
12 significant adverse effects in the areas of waste,
13 health, accident, risk, and ecological impacts,
14 among others, which cannot be mitigated, and you
15 certainly can't find a case of justification of
16 those effects on the evidence before you.

17 Thank you, Mr. Chairman, those are
18 our comments, and Mr. Lindgren and I would be happy
19 to answer further questions.

20 CHAIRPERSON GRAHAM: Thank you
21 very much.

22 I'm sure there are going to be
23 some questions, but before we do so, I think I'll
24 call a break, and come back because -- for time.
25 So we'll call a break and we'll be back at 3:25.

1 Thank you very much.

2 --- Upon recessing at 3:07 p.m. /

3 L'audience est suspendue à 15h07

4 --- Upon resuming at 3:25 p.m. /

5 L'audience est reprise à 15h25

6 CHAIRPERSON GRAHAM: Thank you
7 very much everyone for providing for the break, and
8 everyone take their seats and we'll proceed with
9 questions from panel members, and I'll start off
10 with Madame Beaudet.

11 --- QUESTIONS BY THE PANEL:

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

14 My question is regarding
15 alternatives. I've chosen your presentation
16 because you have done a very careful and detailed
17 study about this issue, because as you know, many
18 of the submissions we received talked about this
19 problem of alternatives not being taken care of
20 properly in the environmental impact assessment.

21 Now, if we look at -- there are
22 different things I'd like to address. The first
23 thing -- I mean, for me I have looked -- I have
24 reviewed projects since 1990. And I don't know any
25 project that the contacts hasn't changed.

1 I mean, the goal posts usually
2 evolve, whether a project comes in front of us and
3 the regulation, not just part of interim
4 regulation, and then when we write the report they
5 come into effect.

6 When the government, which happens
7 very often, changes and it's a different party and
8 the entire context changes in terms of what is
9 needed for -- whether it's energy or other domains.

10 So I feel this aspect usually, the
11 panels have to take that into account, and whenever
12 there are -- there are major changes it's usually
13 taken care of in the report.

14 If we look at my second point I'd
15 like to address with you, is alternatives. We have
16 here, OPG, Crown Corporation, but if you have a
17 company, a private company that would, for
18 instance, want to construct and operate an oil
19 refinery, the need for the project for them is just
20 there's an increased demand.

21 The purpose is to make more money,
22 you know, it's -- the alternatives they would have
23 to look at would be, do we have already a refinery
24 that we can expand? Do we have, within our
25 partners, are there any refineries that we can

1 outsource?

2 And then they would have to look
3 at these different options and see what would be
4 the least impact on the environment. But they
5 would also have to look, and I think CEA covers
6 provisions for that, what would be best
7 economically. I think you have to look at that.

8 So if we look at OPG here, I --
9 for us, we are open, I mean, to progress. I don't
10 think -- you know, we shut our minds on that, but
11 if we try to look with OPG what would be the
12 alternatives?

13 It's not because they're Crown
14 Corporation that they would have to look at
15 different possibility, like you're doing a
16 consultation on -- on an energy plan. And I'd like
17 you to comment on this.

18 You have OPG, who deals with
19 hydro, nuclear and thermo. They don't deal with
20 wind. So what would be the alternatives, you feel,
21 as if they were an ordinary company.

22 What are the alternatives, and
23 what they should look at in order to be more
24 efficient and to impact less on the environment?
25 Would it be to look -- if the hydro projects should

1 be increased, I think that would -- the Niagara
2 tunnel has already been done.

3 Would they look, for instance,
4 there's some decommissioning, they have decided,
5 some of the decisions have already been made.
6 Would -- should they increase, for instance, the
7 stations, the future stations or some of the
8 stations are being closed down and then should have
9 -- should have they looked at no, you don't close
10 this down because if we want to replace completely
11 the project, do it in a different way. We have to
12 look at other things.

13 I'd like -- I'd like to sort of
14 make a full circle of really what you would look at
15 and find that is acceptable?

16 MS. McCLENAGHAN: Thank you,
17 Madame Beaudet.

18 So, first of all, I agree, the
19 context normally would change over the course of a
20 major -- of a major project.

21 However in this case, OPG didn't
22 even purport to describe the need or the
23 alternatives to, even as the situation was when
24 they began, and at the time that they did their
25 environmental impact statement, and then no doubt

1 if they had done that, they would have had to
2 update it, as you would expect.

3 But they didn't do it, they said
4 they didn't have to because they had a minister's
5 directive.

6 Now, secondly, in terms of their
7 -- of their mandate, I took a look and there's
8 nothing in there enabling statute under the
9 *Electricity Act* that constrains the kind of
10 generation they can do.

11 They're simply to do generation.
12 And as you yourself noted, hydro power is one of
13 our major renewable sources of generation here in
14 this province.

15 They, themselves, have said that
16 one of the things they're looking at is
17 implementation of Ontario government policy on
18 energy, and certainly Ontario government policy on
19 energy includes a wider range of alternatives,
20 however, those were not outlined and examined in
21 this EIS or in any update.

22 But what would you look at? Some
23 of the things I included in my remarks would be
24 things like, you know, once you establish need,
25 once you go through that, then -- and you ask

1 questions around needs, such as -- such as I
2 posited? Does it have to be baseload? Are there
3 other ways to provide for reliability? So that's
4 part of identifying what it is you actually need.

5 And then when you determined that,
6 then you look at, how can you provide for that?
7 Are there options on the grid? Are there options
8 -- some of the services provided for electricity,
9 as you've heard from others, include heat, for
10 example.

11 Well, sometimes you can do other
12 ways of heat generation, or you can get more
13 efficiency with combined heat and power; renewables
14 evaluation, all kinds of renewables, solar, wind,
15 geothermal, biogas. There are many, many, many
16 options.

17 And I think the point for all
18 those presenters who have said to you to this
19 point, and OPG hasn't done this analysis and this
20 presentation to you, about what the alternatives
21 are. You've only heard that from various
22 intervenors.

23 And the bottom line point is,
24 there are numerous options, and they weren't
25 explored. I don't think anyone says they're

1 positing the only option that would work.

2 In fact, the presenter just before
3 us made that very point. It's one of a range of
4 portfolios that would work.

5 So regardless of the changing
6 landscape, they should have evaluated those in the
7 first place and then, yes, they could update them.

8 They could update them with things
9 like prices are changing in terms of the cost of
10 building some of these renewables; prices are
11 coming down in some cases; new efficiencies are
12 being realized.

13 You would update those kinds of
14 things, but to just dismiss out of hand any
15 requirement which is the federal requirement to say
16 it's actually -- this project is actually needed
17 and I would say beyond that because they're not a
18 private corporation -- they're a Crown corporation
19 -- they have even more of an onus to show that
20 there is a need in the public interest especially
21 when, as I said, in the first place, it's a risk-
22 laden project.

23 And you will have to grapple with
24 that on the justification exercise.

25 MEMBER BEAUDET: I agree with you

1 when you say it's a Crown corporation, but even if
2 you do a project, let's say with Hydro Quebec that
3 doesn't deal with wind, you won't ask them to see
4 how they can replace the megawatts they're
5 proposing with wind.

6 They may say that they have made
7 some efforts in order to be able to integrate in
8 their system that type of energy, but I don't see
9 on what a panel could base itself on requesting
10 from a proponent to examine options that are not
11 part of their competence and that's the basis, I
12 think, of my question.

13 OPG deals with hydro, nuclear and
14 thermal; not renewable energy except for hydro
15 electricity.

16 So I'm trying to sort of
17 circumscribe your requirements and we can ask it as
18 an undertaking. I mean what exactly are we looking
19 at?

20 MR. LINDGREN: Richard Lindgren,
21 for the record.

22 Just as I listened to your
23 question, Madame Beudet, I was thinking well, what
24 functionally different options could have been and
25 should have been on the table for consideration by

1 OPG and I could think of at least six just off the
2 top of my head.

3 Demand management; that's clearly
4 within the competence and jurisdiction and mandate.

5 Energy efficiency and conservation
6 programs; number two; that's something that OPG can
7 and should do.

8 Building new hydroelectric
9 facilities or expanding existing ones. Again,
10 those are options.

11 Importation of power; that's an
12 option that could be looked at.

13 Do nothing; what are the
14 implications of doing nothing?

15 Not that anybody would advocate
16 that, but all of the alternatives to analysis need
17 to be predicated or preceded by a reliable, robust
18 assessment of what the need is.

19 How much electricity needs to be
20 generated to meet the projected demand? Once
21 you've quantified that, once you've established
22 that through evidence, not through a mere
23 ministerial fiat or directive, that will help
24 inform the range of reasonable alternatives too.

25 So that's why we keep harping on

1 the fact that the first critical step has to be
2 documentation of need. And waving around a
3 ministerial directive just doesn't go far enough;
4 doesn't go far enough at all.

5 But once you've assessed need in a
6 robust and credible manner, then you can look at
7 well, how can I actually deliver that; what do I
8 have to do? What should I do having regard for the
9 environmental pros and cons of each alternative?
10 And at the end of the day, hopefully, you'll make
11 an informed choice.

12 And that unfortunately, has not
13 happened and as my colleague has pointed out, the
14 only real discussion of alternatives to this come
15 not from the Proponent, but from the intervenors in
16 this process and I say to you with the greatest of
17 respect that all material times the onus was on the
18 Proponent to comply with the act by looking at need
19 and alternatives too in a serious, credible manner.

