

IN THE MATTER OF THE JOINT REVIEW PANEL ("JOINT PANEL")  
ESTABLISHED TO REVIEW THE SITE C CLEAN ENERGY PROJECT  
("PROJECT") PROPOSED BY BRITISH COLUMBIA HYDRO  
AND POWER AUTHORITY ("BC HYDRO")

CANADA ENVIRONMENTAL ASSESSMENT AGENCY

AND

BRITISH COLUMBIA ENVIRONMENTAL ASSESSMENT OFFICE

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PROCEEDINGS AT HEARING

December 9, 2013

Volume 1

Pages 1 to 343

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Held at:

Pomeroy Hotel  
11308 Alaska Road  
Fort St. John, British Columbia  
V1J 5T5

**APPEARANCES**

**JOINT REVIEW PANEL:**

Dr. Harry Swain - Chairman  
Ms. Jocelyne Beaudet  
Mr. Jim Mattison

Brian Wallace, Esq. (Legal Counsel)

**THE SECRETARIAT:**

Courtney Trevis (Panel Co-Manager)  
Brian Murphy (Panel Co-Manager)

**PARTICIPANTS:**

Craig Godsoe, Esq., BC Hydro (Legal Counsel)  
Peter Feldberg, Esq., BC Hydro (Legal Counsel)  
Ms. Bridget Gilbride, BC Hydro (Legal Counsel)

Larry Evans, Councillor Bruce Christensen, City of Fort  
St. John

Tribal Chief Liz Logan, Treaty 8 Tribal Association

Chief Roland Willson, West Moberly First Nation

Chief Russell Lilly of Halfway River First Nation

Chief Lynette Tsakoza of Prophet River First Nation

Chief Norman Davis, Councillor Kelvin Davis, Doig River  
First Nation

Chief Harley Davis, George Desjarlais, Former Chief Gary Oker, Tommy Attachie, Sammi Acko, Saulteau First Nations

Jesse McCormick, Esq., Saulteau First Nations (Legal Counsel)

Councillor Tammy Watson, Sandra Fuchs, Carmen Marshall, Naomi Owens, Saulteau First Nations

Jeff Langlois, Esq., Athabasca Chipewyan First Nation, the Mikisew Cree First Nation, and the Dene Tha' First Nation

Randy Hadland

Tim Howard, Peace Valley Environmental Association

Dr. Marvin Shaffer, expert for Peace Valley Environmental Association

Mike Kroecher and Richard Koechl

**REALTIME COURT REPORTING:**

Mainland Reporting Services, Inc.

Nancy Nielsen, RPR, RCR, CSR(A), OCR

Diane Huggins, OCR

Steve Lee, OCR

Leanne Kowalyk, OCR

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**Monday, December 9, 2013**  
**Fort St. John, British Columbia**  
**(Proceedings commenced at 9:00 a.m.)**

**Introductory Remarks by the Chairman:**

THE CHAIRMAN: Good morning, everyone.

Welcome to the first day of the public hearing regarding the environmental assessment of BC Hydro's proposal to build the Site C dam.

I would like to thank the town of Fort St. John and members of the Treaty 8 First Nations within whose Traditional Territory we are holding this hearings today.

My name is Harry Swain, and my colleagues on the Panel are Jocelyne Beaudet and Jim Mattison.

Our legal counsel is Brian Wallace. Wave. Thank you.

The Secretariat, who are also over here mostly include Courtney Trevis and Brian Murphy.

The panel co-managers from the federal and provincial governments, respectively. Catherine Bailey-Jourdain, Phil Seeto, and Daniel Martineau, our analysts.

Lucille Jamault, who is walking around somewhere -- there she is -- is our media relations

1 person.

2 In addition, there is our court reporter,  
3 Nancy Nielsen, our audio-visual technician, Alex  
4 Barbour.

5 The staff will be glad to assist you with any  
6 problems you may have.

7 The purpose of the hearing is to allow the  
8 Panel to receive information from the interested  
9 parties and the general public on the potential  
10 environmental, economic, health, social, and  
11 heritage effects of the proposal by BC Hydro to  
12 construct and operate a large earth-filled dam,  
13 power house, transmission line, and ancillary  
14 works.

15 The hearing is also designed to provide  
16 opportunities for Hydro to explain the project and  
17 to respond to concerns and questions raised by  
18 participants, including federal and provincial  
19 government departments, local, regional, and First  
20 Nations governments, Métis associations,  
21 non-governmental and civic organizations and the  
22 general public.

23 We are an independent panel. We are not part  
24 of the government of Canada or the government of  
25 BC. We are appointed by the two governments to



1           conduct an assessment of the effects of the  
2           proposed project under the **Canadian Environmental**  
3           **Assessment Act** of 2012 and the **BC Environmental**  
4           **Assessment Act**. As the Acts and related procedures  
5           differ somewhat, the two governments entered into a  
6           formal agreement which incorporates specific Terms  
7           of Reference for this Joint Review Panel.

8           We will, doubtless, have occasion to refer to  
9           it to keep our discussions on course. I encourage  
10          any of you who have not read this document to do  
11          so. I thought that the URL might be up on the  
12          slide, but it isn't. The document is available  
13          from the Secretariat for anyone who would like to  
14          see it.

15          I may, from time to time, admonish  
16          participants to make sure that what they have to  
17          say relates to these Terms of Reference.

18          I'd like to highlight some key features of  
19          our instructions.

20          Our first task was to review the 20,500 pages  
21          of the Environmental Impact Statement and its  
22          supplements, together with a written record of the  
23          pre-panel stage of this procedure, and decide  
24          whether the record was sufficient for the purposes  
25          of holding public hearings. After three rounds of

1 Information Requests, and responses by Hydro, we  
2 found the information, now some 27,000 pages, not  
3 perfect, but sufficient for the purposes of holding  
4 these hearings.

5 We are required to provide conclusions on the  
6 significance of any adverse environmental effects.  
7 We are also required to recommend mitigation  
8 measures and follow-up programs for the management  
9 of the effects associated with the project, should  
10 it proceed.

11 We are to include in our report a summary of  
12 information received at this hearing, and in the  
13 record that may bear on a determination by the two  
14 governments with respect to the justification for  
15 the project.

16 With respect to First Nations, the Panel will  
17 receive information related to the nature and scope  
18 of asserted or established Aboriginal Rights or  
19 Treaty Rights within the project area, and assess  
20 potential adverse impacts or potential  
21 infringements of those rights. We may recommend  
22 measures to mitigate any real or potential adverse  
23 effects of the project on those rights.

24 However, the Panel does not have a mandate to  
25 make any determination on the validity of rights or

1 title claims asserted or on the strength of those  
2 claims. We may not determine the scope of the  
3 Crown's duty to consult First Nations, nor may we  
4 determine whether governments have met their duty  
5 to consult and accommodate.

6 Following the completion of our assessment,  
7 we will prepare our report for the two governments.  
8 This report will be submitted within 90 days of the  
9 close of the hearing, and will be made available to  
10 the public by the governments, not us.

11 I'd like to thank you for taking part in  
12 these proceedings. Your participation and your  
13 involvement is very important to us. We will rely,  
14 in part, on information received through the  
15 hearing and we also believe it will be helpful to  
16 Hydro and to other participants in the hearing.

17 We recognize that the conclusions and  
18 recommendations that we will provide to the two  
19 governments on this matter will have an effect on  
20 the participants here today, and on those who live  
21 in Fort St. John and the surrounding communities.

22 We want to assure you that we take this  
23 responsibility to assess the potential  
24 environmental effects of this project very  
25 seriously, and we ask that everyone here do the

1 same.

2 We ask that you conduct yourselves in a  
3 manner that is respectful of the important  
4 responsibility we jointly own. People in the  
5 hearing should be courteous and respectful when  
6 asking questions or making comments. The use of  
7 demeaning language is not appropriate in this  
8 forum. Any participants who are disrespectful or  
9 rude in questioning, or in their remarks, will not  
10 be allowed to ask further questions or make further  
11 comments.

12 You have all seen the schedule for the next  
13 two weeks, and for the three weeks in January. We  
14 have a lot of territory to cover and, courtesy our  
15 governments, not much time, and that's without  
16 taking account of winter weather in the peace.  
17 Changes to the schedule may have to be made indeed  
18 maybe forced on us. We'll do our best to  
19 communicate any last-minute changes to the hearing  
20 schedule. All changes will be immediately posted  
21 on the second URL, on the slide there.

22 We have a great deal to cover today and  
23 tomorrow, and may extend the hearings into the  
24 evening. I'll let you know later if this will be  
25 necessary.

1           Our role requires us to remain independent  
2           and objective, including with respect to all  
3           participants who are before us. And, as a result,  
4           we will not engage in private discussion on these  
5           matters with anyone involved in these proceedings  
6           outside of ourselves and the Secretariat. We ask  
7           that you not attempt to discuss the project or any  
8           of the hearing matters with us outside the hearing.

9           I apologize if we appear detached or  
10          unapproachable. As a nice part of the country with  
11          wonderful people and we would like to chat, but we  
12          must not. We need to ensure that our behaviour  
13          does not give anyone any reason to be concerned  
14          regarding our impartiality.

15          I'd like to draw your attention to some of  
16          the procedures that we follow during these  
17          hearings. Copies of the public hearing procedures  
18          are available at the door and at the third website  
19          shown. Participants presenting before the Panel  
20          are not required to give evidence under oath or  
21          affirmation, and certainly don't have to have a  
22          lawyer, but everyone is expected to speak honestly,  
23          and to give us good information.

24          Our Terms of Reference dictate the time is of  
25          the essence. We will try to strike a balance

1 between formality and expediency while still being  
2 fair to all parties.

3 All documents filed in this proceeding must  
4 be placed on the public record unless it is ordered  
5 otherwise by the Panel as a result of a request for  
6 confidentiality. Our strong preference is to avoid  
7 accepting information that can't be shared, and the  
8 legal threshold for doing so is very high. Copies  
9 of written submissions received by the Panel are  
10 currently available on the website.

11 You should note also the transcripts are  
12 being produced by our court reporter, and, for that  
13 reason, it is essential that participants use the  
14 microphone when speaking. Transcripts of testimony  
15 will generally be available on the website the next  
16 day.

17 When you do come forward to speak, we ask  
18 that you identify yourself so your name is on the  
19 record, and spell your last name for the court  
20 reporter. We also ask that you let everybody know  
21 whether you are speaking on your own behalf, or if  
22 you represent a group or an association.

23 I remind you to direct questions or comment  
24 to me as the Panel Chair. I will then direct them  
25 to the appropriate person or group for a response.

1 And, please, remember that you are presenting your  
2 material to us, the Panel. It's most important  
3 that we are able to hear you and see you clearly.

4 Finally, you are also reminded, as you have  
5 been for the last several decades, to turn off the  
6 ringer on your Blackberry or cell phone.

7 Please note that filming and photography, but  
8 not the use of flash or flood lights, is allowed  
9 with prior approval. Anyone with questions  
10 regarding filming or photography should see Lucille  
11 Jamault, who disappeared again.

12 Presentations: A daily agenda, will be made  
13 available each morning outlining the order in which  
14 speakers will appear before the Panel. The agenda  
15 can be picked up at the entrance over there or at  
16 the Secretariat table. The length of presentations  
17 and the time available for questioning has been  
18 estimated by the Secretariat, the Chair will do his  
19 best to keep to the schedule and will not allow  
20 repetitious or overly-leisurely presentations or  
21 questions or answers.

22 Anyone who would like to make a presentation  
23 to the Panel and who has not registered in advance,  
24 should see a Secretariat member at the registration  
25 desk, and he or she will register you and let you

1 know if and when you will be able to address the  
2 Panel. If your information is similar to that of  
3 another witness, we may ask that you collaborate in  
4 a single presentation in the interest of time.  
5 Remember that if time runs out on us, you can  
6 always submit written material any time until the  
7 close of the public record, and it will be read and  
8 considered by the Panel and posted on the Registry.

9 Thank you for your attention.

10 I now call on the City of Fort St. John for  
11 an introductory remark.

12

13 Introductory Remarks of the City of Fort St. John:

14 MR. EVANS: Good morning, people. Welcome. My  
15 name is Larry Evans. I'm a city councillor and  
16 acting mayor. Mayor Ackerman sends her regrets.  
17 She's unable to attend today. I would like,  
18 however, to introduce one of our councillors that  
19 is in the audience, that would be Councillor Bruce  
20 Christensen.

21 And to correct the Chair, just briefly, it's  
22 not a town, it's a city, sir. Thank you.

23 On this cold northern day, I want to extend a  
24 very warm welcome on behalf of our community to our  
25 distinguished Joint Review Panel members: Dr. Harry



1 Swain, Ms. Jocelyne Beaudet. I said that wrong;  
2 didn't I? And Mr. James Mattison.

3 We trust you will get a sense of our  
4 energetic city and have an opportunity to  
5 experience some great hospitality during your time  
6 here with us. I'll also extend a welcome to  
7 BC Hydro representatives and the many other  
8 interested parties and participants who will take  
9 part in this very important public process over the  
10 next few weeks.

11 We are extremely thankful to be able to live  
12 in this beautiful region of British Columbia. We  
13 are grateful also that our First Nations neighbours  
14 share this land with us. I want to acknowledge  
15 that we are not only in the city of Fort St. John,  
16 but also on the Traditional Territory of the Dene  
17 Tha' people. Their stewardship of this land dates  
18 back thousands of years.

19 I want to begin by saying we are glad you are  
20 here. Public hearings, such as these, are a vital  
21 part of ensuring an open and transparent process.  
22 They are critical to the integrity of government  
23 decision-making on projects of this magnitude that  
24 have potential to impact so many. The residents,  
25 businesses, and organizations who are committed to

1 seeing this region continue to thrive understand  
2 the particular significance of these public  
3 hearings to discuss the proposed Site C energy  
4 project.

5 Site C has been at the top of peoples' minds  
6 in our community for decades. The potential for a  
7 third dam on the Peace was first identified back in  
8 the 1950s. The project was formally proposed in  
9 the early '80s. Most originally it was formally  
10 proposed again in the mid-2000s. Over those many  
11 years, city council, staff, and countless  
12 residents, businesses, and organizations have been  
13 working hard to understand the potential  
14 implications Site C may have for our economy and  
15 our quality of life.

16 It is clear that a project of this magnitude,  
17 just seven kilometres from downtown Fort St. John,  
18 the city of Fort St. John, will have implications,  
19 not just for the life of the project, but for the  
20 lifetime of our communities.

21 Ensuring meaningful public participation and  
22 the chance for all people to speak about their  
23 concerns and aspirations regarding this project is  
24 an essential and much appreciated part of the  
25 decision-making process.

1           The city of Fort St. John values the ability  
2           to actively participate in these proceedings. We  
3           plan to provide a number of presentations over  
4           several days to convey our conclusion from the  
5           research and discussions we have undertaken over  
6           the years, and especially in recent years. As a  
7           community, we have worked hard together to set a  
8           direction and identify goals we believe will enable  
9           Fort St. John to move forward to be a better place  
10          tomorrow than it is today.

11          Our goals are to create a vibrant and  
12          diversified economy, facilitate and maintain a safe  
13          and healthy community and do implement plan to  
14          sustainable practices. As I said, we are glad  
15          you're here. We look forward to the opportunity to  
16          present our concerns and aspirations for Site C to  
17          you for your thoughtful consideration.

18          As we prepare to engage in this very  
19          important public process, I'm reminded of the words  
20          of late Stephen R. Covey: We are not a product of  
21          our circumstances, but a product of our decisions.

22          We thank you again for our opportunity to be  
23          part of this important decision-making process, and  
24          best of luck.

25          Thank you very much.

1 [Applause]

2 THE CHAIRMAN: Thank you, councillor. And I  
3 will never again say that this is the town of Fort  
4 St. John.

5 I would now like to call on Treaty 8 to say a  
6 few words.

7

8 Introductory Remarks of Treaty 8 Tribal Association:

9 (Drumming ceremony)

10

11 TRIBAL CHIEF LOGAN: Good morning. My name is  
12 Liz Logan. I'm Tribal Chief of Treaty 8.

13 SPEAKER: Please use the mic.

14 TRIBAL CHIEF LOGAN: Take 2.

15 Good morning. My name is Liz Logan. I'm  
16 Tribal Chief of the Treaty 8 Tribal Association,  
17 and I welcome you to Treaty 8 territory.

18 On behalf of the Dane Zaa, the Cree, and the  
19 Dene people, I'd like to say that this is a very  
20 important and historic day for our people. This is  
21 the third time that we are going to be discussing  
22 this topic. And I just wanted to let you know that  
23 I am a descendant of a chief who signed our Treaty.  
24 And I want to have you touch and look at this and  
25 give it back to me. But this is what it's about.

1 It's about our Treaty, the promises that were made  
2 under this Treaty to our people that we are talking  
3 about today. And then I'll come back to the mic.

4 I'd like to at this time introduce the Chiefs  
5 of Treaty 8. We have Chief Roland Willson of West  
6 Moberly First Nations. We have Chief Russell Lilly  
7 of Halfway River First Nation. We have Chief  
8 Lynette Tsakoza of Prophet River First Nation. We  
9 have Chief Norman Davis of Doig River First Nation.  
10 And we have Councillor Kelvin Davis of Doig. And I  
11 believe that Chief Harley Davis is in the room from  
12 Saulteau First Nations.

13 And so we would like to now call upon George  
14 Desjarlais to do an opening prayer, and then we  
15 will have the Doig River drummers do two songs for  
16 us before we commence.

17 Okay. Thank you.

18 (Prayer).

19 MR. DESJARLAIS: I'm going to have to  
20 listen very closely because a prayer is not to be  
21 said over a mic, so if everybody will rise, please.

22 (Prayer.

23 FORMER CHIEF OKER: Good morning, Ladies and  
24 Gentlemen. Good morning. Thank you for coming to  
25 Treaty 8 territory.

1                   We want to be able to help set the tone about  
2                   what we feel is important to us. And these songs  
3                   that we're singing come from (Aboriginal word  
4                   spoken). It's a song of the dreamers that goes  
5                   back thousands and thousands of years and are  
6                   evidence of our ancestors over 10,500 years at the  
7                   Charlie Lake cave proves that our ancestors have  
8                   been here forever, dreaming about a better life and  
9                   quality for the people, so we're going to sing some  
10                  songs in order to set that stage.

11                   (Song ceremony.

12       MR. ATTACHIE:                   This song we sing (Aboriginal  
13                   word spoken), just north of Fort St. John here, in  
14                   the reserve there, we sing that last song, and,  
15                   actually, died and he went to heaven. That's a  
16                   powerful song. All these songs, hundreds of years,  
17                   you know, even I'm 71, coming, but after I'm gone,  
18                   these guys are going to carry it over. All this is  
19                   really important to us, it's powerful, all these  
20                   lots of power in Fort St. John area, all over. We  
21                   still hang onto these, these songs. One more song  
22                   we're going to sing.

23                   (Song ceremony.

24       FORMER CHIEF OKER:            Thank you very much, Doig  
25                   River drummers. Youth and Elders, thank you very

1 much.

2 I'd like to now just maybe ask the Chiefs if  
3 they would like to have a quick word before we wrap  
4 up.

5 CHIEF LILLY: Good morning. My name is  
6 Chief Lilly from Halfway First Nation. On behalf  
7 of my Nation, I would like to welcome you to  
8 Treaty 8 territory. Thank you.

9 CHIEF DAVIDSON: Good morning. My name is  
10 Chief Norman Davidson from the Doig River First  
11 Nation. I would just like to welcome our drummers  
12 here and our members and Elders here to be part of  
13 this hearing this morning here, and here in Dane  
14 Zaa territory here. Thank you.

15 CHIEF WILSON: (Aboriginal word spoken).  
16 Welcome to Treaty 8 territory. I'm Chief Roland  
17 Willson of West Moberly First Nations. We were  
18 part of the Hudson's Hope original Band, located in  
19 Hudson's Hope, with our sister community, the  
20 Halfway River First Nations. Our feet have been on  
21 the ground here for close to 10,000 years. Just up  
22 the road here a little ways at Charlie Lake there's  
23 a place called the Charlie Lake caves. It was the  
24 site for a long time as one of the earliest known  
25 human habitations in North America, and it was our

1           ancestors that populated that cave. Welcome to  
2           Treaty 8.

3       COUNCILLOR WATSON:       (Aboriginal word spoken). Good  
4           morning. On behalf of Chief Harley Davis of  
5           Saulteau First Nations, I thank you for allowing us  
6           this opportunity. I also thank the Dane Zaa people  
7           of this Traditional Territory on which we are  
8           meeting on today, for allowing us to be here today,  
9           and for the drummers and the prayers to set the  
10          tone for today.