20 MEMBER BEAUDET: Thank you.

21 I'll go to OPG and I'd like --
22 first, are you involved in programs with respect to
23 conservation and efficiency of energy?

24 MR. SWEETNAM: Albert Sweetnam,
25 for the record.

1 First of all, obviously, we
2 disagree with what CELA is saying. Basically, our
3 mandate is given to us by the Minister of Energy,
4 but the Ministry of Energy is represented by the
5 Minister of Energy.

6 Our mandate is posted on our
7 website and it clearly excludes renewables. Again,
8 demand planning and how much electricity is
9 required in the province as well as conservation
10 efforts, et cetera, are outside of our mandate.
11 These are handled by the Ministry through their
12 different organizations including the OPA.

13 MEMBER BEAUDET: Your mandate, I
14 believe, was to maintain 14,000 megawatts of
15 nuclear power.

16 Is it possible to look at the --
17 within your competence to look at different ways to
18 present, let's say, two scenarios that would look
19 at the different aspects of how it could be done
20 that would be different than nuclear power -- 4,800
21 megawatts of nuclear power?

22 MR. SWEETNAM: Albert Sweetnam,
23 for the record.

24 In addition to our mandate, we
25 also have to follow directives that are provided by

1 the Ministry through the minister and I'll just
2 read quickly what directive was on June the 16th,
3 2006.

4 "The Province of Ontario, as
5 represented by the Minister
6 of Energy, issued a directive
7 to OPG to implement a nuclear
8 component of its 20-year
9 plan. The relevant portion of
10 that directive stated:
11 'Recognizing that maintaining
12 the current level of nuclear-
13 based load through 2025 would
14 require a combination of
15 refurbishment of existing
16 units and construction of
17 replacement units and given
18 the long lead times required
19 for licensing approvals of
20 these activities, I am
21 directing OPG to begin
22 feasibility studies on
23 refurbishment of its existing
24 nuclear units. As part of
25 this initiative, OPG's

1 directed to also begin an
2 environmental assessment on
3 the refurbishment of the four
4 existing units at Pickering B
5 and D, begin a federal
6 approval process including an
7 environmental assessment for
8 new nuclear units on an
9 existing site.' "

10 In terms of how we handled the
11 alternatives that would fall within that directive,
12 I'll just read this straight out of the EIS:

13 As indicated in the EIS guideline,
14 Section 7.2, alternatives to the project are the
15 functionally different ways of achieving the
16 projects purpose and need that are within the
17 control and/or interests of OPG. Such alternatives
18 need not, however, include those that are contrary
19 to Ontario's formal plans or directive.

20 And we identified that the
21 possible alternatives to the project that are
22 within the control of OPG that could be considered
23 are: 1) do nothing; 2) seek approval for a modified
24 project with a generating capacity of less than
25 4,800 megawatts; 3) seek approval for the project

1 at a different location; and 4) seek approval for a
2 non-nuclear generating option.

3 All of these possible alternatives
4 to the project are deemed to be unacceptable for
5 the following reasons. OPG's responsibility is to
6 comply with the provincial directive.

7 Alternatives one and four would be
8 in clear breach of the directive and alternatives
9 two and three would be inconsistent with the
10 clarifications of that directive that have been
11 subsequently issued by the provincial government.

12 Alternative two would be
13 inconsistent with the province's express objective
14 of having flexibility in its long-term planning
15 decisions.

16 The province will consider
17 feasibility of both refurbishment of existing units
18 and the construction of new units and determine the
19 appropriate generation mix.

20 Maximizing the new capacity that
21 could be installed at the Darlington site will
22 provide the province with the greatest flexibility
23 and determine the most appropriate mix of these to
24 maintain the nuclear-based load component of its
25 energy plan.

1 done no cost benefit analysis looking at other
2 options that you could compliment the 48 -- that
3 you could replace the 4,800 megawatts by
4 hydropower?

5 MR. SWEETNAM: Albert Sweetnam,
6 for the record.

7 That's correct. That's -- that
8 would be contrary to the directive of the province.

9 In terms of our hydroelectric
10 capacity, we have a completely different -- that is
11 also handled in the long-term energy plan that's
12 being put forward by the Ministry of Energy in
13 terms of what the hydroelectric development will be
14 in the province.

15 We have an -- we're developing Low
16 Mattagami and we're looking at several other
17 developments that will fulfill the hydro portion of
18 the overall mix, electricity mix for Ontario.

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

21 CHAIRPERSON GRAHAM: Mr. Pereira?

22 MS. McCLENAGHAN: Mr. Chairman, I
23 wonder if I could follow up on that point for a
24 moment?

25 CHAIRPERSON GRAHAM: I think I'll

1 go to Mr. Pereira ---

2 MS. McCLENAGHAN: Okay.

3 CHAIRPERSON GRAHAM: --- and then
4 I'll let you -- we'll give you some time.

5 MS. McCLENAGHAN: Thank you.

6 MEMBER PEREIRA: I have no further
7 questions.

8 I was going to go to Ontario Power
9 Generation what Mr. Sweetnam has -- well, I don't
10 know whether you have any more to add, go ahead?

11 MR. SWEETNAM: Albert Sweetnam,
12 for the record.

13 I had just asked somebody to print
14 out the mandate from the website. So I just think
15 that I would actually just read the one section
16 that deals with this issue and it's part of a
17 Memorandum of Agreement between Her Majesty The
18 Crown and Ontario Power Generation.

19 And in Section A, Mandate, Item 5,
20 it says clearly:

21 "OPG will not pursue
22 investment in non-
23 hydroelectric renewable
24 generation projects unless
25 specifically directed to do

1 so by the shareholder."

2 CHAIRPERSON GRAHAM: I know that's
3 not an undertaking, but would you provide that to
4 the Secretariat? We're prepared to --

5 MR. SWEETNAM: Albert Sweetnam,
6 for the record.

7 Yes, we will.

8 CHAIRPERSON GRAHAM: Thank you.

9 Madam Beaudet, do you have
10 anything further?

11 MEMBER BEAUDET: Well, I was just
12 wondering if there is any clause or so that you can
13 not do anything within your competence of thermal
14 energy unless you are directed to do so?

15 MR. SWEETNAM: Albert Sweetnam,
16 for the record.

17 I'll just read the section on
18 thermal. It's item -- it's under Item A, Mandate,
19 Section 6:

20 "OPG will continue to operate
21 its fossil fleet, including
22 coal plants according to
23 normally commercial
24 principles, taking into
25 account the government's coal

1 replacement policy and
2 recognizing the role that
3 fossil plants play in
4 Ontario's electricity market.
5 Until government regulation
6 and/or unanimous shareholder
7 declarations require the
8 closure of coal plants."

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

11 CHAIRPERSON GRAHAM: Now, Ms.
12 McClenaghan, do you want to --

13 MS. McCLENAGHAN: Yes, thank you,
14 Mr. Chairman.

15 A couple of things with respect to
16 the points that OPG just made. First of all, the
17 MOU that was just read is interesting, but that
18 doesn't preclude OPG dealing with those kinds of
19 projects in the future.

20 And given that they state the need
21 is to comply with Ontario Energy Policy and Ontario
22 is its shareholder, again that gets them right into
23 the circular reasoning that they say they're here
24 to carry out a directive they've been given and
25 therefore not -- need not look at alternatives, but

1 the CEAA requires looking at alternatives.

2 And I think it's clear that they
3 could be required to do such projects if they were
4 directed by their shareholder, Ontario.

5 Secondly, in terms of the
6 *Electricity Act*, the objects of Ontario Power
7 Generation Inc. include in addition to any other
8 objects, owning and operating generation
9 facilities. That's Section 53.1. It doesn't say
10 that they may not operate any particular type of
11 generation facility.

12 Thirdly, the FAQs on their website
13 indicate -- and I apologize, I didn't get the date
14 of this particular page. It indicated that they
15 operate three nuclear stations, five thermal
16 stations, 65 hydroelectric stations and two wind
17 generating stations.

18 It may be that that was pre the
19 Bruce transfer, but the point is that they have in
20 the past operated wind and they could in the future
21 if requested by the province.

22 So what we have here is -- is a
23 little bit of a situation where alternatives are
24 not being evaluated because of a Minister's
25 directive and yet at any point in time, they may

1 well find themselves operating those kinds of
2 facilities.

3 Some of the range of options that
4 they do operate, like Moore Hydroelectric, the new
5 Mattagami Project. Switching some of the thermal
6 stations may in themselves affect the need for
7 nuclear, the need for base load, those kinds of
8 issues. And, again, they just didn't evaluate
9 them.

10 The section that Mr. Sweetnam read
11 to you is exactly what they do have in their EIS
12 and that's all they have in their EIS on those
13 options. That's it.

14 They said we don't have to
15 evaluate them because they're not consistent with
16 the Minister's directive. That doesn't meet the
17 requirements of CEAA.

18 CHAIRPERSON GRAHAM: Thank you.

19 Mr. Pereira, do you have anything
20 else? Madam Beaudet?

21 With that, then, we will go now to
22 -- to the floor and the first one I will go is to
23 OPG, do you have any questions or comments?

24 MR. SWEETNAM: Albert Sweetnam,
25 for the record.

1 No questions, but just a generic
2 comment. That we feel that CELA's presentation is
3 flawed on several legal -- on the legal position
4 they've taken and several aspects of that legal
5 position.

6 And we -- if the Panel would like,
7 we could respond in writing to this or we could
8 include it as part of our final submission, as the
9 Panel wishes?

10 CHAIRPERSON GRAHAM: I don't want
11 to direct you how to -- how to do things, but I
12 think probably the logical way would be in your
13 final submission to address that because you have
14 other interventions that I imagine you would want
15 to address at that time, so in your final comments
16 I would suggest that's probably the best way.

17 MS. McCLENAGHAN: May I, Mr.
18 Chairman? The issue though is that Mr. Sweetnam
19 indicates they have quarrels with our legal
20 analysis and their submission will follow our final
21 submission, so we will have no opportunity to
22 see what they say are the flaws and respond to
23 those.

24 CHAIRPERSON GRAHAM: Look, there
25 is going to be other information that we have to

1 address, but you've made your intervention today
2 and we have to -- we'll take that as everyone, as
3 intervention we've had and address the certain
4 questions that come out of it and see where we're
5 going.

6 I think that really I'm going to
7 allow everyone to make a final summation and submit
8 it, so what we'll go forward with I think we have
9 to address it then and we appreciate your
10 intervention.

11 OPG -- or not OPG, but CNSC, do
12 you have any questions?

13 MR. HOWDEN: Barclay Howden, no
14 questions. Thank you.

15 CHAIRPERSON GRAHAM: Departmental
16 agencies, do you have any? No, okay.

17 Then, now we have from the floor,
18 and I guess we have got an extra one, but, well,
19 okay, Tienco Posthumus, you have a question. And
20 is this from ---

21 --- QUESTIONS FROM THE PUBLIC:

22 MR. POSTHUMUS: I was going to ask
23 a question and get some clarification, but we've
24 just been discussing my question for the last 15
25 minutes.

1 And that is the fact that OPG has
2 been restricted by the mandate from the Ontario
3 Government as to how far they can go in producing
4 electricity. And this was a movement that was
5 started by the NDP some time ago, and the
6 Conservatives and Liberals picked up on it.

7 I only found that out this weekend
8 myself after doing some research and it's kind of
9 disturbing to me to hear that, but -- and I think
10 the government's position on that is -- the Ontario
11 Government's position is that they desire public
12 interest -- or private companies to take over or be
13 involved in producing alternative energy such as
14 wind and solar or -- or thermal, underground. And
15 the reason being, it would stimulate the economic
16 growth in Ontario.

17 So my question has already been
18 answered. Thank you.

19 CHAIRPERSON GRAHAM: Thank you
20 very much.

21 The next one was -- was, okay, to
22 be from F.A.R.E and I guess they have given their
23 time up to Mr. Kalevar.

24 MR. KALEVAR: Thank you, Mr.
25 Chairman.

1 My question is a bit of what just
2 has been discussed. Is the minister acting outside
3 of the law by giving the directive he has given
4 because it seems to -- definitely seems to
5 contravene CEA, so I think that is a very big
6 judgment, and I don't know if this Commission can
7 really make that judgment? That's another
8 question.

9 CHAIRPERSON GRAHAM: OPG, do you
10 wish to respond?

11 MS. McCLENAGHAN: Mr. Chairman, I
12 don't think the minister has acted outside the law.

13 CHAIRPERSON GRAHAM: I don't think
14 so either, but Mr. Kalevar ---

15 MS. McCLENAGHAN: He can issue ---

16 CHAIRPERSON GRAHAM: Mr. Kalevar,
17 this is his 73rd question, and I ---

18 MS. McCLENAGHAN: Okay.

19 CHAIRPERSON GRAHAM: --- always
20 let them go, and I -- I don't think any -- it's not
21 -- we may not agree with policy, we may not agree
22 with certain things, but I don't think the minister
23 is operating outside the law, no.

24 MS. McCLENAGHAN: No. He
25 absolutely may issue the directive. It's provided

1 in the *Electricity Act*. The only question is,
2 then, does that excuse compliance with CEA in this
3 CA. That's where we have a difference of opinion
4 with OPG.

5 CHAIRPERSON GRAHAM: I hope that
6 Mr. Kalevar understands that.

7 Now, I guess I just -- the thing
8 that I do now is thank Ms. McClenaghan for coming,
9 and also for bringing Mr. Lindgren with you, and we
10 thank you for your intervention. We thank you -- I
11 thank you also for all of the precise questions
12 that you have put to the panel over the last two
13 weeks, and we thank you for your keen interest in
14 this subject.

15 We will now -- the floor will now
16 go to the next intervention, which is an
17 intervention by Mr. Zach Ruitter, and it's PMD 11-
18 P2.45.

19 So, Mr. Ruitter, you know the --
20 know the rules of this procedure, and I ask you to
21 proceed.

22 --- PRESENTATION BY MR. RUITER:

23 MR. RUITER: For the record, Zach
24 Ruitter.

25 I am here today as the host of my

1 own citizen's journalism Youtube show called the
2 Anti-Nuclear News Now. It's available on Youtube
3 on the channel Fight Pollution, and it is --
4 doesn't make a claim of unbiasedness. It is
5 activist journalism, and it is very incredible,
6 from my point of view.

7 I'm also a writer for Trent
8 Arthur, Peterborough and Trent University's
9 independent press, and a writer for rabble.ca, an
10 alternative news media website online and
11 associated with Trent University as you can see
12 from my T-shirt.

13 I'm very happy to follow CELA and
14 the debate that just happened because it does play
15 into what I was coming to here to speak to you
16 today.

17 In terms of economics, I would --
18 and the question from Ms. Beaudet in terms of best
19 economics, I would point you to an article by Neil
20 Reynolds, March 23rd in the Globe and Mail, Report
21 on Business, and the title is, "Ottawa Needs to be
22 Weaned from its Nuclear Obsession"é

23 And just in terms of this -- this
24 last conversation, what the last questioner brought
25 up was whether they -- the minister was breaking a

1 law, and I don't think that that's the case, but
2 from when I hear from Mr. Sweetnam that the mandate
3 by the Ministry of Energy clearly excludes
4 renewables.

5 It is somewhat alarming to me if
6 this is their mandate and the *Green Energy Act* and
7 CELA request the look at renewables and that
8 arguably for the sake of this environmental
9 assessment, that if that lack of competence or
10 arguably incompetence from Ontario Power
11 Generation has not really sort of changed its tone
12 throughout these -- these lengthy hearings, that by
13 virtue of this, as an ordinary citizen, I find it
14 slightly alarming that the application is still
15 being considered as such in front of you today.

16 And I would prefer, and I think
17 hopefully in the future, and if it doesn't happen
18 on this round of nuclear contestation, it may
19 happen on the next generation nuclear contestation,
20 that we may return here and speak much more
21 collaboratively on how to phase out nuclear plants
22 and to work on decommissioning solutions.

23 I'll remind the panel that the
24 Douglas reactor point is sitting in a 50-year cool-
25 down plan, and there's no plan for it afterwards.

1 The Nuclear Waste Management Organization Advisory
2 Council is still looking for a host community to
3 have a deep repository for nuclear waste, which has
4 to happen in the next eight years, and so far there
5 aren't really any volunteers.

6 And I know someone has suggested
7 kind of humerously that if it should go anywhere,
8 it should go below Bay Street because those who use
9 the power and profit from the power might be --
10 might best well have a very local concern.

11 As you can see, I'm from Trent
12 University, and we have a very long history of
13 nuclear contestation and a record of excellence of
14 environmental studies and science.

15 You may know of Paul McKay who
16 worked with Ralph Nader for something called the
17 PIRG, Public Interest Research Groups, and Paul
18 McKay started the Birch Bark Press, which was a
19 complementary press to the Clamshell 6:40 Alliance
20 and then it became the Anti-Nuclear Press.

21 And it was distributed across
22 North America with a circulation of about 5,000
23 copies per month, and it was a newspaper magazine,
24 and we do have the archive available in our OPIRG
25 office.

1 And I find that a lot of the -- a
2 lot of the -- the arguments and the articles and
3 investigation in it, and a lot of this really
4 interesting history, compounds the relevance of
5 these arguments that these -- that these people
6 were making on the first round.

7 And as much as the Peterborough
8 community is interested and I have a lot of people
9 that I'm reporting back to with my Trent Arthur and
10 my news show, a lot of parents as well from the
11 Prince of Wales School Community that Mr. Graham
12 has received their submissions as a part of the
13 CNSC and General Electric's application to produce
14 LEUs directly across the street from the children's
15 playground.

16 This was -- this is my colleague
17 Amanda Lickers with Roy Brady of Safe and Green
18 Energy Peterborough addressing Mr. Binder and Mr.
19 Graham at the hearings. And what they were able to
20 show is that General Electric did all that they
21 could to avoid a public consultation, in our
22 opinion, and the opinion of the very late
23 submission intervenors from the Prince of Wales
24 School Community.

25 And I still -- I've mentioned to

1 the JPR that we -- we were the only intervenors
2 from Peterborough, but the application was also for
3 -- for the Toronto GE facility at Davenport and
4 Lansdowne, and there was not a single intervenor
5 from Toronto.

6 So it's my contestation that if
7 the Joint Panel Review and CNSC does not wish to
8 investigate this further, that I will, and I'll
9 knock on the doors of everyone surrounding that
10 plant and ask them if they know of any Notice of
11 Public Consultation for that.