11                 Saulteau First Nations is 1,000 members  
12           strong, and this project is in the midst of our  
13           Traditional Territories. This project will affect  
14           our Treaty Rights, and we have participated in your  
15           environmental assessments, and we continue to do  
16           our own environmental studies. Our community is  
17           not ready yet to take a stance on this project, but  
18           we continue the meet constantly in our community to  
19           better understand how this will affect our Treaty  
20           Rights. I welcome you, and I hope today you listen  
21           with your heart as well as your minds. (Aboriginal  
22           word spoken).

23                 [Applause]

24       CHIEF TSAKOZA:                 My name is Chief Lynette  
25           Tsakoza from the Prophet First Nations. I welcome



1           you to Treaty 8 territory.

2       TRIBAL CHIEF LOGAN:                    Thank you very much. We  
3           will now proceed to move to the back of the room,  
4           but you'll be hearing from us on Wednesday in more  
5           detail. So welcome to Treaty 8 territory.

6       FORMER CHIEF OKER:                    Just one more thing we're  
7           going to do, and we're going to talk to you about  
8           some very important issues while you're here.

9           So the issues that we're going to talk to  
10          you, we want to show it to you symbolically. So I  
11          want to ask all the people to come forth with some  
12          of their sacred objects that they think is  
13          important, and put it in front of them so that they  
14          can see the truth of what we want to talk about  
15          with regards to this hearing.

16          So let's start out with the contents of our  
17          Treaty, and all the guarantees in the middle, a  
18          very important issue that's going to be affected.

19          You guys bring whatever you have. Make room  
20          for our people that -- yeah, just make your way  
21          out, and put all the stuff there that you think is  
22          important.

23                   (Placing of traditional objects before the  
24          Panel).

25           This is the cultural feast of issues that

1           hasn't been talked about to your Environmental  
2           Assessment. And, while you are here, these are the  
3           things that we want to talk about. Thank you.

4   THE CHAIRMAN:                    Thank you very much for this.  
5           I would like to suggest that we take a short break  
6           right now so that anybody in the audience who wants  
7           to come and have a look at these objects can do so.  
8           Let's take 10 minutes right now. Thank you.

9           [Applause]

10          **(BRIEF BREAK)**

11   THE CHAIRMAN:                    Treaty 8 have kindly agreed  
12           to leave this display or artifacts in front of us  
13           until the noon break, so you'll have a chance to  
14           come and see some more.

15                    I would now like to ask if there are there  
16           any motions that any interested parties wish to  
17           make to the Panel?

18   MR. MCCORMICK:                    Mr. Chairman, my name is  
19           Jesse McCormick. I'm legal counsel for Sauteau  
20           First Nations. We wonder if we might have a brief  
21           moment to share an introduction. Thank you.

22

23   Introductory Remarks by the Sauteau First Nations:

24   MR. MCCORMACK:                    Good morning, Members of the  
25           Panel, representatives of BC Hydro, Panel

1           Secretariat. My name is Jesse M-c-C-o-r-m-i-c-k.  
2           I am legal counsel to the Saulteau First Nations.  
3           I'm joined here today by Councillor Watson of  
4           Saulteau First Nations, W-a-t-s-o-n. And in  
5           addition to the remarks that were shared just a few  
6           minutes ago, we'd like to elaborate a little  
7           further on the welcome from Saulteau, and to share  
8           a bit of information regarding why Saulteau is here  
9           today.

10                    To begin, we'd like to acknowledge and thank  
11           the Doig River drummers and Andrew Desjarlais for  
12           the opening, and his help to start these  
13           proceedings in a good way.

14                    We'd also like to acknowledge the leadership  
15           of Treaty 8 that has made the trip here to join us  
16           this morning.

17                    The leadership of Saulteau First Nations is  
18           represented here today by Councillor Watson, and  
19           the other members of Saulteau First Nations  
20           leadership do send their good wishes.

21                    We'd also like to acknowledge the presence of  
22           the Elders, Leaders, and Community Members from the  
23           various communities that stand to be impacted by  
24           this project. And we'd like to offer a particular  
25           appreciation to any members of Saulteau First

1 Nations who have made the trip here to join us  
2 today. The Saulteau First Nations welcome you to  
3 Treaty 8 territory.

4 In considering Treaty 8 to be a sacred peace  
5 agreement, which guarantees that Saulteau First  
6 Nations members the right to continue in their  
7 traditional activities without interference, it is  
8 understood to be a binding agreement of peace and  
9 coexistence under which this land would be cared  
10 for, and the benefits of the land would be shared.  
11 It is under that agreement that all people of  
12 Treaty 8 territory live and share the land.

13 Within that area, and before the Site C  
14 project was proposed, Saulteau First Nations  
15 identified core areas of critical concern to the  
16 community. Those areas include the area of  
17 critical community interest and the Peace-Moberly  
18 Tract. And we will have available for you later  
19 displays on the screen of those areas.

20 Saulteau First Nations have been actively  
21 working to protect its members' rights and  
22 interests in those areas for many years, much of  
23 what you will hear from Saulteau First Nations in  
24 those proceedings relates directly to protecting  
25 those areas. You now see them displayed on the

1 screen. The area outlined in red is the  
2 Peace-Moberly Tract. And the area outlined in  
3 green is the area of critical community interest,  
4 areas of significant concern to Saulteau First  
5 Nations and Saulteau First Nations members.

6 Saulteau First Nations members rely on these  
7 areas for traditional resources, for food, for  
8 medicine, and for other purposes. And the Saulteau  
9 First Nations are particularly concerned about the  
10 potential impacts of industrial development on  
11 moose, fish, plants, and other harvestable and  
12 culturally-significant resources within this area.

13 Moose will also be an area of particular  
14 focus for Saulteau First Nations in these  
15 proceedings. Moose are an intrinsic part of the  
16 Saulteau First Nations identity. They are a  
17 cherished food stuff, a key cultural resource, and  
18 a primary component of the Saulteau First Nations  
19 traditional practices.

20 Saulteau First Nations are also concerned  
21 about potential socio-economic impacts on Saulteau  
22 First Nations if the proposed project is approved.  
23 And we hope to share further information with you  
24 regarding those potential impacts as well.

25 Lastly, Saulteau First Nations will also be

1 sharing information about the significant impact of  
2 industrial development within their territory, and  
3 the cumulative effects of those developments and  
4 how they have impaired the exercise of Aboriginal  
5 and Treaty Rights.

6 In closing, I'd like to note that Sauleau  
7 First Nations wishes to consider the information to  
8 be made available through the hearing process  
9 before adopting a final position on this project.  
10 And I would also note that many concerns about the  
11 project have been expressed by Sauleau First  
12 Nations members.

13 With those remarks, on behalf of Sauleau  
14 First Nations, I welcome you to Treaty 8 territory.  
15 We wish you well in your deliberations.

16 We would also like to have Councillor Watson  
17 share a few words with the Panel.

18 COUNCILLOR WATSON: Thank you. As I  
19 mentioned earlier this morning, I want to thank you  
20 again for this opportunity to speak. It's  
21 important to have these face-to-face dialogues to  
22 really get the feel about what we're talking about.  
23 And this morning, I wanted to talk to you about  
24 this area that project Site C is going to take  
25 place in, if it goes through.

1           It's very, very dear to me, personally. My  
2 grandfather, who I was raised by up until the age  
3 of 5 years old, that project borders his trap line  
4 area. And I was raised there until I had to go to  
5 school. But I still use that area to this day for  
6 my berry picking, my hunting, and my trapping. My  
7 Auntie Bev has now taken over that trap line when  
8 my grandfather, Frank, passed away some years ago.  
9 And it's widely used by our whole community, in  
10 general, and we often have our traditional culture  
11 camps out there during the summer.

12           As you can see from that map, our reserve is  
13 the little shape on the bottom right corner. And  
14 so you can imagine the use that that area gets from  
15 our people. And already it has been affected, that  
16 area, by industry, and to add the Site C project to  
17 that would devastate that land; I tell you that  
18 right now.

19           I want to share a message to you that our  
20 Chief Harley Davis sent this morning, and he says  
21 Saulteau First Nations has chosen to take part in  
22 the environmental assessment on this proposed  
23 project. Saulteau First Nations also continues to  
24 take part in all field assessments, archaeological  
25 assessments, ground and slope assessments.

1           Saulteau First Nations continues to take part in  
2           these studies to ensure that Treaty Rights,  
3           wildlife and environment are always at the  
4           forefront. Saulteau First Nations is not taking  
5           the stand on whether we support or are against the  
6           proposed project at this time.

7                       However, Saulteau will continue to review the  
8           information that we have gathered from all these  
9           studies and assessments, and this information will  
10          then be taken to our members to review and comment.  
11          When this process is completed, the members will  
12          decide if they support the project or not.

13                      Chief Davis also says that these words  
14          represent where we are now in all of this. We  
15          still have no clear mandate from our membership.  
16          But we will continue to work together to form a  
17          decision that will affect us all, and we take that  
18          into consideration because we are 1,000 members  
19          strong in Treaty 8 First Nations territory, but we  
20          have other brothers and sisters who share our land  
21          with us. And that will also be. And we think  
22          about the future, our children and their children,  
23          those that are going to come after us. That's who  
24          we keep this land for. And that's our inherent  
25          right, our responsibility from the Creator that we



1           have to take care of this land, not for us, but for  
2           those who come after us, and that includes your  
3           children, too. So think about those things when  
4           we're thinking about how we're going to move on  
5           this project. (Aboriginal word spoken).

6           [Applause]

7           THE CHAIRMAN:                               Thank you, councillor.

8           Councillor. May I ask again, are there any  
9           interested parties who wish to make motions at this  
10          point?

11                       Sir?

12

13          Motions by Interested Parties:

14

15          By the Athabasca Chipewyan First Nation, the Mikisew Cree  
16          First Nation, and the Dene 'Tha First Nation:

17          MR. LANGLOIS:                               Hello. Good morning. My  
18          name is Jeff Langlois, L-a-n-g-l-o-i-s. I'm a  
19          lawyer from Janes Freedman Kyle in Vancouver. Our  
20          firm is representing the Athabasca Chipewyan First  
21          Nation, the Mikisew Cree First Nation, and the Dene  
22          'Tha First Nation. And these are First Nations  
23          that lay downstream from the proposed project.

24                       We'll be participating primarily on the  
25          topic-specific sessions in January, but we did file

1 a procedural motion on December 2nd that I wanted  
2 to speak to briefly.

3 That motion contained two items. And over  
4 the last week, there's another procedural item  
5 that's come up that I hope to speak to very  
6 briefly.

7 The first item in that motion concerned the  
8 identification of witnesses by BC Hydro and by  
9 government participants. In the last week,  
10 BC Hydro has committed to deliver that list of  
11 witnesses within this current week. So that's fine  
12 to the extent that occurs.

13 There's still a number of government  
14 participants that have filed written submissions  
15 but that have not either identified witnesses or  
16 identified these sessions which they will be  
17 attending.

18 So we're looking for a direction that those  
19 governments' participants provide that information;  
20 specifically, Parks Canada, Transport Canada, the  
21 Alberta Ministry of Environment, and the BC  
22 Ministry of Forest, Lands, and Natural Resources  
23 have filed written submissions, certain of those  
24 parties have identified witnesses, but none of  
25 those parties have identified which topic-specific

1 sessions they will be having their witnesses attend  
2 to answer questions. So I'm hoping there can be a  
3 direction from the Panel that those governments'  
4 participants provide that information.

5 The second item in our motion was a motion  
6 pursuant to Section 5.7 of the hearing procedures.  
7 That section requires that parties that rely on  
8 expert witnesses make those experts available  
9 during the hearings. There are certain of our  
10 experts that we are seeking hearing time for, and  
11 will be present at the hearings.

12 We've provided a list to the panel of experts  
13 which we do not intend to provide oral  
14 presentations, and which we are hoping can be  
15 excused from attending sessions in either Peace  
16 River or Fort St. John. It's really a practical  
17 concern for our clients. It's very expensive to  
18 bring certain of these experts to these hearing  
19 sessions. We don't want to foreclose any  
20 possibility of the Panel, or any other participant,  
21 including the proponent, from asking questions to  
22 those witnesses, but the witnesses we've  
23 identified, we think there might be a less  
24 possibility for there to be questions.

25 So we are seeking a direction that those

1 witnesses be excused if there is no intention of  
2 the Panel or any other participants to ask  
3 questions. Of course if there are questions to be  
4 asked, we will provide access to those experts of  
5 course.

6 Those are the two items that were in our  
7 written motion on December 2nd.

8 There's one additional item that's come up in  
9 the last week. Two of our clients, Mikisew Cree  
10 First Nation and the Athabasca Chipewyan First  
11 Nation, have retained Dr. Martin Carver to provide  
12 an expert report on downstream hydrological issues.  
13 That report was filed with the Panel on  
14 November 25th.

15 On December 3rd, counsel for BC Hydro sought  
16 leave to file a rebuttal report to that report. We  
17 filed a letter on Saturday in which we expressed  
18 that we had no problem with a rebuttal report being  
19 filed, but expressed a concern as to the timeline.  
20 BC Hydro's counsel has sought a deadline of  
21 December 20th for the delivery of that report. In  
22 our letter on Saturday, we expressed that we would  
23 prefer if that report was delivered to us by the  
24 16th. It's a short amount of time, but days are  
25 very important, as you noted this morning.

1           On Friday night, I only learned this morning  
2           that counsel for the Panel had assented to BC  
3           Hydro's request to file that rebuttal report by the  
4           20th.

5           We'd just like to reiterate the concerns we  
6           have as to that deadline. Principally, there's  
7           going to be a lot of, obviously, Saturdays and a  
8           lot of work that needs to take place over the  
9           coming time, but December 20th is essentially the  
10          last working day before the Christmas holidays.  
11          Our expert has family commitments during the week  
12          following that.

13          If we could have that report prior to the  
14          20th, and I'm hoping on the 16th, I think that will  
15          give our expert the opportunity to review that  
16          rebuttal report and prepare for his oral  
17          presentation and potentially prepare to answer  
18          anything that's in that rebuttal report as well.

19          So we're seeking a direction that that report  
20          be delivered on or before December 16th.

21          And those are all the issues I have to raise.

22          Thank you.

23          THE CHAIRMAN:                    Thank you, Mr. Langlois.

24          Are there any other motions?

25          Then I think we can respond to some of these

1 right away.

2 Sorry?

3 MR. FELDBERG: Mr. Chair, I wonder if I may  
4 be able to respond on behalf of BC Hydro to the  
5 application that was just made by my friend, if  
6 possible. He raised two issues --

7 THE CHAIRMAN: Who are you, please?

8 MR. FELDBERG: I am counsel for BC Hydro,  
9 Peter Feldberg.

10 THE CHAIRMAN: Thank you.

11 MR. FELDBERG: F-e-l-d-b-e-r-g. My  
12 apologies.

13 He raised two issues with respect to my  
14 client, one of which was whether or not certain of  
15 his witnesses would be required to come whether we  
16 would have questions for them.

17 At this stage, it's still difficult to assess  
18 whether we will have questions for every witness  
19 that is there. I think that we can say at this  
20 point it's very unlikely that we will have  
21 questions for Dr. McCormick on that list. But I'm  
22 unable to say right now whether we will have  
23 questions for the others. I will advise my friend  
24 as soon as I can whether we will or not so that he  
25 can make appropriate arrangements. I do not know

1           whether the Panel itself will have questions of  
2           those witnesses, so, obviously, can't deal with  
3           that.

4                       With respect to the response to Dr. Carver,  
5           we did get a ruling on Friday on that the date of  
6           December 20th wasn't sought lightly. As I think I  
7           pointed out in my letter there, there are a number  
8           of experts that need to be coordinated in order to  
9           put that response together. What I can say is we  
10          will do everything possible to get it done earlier.  
11          And I understand my friend's constraints, and I  
12          will try very, very hard to get that to him, if not  
13          on the 16th, as soon as I can after that.

14       THE CHAIRMAN:                       Thank you, Mr. Feldberg. I  
15          take it, then, that the first issue of the  
16          identification of witnesses in advance has been  
17          dealt with.

18                       With respect to the government witnesses, the  
19          Panel requires them also to be -- to identify  
20          themselves or be identified. And we will  
21          communicate that to the errant parties.

22                       With respect to excusing witnesses from  
23          attendance, I think we will hold on that until we  
24          see a little bit farther the nature of questions  
25          that need to be asked of them, and whether or not

1           some of them can be excused.

2                         With respect to the dates of the 16th or the  
3           20th, it is in the nature of this rather  
4           abbreviated procedure and the timetables imposed  
5           upon us all that many of us will be working over  
6           Christmas. We knew that when our counsel said the  
7           20th. I welcome Mr. Feldberg's assurance that  
8           Hydro will do everything possible to make that  
9           material available by the 16th, or at least earlier  
10          than the 20th. In any case, there will be an  
11          opportunity to test it all in front of the Panel  
12          and all of you after Christmas.

13                        Thank you. I think that disposes of the  
14          motion.

15                        Are there any further motions?

16                        In that case, I would call upon -- oh. A  
17          gentleman in the back.

18

19          Motion by Mr. Hadland:

20          MR. HADLAND:                 Good day. I'd like to welcome you  
21          to the Peace country, too. My name is Randy  
22          Hadland, H-a-d-l-a-n-d.

23                        I would also like to thank Treaty 8 for the  
24          prayer and for the drumming.

25                        I farm on the banks of the Peace River. And



1 when things get a little hectic here, maybe we  
2 could all just try and remember the drumming and  
3 standing on the side of the Peace River and listen  
4 to it.

5 My motion comes from your speech, sir. I  
6 agree with most of what you said, and was very  
7 pleased to hear that you will address the issues  
8 here seriously. But there is a contradiction in  
9 that you have this mandate from the governments  
10 that this is a matter of time of the essence.

11 And time is not of the essence. We've been  
12 fighting BC Hydro for 40 years. We've been beating  
13 them for 40 years. We have -- we have to have the  
14 opportunity to go through all of the information as  
15 slowly and as painstakingly as we need to;  
16 otherwise, all the good seriousness is not going to  
17 be of assistance.

18 So my motion is that I request that you  
19 notify the governments that in the event that the  
20 information you're going to be looking at is  
21 requiring more time, that you will have to take  
22 that time.

23 Thank you.

24 THE CHAIRMAN: Thank you, Mr. Hadland.

25 [Applause]

1 THE CHAIRMAN: I think for the moment all  
2 that's necessary to say is that we have a -- really  
3 a statutory deadline, and we are constrained to  
4 follow the law. But within that, we will do  
5 everything that we can to make sure that all the  
6 relevant considerations are heard and considered.

7 Thank you.

8 Are there further motions?

9 In that case, I call upon BC Hydro to  
10 introduce the project.

11

12 Opening Statement by BC Hydro:

13 MR. FELDBERG: Thank you, Mr. Chairman. All  
14 we have in the opening is an opening statement that  
15 BC Hydro will make. What we wanted to do at the  
16 beginning was to introduce you to the panel that  
17 you will see at the general and at the community  
18 sessions.

19 At the topic-specific sessions we will, of  
20 course, have different witnesses and experts, but  
21 we thought it would be useful for you to see and  
22 hear from those that you would be seeing throughout  
23 the days in Fort St. John, Hudson's Hope, and  
24 elsewhere at the communities as well.

25 I'd like to introduce you to the BC Hydro

1           general panel.

2

3           Introduction of BC Hydro's General Panel:

4           Bridget Gilbride

5           Robert Lonergan

6           Craig Godsoe

7           Peter Feldberg

8           Michael Savidant

9           Trevor Proverbs

10          Susan Yurkovich

11          John Nunn

12          Siobhan Jackson

13          Al Strang

14

15          MR. FELDBERG:           Third from the end towards you is

16           Ms. Susan Yurkovich, who is the executive

17           vice-president of BC Hydro responsible for the

18           project.

19           To her immediate right is Trevor Proverbs,

20           who is the First Nations project director -- or

21           First Nations director for the project.

22           To his right is Michael Savidant, who is the

23           commercial manager for the project.

24           Moving to the left of Ms. Yurkovich is John

25           Nunn, who is the chief project engineer.

1           To his left is Siobhan Jackson, who is the  
2 socio-ec manager.

3           And to her left is Al Strang, who is the  
4 environmental manager.

5           And Ms. Yurkovich has an opening statement  
6 that she'd like to make at this point.

7 MS. YURKOVICH:           Thank you, Mr. Feldberg.

8           Good morning, Chair, Panel Members, Chiefs of  
9 Treaty 8, and Councillor Evans and participants  
10 here today.

11           Before I present my opening remarks, I would  
12 like to acknowledge these hearings are taking place  
13 on Treaty 8 territory.

14           On behalf of BC Hydro and the project team,  
15 I'd like to thank the Panel Members and all  
16 participants for taking the time to be engaged in  
17 this important process. Over the weeks ahead, we  
18 welcome the opportunity to listen, to provide  
19 information, and to respond to questions.

20           For decades, British Columbians have  
21 benefited from the hydro electric dams and  
22 generating stations built from the 1960s to  
23 mid-'80s. These heritage assets deliver clean,  
24 reliable, affordable electricity to homes and  
25 businesses across the province. They have also

1 made BC one of the fortunate jurisdictions that is  
2 able to provide for its own power needs.