12 And if they didn't, I will be
13 bringing the results of that back to the Joint
14 Panel of Review at CNSC and General Electric.

15 We like to think of what we did as
16 a social justice version of David versus Goliath
17 with General Electric.

18 And I know General Electric has
19 been on the news recently for evading taxes in many
20 jurisdictions and paying no taxes in the United
21 States, and they were proposing to provide fuel
22 rods for this next generation of what -- up to four
23 different technologies.

24 Here I have just some photo
25 documentation -- I know -- I'll provide these as

1 copies to the review board. And this says -- this
2 is from the first round of contestation of nuclear
3 protests, and it says Stop Darlington, Fund Human
4 Needs, and this is from that OPIRG Group.

5 A lot of them look like the
6 students look like today. They've got, like,
7 shaved heads on the side and they look like they
8 managed to have some fun with it and become
9 educated throughout the process and become sort of
10 responsible members of the community.

11 Here's another one. Recently, we
12 had some guest speakers at Bagnani Hall at Trent
13 University. The evening was sort of in response to
14 Fukushima so people could find out some information
15 about Canada's nuclear history, which very much
16 ties into all the events that have led up to today
17 and how the decision that comes from the joint
18 panel review will be a part of such events.

19 This is a moratorium signed by the
20 members present and I'll read this out to you and
21 pass it to you. It says:

22 "We the undersigned gathered
23 at Bagnani Hall, at Trent
24 University, to screen Peter
25 Blow's film, 'Village of

1 Widows' and Blake
2 Fitzpatrick's presentation on
3 work by the Atomic
4 Photographers Guild, this
5 document signifies a
6 citizens' moratorium that
7 unequivocally rejects nuclear
8 expansion anywhere in
9 Canada."

10 Peter Blow's film, which I may --
11 might be able to make available to you or anyone in
12 the audience should they wish to contact me.

13 And I will be giving a copy to Ms.
14 Swami and her crew from OPG documents -- how the
15 uranium mined from Great Bear Lake, at the Dene
16 community, was the same uranium that was
17 manufactured in Port Hope and then eventually
18 dropped on Nagasaki and Hiroshima.

19 And Blake Fitzpatrick, as part of
20 the Atomic Photographers Guild, took some photos
21 around Port Hope, one very famous where one slipper
22 was taken away because it was radioactive and the
23 other one was still radioactive and it belonged to
24 Marcel Pochon, an employee of the -- I believe
25 Cameco. But then -- so this is -- this is very

1 much tied to our community of Trent.

2 There is another book here that
3 was produced by Peter van Wyck. I think it was in
4 -- I'll point it to the audience. I think he had a
5 grant to write it and it's called "Highway of the
6 Atom," and it's a travelog.

7 Van Wyck went up to Great Bear
8 Lake and he interviewed members of the community
9 and he followed the story of the atom all the way
10 to Hiroshima. And he had people from the Dene
11 community meet with survivors of Hiroshima and one
12 -- and he calls the story of nuclear and its
13 continued expansion in Canada as a story of the
14 aporias or cul-de-sacs of responsibility or the
15 infinite character of responsibility.

16 And it's a wonderful scene to see
17 the Dene from beginning to end, maybe the full
18 circle that Ms. Beaudet asked CELA for, the full
19 circle of the effects of nuclear.

20 When the Dene met with the
21 Japanese -- and one of the things that was
22 mentioned was that -- was that there are those in
23 Japan who can't remember because they're too young,
24 but then there are those who can't forget and, as
25 we go into another era of kind of nuclear

1 catastrophe in Japan that this statement is once
2 again renewed.

3 And I think I recognized that.
4 And Ms. Swami, from seeing this a couple of years
5 ago, I don't know if -- if this is her, but it
6 says, "This little nuclear" ---

7 CHAIRPERSON GRAHAM: Mr. Ruiter,
8 just -- the only thing is ---

9 MR. RUITER: Yeah.

10 CHAIRPERSON GRAHAM: --- we don't
11 single out people like that.

12 MR. RUITER: Okay. Then I'll talk
13 about OPG.

14 CHAIRPERSON GRAHAM: It's not in
15 the role to single out people, so I would suggest
16 you have time for your presentation. We've read
17 your intervention, so you know the topic, so we
18 appreciate you go on, but we do not --

19 MR. RUITER: Okay.

20 CHAIRPERSON GRAHAM: -- we do not
21 use --

22 MR. RUITER: Point of order taken.
23 I'll make a point about the advertising in the
24 nuclear industry.

25 Carol Gore, in the Toronto Star,

1 has recently branded something or coined a term
2 called narrow casting as opposed to broadcasting.

3 And I have information that the
4 Atomic Energy of Canada Nuclear Association
5 regularly conducts opinion polls and then they use
6 the results of the opinion polls to target people
7 who are on the fence about nuclear energy, and that
8 young mothers who were on the fence because they
9 didn't know whether it was bad for the environment
10 or good for climate change, so then a campaign was
11 given to them.

12 CHAIRPERSON GRAHAM: But --

13 MR. RUITER: Okay, I'll continue.
14 So I think it's a little unfair.

15 This brings me to the body of my
16 presentation, that ---

17 CHAIRPERSON GRAHAM: No, we just
18 don't attack personalities.

19 MR. RUITER: We -- we don't --
20 we're not attacking personalities, but, I mean, as
21 a representative and on the billboard, it's not
22 just a model, it's a person.

23 So this brings me to my
24 presentation that you see me before you here today
25 as an ordinary citizen. I'm speaking for some of

1 reactor.

2 Palisades, I believe, sits on Lake
3 Michigan shores and they have been storing their
4 radioactive waste in silos on the shore in direct
5 contravention of NRC regulations since 1992.

6 And Fermi 2 reactor, also in
7 Michigan -- it's been found that since -- from '86
8 to 2006, that their diesel backup generators had
9 not been operable, so while I do commend Ontario
10 Power Generation's safety record thus far,
11 notwithstanding a 73,000 litre leak from the
12 Pickering station while these hearings did occur on
13 March 18, I believe that there are more pressing
14 issues right now than even meeting the needs of
15 energy needs as they are right for the future when
16 the Palisades nuclear plant is storing this much
17 radioactive waste on the shores of Lake Michigan
18 which can contaminate the water of -- drinking
19 water of Windsor and much of Canadian interest, so
20 I say that safety before energy needs needs to be
21 looked at.

22 I'd also like to point you to Ann
23 Sacks, who is an environmental lawyer, has a blog
24 called Enviro Law and has linked to a new study
25 called the Royal Society of Mathematical and

1 Physical Engineering Sciences.

2 And they've produced something
3 that I think is of the utmost importance to whether
4 we can consider threats credible or not and we can
5 accept these sort of figures of one in a billion
6 years.

7 And this study is about climate
8 forcing of geological and geomorphological hazards,
9 and I'll be providing a copy of that study to all
10 the stakeholders present.

11 It kind of says that with climate
12 change and with the evolution of earth, even if
13 it's caused by man or not, that predicting seismic
14 events is subject to change just as is demonstrated
15 by Fukushima and the reassurances that were given
16 to those people, that Fukushima was safe.

17 So as an ordinary citizen from the
18 reading that I've done and the speaking I've done
19 with my community members and my Elders, such as
20 Mrs. Lawson and Holly Blefgen, that it seems to me
21 that those reassurances, since they didn't work,
22 kind of discredit the reassurances that OPG may
23 give and that the Joint Review Panel may accept in
24 terms of questions of credible and incredible.

25 How am I doing for time by the

1 way?

2 CHAIRPERSON GRAHAM: You have
3 approximately -- about ten minutes -- eight minutes
4 to be exact.

5 MR. RUITER: Okay. Thank you.

6 So in the back and forth of these
7 questions -- well, I'll just say right now, I am --
8 there was another professor at the Bagnani Hall
9 named Ian McLaughlin, a professor of Cultural
10 Studies Americus. He's kind of been watching this
11 at Trent and he stated that, you know, there seems
12 to be a widespread suppression of information and
13 that people feel that their livelihood is at stake
14 if nuclear doesn't continue. And there's this
15 deliberate suppression, to sort of maintain things.

16 And there'll be four questions
17 written down and I will be distributing them
18 amongst the stakeholders here today, during my
19 question period and I would give them over, and
20 they present some research that I've done and some
21 investigation that I've done that there are
22 possibly three very serious cover-ups that have
23 happened by Ontario Power Generation within the
24 last couple of years.

25 And I've just come across this

1 information before I was interested in nuclear
2 because I worked as a beekeeper in Indian River,
3 also at a dairy farm.

4 And the first thing that I will
5 ask them to address are these questions which
6 suggests that OPG has increasingly been testing the
7 milk from dairy farms in the proximity of the
8 reactors.

9 I don't know if this is standard,
10 but if it is -- and if it's not I'd like to see the
11 information from these tests and I'd like to see
12 how they test and have comprehensive information
13 about them.

14 The second one is from a fireman
15 that I met and I won't tell the name because I
16 don't want to -- you know, I don't want to risk
17 anyone's livelihood here, but he responded to the
18 scene at an OPG nuclear reactor where an employee
19 had wilfully either suicidally or wilfully entered
20 a radioactive area without protective gear, and
21 died a death of radiation poisoning.

22 And I can't find any information
23 about this and I've asked the Joint Review Panel
24 for some information about this through Kelly McGee
25 to have some more information and I have not met

1 any responses.

2 And I know these are serious
3 allegations, but what I'd like is some confirmation
4 or maybe some -- maybe some co-ventures with the
5 Information Commissioner, *Access to Information Act*
6 so we can sort of make these -- rest assured that
7 these things didn't really happen or they didn't
8 happen the way I'm saying.

9 And if I don't really -- if I'm
10 not satisfied with these answers, then I will
11 investigate personally. I'll ask for stories,
12 knock on doors, go to the dairy farmers that told
13 someone that I know that OPG was testing the
14 radioactivity of the milk because that's one of the
15 first places that radiation leaks that are not
16 recorded, would show up.

17 Professor Alicja Zobel is a
18 Chernobyl survivor and associated -- and is a
19 highly qualified researcher at Trent University,
20 who is arguably responsible for kind of persisting
21 or spamming parliament so much until they labelled
22 transfats on grocery store foods.

23 And I met with Zobel I guess on
24 Tuesday morning and interviewed her for the Arthur
25 and she has Geiger meters and she's well published

1 and travels.

2 And she basically summed up
3 Fukushima for me by saying that if the reaction,
4 which is the meltdown or the catastrophic leak,
5 happens, how many times do you need to repeat it
6 before a standard deviation is proven. And she
7 said for this reason, Chernobyl had to be because
8 we need to learn from this.

9 (SHORT PAUSE/COURTE PAUSE)

10 MR. RUITER: This is where I
11 always break down in tears and I'm going to try not
12 to do it right now, but when I was here listening
13 to Helen Caldicott when she said she read a book
14 that branded her soul when she was 16, and it
15 instantly transported me back to when my father
16 used to read me and my younger brother, who is now
17 a medical student, he used to read me a book called
18 Sousreal (ph), right between when we were about to
19 go to bed.

20 And it was the story of Montreal
21 in the future. And in this Montreal they don't
22 live on the Mount Royal. They live in the Sousreal
23 (ph) and I think it's a pun on surreal.

24 And their environment becomes so
25 polluted that they irradiated it through nuclear

1 war, because we could have war; it's pointed at us
2 right now and Canada's nuclear expertise is
3 actually a result of the Manhattan Project and
4 their exporting of uranium that was -- eventually
5 became part of the bomb that struck in Hiroshima
6 and Nagasaki and then eventually part of the
7 technology produced by our friend corporation --
8 Peer Masons' Corporation and General Electric that
9 just, you know, didn't -- I know you looking at the
10 time, thank you, Mr. Chairman.

11 And just in talking about what is
12 so surreal here, is that we're all on different
13 tables, but I thought they would just come back to
14 the table and maybe have maybe one representative
15 of each of these parties sit at a table and then
16 work something out, at least something that we can
17 agree on, moving forward because I know we're
18 sitting in a church right now, and I feel like I'm
19 addressing the nuclear church and this is the
20 church of the atom.

21 And I'm appealing to you and what
22 you think for your ancestors and listen to the
23 science and listen to these alternatives and
24 realize that the ones that are passionate and have
25 the hope sit here in front of you.

1 And I know this is hard for you to
2 have the task, but as I look at the OPG and
3 sometimes the CNSC, they are carrying out their
4 mandate and they're doing a wonderful job, but
5 they're paid to say what they're saying.

6 I haven't received any kind of --
7 I'm not paid to write my articles. I've taken time
8 off of my other work. Well, I've had time because
9 the bees are in hibernation and I'll be getting
10 back to the bees soon.

11 But I'm just appealing to you to
12 say that we have up to \$35 billion and we have a
13 lot of options and I'd like to work together.
14 Thank you.

15 CHAIRPERSON GRAHAM: Thank you
16 very much, Mr. Ruiter, for a very passionate
17 intervention.

18 I want to assure you over the last
19 11 or 12 days, of 11 or 12 hours a day, that we
20 have tried to be fair with everyone. And there has
21 been a lot of intervenors that have intervened in
22 opposition. There have been intervenors that have
23 intervened on behalf of the nuclear industry.

24 But we, as a panel, take our job
25 very seriously and we believe that that job is

1 ultimately to get a decision, and we appreciate
2 your intervention.

3 I will start off questions, Mr.
4 Pereira, do you have any questions?

5 --- QUESTIONS BY THE PANEL:

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

8 In your intervention, one of the
9 areas in which you expressed concern about is
10 consultation with respect to some of the proposals
11 brought forward in the regulatory process done by
12 the CNSC.

13 But I'm focusing more now on this
14 particular proposal before us, the environmental
15 assessment for constructing the new reactors at
16 Darlington.

17 And as you know the environmental
18 impact statement prepared by Ontario Power
19 Generation was issued a while ago and has been out
20 for public comment for a considerable period of
21 time.

22 And this panel has considered the
23 issues brought forward by the public and by various
24 organizations on the matters raised in the
25 environmental impact statement.

1 So we've spent a fair period of
2 time considering those inputs, responding to those
3 questions, asking Ontario Power Generation to
4 respond to the questions raised.

5 And so I don't know whether you
6 have considered what has gone on and, you know,
7 except that a considerable period of time has been
8 devoted to trying to obtain input from the public
9 and from interest parties.

10 And of course this hearing going
11 on over -- close to three weeks is an attempt to
12 engage the public and to engage anyone who is
13 interested in providing a view, an opportunity to
14 come forward.

15 So I don't know whether you --
16 you're of the view that the consultation that has
17 gone on as part of this process has been fair and
18 open. What's your feeling on that?

19 MR. RUITER: Zach Ruitter, for the
20 record.

21 Yeah, it is -- it is a good
22 question and I think that the consultation process
23 that we have here today is as result of hard work
24 of the environmental community in terms of bringing
25 the -- both government and energy distributors and

1 corporations and fellow citizens to account for our
2 shared environment.

3 And I think that activists need
4 their due. Like, looking at the Nuclear Free Press
5 and there have always been problems with -- with
6 consultations and the way they're run.

7 I really feel like back to the
8 issue of credibility that a lot of what you
9 continue to do here, you might even be mandated to
10 do, is to discredit and dismiss some of the
11 information that the citizens bring to you today
12 because you were asking me if I was aware of this
13 by the CEAA Funding Guideline for this project.

14 I was not even aware of an
15 expansion. I was only made aware of it in November
16 at the last moment when the Prince of Wales'
17 parents were aware the GE was putting in this
18 application for an amendment, a ten-year licence
19 renewal and so I've just jumped onboard.

20 And there is no way that one
21 single person can be up to date on ever single
22 document. And I know in my conversation with one
23 of the co-managers of this -- this panel here, that
24 I put -- I put a request that the webcast be more
25 accessible to people with not necessarily the best

1 technology.

2 That it could be shortened
3 into -- like, the webcast that you would see the
4 next day shortened into segments that correspond to
5 the different presentations, so if I wanted to see
6 Ontario Water Keeper, I could -- I could see it
7 because right now, it -- there are many people who
8 in my community including John Etches who I found
9 out said that he can't access it on his Mac and it
10 takes way too long to upload, so I asked that
11 question, if there could be something that could be
12 done? And I said, when could I expect a response?

13 I didn't receive a response, but
14 the only response I received from said co-manager
15 was that when I said -- when I was making the
16 question about the cross-talk that Patricia Lawson
17 asked for was that this co-manager said that this
18 is not a court of law.

19 And then I asked back and, you
20 know, I'm sorry if this seems argumentative, but,
21 you know, to answer your question, I don't think
22 that these -- that these hearings -- while they are
23 a step in the right direction, they're not what we
24 need, which is symbolically a table that we can all
25 sit at and that we could all talk on -- on or off

1 the record and a way for us to work together
2 because I think it's been unequivocal as the
3 nuclear moratorium suggests that we say -- we say
4 no new nuclear and just to conclude this.

5 My response, and -- you know, and
6 it looks bad and it may discredit me, but was that
7 when I was reminded by the co-manager of this
8 hearing -- and not reply to any of the other
9 emails, the only e-mail was that this is not a
10 court of law.

11 I suggested that as Ontarians, are
12 we not allowed to seek justice outside of the court
13 of law? And is the court of law only the last
14 resort to uphold justice both within the court of
15 law and outside of the court of law?

16 So to answer your question, I
17 appreciate it and I appreciate the civility with
18 which we can talk and I'm so happy that I'm
19 addressing you. And you're spending your time
20 listening here to me today, but there's a lot of
21 improvement that can be made on this.

22 And the fourth question in --
23 yeah, the fourth question on my list of questions,
24 which my colleague, the Chair or one of the
25 Directors of Food Not Bombs Peterborough, will be

1 handing out to the stakeholders.

2 It basically says, ask for
3 acknowledgement that I hope that my participation
4 in this hearing, well valued and grateful does not
5 equal my consent to the eventual -- to the eventual
6 decision from the Joint Review Panel because of
7 some great concerns regarding the process and some
8 of the issues that I can't articulate, but were
9 very well articulated by CELA's presentation.

10 CHAIRPERSON GRAHAM: Mr. Pereira?

11 MEMBER PEREIRA: Thank you.

12 We have also read your submission,
13 so we take it into account all the -- all the
14 issues you've raised.

15 Thank you, Mr. Chairman.

16 CHAIRPERSON GRAHAM: Madam
17 Beaudet?

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

20 Just to tell you first that the
21 stage behind is much higher than where we are now
22 and we have tried to look a little bit more
23 friendly by, you know, asking to be down here and
24 not on the stage.