3 Now, more than 50 years later, we are  
4 preparing our facilities and our system to meet the  
5 needs of the generations that will follow.

6 Since BC Hydro's last new major facility was  
7 built, the province's population has grown by more  
8 than 1.5 million people. Along with that  
9 population, here BC's economy has continued to  
10 expand, bringing new residences, businesses, and  
11 industrial activity.

12 BC Hydro is the Crown corporation that, under  
13 the ***Utilities Commission Act and Tariffs***, has the  
14 obligation to meet its customers' needs, and we lay  
15 out our plans to do so in our long-term resource  
16 plans. Our current plan forecasts the demand for  
17 electricity will increase by, approximately,  
18 40 percent over the next 20 years.

19 BC Hydro's first choice to meet this growth  
20 is through aggressive conservation and efficiency  
21 initiatives targeted to offset more than three  
22 quarters of future load growth through a  
23 combination of demand-side initiatives, including  
24 codes and standards, programs, and rate structures.

25 In addition, we have contracted with

1 independent power producers to provide electricity  
2 through long-term purchase agreements, and we are  
3 reinvesting nearly 2 billion dollars annually to  
4 upgrade the capacity, safety, and reliability of  
5 existing facilities to ensure that they are  
6 available for generations to come. However, as  
7 demand continues to grow, we will also need to add  
8 both new energy and capacity to our system.

9 For those of you who have lived in British  
10 Columbia, you will know that Site C has been  
11 contemplated for many years, first identified as  
12 part of the two rivers strategy. The project was  
13 part of the two rivers strategy, which sought to  
14 harness the hydro-electric potential of the Peace  
15 and Columbia Rivers to facilitate the growth of the  
16 province.

17 The WAC Bennett Dam was completed in 1968,  
18 followed by Peace Canyon in 1980, and planning for  
19 Site C began in earnest in the late '70s. An  
20 application to the newly-formed BC Utilities  
21 Commission was made in 1981, and public hearings  
22 were held through the following year.

23 In its 1983 decision, the BCUC did not  
24 approve the project citing the need for more  
25 information on load requirements and alternatives;

1 information that is included in the Environmental  
2 Impact Statement for this project. However, it's  
3 also important to note that they concluded that in  
4 some -- while the Commission recognizes that major  
5 impacts will result from the Site C project, the  
6 Commission concludes that they are not so large as  
7 to make them unacceptable.

8           Provided that appropriate conditions are  
9 placed on hydro, and that the government response  
10 to the special needs created in the region, the  
11 impacts can be successfully and acceptably managed.

12           Development of a hydro dam at Site C was  
13 advanced again from 1989 to 1991, and then deferred  
14 in favour of demand-side management. But with  
15 provincial electricity demand continuing to grow,  
16 the challenges faced, including the subsequent  
17 cancellation of the Duke Point gas fired project  
18 and the provincial government's commitment to  
19 addressing the impacts of climate change, the  
20 development of a hydro dam at Site C has been part  
21 of our long-term plan in each successive plan.

22           Between 2004 and 2007, the review of existing  
23 Site C project engineering and records was  
24 undertaken to determine whether it was in the best  
25 interests of BC Hydro's customers to advance the

1 project to the next stage of project planning and  
2 development. This work is summarized in the Site C  
3 feasibility review, stage 1 completion report.

4 Then in its March 2007 energy plan, the  
5 province of British Columbia directed BC Hydro to  
6 initiate consultation with Aboriginal groups,  
7 communities in the province of Alberta and  
8 Northwest Territories. BC Hydro held over 120  
9 consultation meetings between 2007 and 2009. The  
10 province initiated discussions with Alberta and the  
11 Northwest Territories, and we began a separate  
12 process of private discussions with potentially  
13 impacted property owners.

14 Importantly, as part of the Crown's duty to  
15 consult, BC Hydro initiated consultation and  
16 engagement with over 40 Aboriginal groups;  
17 primarily, Treaty 8 First Nations in British  
18 Columbia, Alberta, and Northwest Territories so  
19 that we could begin to understand their interests  
20 and concerns.

21 In addition to further geotechnical  
22 investigations, a large number of baseline studies  
23 were initiated to characterize the existing  
24 physical, biological, and socio-economic  
25 environment in the project area. To help guide



1           this work, we established seven technical advisory  
2           committees for key programs, areas, including fish,  
3           wildlife, heritage, greenhouse gas, recreation and  
4           tourism, land and resource, and community services  
5           and infrastructure.

6                        These technical advisory committees included  
7           representatives of First Nations and local and  
8           provincial and federal regulatory authorities,  
9           including Environment Canada, BC Ministry of  
10          Environment, Department of Fisheries and Oceans,  
11          and Transport Canada, who provided early input into  
12          the scope of the potential data collection and  
13          methodologies for an environmental assessment.

14                       This led to the development of a  
15          comprehensive multi-year program to gather baseline  
16          information throughout the project area.

17                       A stage two report, including a  
18          recommendation to advance the project, was  
19          submitted to the province in late 2009. And in  
20          April 2010, the province announced the decision to  
21          proceed with the project, subject to achieving  
22          environmental certification and meeting the Crown's  
23          obligation to consult and accommodate First Nations  
24          where appropriate.

25                       At this time, the historic project design was

1 updated to reflect current seismic environmental  
2 standards. This work was reviewed by our external  
3 technical advisory board and a group of  
4 internationally-recognized engineering experts who  
5 provide ongoing, arm's-length input as part of our  
6 quality assurance and technical due diligence.  
7 This updated design formed the basis of the project  
8 description report, which was submitted in May of  
9 2011.

10 In August of that year, the Ministers of  
11 Environment Canada and British Columbia confirmed  
12 that the project will be subject to a cooperative  
13 review process, including a two-year pre-panel  
14 stage followed by public hearings conducted by a  
15 joint review panel. This agreement was finalized  
16 in February 2012 following public comment, and  
17 amended in September after the new federal CEAA  
18 legislation came into force. Accordingly, the  
19 assessment for Site C includes some requirements  
20 that are no longer part of CEAA 2012, but reflect  
21 the hybrid nature of the assessment we are  
22 undergoing.

23 To provide advice on the content of the  
24 Environmental Impact Statement guidelines and the  
25 valued components to be studied, the regulators

1 established a working group comprised of federal  
2 agencies and provincial authorities from Alberta,  
3 British Columbia, Northwest Territories, along with  
4 Aboriginal groups and local and regional  
5 governments.

6 Draft guidelines were prepared consistent  
7 with the provincial and federal guidance documents,  
8 and were subject to consultation and open houses in  
9 the project area.

10 The final guidelines were issued by the  
11 federal minister of environment and executive  
12 director of the BCEAO in September of 2012.

13 In January of this year, BC Hydro submitted  
14 its Environmental Impact Statement in accordance  
15 with the requirements of the EIS guidelines. This  
16 comprehensive document is laid out in five volumes,  
17 and describes the need for the project,  
18 environmental background changes, and potential  
19 effects, and proposed mitigation for the 22 valued  
20 components. It also describes the project  
21 benefits, alternatives, and justification of the  
22 significant adverse residual effects.

23 The public was invited to comment on the EIS  
24 from February to April, and during this time the  
25 regulators held both open houses in six

1 communities, along with both general and  
2 topic-specific meetings with the working group.  
3 The comments and responses to the information  
4 requests were adjudicated by the regulators, who  
5 then directed BC Hydro to amend its EIS. And on  
6 August 1st, CEAA and BCEAO advised that the EIS was  
7 satisfactory.

8 The purpose of this environmental assessment  
9 is to predict the potential effects, both adverse  
10 and beneficial, that are likely to result from the  
11 project. We believe that the substantial work  
12 undertaken, as part of this assessment,  
13 demonstrates that the potential adverse effects  
14 from the project can largely be mitigated through  
15 careful planning, comprehensive mitigation  
16 programs, and ongoing monitoring during  
17 construction and operations.

18 However, a determination that a significant  
19 residual adverse effect is likely was made for four  
20 valued components: fish and fish habitat, wildlife  
21 resources, vegetation and ecological communities,  
22 and current use of land and resources for  
23 traditional purposes.

24 For these and the other potential effects, we  
25 have proposed comprehensive mitigation measures,

1 environmental management plans, and ongoing  
2 monitoring, which are described in section 39 of  
3 the EIS.

4 We recognize that for some, these measures  
5 will not satisfy all of their concerns. We respect  
6 the views of all participants, and we are grateful  
7 for the valuable contributions to the project that  
8 have been provided to date.

9 If the Site C project proceeds, it is our  
10 intention to work hard to mitigate the effects of  
11 the project, and to deliver on our commitments to  
12 both First Nations and communities.

13 The assessment also includes an evaluation of  
14 the beneficial effects of the project.

15 Construction is expected to create, approximately,  
16 10,000 direct jobs and 33,000 direct, indirect, and  
17 induced through all stages of the project.

18 Site C will also provide substantial economic  
19 and regional benefits, including a \$3.2 billion  
20 increase to provincial GDP, regional employment and  
21 contracting opportunities, improvements to road and  
22 infrastructure, and new recreational opportunities.

23 As a third dam on the Peace River, the  
24 project would make valuable use of the existing  
25 Williston reservoir to generate 35 percent of the

1 output of the Bennett Dam with 5 percent of the  
2 reservoir footprint. And as a firm dispatchable  
3 resource, it will provide additional capacity to  
4 meet peak demand, and to facilitate the integration  
5 of intermittent resources.

6 Importantly, as a clean renewable resource,  
7 Site C will deliver power with very low emissions  
8 per unit of energy produced, helping to support  
9 both federal and provincial greenhouse gas  
10 reduction targets.

11 BC Hydro believes that while the project has  
12 the potential to result in some significant  
13 residual adverse effects, they can be justified in  
14 light of the need for the project and the benefits  
15 associated with it.

16 This provides a high-level summary of the  
17 process that brings us to today. We recognize the  
18 important role that this panel has in the  
19 environmental assessment of the project. Part of  
20 that mandate includes conducting these public  
21 hearings, which begin today, and continue in the  
22 weeks ahead.

23 In order to fulfill your mandate, you must  
24 consider a large body of evidence, both written and  
25 oral. We appreciate that this is a complex and

1 challenging task, and we, from BC Hydro, will do  
2 everything we can to support your efforts by  
3 providing the information and the experts that you  
4 require.

5 We've reviewed the schedule provided by the  
6 panel, and have arranged for experts to be  
7 available to present and answer questions at the  
8 sessions identified. Later today at the  
9 topic-specific session on needs, purpose, and  
10 alternatives, I'll be joined by colleagues,  
11 including Randy Reimann, who leads our BC Hydro  
12 resource planning group. Tomorrow, John Nunn, our  
13 chief project engineer, will lead the panel on  
14 alternative means of carrying out the project. And  
15 later this week, following the general session in  
16 Fort St. John, you'll hear from experts on topics  
17 relating to atmospheric environment, including  
18 Dr. Mike Murphy, head of Stantex National  
19 Atmospheric Group, and Dr. Jean-Michel De Vink, who  
20 completed the GHG modelling. Experts will also be  
21 available to discuss air quality, meteorology,  
22 noise, vibration, and climate change.

23 When the topic-specific sessions resume in  
24 January to respond to questions about aquatic and  
25 downstream environment, our panel will include

1 experts on downstream changes, hydrology, and  
2 cumulative effects. In addition, Drs. John Small,  
3 Darryl Smith, George Ashton, Kevin Timoney, and  
4 Stephen Burgess will be available to discuss issues  
5 related to the Peace-Athabasca Delta.

6 On January 13th, the panel has scheduled a  
7 review of the aquatic environment, and we will have  
8 a variety of experts available to address the  
9 listed topics, including dam safety and seismicity.

10 The vegetation and wildlife sessions will  
11 include experts from Keystone Wildlife Resources,  
12 Golder Associates, BGC Engineering, and Big Sky,  
13 and Traditions Consulting.

14 For the session on asserted or established  
15 Aboriginal and Treaty Rights, our panel and experts  
16 will address BC Hydro's approach taken in section  
17 34 of the EIS and its conclusion, and we'll discuss  
18 accommodation and mitigation implemented to date  
19 and proposed.

20 Regional development is scheduled for  
21 January 18th where effects on agriculture,  
22 forestry, oil, gas, minerals, and aggregates will  
23 be addressed.

24 And, finally, the sessions on local and  
25 socio-economic environment on January 20th and 21st



1 will include topic areas important to communities,  
2 and BC Hydro will be assisted by experts who  
3 completed the socio-economic assessment, including  
4 Dr. Linda Erdreich, Golder Associates, RWDI, and  
5 Azimuth Consulting to discuss project-related  
6 changes and human health.

7 The decision to advance this project to this  
8 stage has not been made lightly. It has resulted  
9 from careful consideration of the future  
10 electricity needs of our customers following  
11 many years of review and analysis.

12 The federal and provincial decision-makers  
13 will ultimately have to decide whether the  
14 potential significant residual effects are  
15 justified in this circumstance.

16 As with any large infrastructure project,  
17 we've acknowledged that there will be some effects  
18 that cannot be fully mitigated, but there will also  
19 be significant benefits from the project for  
20 ratepayers, taxpayers, local and First Nations  
21 communities.

22 These decisions are not easy, and the  
23 prospect of them often provokes rigorous public  
24 debate. While preparing for these hearings, I've  
25 been reviewing some of the clippings from the late

1 '60s and '70s when our hydro facilities were first  
2 being built. If you didn't look at the dates on  
3 the pages, you could easily imagine that they had  
4 been written in this year about this project.

5 Of interest were the remarks of then  
6 Lieutenant Governor George Pearkes in his 1967  
7 opening address at the WAC Bennett Dam. He said:

8  
9 "It may be apparent to  
10 everyone today that harnessing of  
11 the Peace River promises great  
12 benefits for the people of British  
13 Columbia, but this was not always  
14 so. There were some who expressed  
15 concern when the project was  
16 launched. They felt the cost would  
17 be too great for our relatively  
18 small population to bear, that  
19 there would be insufficient market  
20 for the tremendous amount of power,  
21 and that it was too far from the  
22 population centre to be  
23 economically feasible."

24  
25 Concerns were raised again about the cost and

1 the need for the Revelstoke dam, and, today, these  
2 facilities deliver electricity to British  
3 Columbians at between one and a half and three  
4 cents a kilowatt hour, and will continue to do so  
5 for generations. That is because, while these  
6 assets have a large up-front capital cost, they  
7 have low operating costs, and, with maintenance,  
8 can provide dependable electricity for more than  
9 100 years.

10 As with these historic projects, there are  
11 those who have voiced similar concerns about  
12 Site C, but Site C also enjoys considerable public  
13 support. A recent province-wide poll found that  
14 over 80 percent of those surveyed support the  
15 project provided that it undergoes a thorough  
16 environmental assessment and that the communities  
17 in the region are consulted.

18 As the public entity responsible for keeping  
19 the lights on for our customers, it's our job to  
20 ensure that we have the electricity to meet the  
21 needs of our residential, commercial, and  
22 industrial customers now and in the years ahead.

23 While forecasts may move up or down in any  
24 given year, the long-term trend is clear. The  
25 demand for electricity is increasing. It is for

1           these reasons that BC Hydro believes that building  
2           Site C is the right thing to do so that our  
3           customers can continue to enjoy the benefits of  
4           domestic, cost-effective, dependable, and renewable  
5           electricity for generations to come.

6                       Thank you for the opportunity to present this  
7           morning. We look forward for the discussion ahead.

8   THE CHAIRMAN:                       Thank you, Ms. Yurkovich and  
9           Mr. Feldberg. That's a very broad and general  
10          introduction.

11                       I wonder if there are any interested parties  
12          who wish to ask questions at this stage? Please,  
13          come to the microphone.

14

15   Questions by Interested Parties:

16   MS. FUCHS:                       Hi. I'm Sandra Fuchs from  
17          Saulteau First Nations. And I've been interested  
18          in this for a long time because of all of the  
19          archeology assessments that has been done  
20          throughout the years, and I was actually involved  
21          in that. And I just want to see where -- when they  
22          did do the Site C archaeology tests and everything,  
23          and what they found out there, I'm wondering how  
24          come it's not sitting in front of us?

25                       And the other thing is that water flooding.

1 The water is going to be flooded around Moberly and  
2 Halfway area and other -- probably other little  
3 tributaries and rivers that are coming in due to  
4 the fact that it's going to be a big damage towards  
5 our Peace -- towards our river.

6 And when they did the process in 1967, they  
7 didn't do -- they did not consultate with the First  
8 Nations at that time. The First Nations didn't  
9 know what was going on. They didn't talk about the  
10 white paper that time.

11 So, now we have a lot of people that are  
12 educated. We got a lot of people that are doctors.  
13 We got a lot of people that are archeologists.

14 Now, in that time, when they did -- when they  
15 had that process for the first dam that went in, it  
16 created nothing but just for their benefit, not for  
17 the First Nations. Because a lot of -- no  
18 archaeology was done at the time, and nothing was  
19 brought forward to the First Nations in our area.

20 My grandfather and my grandparents have been  
21 living here for years and years. I grew up here.  
22 And throughout the years that they say that our --  
23 we live clean with this BC Hydro economy.

24 When they pushed the road through to Hudson  
25 Hope at the time, they didn't consultate with us,

1           they just went ahead and did it.

2                       So, you know, to the advantage of other  
3           people, and to this day, like, with all the  
4           windmills going up, I'm sure the windmills could  
5           take care of half the United States for them to get  
6           their electricity.

7                       And, you know, like, for the electricity, for  
8           them to say that we're living in an area where our  
9           electricity is cheap, our electricity has gone up  
10          15 percent now, even with the windmills here. So,  
11          you know, we're always fighting with BC Hydro.  
12          Everything that comes, like -- like, with our -- we  
13          didn't get no benefits at all at the time when we  
14          were -- when 1967, when they put that first dam in.  
15          And then when they put that second dam in, they  
16          didn't consultate with us either; we never sat at  
17          the table.

18                      So who is benefitting from this? Not the  
19          First Nations. It's probably other communities  
20          that BC Hydro has been paying to. We never got one  
21          red cent as a First Nations from BC Hydro. We  
22          never got a cut from BC Hydro. We never had any  
23          free hydro from them for utilizing our land and our  
24          resources.

25                      Now, when you think about that, you think

1 about all the First Nations all around that are  
2 living here. Eight communities. You know, we  
3 don't benefit from this. We do not. Because it's  
4 not even going to come through our table, and we're  
5 not even going to get one cent out of it again.

6 They say it's clean. And, you know, when you  
7 destruct something, when you disturb that land, you  
8 cannot place it back again. You cannot make it the  
9 same way as it was before. In a lot of areas down  
10 that Peace River where all the animals are living,  
11 there is a place there in that island where we get  
12 our moose from, where the cows go and calf there  
13 every springtime. Now they are going to be  
14 displaced somewhere else.

15 You know, when you think about it, you're  
16 taking our food sources from our mouth and then  
17 letting this water, you know, stabilize in one  
18 area, but the flooding in our communities are going  
19 to be higher.

20 I don't know what kind of consultation that  
21 has been going on, but I follow a lot of stuff.  
22 And the thing that really gets me upset is because  
23 BC Hydro did not consultate with the First Nations  
24 at the beginning. And, today, it's really  
25 heart-breaking of what's happening to our land.

1           So when you think about it, you know, like,  
2           it would be nice that -- you know, I'm glad that  
3           you're sitting here and listening to our point of  
4           views and having all these things come in right  
5           there, but, you know, when you think about it,  
6           BC Hydro didn't -- they dug up a lot of ground to  
7           do that archaeology. They found our ancestors'  
8           stuff all along that river, knowing that we did  
9           stay there, we did park our -- we did camp  
10          overnight there. We did our moose hunting there,  
11          our fishing, trapping, but, yet, it's going to be  
12          taken away from us again.

13                 That big area that they did for the Peace  
14          Williston, that was the big, major damage. Now,  
15          you try to fish in there. And you try to, like,  
16          you know, trap there. There's no way that you can  
17          do that over there. The water's poison. You know,  
18          you can't drink that water. You can't make water  
19          go back into clear again that you can drink it.  
20          And the fish, the fish are poisoned all from the  
21          mercury.

22                 Now, that same similar thing is going to  
23          happen in our area. They want to put Kokanee in  
24          our rivers. Kokanee is going to eat up our fish  
25          that we always, you know, every year we fish for.



1                   But the thing I'm worried about is just the  
2                   animals. Like, we have so many people that we have  
3                   to fight for; like, for instance, all the hunters  
4                   that come into our area, you know. So there's a  
5                   lot of things I would like to say, but when you  
6                   come to my community, I'll let you know more.

7                   So thank you very much.

8                   [Applause]

9                   THE CHAIRMAN:                   Okay. Thank you.

10                   Are there any other general questions that  
11                   people would like to raise? Sir?

12                   MS. YURKOVICH:                   Mr. Chair, would you like us  
13                   to respond on the archaeology?

14                   THE CHAIRMAN:                   I think maybe just before the  
15                   lunch break, we should have a -- there may be other  
16                   points that you may wish to respond to.

17                   MS. YURKOVICH:                   Thank you.

18                   MR. FELDBERG:                   Mr. Chair, just before my  
19                   friend begins, my understanding was that today we  
20                   would have the topic-specific session, and that the  
21                   general session for this panel would be held  
22                   further on. So I wasn't sure what your plan was  
23                   for the day with respect to these folks as opposed  
24                   to the technical panel that I have coming up next.  
25                   I just wasn't sure on the schedule how this was

1 going to work.

2 THE CHAIRMAN: We have time now to hear  
3 comments to the very general introduction that  
4 Ms. Yurkovich made, and we will indulge people for  
5 the moment. We will have your presentation on the  
6 need, purposes, and alternatives immediately  
7 afterwards, and then we can go at it, hammer and  
8 tongs.

9 Thank you.

10 MR. FELDBERG: Thank you.

11 THE CHAIRMAN: Sir?

12 MR. HOWARD: Thank you. My name is Tim  
13 Howard. I am counsel to the Peace Valley  
14 Environment Association. I'm joined by my  
15 co-counsel, Ms. Anna Johnston, who is a staff  
16 lawyer with West Coast Environmental Law  
17 Association.

18 I understand that we will be allowed a brief  
19 moment to introduce our client to the panel by way  
20 of some opening remarks when we offer our witness  
21 of today, Dr. Marvin Schafer, so I'll leave those  
22 comments until later. But I just have a few  
23 questions to ask of Ms. Yurkovich, with your  
24 permission.

25 And I trust I may ask the question directly

1 of the presenter?

2 THE CHAIRMAN: You are to address the Chair,  
3 please.

4 MR. HOWARD: All right. Ms. Yurkovich, my  
5 question is directed to providing some context to  
6 the quote provided in 1967 on the opening of the  
7 WAC Bennett facility. And it's my understanding  
8 that today, BC Hydro has a relatively broad array  
9 of resources that you can look at in terms of  
10 figuring out the best way to meet the need for firm  
11 capacity and energy; is that correct?

12 THE CHAIRMAN: It would be helpful if you  
13 could ask a series of questions, if that's what you  
14 had in mind, and then we'll ask Hydro to respond to  
15 them all together. Thank you.

16 MR. HOWARD: Certainly. So it's my  
17 understanding that the portfolios or the resource  
18 options available to you today include energy  
19 produced from the IPP, or Independent Power  
20 Producer sector. There are geothermal resources,  
21 there's wind, there is the non-firm energy from the  
22 heritage hydro electric facilities, there is the  
23 Canadian entitlement received under the Columbia  
24 River Treaty, there is the spot market, i.e., the  
25 ability to purchase energy from outside BC, and, as

1 well, there's a range of additional generation  
2 options, single-cycle gas turbine, combined cycle  
3 gas turbine. And I list these simply to  
4 illustrate, I hope, that Hydro has a range of  
5 choices available to it when it looks at how do we  
6 meet, you know, projected demand.

7 May I pause there with my first frame of  
8 question?

9 THE CHAIRMAN: May I just comment that we  
10 are going to have a session that deals with the  
11 demand and the supply and the alternatives and so  
12 on in some depth. I'm not quite sure where you're  
13 getting at these now.

14 MR. HOWARD: I'm well aware of that, and I  
15 appreciate you pointing it out. My question is  
16 directed towards the opening remarks. And this  
17 need to route them through you is perhaps slowing  
18 down my ability to get to that point. So, I mean,  
19 I have a question that is directed to the opening  
20 remarks; in particular, to the context of the 1967  
21 BC Hydro and power choices and today's BC Hydro and  
22 power choices. These are quite different worlds.

23 THE CHAIRMAN: Ms. Yurkovich?

24 MS. YURKOVICH: Thank you for your question.  
25 Yes, we do have a number of choices. You

1 referenced independent power projects. So we  
2 currently have -- about 20 percent of our need is  
3 met through independent power projects, wind and --  
4 largely wind and run of river.

5 You did reference geothermal. Those  
6 contracts come to us through open processes. So  
7 commercial processes where people have in the  
8 past -- the most recent one was 2010 -- where  
9 people bid into a call process. There have been no  
10 geothermal projects that have been bid in, so I  
11 understand there is some potential for geothermal  
12 in the province, but there have been no entities  
13 that have bid into our process.

14 Independent power makes up about 20 percent  
15 of our resources right now; that number will grow,  
16 probably closer up to 25 percent as the projects  
17 that were successful in the 2010 clean power call  
18 come on-stream.

19 In terms of other resource choices, there are  
20 choices, but when we do our planning, as we will  
21 speak this afternoon about, is we are guided by a  
22 couple of things: the Acts that govern British  
23 Columbia -- or **BC Hydro Power and Authority Act**,  
24 the **BC Utilities Commission Act**, and our tariffs.  
25 And we are also guided by provincial energy policy.

1                   And, Mr. Chair, I think we are going to spend  
2                   some time on that this afternoon in quite detail,  
3                   but in alignment with provincial policy excludes  
4                   some options; particularly, with the provincial  
5                   government's desire to be self-sufficient, and to  
6                   maintain a 93 percent clean portfolio.

7           MR. HOWARD:   So thank you for that answer.

8                   I just have, I believe, one follow-up question, and  
9                   it's simply this; that is it reasonable to say,  
10                  Ms. Yurkovich -- and I'm harkening back to this  
11                  1967 quote, the era that that quote arose from,  
12                  that there are a broader array of choices available  
13                  to BC Hydro today in terms of evaluating the best  
14                  way to, you know, meet future demand.

15          THE CHAIRMAN:                                       I'm not sure I understand the  
16                  relevance of the question.

17          MR. HOWARD:                                       The implication of the  
18                  presentation was that what was good in 1967 will be  
19                  good today. And my line of questioning is  
20                  simply --

21          THE CHAIRMAN:                                       But could we take that as a  
22                  rhetorical comment, one that reflects the long  
23                  history of this province and some of the mistakes  
24                  that have been made in the past?

25          MR. HOWARD:                                       Well, you can take my

1 response to your question in whatever manner you  
2 wish, Chairman. My questioning was simply directed  
3 to illustrate that we live in a very different  
4 world today in terms of the choices that are  
5 available. And my line of questioning was directed  
6 towards that destination alone. I don't know where  
7 that leaves me in terms of getting a response to my  
8 questions.

9 THE CHAIRMAN: Do you care to respond to  
10 that? Or do you have more choices today than you  
11 did in 1967?

12 MS. YURKOVICH: Well, I can't say what the  
13 choices were in 1967, sir, because I wasn't old  
14 enough to understand at that time, but I can tell  
15 you that we have a lot of choices. And the choices  
16 that we make are guided by the provincial energy  
17 plan, the energy policy that we have. We are a  
18 crown corporation. British Columbia's government  
19 sets the energy policy for our province, and we act  
20 in alignment with that.

21 We do have options, and we do have choices.  
22 I can't say what the array of options that were  
23 looked at in 1967 were because I wasn't there, but  
24 I'm very happy to talk later on about how we have  
25 come to the conclusion around the choices that we

1           have made when we go to the Needs, Purpose, and  
2           Alternatives panel.

3                     Thank you, Mr. Chair.

4   MR. HOWARD:                     Thank you, those conclude my  
5           questions.

6   THE CHAIRMAN:                   Thank you.

7                     Are there any other introductory questions?  
8           Mr. Hadland.

9   MR. HADLAND:                    Thank you, Mr. Chairman.  
10          Randall Hadland.

11                    Yes, Ms. Yurkovich, maybe it would have been  
12          better off if you'd left the '67 references out.

13                    But my question concerns a similar vein.  
14          Your assertion that those projects that were built  
15          up until 1980 have been a benefit to the province.  
16          I'm just wondering whether BC Hydro has ever done  
17          an analysis of the cost of overbuilding of those  
18          projects since we didn't need them until now --  
19          since we didn't need the total amount of it until  
20          now?

21   THE CHAIRMAN:                   Would you care to respond to  
22          that?

23   MS. YURKOVICH:                 Maybe I'll just clarify. My  
24          reference to the 1967 was just -- it was  
25          interesting to me that some of the comments were



1 very similar. It's not to say that -- it wasn't to  
2 say that that decision should be exactly taken. It  
3 was just an interesting comment, and it was curious  
4 to me that some of the comments that we hear were  
5 very similar.

6 In terms of our system, from time to time, we  
7 go -- we have been short and we have been long  
8 because forecasting demand is an inexact science;  
9 things go up and down. But, in general, over the  
10 long-term, we have -- we try and maintain a  
11 balanced position. We try and plan to the mid-load  
12 and we try to have mid-load forecasts and we try to  
13 have the resources available to meet that.

14 So from time to time, we have been short; we  
15 have been net importers before, but the desire of  
16 the province now is to be electricity  
17 self-sufficient, and we are looking to achieve that  
18 goal over time.

19 MR. HADLAND: Well, more answer than I  
20 needed, I think.

21 I guess I would just leave it at this: you  
22 were making the point, whether you admit it or not,  
23 that those were a net benefit to the province. And  
24 you've heard already here that the damages that  
25 were done in '67 have not been mitigated, and were

1 never compensated for.

2 And that the damage, the costs, have been far  
3 greater than Hydro has ever acknowledged. I'm just  
4 wondering if the panel understands, I guess, that  
5 the costs have to be balanced against these  
6 benefits that BC Hydro continues to say arise from  
7 these projects. And when you build a project 30  
8 years too early, you have to account for the fact  
9 that those environmental and economic impacts are  
10 impacted -- or incurred before they are necessary,  
11 and those have costs in themselves. That was  
12 another rhetorical --

13 THE CHAIRMAN: Thank you, Mr. Hadland.

14 The question of timing and whether one can at  
15 least put off some adverse effects is very much  
16 before the panel, and I'm sure we will return to  
17 that in some depth. Thank you.

18 Sir.

19 MR. BOON: Yes. Thank you. Good  
20 morning.

21 I just wanted to make a comment about a  
22 couple things that Susan neglected to mention in  
23 her opening comments. One was that in '82, the BC  
24 Utilities Commission --

25 THE CHAIRMAN: I'm sorry, sir, could you

1 identify yourself.

2 MR. BOON: Oh, sorry. My name is Ken  
3 Boon. I'm an impacted land owner in the valley.

4 So in '82 when the BC Utilities Commission  
5 made their decision, one of their findings was that  
6 BC Hydro should investigate alternative sources of  
7 energy. And, as well, in '91, BC Hydro was advised  
8 to investigate the use of natural gas. So I just  
9 find it interesting we're back here now 30 years  
10 later and still talking about a dam.

11 Anyway, that's all I got to say right now.

12 THE CHAIRMAN: Thank you.

13 Are there further questions of a general  
14 nature?

15 MS. HOFFMAN: Hi. My name is Verena  
16 Hoffman. And I have -- my question is with regard  
17 to Ms. Susan Yurkovich's comment about -- that she  
18 felt was worth noting about the poll that BC Hydro  
19 undertook about finding out about how much  
20 provincial support in British Columbia there is for  
21 the province. I have some doubt with regard to the  
22 validity and credibility of that poll.

23 My question is, then: how many actual poll  
24 surveys were completed for the entire population of  
25 British Columbia? And can you truthfully say that

1 the people that were polled in your study were well  
2 informed of the project, of what Site C is, as well  
3 as the impacts that could result from this project?  
4 And, as well, I think that that's very important to  
5 have a better understanding in terms of your  
6 remarks in terms of how much we can actually say  
7 there is public support here in the province for  
8 this project to date.

9 And, as well, I have one more comment about  
10 that because you also made a remark and quoted how  
11 many consultation meetings you've had. How many  
12 consultation meetings have you had in the south of  
13 British Columbia to make sure that people are well  
14 informed before you poll them?

15 THE CHAIRMAN: Ms. Yurkovich.

16 [Applause]

17 MS. YURKOVICH: Thank you, Mr. Chair.

18 I believe, though, the poll was conducted --  
19 that I was referencing, was conducted in  
20 September of this year; there were a -- 1,050 was  
21 the sample size, which has a margin of error of 19  
22 times out of 23 and a half percent margin of error.  
23 It was a random sample conducted by an independent  
24 polling firm who undertook the work, Anderson  
25 Insight. And I believe the full report of the poll

1 is available on the BC Hydro website for reference.

2 So that was Part 1 of the question. I'm  
3 sorry, Ms. Hoffman, the second part of the  
4 question?

5 MS. HOFFMAN: Thank you.

6 The question was: can you truthfully say that  
7 the study population for that poll of just over  
8 1,000 people, which I find it's quite small  
9 compared to how many people live in the province of  
10 BC, can you truthfully say that those polling  
11 participants were well informed of what Site C is,  
12 as well as the impacts given, the amount of  
13 consultation meetings that you've had in southern  
14 BC and the southern regions?

15 MS. YURKOVICH: Thank you.

16 So, obviously, the knowledge about the  
17 project is much higher in the project region than  
18 it is in the province as a whole, and that's  
19 included in the report.

20 In earlier stages of consultation, BC Hydro  
21 did undertake public consultation meetings in  
22 Vancouver. As we have -- and we did that in the  
23 pre-consultation phase, and also in our earlier  
24 consultation prior to entering the formal  
25 environmental assessment process.

1                   Once we entered the formal environmental  
2                   assessment process, it was the federal and  
3                   provincial authorities who determined where the  
4                   meetings would be held in which regions, and so we  
5                   have attended those meetings as set out by the  
6                   regulators.

7           MR. HOFFMAN:                   I'll leave that to you,  
8                   Chairman, if you think that's a satisfactory  
9                   answer, but I don't think I got a direct answer.

10          THE CHAIRMAN:                Thank you.

11           [Applause]

12          THE CHAIRMAN:                A gentleman at the back.

13          MR. ATKINS:                   My name is Tony Atkins,  
14                   A-t-k-i-n-s.

15                   Site C has been in the planning stages for 30  
16                   to 40 years. I would like to know what BC Hydro  
17                   has in the future after they have used up all  
18                   Site C's power, because we need to be planning 30,  
19                   40 years ahead for that point.

20                   I'd like to know what they have in the  
21                   planning stages to provide us with electricity  
22                   then, and I would like them to use that now rather  
23                   than Site C. So could they tell us what they are  
24                   going to be doing after they've used up the power  
25                   for Site C? Thank you.

1 THE CHAIRMAN: Ms. Yurkovich.

2 MS. YURKOVICH: Well, our long-term resource  
3 plan, our integrated resource plan, does take a  
4 long, long view of 30 years.

5 We have a couple of things. Number one, we  
6 have worked very hard on our aggressive demand side  
7 management. That's targeted to meet 7,800 gigawatt  
8 hours of energy, and 1,400 megawatts of capacity by  
9 fiscal 2021 subject to check. Fiscal 2021. So we  
10 will continue to pursue all cost-effective demand  
11 side management.

12 We do have, as I mentioned to the previous  
13 speaker, the counsel for PVEA, we have brought in  
14 considerable renewable energy into the system  
15 through independent power projects.

16 We do have to consider, though, that those  
17 resources are intermittent in that they are  
18 available when the wind is blowing and when the  
19 rivers are running. We do have to have capacity  
20 assets that can firm, what we call firming and  
21 shaping. So, for instance, when the wind is  
22 blowing, we can hold back the water from our  
23 turbines to bring the wind into the system. Then  
24 when the wind is not blowing, we can run the water  
25 through the turbines and generate electricity.

1                   So intermittent sources can provide  
2                   additional energy for our system, but we also must  
3                   have capacity to be able to meet the peak demand of  
4                   our customers. So we look at IPPs.

5                   We have another capacity project at  
6                   Revelstoke 6. And beyond that, there are no other  
7                   large hydro projects planned in Site C's portfolio  
8                   at this juncture.

9           THE CHAIRMAN:                   Do you have a supplementary  
10                   question, sir?

11           MR. HOFFMAN:                   I do, because that doesn't  
12                   tell me what the next firm energy project is. And  
13                   I would like to know why we can't use that,  
14                   whatever it might be, instead of Site C. I  
15                   understand the idea of needing firm power, and  
16                   Site C would do that for the time being, but it's  
17                   not -- if BC Hydro's forecasts are to be believed,  
18                   it will not carry us on for the -- forever. So  
19                   there must be other projects in mind. And I  
20                   wondered what they might be. That's all.

21           THE CHAIRMAN:                   I understand the question.  
22                   And I can also understand why Hydro might not have  
23                   a concrete proposal to make right now, other than  
24                   to say that conservation and efficiency measures  
25                   are always top of the list.



1 I think we will have a chance to explore  
2 these issues of what future demand is going to be  
3 and what supply alternatives there may be in more  
4 depth following their presentation on the need and  
5 purpose and alternatives to the project.

6 MR. ATKINSON: Okay, thank you very much.

7 THE CHAIRMAN: Thank you, Mr. Atkinson.

8 Seeing no further questions, I would propose  
9 that we take a 10-minute break, reconvene, and we  
10 will hear Hydro's presentation on the need,  
11 alternatives, and purpose of the project.

12 MS. YURKOVICH: Mr. Chair, did you want us to  
13 respond to the archaeology question?

14 THE CHAIRMAN: I'm sorry, I completely  
15 forgot about that. Yes, would you please.

16 MS. YURKOVICH: Okay, I'm going to ask  
17 Siobhan Jackson to respond on that.

18 MS. JACKSON: Good morning, my name is  
19 Siobhan Jackson, S-i-o-b-h-a-n, Jackson.

20 The question that was asked earlier was where  
21 the artefacts are that have been collected during  
22 the investigative archaeology programs for the  
23 project.

24 That work is done under permit by the  
25 Province of British Columbia under the **Heritage**

1           **Conservation Act.** All of the artefacts that have  
2           been collected are destined to go to the Fort  
3           St. John Museum, which is the named repository in  
4           the permit issued for undertaking that work.

5                       The artefacts are to be fully catalogued  
6           prior to delivery to the museum. They would  
7           constitute on the order of about two or three file  
8           boxes worth in terms of the quantity due to the  
9           nature of the artefacts that are typically  
10          collected. And the museum will receive those.

11       THE CHAIRMAN:                       Thank you for that.

12                       I propose we now take a 10-minute break and  
13          reconvene to hear the second Hydro proposal or  
14          presentation. Thank you.

15                       **(BRIEF BREAK)**

16       THE CHAIRMAN:                       Ladies and Gentlemen, can we  
17          reconvene, please.

18                       We are now going to start to get into the  
19          meat of all of this with a presentation by Hydro on  
20          the need for, purpose of, and the alternatives to  
21          this project.

22

23       BC Hydro's Presentation on the Need, Alternatives, and  
24          Purpose of the Project:

25       MR. GODSOE:                         Good morning Mr. Chair,

1 Members of the Joint Review Panel.

2 My name is Craig Godsoe and I am BC Hydro's  
3 in-house regulatory counsel. I'm here to introduce  
4 BC Hydro's need, purpose and alternatives to panel.

5

6 Introduction of BC Hydro's Second panel on need, purpose  
7 and alternatives to:

8 David Ince

9 Randy Reimann

10 Susan Yurkovich

11 Michael Savidant

12 Craig Godsoe

13

14 MR. GODSOE: Furthest from you is David  
15 Ince. Mr. Ince is BC Hydro's manager of market  
16 forecasting, a position he has held since 2007.

17 Next is Randy Reimann. Mr. Reimann is  
18 BC Hydro's director of resource planning, a  
19 position he has held since 2005.

20 You've been introduced to Ms. Yurkovich.  
21 Ms. Yurkovich is executive vice-president for  
22 Site C, a position she has held since 2007.

23 And closest to you, Mike Savidant you've also  
24 been introduced to. Mr. Savidant is BC Hydro's  
25 commercial manager for Site C, a position he has

1 held since 2008.

2 I note the CVs for these panel members,  
3 together with the areas of Environmental Impact  
4 Statement for which this panel is responsible for  
5 is set out in Fasken's letter of December 3, 2013  
6 which for reference is CEAR number 2016.

7 And with that, I'll yield the floor to  
8 Ms. Yurkovich.

9 MS. YURKOVICH: Thank you, Mr. Godsoe.

10 Good morning again. I am pleased to be here  
11 to talk today about the need for, purpose of, and  
12 alternatives to the Site C Clean Energy Project.

13 I'm going to start by reviewing BC Hydro's  
14 mandate, our policy environment, and our process.  
15 And then I'm going to turn it over to Randy Reimann  
16 who will discuss the steps that we take to  
17 determine the need for new resources and resource  
18 options required to meet that need.

19 I'll then conclude with the last step and our  
20 conclusions.

21 As you know, BC Hydro is -- Hydro's mandate  
22 is to generate, conserve, and to purchase  
23 sufficient electricity to meet the needs of our  
24 customers. We do this in accordance with the  
25 **Utilities Commission Act**, BC Hydro's various

1 tariffs, and government policy, including the **Clean**  
2 **Energy Act**.