25 It's not a question I have. It's

1 just more of a -- maybe to clarify a little bit
2 your concern about sampling of the milk.

3 I believe OPG is required to do
4 samples and they publish those samples and it's a
5 regulatory requirement from CNSC. And I would like
6 OPG to explain their program and then CNSC to
7 explain also why they are required and what does it
8 encompass, this requirement, please?

9 MS. SWAMI: Laurie Swami, for the
10 record.

11 Madam Beaudet, you are quite
12 correct, we have an extensive program of monitoring
13 the environment around our nuclear facilities.

14 And in 2009, we had over 2,700
15 sample results that were completed. This is part
16 of our licence requirement in which we calculate
17 the public dose impact from our operations.

18 The report is submitted to the
19 CNSC on a yearly basis and it identifies the sample
20 results. It goes through the modelling exercise
21 that we use to assess what the dose may be.

22 We look at a variety of potential
23 recipients of dose. It includes infants and it
24 goes through a number of age categories and that's
25 all laid out in our report, which is available on

1 our website.

2 And it is fairly comprehensive.
3 It does include milk samples and other food stuffs,
4 as well, from the local community. So it's
5 possible the intervenor would have been talking to
6 a local farmer who would give us milk samples
7 because we do go through that process of obtaining
8 samples from the local environment.

9 MEMBER BEAUDET: Thank you.

10 CNCS?

11 MR. HOWDEN: Yeah, Barclay Howden
12 speaking.

13 Yeah, in terms of the programs, we
14 have three programs that we expect the licencees to
15 carry out.

16 One is a missions monitoring. The
17 second is environmental monitoring, which would be
18 the sampling of the milk. And the third one is the
19 environmental effects monitoring, ie, with this
20 just monitoring, but determining whether there is
21 actually effects being done on the environment.

22 And the purpose of this is to
23 validate any predictions that the proponent or
24 licencee has made that their plant will have on the
25 environment, so this is done on a regular basis.

1 And the intention is is that if
2 they detect issues, that they would have to take
3 mitigative actions to resolve those. Thank you.

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

6 CHAIRPERSON GRAHAM: Thank you.

7 I only have one and maybe it's a
8 clarification from OPG. The intervenor did talk
9 about a worker being exposed.

10 Can you address that and if that
11 was the case and how long ago it was and was it
12 reported?

13 MR. SWEETNAM: Albert Sweetnam,
14 for the record.

15 Before I ask Laurie Swami to
16 specifically address that, I was wondering if the
17 Chair would allow if we could also address the
18 issue that was raised, which was basically that
19 because OPG doesn't have the mandate for
20 renewables, that the province is actually ignoring
21 renewables.

22 I think it's important that it
23 goes on the record what's being done, if you would
24 allow?

25 CHAIRPERSON GRAHAM: Yes, I

1 thought perhaps you were going to do that when I
2 call on OPG, a further statement.

3 MR. SWEETNAM: Okay. I can wait
4 for that.

5 CHAIRPERSON GRAHAM: I would just
6 like mine now and then we'll go to the others.

7 MR. SWEETNAM: Yes.

8 MS. SWAMI: Laurie Swami, for the
9 record.

10 There has never been a death from
11 our facilities as a result of radiation exposure.

12 We from time to time, employees
13 may get ill at our site and there would be response
14 from emergency response, such as a fire department
15 or ambulance service that could respond, but those
16 are not related to radiation exposure.

17 And with that there would be a
18 requirement to report even an illness that may
19 result in, say, a heart attack that may result in
20 death.

21 That could possibly happen. That
22 is still required to be reported, and we would do
23 that to the CNSC.

24 CHAIRPERSON GRAHAM: CNSC wish to
25 add anything to that?

1 MR. HOWDEN: As part of our
2 reporting requirements, regardless of any cause,
3 there is a requirement to notify us of any deaths
4 that may occur at any licensed sites.

5 Thank you.

6 CHAIRPERSON GRAHAM: Thank you.

7 We will now go to questions --
8 I've done those, Mr. -- Madame Beaudet, yes. We'll
9 now go to questions or clarifications from various
10 parties, and that's OPG is first.

11 MR. SWEETNAM: Albert Sweetnam,
12 for the record.

13 We have no questions, but we would
14 like to give a clarification related to the comment
15 that was raised about renewables and the province.

16 The Ministry of Energy has gone on
17 record clearly by providing the government's goals
18 as set out in the supply mix directive that was
19 sent to the Ontario Power Authority. And I'll just
20 touch quickly on the different aspects of this
21 supply mix directive.

22 In terms of demand, they've
23 indicated that the OP should be utilizing a medium
24 electricity demand growth, but should also provide
25 the flexibility to accommodate the potential for a

1 higher growth outcome.

2 In terms of conservation, they've
3 set a target of 7,100 megawatts to be conserved, at
4 an energy savings of 28 terawatt hours by the end
5 of 2030.

6 In term of nuclear, they've stated
7 the refurbishment of 10,000 megawatts of nuclear
8 and the addition of about 2,000 megawatts at the
9 Darlington site.

10 In terms of the phasing out of
11 coal, they've indicated a phasing out of coal would
12 continue and be complete of 2014, and also
13 indicated the repowering of some of the coal units
14 with either gas or biomass.

15 In terms of hydroelectric, they've
16 indicated that they should plan for 9,000 megawatts
17 by 2018, which would reflect about 20 to 25 percent
18 of the total Ontario electricity generation. In
19 terms of renewables, other than hydroelectric,
20 which would be wind, solar, or bio-energy, they
21 have indicated that they should plan for 10,700
22 megawatts of renewable energy capacity by 2018,
23 which would reflect 10 to 15 percent of Ontario's
24 electricity generation by 2018, which would place
25 Ontario amongst the highest in North America.

1 There's also a plan for some
2 limited natural gas, specifically to address the
3 period when the nuclear units are down for
4 refurbishment.

5 They have an extensive plan on
6 transmission, to address all of the new renewables
7 that need to come online. There's indication of
8 developments in the smart grid. There's also
9 indication around the potential of electricity
10 storage and address the availability of imports
11 from other jurisdictions.

12 Then there are the price issues,
13 the impacts on consumers that have to be addressed,
14 consultation of the plan with the public and
15 Ontario's Aboriginal peoples.

16 Then lastly it addresses the
17 requirement to conform with all statutory and
18 regulatory requirements.

19 So this is a very detailed
20 directive that's been given to the OPA and lays out
21 the supply mix for Ontario, which, as you can see,
22 fully considers renewables, and actually becomes a
23 leader in Canada on renewables.

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

1 CNSC, do you have any questions or
2 comments?

3 MR. HOWDEN: No questions, thank
4 you.

5 CHAIRPERSON GRAHAM: Government
6 departments, Environment Canada were here. I guess
7 not.

8 Before I go, I have two questions
9 from the floor, intervenors. I just want to remind
10 the intervenor that any documentation you have, if
11 you file it with the Secretariat back at the back,
12 they will see it's distributed to all the parties
13 that'll be available. So you don't have to go and
14 make sure it goes to everyone; if you filed the
15 copies, it will done that way.

16 MR. RUITER: And just a point of
17 record. Do I have one more question available to
18 ask in response to the -- the issue of measurement
19 and measuring mild and the -- what CNSC and OPG has
20 said?

21 CHAIRPERSON GRAHAM: I will do
22 that after I hear from the two intervenors from the
23 floor.

24 --- QUESTIONS BY THE PUBLIC:

25 CHAIRPERSON GRAHAM: Mr. Kalevar,

1 I hope that you have had the time to write your
2 question or have it very succinct, and to the
3 Chair, please.

4 MR. KALEVAR: Through the chair,
5 to the intervenor.

6 You mentioned the new Journal of
7 Statistical Probability and -- or Physical
8 Probability or something like that.

9 The question is, do you think that
10 the evidence that has been collected over hundreds
11 of years, the seismic evidence that has been
12 collected over hundreds of years, is it wise
13 scientific, reasonable and rational for anybody to
14 extend that hundreds of years of seismic data
15 evidence to thousands and millions of years?

16 CHAIRPERSON GRAHAM: Mr. Kalevar,
17 that -- we had scientific evidence this morning,
18 you may not have been here, but we had Natural
19 Resources Canada back and we had Dr. Lamontagne
20 here again, and I'm sorry you weren't here or
21 didn't make it in time, but he gave specific
22 evidence with regard to seismic activity, the
23 possibility of faults, where they lie, ice age and
24 so on. So those -- that question -- those
25 questions were answered this morning.

1 I'll go to Ann Tilman. Anna
2 Tilman, you have a question please?

3 MR. RUITER: Sorry. Point of what
4 I was -- do I have a chance to respond to the last
5 question at all? No? Okay. I will do so in
6 writing. Thank you.

7 CHAIRPERSON GRAHAM: All questions
8 go to the Chair, and I direct them. And the Chair
9 answered that question has been put at least four
10 times in the last two weeks, and we had scientific
11 evidence this morning. It's not of people's
12 opinion. We have to go by the evidence that was
13 given.

14 Ms. Tilman?

15 MS. TILMAN: Yes, Mr. Chair.

16 With your indulgence I have two
17 succinct questions. The first question comes out
18 of Zach's presentation, and a worker -- the
19 possibility of a worker dying.