3 This mandate drives BC Hydro's long-term  
4 planning process and the development of our  
5 Integrated Resource Plan, or IRP. The IRP  
6 recommends the actions to meet customers' needs  
7 with cost-effective reliable electricity.

8 The **Clean Energy Act** includes requirements to  
9 be self-sufficient by 2016 and to be in alignment  
10 with the other 15 energy policy objectives set out  
11 in the Act.

12 The five objectives of particular relevance  
13 for today are to generate at least 93 percent from  
14 clean or renewable resources, to ensure that  
15 BC Hydro's rates remain amongst the most  
16 competitive of rates charged by public utilities in  
17 North America, to reduce greenhouse gas emissions  
18 as set out in the 2007 **Greenhouse Gas Reduction**  
19 **Targets Act**, to encourage economic development and  
20 job creation and retention of jobs, and to maximize  
21 the value of BC's generation assets.

22 BC Hydro's recent IRP was developed between  
23 2010 and 2013 and was approved by the BC government  
24 on November the 26th. This included confirming  
25 BC Hydro's application of the **Clean Energy Act**

1 objectives such as the use of natural gas fired  
2 generation in meeting the 93 percent clean or  
3 renewable objective.

4 The analysis of the need for and alternatives  
5 to the project in the environmental impact  
6 statement or EIS is consistent with the analysis  
7 provided in the Integrated Resource Plan. The  
8 process and analysis underlining the assessment is  
9 rigorous and includes forecasting of customer  
10 demand, natural gas prices, greenhouse gas, and  
11 electricity prices all with the assistance of  
12 experts.

13 For the purposes of today's presentation, we  
14 thought it might be useful to describe the process  
15 in a few steps. These steps summarize how we  
16 undertake our planning process which is consistent  
17 with the BC Utilities Commission project evaluation  
18 decisions.

19 At this point I'd like to turn it over to  
20 Randy Reimann to describe the planning process  
21 included in the EIS.

22 MR. REIMANN: Thank you, Susan.

23 To determine need, BC Hydro compares its load  
24 forecast to available supply side resources. When  
25 demand exceeds existing supply, there is a gap.

1 The gap is the starting point for determining how  
2 many resources are required and when they should be  
3 acquired.

4 The load forecast for both energy and  
5 capacity is developed in accordance with the BCUC  
6 resource planning guidelines and includes a sector  
7 by sector analysis of the load.

8 It consists of a mid-level or reference  
9 forecast as well as high and low forecast bands.

10 The December 2012 load forecast incorporates  
11 third party economic indicators including gross  
12 domestic product forecasts from both the BC  
13 Ministry of Finance and external experts such as  
14 Stokes Consulting and the Conference Board of  
15 Canada. As set out in slide 6, the load forecast  
16 uses a broad set of models.

17 Forecasts for our major industrial customers  
18 are done on a customer-by-customer basis. BC Hydro  
19 is assisted by sector-specific experts, including  
20 for the forestry, mining, and oil and gas  
21 industries. The list of experts is set out on  
22 slide 7.

23 To determine the gap, we then take a look at  
24 the existing generation resources. These resources  
25 are described on Slide 8. From this analysis,

1           there is a need for both energy and capacity in  
2           fiscal 2017 if no future actions are undertaken.

3                     Step 2 is to determine and characterize the  
4           resource options that are economically and  
5           technically feasible that can fill the energy and  
6           capacity gaps. BC Hydro considers a wide variety  
7           of resource options which fall into two general  
8           categories: demand side management resources,  
9           which are the various conservation and efficiency  
10          measures to reduce customer demand, and supply side  
11          or generation resources.

12                    The potential resources are described using  
13          financial, technical, environmental, and economic  
14          development attributes that reflect information  
15          that's gathered from expert studies, project  
16          experience, First Nations, and public and  
17          stakeholder input.

18                    A number of studies conducted by BC Hydro are  
19          also listed on slide 10.

20                    Resource options must be appropriately  
21          characterized and be reliably available to perform  
22          their intended purpose. For example, the reliance  
23          on natural gas fired simple cycle gas turbines must  
24          be counted on and able to operate to meet the needs  
25          of customers during peak periods and to back up



1 other generation resources that may experience  
2 outages.

3 However, they should not be relied upon to  
4 the extent that they frustrate the BC government  
5 self-sufficiency and energy policy requirements.

6 The planned 18 percent capacity factor would  
7 allow simple cycle gas turbines to operate for peak  
8 load hours during the coldest months of the year  
9 November through February.

10 Some interested parties' submissions have  
11 suggested a capacity factor as low as 5 percent,  
12 while others have suggested 90 percent.

13 A 5 percent capacity factor would not provide  
14 BC Hydro sufficient flexibility to operate the  
15 system.

16 At the 90 percent end, we would not be able  
17 to operate the simple cycle gas turbines within the  
18 93 percent objective. Instead, we would have to  
19 rely on spot market imports, most of which would  
20 consist of thermally-generated electricity,  
21 frustrating both the BC government's  
22 self-sufficiency requirement and the 93 percent  
23 clean objective.

24 Consistent with Section 4 of the EIS  
25 guidelines, BC Hydro considered other potential

1 resources to determine if they were viable  
2 alternatives to the project. I would like to  
3 briefly discuss two examples of resources that are  
4 not viable alternatives: Burrard thermal and  
5 demand side management capacity initiatives.

6 Burrard is not a viable resource pursuant to  
7 the **Clean Energy Act** and the Burrard Thermal  
8 Electricity Regulation. Pursuant to those,  
9 BC Hydro cannot rely on Burrard for any firm energy  
10 and after 2016 cannot rely on Burrard for any  
11 dependable capacity.

12 For demand side management, while BC Hydro  
13 has adopted an aggressive target, demand side  
14 management capacity initiatives are not viable  
15 alternatives because customer participation and  
16 response is unknown.

17 As the utility with the obligations to serve  
18 customer demand, it would be imprudent to stop  
19 constructing physical assets on a hope that  
20 significant savings may materialize.

21 The viable resource options are listed on  
22 slide 12 and include the demand side management  
23 target and options 1 and 3, independent power  
24 producer or IPP contract renewals, Site C, new  
25 renewable IPP resources, and natural gas fired

1 generation that fits with the **Clean Energy Act**  
2 93 percent clean generation objective.

3 The third step is to identify key risks and  
4 uncertainties which include the following: Load  
5 growth and the risk that it exceeds or falls below  
6 forecast, demand side management delivery risk,  
7 which is the risk that the response to demand side  
8 management initiatives is less than planned. Other  
9 uncertainties and risks assessed as part of the EIS  
10 include electricity and natural gas market  
11 conditions including prices, greenhouse gas  
12 regulatory developments including prices, and costs  
13 for both the project and resource alternatives.

14 In the fourth step, we conduct analyses on  
15 combinations of viable resource options that fill  
16 the remaining gap. BC Hydro's method of analyzing  
17 alternative resource options is through portfolio  
18 analysis. Portfolios consist of demand and supply  
19 side resources that are selected to meet customers'  
20 energy and capacity needs over the next 30 years.  
21 BC Hydro develops portfolios using a third party  
22 model called system optimizer. This model selects  
23 an optimal combination and timing of resource  
24 options to meet customer demand at the lowest  
25 present value cost for a given set of input

1 assumptions. The input assumptions include  
2 available resource options and capabilities, the  
3 need for new resources, market prices, and trade  
4 with the neighbouring electricity markets.

5 System optimizer simulates the operation of  
6 the system over the 30-year analysis period. Its  
7 present value cost calculations reflect the timing  
8 of new resources, operation of the resources  
9 selected, and the market trade of surplus energy.

10 The analysis undertaken through system  
11 optimizer is called portfolio present value  
12 analysis. This analysis is consistent with good  
13 utility practice and with the BCUC's resource  
14 planning guidelines.

15 BC Hydro also conducts a block analysis.  
16 This takes a block of resources that can deliver  
17 the same energy and capacity as the project and is  
18 used primarily to compare the environmental and  
19 economic development attributes of the resources  
20 selected.

21 The block analysis also provides the longer  
22 term net cost difference between the project and  
23 alternative clean resources as a unit energy cost.

24 For all portfolios created, BC Hydro assume  
25 the achievement of the demand side management

1 target and renewal of cost-effective IPP contracts.

2 BC Hydro's demand side management target is  
3 aggressive. We are targeting 7800 gigawatt hours  
4 of energy reduction per year and a 1400 megawatt  
5 reduction in new peak demand by fiscal 2021. This  
6 level of savings represents a 78 percent reduction  
7 in energy demand growth by fiscal '21, which  
8 exceeds the **Clean Energy Act** objective of  
9 66 percent.

10 As shown on slide 19, demand side management  
11 consists of three main tools: codes and standards,  
12 programs, and rate structures.

13 The various components making up the DSM  
14 target provide a broad range of opportunities for  
15 all BC Hydro customers to participate in  
16 conservation.

17 The other resource that BC Hydro includes in  
18 its resource stack prior to determining the need  
19 for the project are independent power producer  
20 contract renewals. BC Hydro plans to rely on  
21 uncertain contract renewals to account for some  
22 6400 gigawatt hours per year of energy by fiscal  
23 2033, making contract renewals second only to the  
24 DSM target in terms of energy value.

25 Having included the DSM target and IPP

1 renewals, we see slide 21 shows a need for energy  
2 in fiscal 2027.

3 Slide 22 shows a need for capacity in fiscal  
4 2019.

5 Both of these graphs exclude the potential  
6 liquified natural gas demand.

7 For the Environmental Impact Statement, the  
8 portfolio analysis compared three categories of  
9 portfolios as set out in slide 23. The first  
10 category was Site C portfolios that included the  
11 project; second, being the clean generation  
12 portfolios that exclude the project and we fill the  
13 energy and capacity gap using only clean and  
14 renewable generation resources; the third category  
15 was clean and thermal generation portfolios, and in  
16 this case, excluded the project but included gas  
17 fired generation up to the 93 percent clean and  
18 renewable target.

19 The present value analysis undertaken through  
20 system optimizer shows that the project provides  
21 benefits not only in the base case, but over a wide  
22 range of scenarios. These sensitivities are set  
23 out on Slide 24 and include: large and small gaps,  
24 higher and lower market price scenarios, higher  
25 capital costs for Site C, and some combination of

1 higher capital costs for resource alternatives, and  
2 low probability compound sensitivities that combine  
3 the effects of some of the above factors.

4 I'll now turn it back over the Susan.

5 MS. YURKOVICH: Thank you, Randy.

6 The fifth set is to identify the preferred  
7 alternative. Both the Integrated Resource Planning  
8 process and the Environmental Impact Statement  
9 demonstrate that Site C has a present value  
10 advantage over alternative portfolios over a broad  
11 range of scenarios.

12 As a firm, dependable, dispatchable resource,  
13 Site C provides important benefits to BC Hydro's  
14 integrated system, including the ability to firm  
15 and shape intermittent resources like run of river  
16 and wind.

17 These intermittent resources cannot be turned  
18 on and off in response to changes in customer  
19 demand and market prices. In contrast, Site C's  
20 output can be varied in response to our customers'  
21 needs.

22 For these reasons, we have concluded that the  
23 Site C project provides the best combination of  
24 financial, technical, economic development in  
25 environmental attributes and that it is prudent to

1 continue to advance Site C for its earliest  
2 in-service date.

3 Thank you.

4 THE CHAIRMAN: Thank you. That's quite an  
5 introduction and will provide a lot of meat for a  
6 lot of discussion. I propose we use the rest of  
7 the time before lunch and some time after lunch to  
8 have a go at some of this. And I would propose  
9 further that we start with questions relating to  
10 energy demand, electricity demand, we'll come to  
11 the supply alternatives later, for no particular  
12 reason, except that I think it simplifies the  
13 conversation a little bit.

14

15 Questions by the Panel:

16 THE CHAIRMAN: Let me start off with a  
17 couple of questions just for clarification.

18 In the demand scenarios, my understanding is  
19 that you have made no allowance for new compression  
20 load for LNG facilities; is that correct?

21 MR. INCE: In the load forecast  
22 presented in the application, there is no facility  
23 load for LNG. So you're referring to compression  
24 north coast load to liquify the natural gas. No,  
25 there is not included in the application.



1 THE CHAIRMAN: I wanted to separate the  
2 three bits. Nothing for compression?  
3 MR. INCE: Correct.  
4 THE CHAIRMAN: Nothing for cooling?  
5 MR. INCE: Correct.  
6 THE CHAIRMAN: But house or plant lighting  
7 and keep the computers going would be in the game,  
8 right?  
9 MR. INCE: There's none of that loading  
10 at all.  
11 THE CHAIRMAN: None of that at all? Okay.  
12 So the criticism that we've heard that this project  
13 is just to supply the Chinese with natural gas is  
14 not correct?  
15 MR. INCE: This load -- or this project  
16 is to serve the broader BC Hydro load, which is  
17 growing, with the forecast included in the  
18 application.  
19 THE CHAIRMAN: Have you made any allowance  
20 for new lighting technologies as people move to  
21 LEDs and whatnot?  
22 MR. INCE: We certainly have. And  
23 that's one of the main areas in the residential  
24 sector of increasing efficiency. So the use for  
25 lighting in the home is decreasing substantially as

1 a result of LED lighting and compact fluorescent  
2 lighting. It was about one-fifth of total home  
3 requirements a few years back, but we see that  
4 dropping rapidly.

5 THE CHAIRMAN: Jumping ahead, is that what  
6 you call natural conservation?

7 MR. INCE: To some extent, yes. Some of  
8 it would have been enabled by our demand side  
9 management or PowerSmart programs, but a lot of it  
10 is natural conservation, yes.

11 THE CHAIRMAN: I understand that you've made  
12 very modest allowance for electric vehicles over  
13 the long forecast period; is that correct?

14 MR. INCE: In Appendix 4 of the load  
15 forecast document, we do include a substantial  
16 section on electric vehicles and it's about 1,000  
17 gigawatt hours a year at the end of the 20-year  
18 forecast horizon.

19 And to put that in context, BC Hydro's load  
20 right now is around 60,000 gigawatt hours. We see  
21 that growing substantially over time under certain  
22 conditions, but it is a modest addition to the  
23 forecast at this time.

24 THE CHAIRMAN: Within this forecast period.

25 SPEAKER: Can you turn the volume up,

1           please?

2           THE CHAIRMAN:                   I hope this works.

3                   I understand that you have made no allowance  
4           for fuel switching by railroads, is that also  
5           correct?

6           MR. INCE:                        We researched this and, yes,  
7           we've made no allowance for railroad fuel  
8           switching.

9           THE CHAIRMAN:                   There were substantial  
10          studies done by the federal government and the  
11          railroads just about the time that Site C came up  
12          the first time about 30 years ago that noted that  
13          the railways, particularly the mountain divisions,  
14          were teetering on the brink of being able to make  
15          that decision then. They had, if I recall rightly,  
16          an internal rate of return of about 4 percent, but  
17          that wasn't enough to meet a corporate hurdle rate  
18          for CP or CN. Have any such studies been  
19          undertaken recently?

20          MR. INCE:                        We have been in discussion  
21          with the customers, specifically CP and CN, and I'm  
22          not aware of advance progress in this regard.

23          THE CHAIRMAN:                   Okay.

24          MR. REIMANN:                    I guess I would just add to  
25          what Mr. Ince is saying, that there was an electric

1 railway that was built to go through the mountains  
2 up at the Tumbler Ridge for the Quintet and Bull  
3 moose mines, but I think that they found over time  
4 that the peak charges and the relatively few trains  
5 made it an uneconomic venture. So ultimately they  
6 discovered they had enough ventilation in the  
7 tunnel that they could go back the diesel.

8 THE CHAIRMAN: Okay. There's been some talk  
9 lately about so-called at berth regulations for  
10 shipping. California now has rules that say that  
11 if you berth a ship, you have to plug it in rather  
12 than run a ship's generators. We are talking --  
13 "we" are talking -- the government is talking about  
14 a vast increase in shipping off the West Coast.  
15 Are you proposing that those be powered by  
16 electricity when at berth or has that come up yet?

17 MR. INCE: We do have some load  
18 allocated to the Vancouver ports. They have  
19 electrified some of the shipping berths to prevent  
20 the diesels running during the loading operations,  
21 but not much beyond what we currently have in the  
22 forecast.

23 THE CHAIRMAN: M'mm-hmm. And I gather also  
24 that you've made very little allowance for  
25 self-generation or going off grid by large

1 commercial enterprises as is apparently happening  
2 in the States these days, Costco and Wal-Mart?

3 MR. INCE: Well, we do have a  
4 significant amount of industrial load that is  
5 behind the fence generation, so particularly on  
6 pulp and paper facilities where they are burning,  
7 for example, black liquor for producing  
8 electricity. And we do take special care in terms  
9 of looking at each of those customers individually  
10 to see what kind of generation that they have. It  
11 is significant because they may have peak load  
12 which is disconnected from their energy. And what  
13 I mean by that is when their generator isn't  
14 running, they are drawing from BC Hydro, and we see  
15 a significant peak from those customers. But at  
16 the same time, overall their energy is relatively  
17 low.

18 So, yeah, we look at each of the roughly 200  
19 individual transmission customers to see what kind  
20 of significant generation they have at their  
21 facilities.

22 THE CHAIRMAN: Now, I understand the point  
23 that was made by an earlier intervener to the fact  
24 that you may have a lot of choices, but it seems to  
25 me that your choices have been substantially

1 narrowed by public policy in the province by the  
2 **Clean Energy Act** and so on. And one of the  
3 constraints was the previous Minister who said  
4 there will never be time of use pricing in BC; the  
5 current Minister says the time of use price for  
6 industrial users is okay.

7 Have you factored that into your load  
8 forecasts?

9 MR. INCE: We have not included time of  
10 use pricing. The research that I'm familiar with  
11 is that time of use pricing tends to shift energy  
12 demand as opposed to reducing the absolute level of  
13 demand.

14 THE CHAIRMAN: Yes, but it tends to have a  
15 nice effect on capacity, and as your presentation  
16 made clear, that's your leading issue.

17 MR. INCE: Fair enough, yes.

18 Also there is research that there is  
19 significant price bands or differences required in  
20 order to enable that conservation in the vicinity  
21 of price ratios between let's say on-peak and  
22 off-peak in excess of 3:1.

23 By the way, BC Hydro does have an industrial  
24 tariff 1825. It's the time of use tariff in which  
25 the industrial customers can, as I say, shape their

1 load according to the beneficial pricing in that  
2 tariff. There's not a single customer that's taken  
3 up that 1825 rate.

4 MR. REIMANN: So if I could add to what  
5 Mr. Ince is saying, the time of use and various  
6 different DSM capacity initiatives we've been  
7 looking at in terms of almost how a supply, whether  
8 it's a demand side or supply side resource would  
9 come in, and we've given some thought to time of  
10 use.

11 We've identified in the Integrated Resource  
12 Plan that we would advance both looking at  
13 interruptible load and particularly with the  
14 industrials to the extent you do interruptible, it  
15 would overlap with time and use.

16 And we've looked at those. And what we've  
17 found is that there's a fair bit of uncertainty in  
18 terms of what the customer response to this would  
19 be. We have had in the past interruptible loads  
20 which would be voluntary and short-term market  
21 oriented. And what we've seen is that the  
22 customer's need of a pretty significant price  
23 differential. And it's really a formula of the  
24 number of interruptions in a year, the duration of  
25 the interruptions as against the price you provide.

1                   And this was looked at a bit through that  
2                   industrial electricity policy.

3       THE CHAIRMAN:                   Yes, interruptible and time  
4                   of use are somewhat different issues, but I  
5                   understand the point.

6                   This is perhaps the point to bring up the  
7                   issue of price increases. I mean, one of the  
8                   observations I make on reading the EIS as amended  
9                   and extended and updated is that you frequently say  
10                  it's difficult to estimate whether such and such an  
11                  effect will take place because one of the main  
12                  reasons is prices in British Columbia have been so  
13                  low over so long that they just don't matter to  
14                  anybody and that modest changes in price levels do  
15                  not induce much in the way of changes in behaviour.  
16                  Right?

17       MR. INCE:                   Well, I'll start off in  
18                  terms of the modelling. The statistical  
19                  underpinning of the analysis is that looking at the  
20                  history of BC Hydro price increases over the last  
21                  20 years, in real dollar terms it's been relatively  
22                  stable. And looking at that as a variable relative  
23                  to things like the economy, the changing end uses  
24                  of the home, the rise of personal computers.

25                  So technology has changed. The use patterns



1 of customers have changed. And so you're trying to  
2 put those variables into a model and tease out the  
3 effects of a relatively small variable such as  
4 those price increases in real dollar terms.