20 wonder how long workers, once
21 they retire or leave the jobs are being tracked for
22 health effects, because they may not appear at the
23 -- on site. It may take 20 years or so, especially
24 in things like radiation, chemical toxicity.
25 That's question one.

1 CHAIRPERSON GRAHAM: We'll go to
2 that, and then we'll get your second question.

3 MS. TILMAN: Thank you.

4 CHAIRPERSON GRAHAM: CNSC, do you
5 -- can you respond to that or -- or direct me where
6 it can be ---

7 MR. HOWDEN: I think OPG can speak
8 to tracking of their workers. But Dr. Thompson did
9 speak to a couple of the health studies where they
10 tracked workers, I think 25,000 nuclear workers
11 throughout their lives, as part of one of the
12 cohort studies.

13 That information will be in the --
14 one of the undertakings that we're putting
15 together. And we'll make sure that that's flagged.
16 But there was the discussion of the tracking of the
17 workers from the health study.

18 In terms of tracking immediately
19 retirees through periods of time, I'll have -- I'd
20 have to suggest that OPG answer that.

21 CHAIRPERSON GRAHAM: OPG, would
22 you care to respond?

23 MS. SWAMI: Laurie Swami, for the
24 record.

25 I think Mr. Howden has given a

1 good overview of the process, and this is reflected
2 in our Health TSD just -- just to confirm.

3 And essentially, we tracked, up
4 until the early '90s, the health and effects or
5 potential health effects with both our worker and
6 pension population, but the -- the pool was too
7 small to have anything that was of statistical
8 significance.

9 And so now OPG participates in all
10 of the studies that may be through the CNSC or
11 other agencies by providing all of the data that is
12 currently submitted as part of our licence
13 requirement of dosimetry.

14 And so all of that information is
15 submitted and is considered in the studies that the
16 CNSC, I believe, will give a review of when they've
17 finished their undertaking.

18 CHAIRPERSON GRAHAM: Ms. Tilman?

19 MS. TILMAN: Yes, it would be
20 interesting to see that information would become
21 public.

22 CHAIRPERSON GRAHAM: Yes, that's
23 part of the undertakings.

24 MS. TILMAN: Okay. My second
25 question is a very different vein, and it's to OPG.

1 I didn't understand an expression
2 that Mr. Sweetnam used when we were talking about
3 power and generation. He said, "For the new
4 reactors the capacity would be up and down".

5 And when I was reviewing the
6 capacity of existing CANDU reactors, they vary
7 anywhere over their lifetime, from 60 percent to 90
8 percent.

9 I don't know what you meant by up
10 and down, Mr. Sweetnam.

11 CHAIRPERSON GRAHAM: I will direct
12 that question to OPG.

13 MS. TILMAN: Sorry.

14 MR. SWEETNAM: Albert Sweetnam.

15 They're two different things. We
16 were talking -- the intervenor was talking about a
17 ramp up and down to reflect the load that's
18 actually on the grid and that's what we were
19 speaking about that the existing reactors have
20 difficulty to ramp up and down, to follow a load,
21 whereas the new reactors will be able to ramp up
22 and down.

23 The capacity factor is something
24 quite different that's basically how reliable your
25 reactor is and the reliability of the new reactors

1 are expected to be in the plus 90 percent range.

2 CHAIRPERSON GRAHAM: Thank you,
3 Mr. Sweetnam.

4 That is, I believe, all on this.
5 I just want to tell you, Mr. -- I'm going to go to
6 you, Mr. Ruitter, is that over the period of the 13
7 days we've been meeting for 10, 12, 13 hours a day,
8 there's been a lot of information that's come to us
9 that wasn't clear enough.

10 And we have gone to the process of
11 undertakings. There have been 67 undertakings to
12 date for further information that this Panel has
13 asked for.

14 Whether it be from public
15 intervenors, whether it be from CNSC, from OPG,
16 from various health -- or various government
17 departments and so on, so we -- when statements are
18 made, we have to verify them. And we have to check
19 them out and that's what those undertakings are.
20 It is to see other studies that have been done and
21 so on.

22 This is not a whitewash or any of
23 type of undertaking. We are trying to be as
24 thorough as possible. We're trying to be as fair
25 as possible. Bent the rules in almost every day to

1 make sure people are heard. So I don't want you to
2 think here that we all just come here and we make
3 up our mind.

4 We are here to listen and we are
5 here to gather information and then we'll make a
6 decision. And no decision has been made.

7 I'll let you have a very short
8 last comment, which isn't even in the rules, by the
9 way.

10 MR. RUITER: Thank you. Zach
11 Ruiten, for the record.

12 As Dr. Zobo (ph) was standing
13 outside of General Electric with the Geiger meter,
14 she told, the measurements are always subjective.
15 She has a PhD in chemistry and she said it depends
16 on the way the wind blows.

17 Quaker Oats, we can smell oatmeal
18 in some parts of town, depending on the wind. So
19 my concern is, considering that many in our
20 community including the Prince of Wales' parents
21 feel that having OPG self-report, GE self-report
22 and the CNSC sort of rubber stamp is equivalent to
23 the fox guarding the henhouse.

24 And I appreciate Member Graham's
25 work in the past with our community and I

1 appreciate your statement right now, but to echo
2 Holly Blefgen's question, how are these reports and
3 these measurings not associated with OPG? And how
4 are they independent and how can we trust you?
5 Because I don't trust you even with all of these
6 assurances?

7 CHAIRPERSON GRAHAM: As I said,
8 everyone is allowed to their opinion and whether we
9 agree or not, as I've said before, I have five
10 children and they're grown up now, but we had lots
11 of good arguments, but we settled those arguments
12 before the day was out and we went on and raised a
13 family. So I don't accept you to say that there is
14 rubber stamps.

15 This industry has come a long way
16 and I believe that it's one of the safest
17 industries -- nuclear industries in any country
18 because of the work of CNSC. Maybe I don't always
19 agree with them, and that's what a Commission is
20 about. The Commission has a right to question.

21 You know, yourself in your
22 undertaking, and with regard to GE Hitachi, there
23 was a recommendation and the Commission made a
24 decision, which was not with the recommendation and
25 that is what happens and that's how the process

1 works.

2 But I do not accept people that
3 say shoot from hip and say that the Commission is a
4 rubber stamp because there are checks and balances
5 and I believe it works very well.

6 With that, thank you very much for
7 your presentation. Thank you very much for coming
8 today. Good luck in your work and a safe trip back
9 to Peterborough.

10 MR. RUITER: Thank you.

11 CHAIRPERSON GRAHAM: With that, my
12 understanding is that the next scheduled presenter
13 was to be Amanda Lickers who has presented a PMD
14 under PMD 11-P1.229, but unfortunately she is not
15 able to be with us here today.

16 The Secretariat will attempt to
17 reschedule this later in the week. If that doesn't
18 happen, if it's not possible, the Panel will treat
19 her intervention as a written one only, but we
20 certainly did appreciate the intervention that she
21 provided us and it will be treated and
22 looked -- and worked on on the record regardless
23 whether she appears in person or not. We'll do our
24 best to try and schedule her.

25 With that, the Panel will now move

1 to some written interventions, I believe, and if
2 you'll just give us a minute, we will try and get
3 these in order.

4 (SHORT PAUSE/COURTE PAUSE)

5 CHAIRPERSON GRAHAM: Would you
6 vacate the table as soon as possible, please, so we
7 can get on with the other business?

8 MR. RUITER: No problem.

9 CHAIRPERSON GRAHAM: I believe the
10 first written intervention that the co-manager will
11 start off with is PMD 11-P1.21, Vlado Karan. If
12 you would start with that one and we'll start going
13 through some of the writtens as time permits.

14 --- WRITTEN SUBMISSIONS AND COMMENTS BY PANEL:

15 MS. MCGEE: Thank you, Mr. Chair.

16 As the Chair indicated, the Joint
17 Review Panel will now move to consideration of some
18 of the written only submissions. I will identify
19 the PMD number and writer. And for each
20 submission, the Panel members have an opportunity
21 to ask questions.

22 The first PMD, PMD 11-P1.21 from
23 Vlado Karan; PMD 11-P1.111 from Bruce Tanaka; PMD
24 11-P1.192 from Keith Falconer; and PMD 11-P1.236
25 from Ahmed Hafez.

1 CHAIRPERSON GRAHAM: The Panel
2 members, Mr. Pereira, do you have any comments or
3 questions with regard to these four written
4 interventions?

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

7 These four PMDs, all are
8 supportive of the proposal brought forward by
9 Ontario Power Generation. They cite that these
10 projects have low environmental impact -- the
11 project is a low environmental impact and provides
12 economic benefit to the community.

13 One talks about technology spin-
14 off of the community and another one talks about
15 low risk to workers. And another one identifies
16 this as being a project that is good in terms of
17 environmental impacts.

18 So that's the -- the sum total of
19 the comments there made and I have no questions on
20 these submissions.

21 CHAIRPERSON GRAHAM: Thank you,
22 Mr. Pereira.

23 Madam Beaudet?

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

1 I believe the comments of my
2 colleague reflect what is presented in these PMDs
3 and I have no further question.

4 CHAIRPERSON GRAHAM: Please,
5 proceed with the next group?

6 MS. MCGEE: Thank you, Mr. Chair.

7 The next group of written
8 submissions for the Panel's consideration, PMD 11-
9 P1.37 from James Araujo; PMD 11-P1.39 from Scott
10 Thomson; PMD 11-P1.40 from Daniel Gravelle; PMD 11-
11 P1.41 from Randy Blake; PMD 11-P1.49 from Konrad
12 Szymanowski; PMD 11-P1.55 from Dariusz Kulczynski;
13 PMD 11-P1.56 from Daniella Kulczynska; PMD 11-P1.57
14 from Ian McIntosh; PMD 11-P1.63 from Rick
15 Patenaude; PMD 11-P1.75 from Michael Pugh; PMD 11-
16 P1.106 from Derek Mitchell; PMD 11-P1.125 from Anca
17 McGee; PMD 11-P1.157 from Victor Trifan, PMD 11-
18 P1.175 from Ruxandra Gheorghe; PMD 11-P1.206 from
19 Jay Cuthbertson; PMD 11-P1.223 from Draga Zivkovic;
20 and PMD 11-P-1.239 from Jim McLellan.

21 CHAIRPERSON GRAHAM: Thank you
22 very much, Kelly.

23 Madam Beaudet, do you have some
24 questions or comments?

25 MEMBER BEAUDET: All of these

1 submissions are in support of the project and of
2 nuclear generation.

3 Most of the people in these
4 underline that it's a stable baseload and nuclear
5 is safe and cheaper than fossil -- than green
6 energy. Some of them are against fossil fuels.

7 Also, it underlines that the
8 community is a willing host community, and that OPG
9 is an important contributor to this community and
10 that the project will bring economic benefits to
11 the Durham Region and to Ontario.

12 They also regard nuclear as being
13 safe and that wind and solar is fine as alternative
14 energy, but it cannot match the power needed for
15 the baseload recommended here.

16 I have, with PMD 11-P1.63 of Mr.
17 Patenaude, the question. Many of the written
18 submissions state clearly that they're in support
19 of the project, but others specified that they're
20 in support of the two nuclear generating units.

21 And I'd like to clarify -- help me
22 -- if OPG can help me clarify this point because
23 the press releases that were issued announcing the
24 procurement exercise in 2008, and I believe 2009
25 always mentioned two unit nuclear power plant with

1 the Ontario Power Generation

2 And then in the procurement
3 documents, only in those documents do we find that
4 the bidder should consider the possibility of two
5 atom units, in other words, to 4,800 megawatts.
6 And for me, I find there seems to be some confusion
7 among the different intervenors.

8 In your communication exercise,
9 was it made clear that it would be possible to go
10 up to four units, and did you at the time you did
11 the exercises, because it was when you were
12 preparing the EIS, did -- that the public was under
13 the impression that you would build two units, but
14 not necessarily four.

15 MR. SWEETNAM: Albert Sweetnam,
16 for the record.

17 In all of the consultations with
18 the public, we have always indicated four units and
19 up to 4,800 megawatts of power. In the procurement
20 exercise it was for two units and up to 3,200
21 megawatts because of the EPR, which was 1,600
22 megawatts each.

23 And the intention of the province
24 again is to maintain the mix at 50 percent nuclear
25 based on a medium expectation of growth across the

1 province. But to provide the flexibility at the
2 Darlington site in case the growth is different
3 from medium, but it's higher, to provide a
4 flexibility to go to 4,800 megawatts, if required.
5 That's always been the position.

6 But in the public sessions where
7 all the consultation was done, it was always four
8 units and 4,800 megawatts.

9 MEMBER BEAUDET: Thank you.

10 CHAIRPERSON GRAHAM: Mr. Pereira.

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

13 I agree with the comments made by
14 my colleague, but I'd like to point out one
15 observation made by -- in PMD P1.25 by Ms. Anca
16 McGee. And she observes that -- now I'd read her
17 paragraph:

18 "Nuclear power is a proven,
19 safe, reliable and clean
20 technology. The rigorous
21 regulations and regulatory
22 oversight that apply to
23 nuclear ensure that
24 construction, commissioning,
25 operation, and waste disposal

1 take place in the safest
2 possible manner."

3 So this is one intervenor
4 expressing confidence in the regulatory oversight
5 and control of the nuclear industry.

6 Thank you, Mr. Chairman.

7 CHAIRPERSON GRAHAM: Thank you,
8 Mr. Pereira. I will go now to the next group, Ms.
9 McGee.

10 MS. MCGEE: Thank you, Mr. Chair.

11 The next 11 PMDs were submitted --
12 submitted a similar letter to the Joint Review
13 Panel for their consideration.

14 PMD 11-P1.59 from Karen Wright;
15 PMD 11-P1.61 from Sanjin Zeco; PMD 11-P1.92 from
16 Susan Schellenberg; PMD 11-P1.96 from Mary Everett;
17 PMD 11-P1.97 from Krista Murphy; PMD 11-P1.98 from
18 Shirley McCormick; PMD 11-P1.100 from Kristin
19 Kagerer; PMD 11-P1.122 from Debra Mair; PMD 11-
20 P1.130 from Liz Miller; PMD 11-P1.165 from Jean
21 Johnston; and PMD 11-P1.209 from Janet Kuzniar.

22 CHAIRPERSON GRAHAM: Start off
23 with Mr. Pereira.

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

1 These interventions are almost
2 identical. They express concern on the cost and
3 need for the project. They assert that it was not
4 a climate change solution because there are CO2
5 emissions.

6 They talk about emissions --
7 radioactive emissions and releases from the
8 proposed generating station, express concern over
9 the 7,000 becquerels per litre limit for tritium in
10 drinking water.

11 They make reference to health
12 effect studies and the studies such as the KIKK
13 study and others on risk of cancers and leukemia.

14 They raise the issue of the waste
15 legacy, the long-lived legacy of waste. They
16 express concern over the terrorism risk that the
17 project would be subject to in operation.

18 They express concern as well about
19 the risk of severe accidents, and finally, they
20 talk about the record of cost overruns with nuclear
21 power projects in Canada.

22 That's all I have on this -- on
23 these CMDs -- PMDs. I have no questions concerning
24 these submissions.

25 CHAIRPERSON GRAHAM: Madame

1 Beaudet?

2 MEMBER BEAUDET: I agree with my
3 colleague on the summary of what these PMDs
4 express, but I would also add that they comment on
5 the AECL performance over the years. And I have no
6 further question.

7 CHAIRPERSON GRAHAM: Thank you
8 very much.

9 I think we'll do a couple more
10 lists. And, Ms. McGee, would you go forward with
11 the next one?

12 MS. MCGEE: Thank you, Mr. Chair.

13 The next group of PMDs for the
14 panel's consideration: PMD 11-P1.23 from Eric
15 Jelinski; PMD 11-P1.25 from Lorne Almack; PMD 11-
16 P1.43 from Michael Wang; PMD 11-P1.54 from Mathieu
17 Gravel; PMD 11-P1.90 from Saad Dahdouh; PMD 11-
18 P1.133 from Peter Moore; PMD 11-P1.156 from
19 Abuzafar Ali; PMD 11-P1.233 from Ahmad Osgouee; and
20 PMD 11-P1.241 from Robert Smith.

21 CHAIRPERSON GRAHAM: Madam
22 Beaudet?

23 MEMBER BEAUDET: One of these
24 submissions is in favour of the project and they
25 base the judgment on underlining that solar and

1 wind energy are not reliable, that they can be
2 niche applications only; that nuclear is safe and
3 reliable and clean especially compared to coal;
4 that there are no other realistic alternatives;
5 that nuclear allows a continuous affordable supply
6 of energy and its near zero greenhouse emission.

7 Also, they underline that the
8 nuclear energy employs thousands of skilled
9 scientists, trades people and engineers. And I
10 have no questions on these PMDs.

11 CHAIRPERSON GRAHAM: Mr. Pereira?

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

14 I agree with the summary provided
15 by Madam Beaudet and I have no questions concerning
16 these submissions.

17 CHAIRPERSON GRAHAM: Thank you
18 very much. We'll do one more batch if you can, Ms.
19 McGee.

20 MS. MCGEE: Thank you, Mr. Chair.

21 The last written submissions for
22 the panel members' consideration today are PMD 11-
23 P1.20 from Alan Gerth; PMD 11-P1.62 from Lisa
24 Grande; PMD 11-P1.110 from Marlene Khalil; and PMD
25 11-P1.180 from Arunkumar Dalaya.

1 CHAIRPERSON GRAHAM: Mr. Pereira?

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

4 These four PMDs talk about the
5 safe performance of nuclear generating of the
6 project proposed.

7 It also talks about the fact that
8 the project will provide a reliable source of power
9 and that the impact on the environment will be
10 minimal.

11 I have no questions or comments on
12 the -- further comments on those proposals.

13 CHAIRPERSON GRAHAM: Thank you.
14 Madam Beaudet?

15 MEMBER BEAUDET: I agree with the
16 summary presented by Mr. Pereira and I have no
17 questions on these submissions.

18 CHAIRPERSON GRAHAM: Thank you
19 very much. With that, that will finalize our
20 written submissions for today.

21 I want to thank everyone for their
22 participation today and the information they've
23 been able to supply the panel.

24 And the panel will adjourn this
25 afternoon and reconvene tomorrow morning at nine

1 o'clock.

2 Thank you very much and safe

3 travels.

4 --- Upon adjourning at 5:06 p.m. /

5 L'audience est ajournée à 17h06

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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-hauts sont une transcription conforme de mes notes/enregistrements au meilleur de mes capacités, et je le jure.



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