5 And most of the studies we've seen is that  
6 there isn't statistical significance. It's very  
7 hard -- and we appreciate the studies that the  
8 Joint Review Panel let us read. There are three  
9 studies in which, for example the RAND study, which  
10 we read from cover to cover, indicated that a  
11 minority of the States reviewed, there was  
12 statistical significance. I think 10 of the 50  
13 States reviewed showed that there was actually  
14 positive elasticity that as you increase prices,  
15 consumption rose.

16 So that is clearly a demonstration that the  
17 statistics don't work in this case.

18 THE CHAIRMAN: It's what economists call a  
19 significant good, huh?

20 But, nonetheless, I think you would agree  
21 that the natural experiment has not been possible  
22 in British Columbia because prices here have been  
23 very low for a long, long time, haven't radically  
24 varied a great deal; is that correct?

25 MR. INCE: Well, in real dollar terms,

1 I understand there's been two crossovers; in the  
2 '90s, our rates were about the same in real dollar  
3 terms as they are now, and the same in the 1970s.

4 So the rates have varied from time to time,  
5 but on a real dollar basis, they've been relatively  
6 stable. And again, this is the difficulty in  
7 statistical analysis in teasing that out.

8 THE CHAIRMAN: And now I read in the  
9 newspapers that prices are going to go up  
10 48 percent in the next five years -- no, 45 percent  
11 over 10 years and 28 over five. Is that  
12 correct?

13 MR. INCE: The rate increases that we  
14 do have built into our forecast are -- well, I  
15 should say there's been announcement -- recent  
16 increase in terms of -- announcement terms of rate  
17 increases. And it's 9 percent for fiscal '15,  
18 6 percent -- and these are nominal dollars, by the  
19 way -- in '16, and then after that for 3.5 and  
20 3 percent.

21 And we have included that in a recent  
22 analysis and concluded that that trajectory rate  
23 increases is actually higher than what we had  
24 underpinning the 2012 forecast. So the forecast  
25 that's underpinning this application -- sorry, yeah

1 lower. That the most recently announced rate  
2 increases are lower. That all things being equal  
3 would tend to increase load because of less  
4 elasticity effect. The effect of that is around 2  
5 to 3 hundred gigawatt hours by the end of the  
6 forecast period.

7 That as a result of the lower rate trajectory  
8 that we have learned about from the government is  
9 that the load will actually increase by about 2 to  
10 3 hundred gigawatt hours at the end of the  
11 forecast.

12 THE CHAIRMAN: So your testimony is that the  
13 rate increases that were baked into your 2012 load  
14 forecast were higher than the numbers that the  
15 province is now talking about; is that right?

16 MR. INCE: That is correct.

17 THE CHAIRMAN: The issue of the effect of  
18 price on demand I think is a central question for  
19 us. In some of the responses to the panel's  
20 questions, Hydro first said that the price  
21 elasticity of demand was minus point one. And on  
22 further clarification said that the impact of price  
23 plus demand side measurements was minus point 57.  
24 Is that correct?

25 MR. REIMANN: Yeah, the overall response

1 to load from looking at all the demand side  
2 management projects as well as any natural  
3 conservation was minus point 57.

4 THE CHAIRMAN: Why do you do the DSM first  
5 and use, quote, natural conservation as a residual?  
6 Why as an economist would you not look at the price  
7 effect first?

8 MR. REIMANN: Yeah, that's a good  
9 question. And we hope to make this clear in our  
10 IRs, but.

11 When we look at the total marketplace, and we  
12 try to understand what savings potentials are out  
13 there, we do that through our conservation  
14 potential review, and our program managers that are  
15 out there working in these different sectors, and  
16 they try to say what is the total amount of  
17 consumption out there that has potential to be  
18 reduced?

19 And we then say, okay, can we reduce that,  
20 and then how would that break into its components?

21 So we have our program managers, they look at  
22 their sector and they say here are the devices, and  
23 they try to ask themselves the question, so  
24 information, and education, and availability of  
25 products all important, ultimately with the

1 programs there's a question of what incentive you  
2 provide. And when you think about the incentive  
3 you provide, you need to break out or think about  
4 so much of that would come naturally from either  
5 natural efficiency or what we were hoping to  
6 achieve with our stepped rates and by putting that  
7 second tier at the marginal cost.

8 And so, in our view, we're feeling like our  
9 DSM programs, and we tried to demonstrate that with  
10 our jurisdictional review, is that they are  
11 aggressive, we're trying to get 7800 gigawatt  
12 reduction, that's three quarters of the load  
13 growth. There's some 1400 megawatts demand in  
14 there. We think that that's a big bite.

15 And that's something we entered into in 2008  
16 as sort of it's a target we're going to try to  
17 achieve and we're going to learn as we go along the  
18 way. We don't feel like we're quite there yet. So  
19 then the questions about elasticity really  
20 become -- so you can't actually measure that out  
21 there. It's very difficult to find any  
22 jurisdiction around who doesn't do some form of DSM  
23 or energy efficiency. And so you say, can we go  
24 out and measure this and what would it be if we  
25 didn't do anything?

1           Well, the truth of the matter is is everybody  
2           is trying to do something to different degrees.  
3           And it becomes a bit of an exercise of how much  
4           incentive should we be paying and how  
5           cost-effective are our programs?

6           I guess I would add, too, if I could that we  
7           did do that RIF evaluation, which was our most  
8           current analysis that we undertook. And we tried  
9           to do exactly that. We tried to say, okay, here's  
10          the overall customer response, and can we put in  
11          control variables that account for programs, codes  
12          and standards and whatnot. And we tried to tease  
13          out and say, so what does the customer response  
14          look like on the two-stepped rate? And we came  
15          with a range I think of minus .08 -- point 008 to  
16          minus point 15 or 3.

17          I think the numbers were minus point 008,  
18          minus point 013, and so that minus point 01 was --  
19          or the minus point 1.

20        THE CHAIRMAN:                    Statistically insignificant.

21        MR. REIMANN:                    Yes. And it seemed to  
22          confirm that, roughly speaking, the analysis  
23          confirmed what our assumptions were.

24        THE CHAIRMAN:                    But it seems to me this is,  
25          to oversimplify it, is one of the differences

1           between engineers and economists; engineers tend to  
2           look at things sensibly, build it up from the  
3           bottom, you know, what's likely to happen for this  
4           particular kind of customer and industry and so on.  
5           And economists just look at the grand, big picture  
6           and try to get it down to one simple figure.

7           Right?

8           [Applause].

9           THE CHAIRMAN:                   Minus point 57. I don't wish  
10           to be applauded. And frankly I think we should  
11           avoid applause in this hearing for a change.

12                        Nonetheless, we have a large-scale natural  
13           experiment going on now, or just beginning, I  
14           guess, in BC Hydro. You've raised rates generally  
15           in the last two years. And you're about to raise  
16           rates considerably in the next few years. I  
17           presume this will lead you to a very detailed set  
18           of econometric measurements and reasoning to try to  
19           refine the notion of what, quote, natural  
20           conservation is in the hydro territory; is that  
21           right?

22           MR. REIMANN:                   I mean, I think over time it  
23           will be interesting to see what we can eke out of  
24           it. From a resource planner, what interests me  
25           more is whether or not the total load is responding

1 to all three things; codes and standards, rates and  
2 programs.

3 THE CHAIRMAN: Well, frankly I think that  
4 you should try to separate the effects. If you  
5 were able to measure and estimate the overall  
6 response to price, and then add or subtract a  
7 particular code standard program or rate structure,  
8 you could then be able to determine with some  
9 accuracy what the benefit cost ratio was for those  
10 particular demand side management techniques.

11 And I'm sorry that this hasn't been done so  
12 far. I can understand why given the varied low  
13 rate and relatively unchanging rate structure of  
14 Hydro. That seems to me, though, to invite close  
15 comparison with other utilities, which I presume  
16 you've done; is that right?

17 MR. REIMANN: Sorry, could you repeat the  
18 last part. It seems to invite?

19 THE CHAIRMAN: Close comparison with other  
20 utilities.

21 MR. REIMANN: By looking at the total  
22 program or the rate component?

23 THE CHAIRMAN: No, there are utilities which  
24 use methodologically more elaborate ways of teasing  
25 out these separate effects. And I presume that you



1 look to them for methodological example.

2 MR. REIMANN: We did. And this was  
3 something that was canvassed in, what was it, the  
4 2006 IPL tab. And our expert Ren Orans from E<sup>3</sup>  
5 spoke to this. And he did a survey for us of what  
6 the different responses would be in different  
7 markets. And it was his conclusion that it was  
8 very difficult to see where the natural  
9 conservation on its own was separated out and it  
10 was a clear study.

11 But I guess I would reiterate that I think  
12 the work that we did with our RIF evaluation is  
13 about as good as you can do and consistent with  
14 what anybody would do. You have the load and the  
15 total response, and then you take your formula to  
16 try to do a regression on it and put the control  
17 variables in to account for the other factors, and  
18 say at the end of the day, so what was left that  
19 would have happened from the stepped rates or  
20 natural conservation?

21 And so we've done that study for the  
22 residential and climate block and concluded that  
23 the minus point 1 is looking like a pretty good  
24 number.

25 THE CHAIRMAN: Okay, but to return to the

1 beginning, then, you're saying that natural  
2 conservation plus DSM measures equals the  
3 elasticity of minus point 57?

4 MR. REIMANN: Right.

5 THE CHAIRMAN: Which would apply to the  
6 entire stock of demand, right, not just the  
7 marginal demand?

8 MR. REIMANN: Correct.

9 THE CHAIRMAN: Right? So am I reading this  
10 right; you're saying that demand is going to  
11 increase 40 percent over the -- was it the next  
12 20 years?

13 MR. INCE: That's correct, but that's  
14 before conservation demand side management  
15 measures.

16 THE CHAIRMAN: Yeah. So if demand today is  
17 100, in 20 years it will be 140, but to that 140  
18 you will be applying in effect an elasticity of  
19 minus point 57?

20 MR. INCE: Mathematically you should  
21 come to the same result.

22 THE CHAIRMAN: Yes. So that would indicate  
23 that total demand 20 years from now would be less  
24 than it is now, wouldn't it, arithmetically?

25 MR. INCE: No, I don't come to that

1 calculation. But when we take the demand side,  
2 it's about 10,000 gigawatt hours of saving relative  
3 to the before DSM forecast, which by the way does  
4 include a component of natural conservation.

5 So we're trying to forecast a baseline world  
6 without PowerSmart, without conservation. And then  
7 on top of that, so this is the world --

8 THE CHAIRMAN: Yes, no that's where we were.

9 That's your 40 percent.

10 MR. INCE: And then after that, things  
11 that are incremental to that natural world without  
12 conservation, as enabled by PowerSmart, those are  
13 further reductions, so that takes our load --

14 THE CHAIRMAN: PowerSmart is part of your  
15 minus point 57; is that right?

16 MR. INCE: That is the minus point 57 by  
17 itself, yes.

18 THE CHAIRMAN: Yeah. So if -- I mean, the  
19 meaning of elasticity is that if price goes up by  
20 10 percent, demand will decrease by  
21 5.7 percent?

22 MR. INCE: That's the conventional  
23 definition, yes.

24 THE CHAIRMAN: Oh, boy, I'm nothing but  
25 conventional, I'll tell ya. I'm an economist; I

1 can't be anything else.

2 So demand today is 100. Demand in 20 years  
3 is 140. Apply minus point 57. And what do you  
4 expect the demand to be 20 years from now?

5 MR. INCE: Well, according to our loads  
6 forecast, it grows, as I mentioned, 40 percent, and  
7 then on top of that you subtract the 10,000  
8 gigawatt hours of savings by the end of the  
9 forecast horizon, and the net load that results  
10 from that. So the elasticity that we applied --

11 THE CHAIRMAN: Hold on, are you saying that  
12 the 40 percent load growth is after PowerSmart and  
13 other DSM measures? You said a moment ago it was  
14 before.

15 MR. INCE: The 40 percent is before  
16 demand side management or PowerSmart --

17 THE CHAIRMAN: Yeah.

18 MR. INCE: -- after which we applied the  
19 savings.

20 THE CHAIRMAN: Jim, do you just want --

21 All right, I wanted to ask a little bit more  
22 about demand side measures. You note that they are  
23 composed of codes and standards of specific  
24 programs, really expenditure programs that Hydro  
25 undertakes to induce behavioural change and to rate

1 structure changes to encourage conservation.

2 Right?

3 On the codes and -- sorry, yes?

4 MR. REIMANN: Yes.

5 THE CHAIRMAN: On the codes and standards  
6 side, there was one statement, probably a bit of an  
7 offhand one back in the original Environmental  
8 Impact Statement that some of these measures could  
9 not be contemplated because they were beyond the  
10 politically acceptable. And my hackles rose  
11 because I thought that that judgment belonged to  
12 probably to the provincial government rather than  
13 to Hydro. And it led me to ask the question, have  
14 you ever made a proposal for a code change or a  
15 standard change which has been turned down?

16 MR. REIMANN: That's a good question in  
17 terms of turned down. I don't know that it's that  
18 black and white. Our DSM PowerSmart folks spent a  
19 lot of time working with the government and  
20 exploring options and alternatives and just to see  
21 how far we could go. And as initiatives are found,  
22 that seemed to have success, and if there appears  
23 to be some acceptance in the market, those codes  
24 and standards would generally move forward.

25 I would think generally speaking that things

1           maybe would have moved a little slower than we  
2           might have liked if we were left to our own  
3           devices.

4                        But we also do recognize that implementing  
5           codes and standards if the market isn't ready to  
6           achieve them can be dangerous grounds.  Even with  
7           the work that we've done with lighting over the  
8           last 10 years, when the regulation finally came in  
9           to remove the incandescent light bulb, there was  
10          still a fair human cry about people not wanting  
11          that option taken away from them.

12                       So I think that the remark that you're  
13          referring to was when we were looking at the DSM  
14          options four and five, and that was to take it from  
15          sort of our current process of changing the market  
16          and working with governments to advance codes and  
17          standards to say let's be more of an aspirational  
18          view of the world, but let's be way more aggressive  
19          and require people to do things.

20    THE CHAIRMAN:                        Just to advance our  
21          understanding a little bit here, could you give me  
22          an example of a particular demand side management  
23          technique which is beyond the fringe, which is --  
24          which you don't think would be acceptable these  
25          days?

1 MR. REIMANN: Maybe an obvious one would  
2 be having a two-tier rate where instead of doing  
3 what might be the economically efficient thing of  
4 marginal cost pricing, you'd move it up to  
5 something way higher to make it essentially  
6 punitive to be over a certain rate.

7 The other one that comes to mind is, well,  
8 something contemplated where customers would have  
9 to demonstrate a certain adherence to energy  
10 efficiency levels and plant certification in order  
11 to qualify for heritage electricity; otherwise,  
12 they would be completely priced at the spot.

13 That's probably a couple of examples of where  
14 that's going. That would be something that would  
15 be I think pretty difficult to try to bring  
16 forward.

17 THE CHAIRMAN: I was impressed in reading  
18 the California, what's it, Power and Electricity  
19 Commission's report, the lead director's report on  
20 the high, high priority that they give to  
21 conservation. And of course they are pressed by  
22 all kinds of factors that don't apply to us. Thank  
23 heavens. But they do seem to get away with more in  
24 the way of stringent demand side measures than we  
25 are contemplating at the moment. For them, it's

1 working. It does lower their demand.

2 Jocelyne?

3 MS. BEAUDET: Thank you, Mr. Chairman.

4 BC Hydro has been doing global reporting for  
5 many years now. And other utilities in Canada like  
6 BC Hydro and Ontario Power Generation use the same  
7 triple bottom line indicators. And one indicator  
8 you have is of course DSM.

9 And I was wondering, when you have meetings  
10 with other utilities across Canada, to what extent  
11 do they consider that reducing loads with industry  
12 is successful or could be expanded. Because you  
13 have in the IS savings from capacity, you consider  
14 it as being uncertain, but you have curtailment  
15 that, in megawatts, can be interesting. And I was  
16 wondering if you have any comments on that.

17 MR. REIMANN: I know that our PowerSmart  
18 folks spend a lot of time with other jurisdictions  
19 in looking at DSM initiatives across North America.

20 My impression is is that on the capacity  
21 side, we hear a lot more about success in U.S.  
22 jurisdictions that have a higher air-conditioning  
23 load. And the peak -- clip that peak  
24 air-conditioning is a little more acceptable than  
25 when we look at our peaks, it would be the



1 wintertime, around supper time on cold days, and  
2 what would the equivalent be. And certainly you  
3 don't want to be clipping your heat there.

4 And so there's things we wonder whether or  
5 not we could do like controlling people's water  
6 heaters and having it go through schedules where we  
7 turn them off in blocks or try to convince people  
8 to either reduce what they cook or do their laundry  
9 overnight or the dishwasher at nighttime or things  
10 like that.

11 But I guess the short answer is the parallels  
12 to some of the warmer jurisdictions, that that's  
13 where we are seeing most of the success we don't  
14 hear so much about in cold climates.

15 MS. BEAUDET: So with respect to industry,  
16 you don't say -- you don't -- you haven't seen yet  
17 that it could be expendable to try to reduce the  
18 load at certain time of the year?

19 MR. REIMANN: We have looked at temporary  
20 or short-term load curtailment and we had quite a  
21 number of customers that were interested. I guess  
22 I'm reiterating myself a little bit here is it's  
23 the combination of the frequency of how often you  
24 call them and the duration of the interruption as  
25 against the value that you pay them. And what

1 we're finding is that it's tough to get to that  
2 hurdle.

3 And so it matters for the industries; do they  
4 really have part of their process, that is, can be  
5 run completely in parallel without losing  
6 production?

7 And so a perfect example that we've had some  
8 experience with is thermo mechanical pulp mills  
9 where they have these grinding circuits and tanks  
10 of fibre. If they can keep their tanks full, and  
11 if they can use extra grinders to have those run  
12 during peak periods -- or off-peak periods, then  
13 you let them shut those off on peak and keep  
14 running your machines to produce your product.

15 Fortunately, the best customer that we had  
16 that did that was Catalyst Paper in Elk Falls and  
17 they are no longer in business, so.

18 So there is some there, but the amount that  
19 it would take to parallel your processes, what  
20 we're finding is that economic formula is pretty  
21 skinny and we're not sure we can induce them to  
22 necessarily do it.

23 And so the other issue that comes up for us,  
24 actually, when we start thinking about how do we  
25 address interruptions or peak load is we've had a

1 lot of focus historically about a three hour a day  
2 peak for a two-week cold snap. And people kind of  
3 have the mindset, okay, you deal with that and  
4 you're good. Well, you can only take so much of  
5 that sort of capacity into your system.

6 And we've already got in our heritage system  
7 a whole bunch of Coastal Hydro systems. And, in  
8 fact, some of the fore bays that we have on the  
9 large hydro that we operate for peak periods.

10 And when you start looking at the peaks,  
11 particularly Vancouver Island, it's maybe not even  
12 a three-hour, it's an eight-hour or a twelve-hour  
13 peak. And in some cases the morning peak is  
14 getting as high as the evening peak.

15 So when you want to get rid of capacity,  
16 particularly on those peak days, you start  
17 needing -- if you've got three-hour interruption  
18 per customer, you might have to actually start  
19 back-ending those all together, so that then takes  
20 the replacement capacity, you could offer one-third  
21 of that value to each customer, so.

22 It's an area that we think is worth  
23 exploring. We would like to see some success on  
24 this. And we've introduced that into our IRP, both  
25 that direct load control and the customer

1 interruptible the government announced which is  
2 well in the '26. It's in our RP. And we want to  
3 move forward on it. It's just, in our judgement,  
4 at this point it's way too uncertain in terms of  
5 what we're going to get to put it into our stack  
6 and plan on it showing up.

7 MR. INCE: Could I add perhaps some  
8 helpful comments about industrial load curtailment  
9 in that the industrial electricity policy review,  
10 there were submissions from industrial customers on  
11 the very subject of curtailment, and they indicated  
12 that BC Hydro's programs to date frankly were not  
13 that successful in terms of getting that load  
14 because of the more manual-based systems, so you  
15 had to make phone calls. And then there was a lot  
16 of lag time and a lot of process involved in  
17 getting that curtailment. So automation is  
18 definitely an advantage.

19 But then also there's more that's required  
20 from BC Hydro in terms of incentive to make that  
21 happen to shut down an entire process.

22 The second thing is I'm familiar with our  
23 generation folks who run the system and their need  
24 for large blocks of capacity. So when things are  
25 getting tight, for example as occurred on Friday

1           where we almost met the all-time system peak, they  
2           are looking down the stack of resources from GM  
3           Shrum to Revelstoke. And these are very large  
4           block of capacity.

5                        So unless you're looking at a fairly  
6           substantial, a fairly easy curtailment, it's hard  
7           to realize that when you're trying to keep the  
8           system going.

9           MS. BEAUDET:                        What are the incentives that  
10           you give to industry for that type of load  
11           curtailment?

12           MR. INCE:                            I'm not a thorough expert on  
13           this, but it's based on the number of occurrences,  
14           the duration of occurrence, and a certain  
15           compensation. I believe it's in a rate schedule.

16           MS. BEAUDET:                        Thank you.

17           MR. MATTISON:                        I just have a little bit more  
18           here. Madam Beaudet has asked some of what I was  
19           going to ask, so I just want to follow up.

20                        If my recollection is correct, and please  
21           correct me, the residential load was about a third,  
22           30 percent of the total load, the rest being  
23           commercial and industrial. And I don't know the  
24           percentages of the other two.

25                        Can you tell me how DSM changes from those

1 three different load groups? Where are you having  
2 the most success, where is the least, and how does  
3 that work in the DSM among the different load  
4 groups?

5 MR. INCE: So I'll start with the load  
6 in that it's roughly one-third, one-third,  
7 one-third for the residential and the commercials  
8 and the industrials. And we do have aggressive DSM  
9 programs for all of those.

10 And then Mr. Reimann will talk about how --

11 THE CHAIRMAN: I'm just wondering if people  
12 in the back can hear clearly. Is it coming through  
13 all right?

14 SPEAKER: Not very well.

15 THE CHAIRMAN: Okay, Mr. Ince, could you get  
16 closer to the mic. Thank you.

17 MR. INCE: Will do.

18 MR. REIMANN: We've tried in our DSM plans  
19 to be pretty balanced and try to target essentially  
20 equivalent amounts. And I think there's potential  
21 there.

22 In terms of success, we've had some pretty  
23 good success on the industrial side. And I think  
24 that's somewhat because it's large blocks and you  
25 can target them easier.

1                   We've had some comments from the PowerSmart  
2                   folks that they've achieved enough in the  
3                   industrial side that they are starting to look at  
4                   less opportunity.

5                   So probably stronger in the industrial, which  
6                   means we're going to have to start working harder  
7                   on the residential and commercial.

8           MR. MATTISON:                    Could you give me some  
9                   examples of how you -- what DSM -- examples of  
10                  demand side management techniques that work in the  
11                  commercial sector.

12          MR. REIMANN:                   Probably our, I would think  
13                  our most successful is when we work with facilities  
14                  to do a complete energy audit and then look at  
15                  lighting and HVAC systems and say, okay, so which  
16                  ones of these are out of date and where can we get  
17                  you to go to a new standard and have you thought  
18                  about these technologies.

19                  I think they are spending a fair bit of time  
20                  as well looking at like a no-net emissions or  
21                  energy consumption building. That's a little bit  
22                  more forward-looking. So trying to get more  
23                  insulation or a better window e-values and...

24          MR. MATTISON:                   And to date, are you getting  
25                  approximately equal savings from all three sectors

1           or are they different in terms of energy reductions  
2           in the sectors?

3       MR. REIMANN:                   My impression is is that  
4           we've been slightly further ahead on industrial  
5           than we have been on the residential commercial,  
6           but over the period I think we're really trying to  
7           target equal volumes from each.

8       THE CHAIRMAN:                I'd like to raise just one  
9           other line of questions before we break for lunch.  
10          And it really goes to the revenue requirements of  
11          Hydro over the next decade.

12                 The rate increases that we were talking about  
13                 are obviously built on a forecast of revenue  
14                 requirements for the utility. And there is this  
15                 peculiar business of promising to address the  
16                 deferral accounts tomorrow; one might even say  
17                 after the next election. Deferral accounts, yes,  
18                 indeed, will be paid down some day starting in 2016  
19                 or something.

20                 We then have the business of it -- well, so  
21                 my first question is, the project is anticipated to  
22                 cost 7.9 billion dollars that will be paid for  
23                 within the coming decade and will all be stuffed  
24                 into a deferral account; is that correct?

25       MR. SAVIDANT:                Our costs are currently



1 included in a deferral account, but once we proceed  
2 into construction, we would assume that would be  
3 capitalized, so it would go into a work in progress  
4 account.

5 But the treatment is the same in that the  
6 BCUC generally likes the cost of a project come  
7 from the people who benefit from that project. So  
8 costs are being held until the project enters  
9 service and then costs will be recovered from  
10 ratepayers over the life of the project.

11 THE CHAIRMAN: You are raising very  
12 substantial amounts of capital to build the project  
13 and not paying it back until Site C comes into  
14 service, so -- and you'll be paying interest on  
15 that capital and so on. Is all of that factored  
16 into the revenue requirements which lie behind the  
17 forecast of a 45 percent rate increase over the  
18 next decade?

19 MS. YURKOVICH: So the rate forecast that was  
20 issued by the government on the 26th, which  
21 included the nine, six, four, three and a half, and  
22 three, within five years to be set by the BC  
23 Utilities Commission following the review goes out  
24 to the 10-year rate forecast window. This project  
25 won't come into service until fiscal 2024 should we

1 be successful with certification and achieving  
2 authorizations and the decision to proceed. So  
3 that would be outside the rate forecast.

4 It would likely be -- at that time, there'd  
5 be following the project coming into service, if we  
6 were successful, it would go to the BC Utilities  
7 Commission for a review, a prudency review, and at  
8 that time the Utilities Commission would make a  
9 determination about over what period should the  
10 rates be -- should it be recouped from ratepayers.

11 Generally that has been many decades because  
12 the benefits accrue to those generations, so that  
13 has been the practice in the past.

14 THE CHAIRMAN: And that in turn raises the  
15 fascinating question of discount rates and the life  
16 of project and so on.

17 In your capital costing, you use a weighted  
18 average cost of capital of 5 percent real, if I  
19 remember rightly, right and 7 percent for the IPPs.

20 The first question is, the actual financing  
21 costs that you experience are not necessarily the  
22 same as what you might call the social discount  
23 rate, are they?

24 MR. SAVIDANT: Well, the financing costs  
25 that we assumed during the construction period are

1 based on our forecast of our incremental debt cost  
2 over that period. So our current borrowing rate is  
3 quite low. I think we're somewhere in the three to  
4 four percent range. But the long-term forecast is  
5 that will increase, and we factored that into the  
6 forecast of the interest during construction we'll  
7 pay. And that's also included in the 7.9 billion  
8 dollars.

9 THE CHAIRMAN: I understand that, but that  
10 wasn't the question. The economics that you use  
11 for comparing investments, if you will, are not  
12 necessarily the same, will not use the same numbers  
13 as a corporate WACC. I'm sure you're familiar with  
14 the huge economic literature on this.

15 MR. SAVIDANT: Yeah, we're -- and we've seen  
16 the paper that was provided by the panel.

17 In the analysis of the alternatives and in  
18 the portfolio analysis that Randy's group conducts,  
19 we -- in the discounted cash flow analysis, the  
20 portfolio PV analysis, we have done that portfolio  
21 PV analysis based on a 5 percent discount rate  
22 which is equivalent to our corporate WACC.

23 THE CHAIRMAN: Elsewhere in the EIS, for  
24 example in the agriculture section, you argue that  
25 for very long-lived projects, the discount rate

1           should be substantially different from the WACC.  
2           In fact, it should be a declining number over very  
3           long periods. Correct?

4   MR. SAVIDANT:                    Yes, I believe that's done in  
5           terms of the estimate of some of the agricultural  
6           values and the mitigation amounts, yes.

7   THE CHAIRMAN:                    Why would you not also use  
8           that for calculating the present value of a  
9           long-lived asset like Site C?

10   MR. REIMANN:                    Yeah, I mean, we've looked  
11           at the different sort of options of how you could  
12           use -- determine discount rates. And we're  
13           generally aware that there's a perspective that  
14           beyond maybe 20 years or 30 years, depending where  
15           it's -- that you should drop your discount rates  
16           perhaps as low as 2 percent. And we've given some  
17           thought to that but decided in the end that -- we'd  
18           gone through an exercise with the BC Utilities  
19           Commission in the 2006 IPL tab and we went through  
20           and had a discussion about what the discount rate  
21           should be and ultimately felt that it was -- often  
22           we do 20 years analysis. When you start looking at  
23           a project like Site C, 30 years is more appropriate  
24           because it's such a long-lived asset and the  
25           construction period is way out. But ultimately we

1           decided to stay with the process that the  
2           Commission had sort of accepted with us.

3                     I guess I would observe that to the extent if  
4           we were to take our portfolio analysis and stretch  
5           it out further and try to use a lower discount rate  
6           out in the latter years, that starts to increase or  
7           demonstrate that the benefit of the project becomes  
8           more prevalent.

9   THE CHAIRMAN:                     Exactly.

10  MR. REIMANN:                        Right.

11  THE CHAIRMAN:                     So I'm surprised you haven't  
12           done it.

13                     Clearly you have been thinking about this  
14           because your consultants Golders used declining  
15           long-term on a discount rates in their analysis of  
16           agricultural effects.

17                     The amortization period that you're proposing  
18           to use for Site C, as I recall from the EIS, is  
19           70 years; is that correct?

20  MR. SAVIDANT:                     That's the blended  
21           amortization period. That's the effect of economic  
22           project life.

23                     In reality what happens is that each  
24           component of the asset is depreciated on a  
25           different schedule, so your turbines will be

1           depreciated on one schedule, your physical works  
2           will be depreciated on another schedule, the  
3           70 years is effectively the weighted average of the  
4           economic lives of the components of the assets, so  
5           it's the average economic life of the project.

6   THE CHAIRMAN:                    So for comparing various  
7           supply side alternatives, the conclusion is that  
8           you have used a very conservative approach which  
9           tends to privilege short-lived assets; is that  
10          correct?

11   MR. REIMANN:                    Generally, yes.

12   THE CHAIRMAN:                    Well, I'm going to suggest,  
13          it's 12:15, that we break for lunch, that we return  
14          at 1:30, even a slightly shorter lunch. We have a  
15          number of topics that we have yet to explore in  
16          this area; particularly the supply side and perhaps  
17          some clarification questions about the policy  
18          constraints under which you operate. There have  
19          been already been one or two observations on that  
20          from the floor.

21                    With your permission, then, we will return at  
22          1:30. Thank you.

23

24                    **(Luncheon break)**

25                    **(Proceedings adjourned at 12:15 p.m.)**

1           **(Proceedings reconvened at 1:30 p.m.)**

2

3           THE CHAIRMAN:                   Can we reconvene, please.

4                           Two brief, procedural announcements. I  
5           gather there is some difficulty in the back of the  
6           room hearing over the PA. If anybody is having a  
7           lot of problems, come on up towards the front, or  
8           there are some headphones over here, which you are  
9           free to borrow.

10                          And, second, all of us who are speaking  
11           should be careful to get close to the microphone.  
12           Okay?

13           SPEAKER:                      And speak slower.

14           THE CHAIRMAN:                 And speak slower. That's the  
15           second announcement. Our court reporters' fingers  
16           fly, but not as quickly as some of us talk.

17                          I want to -- I thought we really kind of  
18           finished off the demand side of the equation this  
19           morning, but I want to go back to one point and see  
20           if I'm actually understanding things correctly.

21                          Brian, can you get that up on the screen,  
22           that slide? And it's this -- the question is the  
23           elasticity of the demand.

24                          There's nothing like computers to slow us  
25           down.

1                   That's the slide. Where is that from,  
2                   please? That's from ...

3       MR. WALLACE:                   That's from the conditioning  
4                   response.

5       THE CHAIRMAN:                 Push your button, please.

6       MR. WALLACE:                   Mr. Chairman, this is the  
7                   additional response to IR, the S26.

8       THE CHAIRMAN:                 Recently received, I think,  
9                   on the 22nd of November?

10      MR. WALLACE:                  On November 20th.

11      THE CHAIRMAN:                 And I can't read it from  
12                   here. Counsel, would you describe what those  
13                   coloured boxes are? Go ahead.

14      MR. MATTISON:                 Let me try to read. The  
15                   purple box on the top left box A is response to all  
16                   price effects. And it is minus 0.1, I think. Then  
17                   underneath that, the blue box on the extreme left,  
18                   Box C is response to rate increases: minus 0.05.  
19                   And D is response to rate structures. And they  
20                   combine -- well, first, on the extreme right at the  
21                   top is Box B, which is DSM programs and codes and  
22                   standards. Those top four boxes combine to the box  
23                   at the bottom, which is purple E, is overall  
24                   reduction and demand (implied elasticity of demand)  
25                   minus 0.57.



1 THE CHAIRMAN: Thank you. Okay. So as I  
2 read that, natural conservation, is implied -- has  
3 a long-term elasticity of demand of 0.1. Total  
4 long-term elasticity of demand is minus .57. So  
5 that means that if the price doubles, the demand of  
6 the whole stock of demand declines by 57 percent.

7 Now, if I have it right, Hydro's 10-year  
8 forecast is that there will be a 40 percent  
9 increase in demand before taking long-term  
10 elasticity or demand side measures into account.  
11 And that over that same period of time, there will  
12 be a 45 percent increase in price. So that implies  
13 that demand in year ten is about 105 percent of  
14 what it is at present. Is that correct?

15 MR. REIMANN: Yes. I think we were trying  
16 to talk around each other a bit before. So let me  
17 start off, and then I'll get Mr. Ince to explain  
18 the formula he used to get to the calculation.

19 And so I guess when you look at this diagram,  
20 I think this kind of explains what we've been  
21 talking about. And just to point out that Box A  
22 with the minus .1 is the response with the  
23 two-tiered rate, and so that's what we would expect  
24 with that price signal, the total response to be.  
25 We split that out, then, to try to determine what

1 natural DSM would be at the minus .05, plus what  
2 more you would get. So it's kind of a combination  
3 of those two.

4 Box E, at the end of the day, then, brings in  
5 from the stepped rates and the codes of standards  
6 and programs, pulls it all together, and we  
7 calculated at an imputed elasticity. And I think  
8 where we started to get a little turned around on  
9 this is the minus .57 is as a portion of what the  
10 rate increase over that period would be, but the  
11 calculation we've done actually goes through and  
12 determines that year by year as increases come  
13 along and calculates out to the final effect.

14 And so let me just mention one other thing  
15 that in JRP IR S26, we did include the number in  
16 there under conclusions regarding project need and  
17 observe that; it was in the order of 10,922  
18 gigawatt hours. So the number's there. But, with  
19 that, let me pass that over to David to get you to  
20 explain the formula.

21 MR. INCE: So the amount of DSM we're going to  
22 realize by the end of the 20-year forecast horizon  
23 is around 11,000 gigawatt hours. And so the  
24 calculation to derive the minus .57 is reverse  
25 engineering of the elasticity that would get you

1           that number. So within, in the base forecast  
2           itself, with this minus .05, we call that natural  
3           conservation. I don't like to use that word  
4           because rate increases really aren't natural  
5           conservation, but that gives you about 1,000  
6           gigawatt hours a year. And so the calculation to  
7           get the minus .5 -- to get the 11,000 gigawatt  
8           hours, it's basically a goal-seek calculation that  
9           gets you what's the elasticity you have to go up to  
10          get you that 11,000 gigawatt hours of savings.

11                     At very high elasticity levels and high rate  
12          levels, the simple relationship, you know, saying  
13          that there's a .1 elasticity will get you -- if you  
14          have 100 percent rate increase, a 10 percent  
15          reduction at load, at high levels, that starts to  
16          break down. Then you have to get into the math and  
17          you have to get into natural algorithm. So this  
18          calculation was done with a little bit more  
19          sophistication than a strict percentage-based  
20          approach. But what we were trying to do with this  
21          calculation is reverse engineer with those savings,  
22          11,000 gigawatt hours, and what the implies in  
23          terms of elasticity.

24       MR. REIMANN:                     And so, roughly speaking, the  
25          rate increase, I think that we were seeing after 20

1           years on a real basis was a little bit less than I  
2           think 30 percent; you're using a number of 45. So  
3           in a very simplistic, I guess, view of it is that  
4           if it's a 30 percent rate increase over the 20  
5           years, and you've got a minus .5 elasticity, you'd  
6           expect to have a 15 percent load reduction.

7                        Now, when you go through the cumulative that  
8           David is talking about with the algorithm, it works  
9           out to be a little bit less than that because it  
10          gets applied all the way along. But it's minus 5.7  
11          of the rate increase.

12       THE CHAIRMAN:                        I'm going to suggest that you  
13          provide us with the actual calculation. My  
14          colleague, Mattison, is an engineer and understands  
15          logarithms; although, you know, Jocelyne and I are  
16          mere geographers who don't. And so it would be  
17          nice if we could have the diagram with every single  
18          assumption spelled out and the algorithm. Could  
19          you do that.

20       MR. INCE:                            All right. This is one of these  
21          cases where it's hard to talk around; whereas  
22          equation is worth a lot of words.

23       THE CHAIRMAN:                        I agree.

24                        Jocelyne, does that cover ... Okay?

25                        All right. Thank you very much for that. So

1 that's an undertaking for those who are taking  
2 notes.

3

4 **UNDERTAKING 1: Provide calculation, algorithm,**  
5 **and diagram**

6

7 THE CHAIRMAN: Undertaking number 1, there  
8 we are.

9 Now, there are a number of people who are  
10 scheduled to present this afternoon, and there are  
11 a number of interested parties who I know are just  
12 anxious to ask questions. I would beg your  
13 indulgence if we go another ten minutes or so and  
14 ask a couple questions about policy and supply, and  
15 then we will turn it open to the rest of the gang.

16 On the questions of policy, Jim, do you want  
17 to start off on ...

18 MR. MATTISON: Thank you, Mr. Chair.

19 In Ms. Yurkovich's presentation, she reviewed  
20 some of the mandate and policy I think on your  
21 third slide. I want to ask questions about two of  
22 those.

23 One is the self-sufficiency requirement. And  
24 I'm going from memory here, so, please, correct me  
25 when I get it wrong. There was a requirement for

1 self-sufficiency during a critical period with  
2 contingency or reserve, and that requirement was  
3 recently relaxed, I believe. And has that  
4 changed -- like, how did that change effect the  
5 supply that you calculate going forward in terms of  
6 the constraint that's put on you with respect to  
7 self-sufficiency?

8 MS. YURKOVICH: So your memory is correct.

9 It was self-sufficient at critical water, which  
10 means one year out of ten, in theory. With 3,000  
11 gigawatt hours of insurance, that was our planning  
12 criteria prior to the change that was made in 2012.

13 In 2012, the definition of self-sufficiency  
14 was changed to average water. So that is the  
15 planning criteria that we plan to know, and it does  
16 mean there are some differences in terms of how  
17 much supply we'll bring in.

18 And I'll let Randy talk about it it from a  
19 planning perspective.

20 MR. REIMANN: So that -- two parts, of  
21 course -- the insurance was an additional 3,000  
22 gigawatt hours that was supposed to be in place by  
23 2020. That's come out of our requirements. The  
24 difference between average and critical water works  
25 out to about 4,100 gigawatt hours. And so, in

1 effect, what we're doing is we're planning on the  
2 average output from the heritage system. And in  
3 low water conditions, we can be managing our  
4 reservoirs as low as 4,100 gigawatt hours shy, that  
5 we would intend to pick up from the market.

6 MR. MATTISON: So the load forecast that  
7 we're looking at is based on moving forward with  
8 that average capacity. You're building on that  
9 now? Like, expanding on that?

10 MR. REIMANN: So it -- yeah, it doesn't  
11 show up on the load forecast but in how we rely on  
12 the resources, how much energy we put into our  
13 stack. And so the energy in the stack now has the  
14 4,100 gigawatt hours of incremental to get to  
15 average water. So it says our system is already  
16 capable of that much when we then take the  
17 forecast, which doesn't change, less supply, we've  
18 got more supply, so the gap reduces.

19 MR. MATTISON: The gap reduces?

20 SPEAKER: Yes.

21 MR. MATTISON: Yes, right. Thank you.

22 And was that updated in any way in the -- did  
23 that change, then, your energy requirement going  
24 forward?

25 MR. REIMANN: It did from the draft IRP

1           that was out in May of 2012.

2       MR MATTISON:                    Okay.

3       MR. REIMANN:                    The EIS, as filed in January,  
4           was on the appropriate water condition.

5       MR. MATTISON:                    Okay. Thank you.

6                    The other question I have is with respect to  
7           the 93 percent clean and renewable. That implies  
8           7 percent dirty and expendable, I suppose. I don't  
9           know what we would call it, but I think that  
10          implies 7 percent thermal; is that correct?

11      MS. YURKOVICH:                  Yes, that's correct.

12      MR. MATTISON:                  And where would -- where,  
13          currently, is 7 percent thermal? Is that mostly  
14          what we're importing now in terms of market  
15          purchase? Or is there thermal generation that's  
16          being purchased inside the province? Or is Hydro  
17          generating with thermal resources?

18      MR. REIMANN:                  So there's been a bit of a  
19          discussion about how the 93 percent works --

20      MR. MATTISON:                  Let's hear it.

21      MR. REIMANN:                  -- and it's helpful if I walk  
22          through it.

23                    The 93 percent, the way it's written, we  
24          looked at it, and came to a conclusion that that is  
25          something that the generation actually produced in



1 the province, had to be 93 percent clean. And so  
2 when we started then saying, well, how do we apply  
3 this criterion, we started asking ourselves so how  
4 do you interpret this? And what does  
5 self-sufficiency and 93 percent clean mean  
6 together?

7 So we've addressed this explicitly in the  
8 integrated resource plan. It's in section 6.2.2.  
9 And we really said there's a number of ways to  
10 interpret it. The one that we looked at, we said,  
11 well, one could say to be self-sufficient, you have  
12 to be capable of generating in the province. And  
13 to be 93 percent clean, you have to generate  
14 93 percent clean in the province. So one way to  
15 interpret this would be to say let's build nothing  
16 but the cheapest gas turbines we can find and never  
17 plan on running them and import because imports  
18 don't count in the 93 percent calculation.

19 And so that was one of the options we looked  
20 at. We said, well, that clearly frustrates the  
21 intent of the **Clean Energy Act**. They wanted us to  
22 be capable of running in the province and to be  
23 generating clean electricity and to be building out  
24 the clean sector. So that was one of three  
25 options.

1           The other two we looked at said do we have to  
2 meet this in every year, even in a low water year?  
3 Or do we meet it on an average? And so we ended up  
4 in the last IRP and in the IS, taking that  
5 mid-position, and saying so we think it makes sense  
6 to plan to average water so that, on average, we  
7 could, if we had to generate everything in the  
8 province, we could use the resources we built and  
9 meet the 90 percent clean. We put that  
10 interpretation to the government; it got taken  
11 through a few different versions of the IRP, and  
12 they've approved the IRP with that interpretation  
13 of it.

14 MR. MATTISON:                   How are the imports currently  
15 calculated then?

16           So in some years, my recollection is we've --  
17 BC has been a net importer of power for at least a  
18 decade, at least on generation on sales. Does that  
19 factor into this 93 percent calculation or not  
20 then, even on average?

21 MR. REIMANN:                   Not into the 93 percent  
22 calculation. It says 93 percent of the electricity  
23 generated has to be clean. So if you import,  
24 effectively, it doesn't get counted. Where we were  
25 anticipating or where it could start to show up --

1 THE CHAIRMAN: I see.

2 MR. REIMANN: -- is if BC starts to get  
3 integrated like the western climate initiative with  
4 the neighbouring jurisdictions, would start looking  
5 at who the first generator is and who's got the GHG  
6 liability. So it may come in the future, but it's  
7 not part of the 93 percent, strictly speaking.

8 MR. MATTISON: Okay. Thank you. That helps  
9 me a lot. Let me just restate it to make sure I've  
10 got it.

11 So you're saying the 93 percent constraint is  
12 on generation in British Columbia. Imported stuff,  
13 for now, we're not looking at where it comes from.  
14 If we get into the western climate initiative, then  
15 we will look at the source of that power, and it  
16 will factor into the calculation, probably, but  
17 that will be another decision of government, I  
18 expect.

19 MR. REIMANN: Right. It will be a climate  
20 liability issue.

21 MR. MATTISON: Thank you. That helps me.  
22 One footnote. One footnote to that, you said  
23 93 percent in the province. So that applies, let's  
24 say, to the aggregate of you and Fortis and anybody  
25 who might be around; is that right?

1 MR. REIMANN: That's right, yeah. And we  
2 looked at that as well and said so what does this  
3 mean? Does this mean that BC Hydro has to meet it  
4 for everybody? And the conclusion we came to is  
5 that we would neither borrow nor lend our headroom  
6 to others, that we would keep the 7 percent  
7 non-clean headroom for our benefit.

8 THE CHAIRMAN: A certain temptation to use  
9 it all up quick, wouldn't it be? Anyway ...

10 MS. BEAUDET: Thank you, Mr. Chairman.

11 I would like to explore a little more about  
12 the constraints that you have for the system, and  
13 look at the IPP.

14 This morning, you said that it will grow up  
15 to 25 percent in the IS; you talk a lot about the  
16 attrition. And when we read in that section, it  
17 looks like you don't see much expansion in that  
18 field. If we look at, for instance, table 5.27,  
19 which shows the on-shore wind potential for the  
20 north coast, it's pretty substantial, and I was  
21 wondering why do you put a cap? Is it because you  
22 have technical limits, which could be what you can  
23 integrate in the system; depending on the region,  
24 you have the distribution lines? Do you have the  
25 circuits? Or, also, is it because of the total

1 system, you can't integrate more than, let's say, a  
2 certain amount of megawatts? I'd like to hear what  
3 are the reasons why you seem to be putting a cap on  
4 these options.

5 MS. YURKOVICH: Thank you. I'll just address  
6 the issue of attrition, and then turn it over to  
7 Randy to talk about how it works in terms of  
8 integrating into our system.

9 We do have about -- it's in the low 20s  
10 percent of independent power projects in the system  
11 right now. We did have higher attrition rates, as  
12 this industry was still -- was just getting going  
13 in our earlier calls for power; for instance, the  
14 2006 call for power. When the industry was a  
15 nascent industry, we had more attrition from those  
16 earlier projects. We have now a more mature  
17 independent power sector in the province, and so we  
18 are seeing those attrition rates decline.

19 There are larger players in the field, and  
20 they're more sophisticated developers. So that's  
21 why we did adjust our attrition rate down. So  
22 that's where we are with independent power in the  
23 province right now.

24 And I'll just turn it over to Randy to talk  
25 about the integration of intermittence into the

1 system.

2 MR. REIMANN: Yeah, the wind potential that  
3 we studied or examined, that we do through our  
4 resource option report process -- and the last one  
5 that we did through a consultation process was in  
6 2010 -- and what we, typically, try to do is see  
7 what the potential is in the province up to a  
8 certain price threshold. And so we have -- I've  
9 got an atmospheric geologist I guess working with  
10 me who's got all sorts of smarts on the wind that I  
11 don't pretend to understand at all, but gone to the  
12 weather systems and tried to plot those down into  
13 the province and see where all the high wind  
14 regimes were, and, together with her and her  
15 consultants, we ended up with the most attractive  
16 areas that we could find, and we put it onto a cost  
17 curve, so ...

18 It's not to say that if one was willing to  
19 pay more, could we find more potential in terms of  
20 megawatts and gigawatt hours? The answer is  
21 absolutely. It's just that we tried to pick the  
22 stuff that we thought would be most likely to  
23 compete with over the next 20 years.

24 MS. BEAUDET: So, if I understand well, the  
25 capping is in terms of cost? You haven't evaluated

1           what's the maximum of megawatt that you could  
2           integrate in the system, and so far have you  
3           reached that maximum, though?

4   MR. REIMANN:                    Yeah.  No, we haven't  
5           actually -- well, Mike can speak to this a bit  
6           more.

7   MR. SAVIDANT:                   So BC Hydro has conducted  
8           some studies in terms of the maximum level of wind  
9           integration that we think is possible into the  
10          system.  I believe there's some discussion of this  
11          in the project benefits section and the technical  
12          memo on hydroelectric storage and capacity.

13                 I will say when we look at the IRP, we did  
14                 not -- we don't see us bumping up against that  
15                 capped in this time frame right now.  So it was not  
16                 a constraint in our evaluation of alternatives to  
17                 the project.  But when we look at that cap, what  
18                 we're really looking at is how much variability we  
19                 expect in the system, and how much dispatchable  
20                 capacity, like our large hydro, we have to respond  
21                 to it.

22                 So wind is an intermittent resource, and it's  
23                 intermittent on a fairly short basis.  In some  
24                 cases, where the wind speed drops, the generation  
25                 will drop as well.  You need dispatchable resources

1           like hydroelectric capacity or a simple cycle gas  
2           turbines to match that load.

3                       And so when we look at what we have in the  
4           system today, our cap is established based on how  
5           much variability we see in the wind resources, and  
6           how much available dispatchable capacity we have to  
7           match that. It's something we're getting to  
8           understand better and better as we bring in more  
9           wind into our system right now, but the initial  
10          studies have established a cap that is not a  
11          constraint to this analysis.

12       MS. BEAUDET:                It could be other intermittent  
13          sources of power. I give as an example wind, but  
14          it could be solar, it could be any others that  
15          you're looking at in the EIS.

16                       And so for me I know in other provinces they  
17          have calculated -- let's say Hydro Quebec says  
18          there's a possibility or potential of 39,000  
19          megawatts so far, otherwise they would have to  
20          invest serious amounts in order to get the system  
21          adjusted to take more. And I was just wondering if  
22          you're considering to look what would be the cap  
23          technically, not in terms of cost?

24       MR. REIMANN:                We have done those studies.  
25          And we're a little bit still in the infancy of



1           those in terms of how much we can integrate  
2           physically.

3           The first number that we'd arrived at was in  
4           the order of 2,000 megawatts. And then we looked  
5           at it again, and so how much could we actually get  
6           with the project? How much more would that add?

7           Some of the things -- when we did the  
8           original study, the volatility of the wind -- and  
9           let me start there, is that we've looked at wind as  
10          being probably of the volatile resources;  
11          certainly, solar has a lot of volatility, too. It  
12          doesn't seem to be as economic here; we don't get  
13          as many hours of sunlight and whatnot, so it was a  
14          higher-cost resource; we didn't see it coming in.

15       MS. BEAUDET:                    I'm not talking about the  
16          potential of wind or other sources --

17       MR. REIMANN:                    The integration effort --

18       MS. BEAUDET:                    -- I'm looking at the  
19          integration part in the system.

20       SPEAKER:                         Right.

21       MS. BEAUDET:                    Either originally or the  
22          total system.

23       MR. REIMANN:                    Yes. And so we looked at it  
24          for the total system in the order of 2,000  
25          megawatts. One of the things that we had -- we

1           assumed when we did that analysis was that we would  
2           sort of have unfettered access to US markets during  
3           our worst time of integrating, and that's in the  
4           freshet period. So what we find is that we have  
5           the ability to take 2,000 megawatts and follow it,  
6           but when you're absorbing or you've got as much  
7           water running in the system and you have no load to  
8           supply with it, and we're seeing in the US markets,  
9           at times, the prices are going negative, that it  
10          becomes uneconomic to absorb much more. But for  
11          the purposes of the analysis we did, 2,000  
12          megawatts is probably a good number, and we didn't  
13          see that as a constraint.

14        THE CHAIRMAN:                    Just a couple of quickies.

15                In an earlier forecast on the supply side, you  
16                included Revelstoke 6 as a capacity resource, and  
17                you deleted it since. Why?

18        MR. REIMANN:                    In the evidentiary update, we  
19                identified a number of factors that had changed. I  
20                guess, most notably, as we went through, as  
21                Ms. Yurkovich was saying, we looked at the  
22                attrition of IPPs, and our belief was is that we  
23                were getting more than we'd thought to begin with.  
24                And so it started to become a marginal question:  
25                does it make sense economically to build Rev 6 for

1 a couple years before the project came on? And we  
2 started looking at it and saying, well, that's  
3 probably not a very economic thing to do, so we  
4 suggested we should defer that.

5 The implication of that in the analysis is  
6 that Rev 6 now becomes a resource, a low-cost  
7 resource, as an alternative to the project, that it  
8 actually becomes a tougher task.

9 THE CHAIRMAN: Sorry. Your last phrase: "it  
10 actually" ...

11 MR. REIMANN: By making Rev 6 available as  
12 a low-cost capacity resource option --

13 THE CHAIRMAN: Yes.

14 SPEAKER: -- it means that you would  
15 defer other higher cost capacity options in the  
16 alternative to Site C portfolios.

17 THE CHAIRMAN: Yes, I understand.

18 Okay. It seems, to me, to be a very cheap  
19 capacity resource, and capacity is the constraint  
20 that's driving it in the forecast? Yes.

21 As a matter of interest, do you know why the  
22 Columbia River Treaty entitlement is a barred  
23 resource? It's a question about provincial policy,  
24 but it just flummoxes me. Why do they not allow  
25 that? Anybody know?

1 MR. REIMANN: Well, I think it's -- yeah,  
2 it's government policy about wanting the generation  
3 in the province, but also observe that in 2014 is  
4 the first year that either party can give notice of  
5 termination of the contract. And that's for ten  
6 years, hence. So, effectively, 2024, there's a  
7 question of how much and what benefits we're going  
8 to get out of the Treaty.

9 THE CHAIRMAN: M'mm-hmm. Okay. I think in  
10 the interest of time, I will stop there. And I'd  
11 like to ask whether there are any of the interested  
12 parties, including some who are going to make their  
13 own presentations shortly who wish to ask questions  
14 on this particular set of things?

15 MR. HENDRIKS: Good afternoon.

16 I'm Rick Hendriks with the Treat 8 First  
17 Nations, that's the Doig River, Halfway River,  
18 Prophet River, and West Moberly First Nations.

19 And that's H-e-n-d-r-i-k-s. So there's no C  
20 in Hendriks. Perhaps that a coincidence, I'm not  
21 sure.

22 So as the panel is aware, we had many  
23 questions during the review of the IS that went  
24 unanswered. In the interest of time and to assist  
25 the panel to the maximum extent possible, we want

1 to focus the questions on the issues that you've  
2 raised in your last set of information requests, as  
3 well as some of the issues raised by the comments  
4 today from BC Hydro.

5 So I'll start with elasticity. In your  
6 response, I say "your", BC Hydro, to the Panel's  
7 additional request, S26. BC Hydro confirmed that  
8 you rely on a long-term price elasticity of minus  
9 .05, meaning a one percent increase in rates will  
10 result in a .05 decrease in demand. It is not  
11 clear, however, to what range of price variation  
12 that figure is meant to apply. And we just heard  
13 some discussion about that, so I'm pleased to hear  
14 that we're thinking along the same lines.

15 In particular, we're questioning the  
16 applicability of this theoretical value to large  
17 price variation, and, also, its applicability to  
18 industrial loads. Since industry makes decisions  
19 that affect large blocks of electricity on a  
20 case-by-case basis. I have a handout, which we'll  
21 file on the record here, which I could hand it out,  
22 but -- do you want me to hand it out?

23 THE CHAIRMAN: I would like it in electronic  
24 form; it's no good on paper.

25 MR. HENDRIKS: Okay. We will file it. But

1 I'm sure that BC Hydro is aware of the events that  
2 have taken place in Quebec in -- over the last few  
3 days that can help focus our minds on this  
4 question.

5 As you probably know, last month ALCOWA  
6 announced that it would permanently close 3  
7 aluminum smelters in Quebec one year from now  
8 unless it is granted substantial relief from the  
9 announced increases in its electricity rates. The  
10 energy lows of these smelters are enormous, on the  
11 level of 13,000 gigawatt hours, so that's about two  
12 and a half Site Cs per year.

13 My question is twofold, for BC Hydro. First,  
14 on a theoretical level, please explain how the  
15 stated elasticity of negative .05 adequately  
16 captures effects of rate changes on large  
17 industrial loads, including these types of changes  
18 where industry simply leads?

19 THE CHAIRMAN: Do you wish to respond now?

20 Or do you want to hear the second part?

21 MS. YURKOVICH: Up to the Chair.

22 THE CHAIRMAN: Why don't we hear the rest.

23 MR. HENDRIKS: Sure.

24 So the first part is on a theoretical level;  
25 please explain how these stated elasticity of minus

1           .05 adequately captures effects of rate changes on  
2           large industrial loads.

3                   And, secondly, which large industrial loads  
4           in BC could be at risk in the event of significant  
5           rate increases? If so, has BC Hydro identified a  
6           red zone, if you will, of rate increases at which  
7           such industrial losses of load become a serious  
8           possibility?

9           MR. CHAIRMAN:                   Thank you.

10          MS. YURKOVICH:                 Sorry, are we taking all the  
11          questions? I thought you had four questions.

12          MR. HENDRIKS:                 Well, that was my question  
13          about elasticity.

14          THE CHAIRMAN:                 All right. So let's hear an  
15          answer to that one.

16          MS. YURKOVICH:                 Okay. Go ahead.

17          MR. INCE:                     A number of questions there.

18                   The first question regarding theoretical. As we  
19                   indicated earlier, the minus .1 elasticity applies  
20                   to customers who are on a stepped rate of which all  
21                   the transmission class customers are. And so I  
22                   would encourage the use of that number, the higher  
23                   number.

24                   In terms of theoretical -- perhaps you can  
25                   restate the question. More of a tangible, please.

1 MR. HENDRIKS: Yes. The issue is you've  
2 developed, what I would call, a deterministic  
3 approach --

4 THE CHAIRMAN: Through the Chair, please.

5 MR. HENDRIKS: Sorry, Chair.

6 This is deterministic approach that the  
7 proponent has proposed here. It doesn't seem to  
8 capture these sorts of stochastic events where, you  
9 know, large industrial customers decide, well, I've  
10 had enough, I'm leaving now, and we don't see how  
11 that's captured in this price of elasticity value.

12 MR. INCE: So on top of the elasticity  
13 calculation, we do an account-by-account forecast  
14 on each of the large industrial customers, that's  
15 200-plus individual forecasts. And those forecasts  
16 take into account commodity prices, world events,  
17 to some extent, of which the industrial customers  
18 cannot control such a supply and demand of metals,  
19 for example. And we also take into account issues  
20 like fibre supply for some of our major pulp and  
21 paper customers.

22 So if you do an audit of the previous  
23 generations, a load forecast, you'll notice that  
24 we've decreased our pulp and paper forecast for I  
25 think about five successive years. And so that's



1 taking into account the state in terms of pulp  
2 prices, the fibre supply, availability. And so we  
3 do recognize these larger factors. It's not just a  
4 simple elasticity calculation; it's a sector by  
5 sector accounting of oil and gas, mining, metal  
6 mining, coal mining, each customer sector is  
7 treated individually, and each customer's forecast  
8 is done individually, recognizing these factors.

9 MR. HENDRIKS: Can I ask another --

10 THE CHAIRMAN: Carry on.

11 MR. HENDRIKS: So does BC Hydro, with  
12 respect to these different industries that you have  
13 in the province, do you then maintain -- actively  
14 maintain I guess an understanding, or a record, of  
15 at what point, in terms of price increases, some of  
16 these industries will start to significantly reduce  
17 load?

18 MR. INCE: Yes. The answer is yes. And  
19 so, for example, on the fibre supply question, we  
20 have reduced the expectation of some of the pulp  
21 and paper customers in the long term as a result of  
22 simply limited fibre supply.

23 It's always a challenging decision within a  
24 load forecast to take a viable customer, a customer  
25 that's operating right now, and make the assumption

1           that customer will drop off. That's too much of a  
2           leap of faith, but we try and consider the sector  
3           as a whole in terms of what is the overall  
4           availability of fibre, and, therefore, allocated  
5           among the relevant businesses in the province. But  
6           we do recognize there are some thresholds, and I  
7           recognize that -- the government understands these  
8           thresholds, and there are active steps being taken.  
9           The industrial electricity policy review has, well,  
10          considered this issue, and is considered remedial  
11          measures in terms of perhaps the potential for  
12          retail access, time of use rates, some mitigation  
13          measures in terms of rate levels. Those are active  
14          discussions.

15       MR. HENDRIKS:                    Okay. So to summarize, then,  
16    the minus .1, in your view, is inclusive of these  
17    potential events where prices get so high that  
18    industrial customers simply cease to require power?

19       MR. INCE:                         Well, I'll characterize it  
20    first, is we do an individual account forecast, and  
21    including, taking into account, customer  
22    self-generation, and after which we apply the  
23    minus .1 for those customers who are exposed to the  
24    stepped rate.

25       MR. HENDRIKS:                    Okay. Thank you.

1           The second question deals with load growth.  
2           BC Hydro indicated in your response to AB 0001-142,  
3           that consistent with good utility practice in  
4           previous BCUC decisions, BC Hydro plans to the  
5           mid-load forecast. The need for the project is,  
6           therefore, based on the mid-load forecast, and no  
7           portfolios were created or evaluated using the high  
8           or low-load forecast. I believe that you have  
9           indicated that the probability of low-load growth,  
10          being higher than a high scenario, or lower than a  
11          low scenario, is 10 percent.

12           I took a quick look at your 2007 load  
13          forecast from your long-term requisition plan. I'm  
14          surprised to see that the actual growth since 2007  
15          has been substantially below the 2007 low-load  
16          growth scenario. When I say "substantially," I  
17          mean more than -- about twice as low as the  
18          difference between the low-load scenario and the  
19          mid-load scenario.

20           I have these figures on a graph, and we will  
21          file the graph. I realize that since 2007, we've  
22          had some unusual economic events; I don't dispute  
23          that. However, this experience suggests that our  
24          forecast are less reliable than we might think, and  
25          that we might need to pay a little bit more

1 attention to these low-load growth scenarios.

2 We have concerns that the low-load scenario  
3 is more plausible than BC Hydro claims. If the  
4 low-load line was really a 10 percent probability  
5 of occurring, what was the probability of the  
6 events of the past five years in terms of load  
7 growth?

8 THE CHAIRMAN: Hydro?

9 MR. REIMANN: So to answer the question  
10 about the portfolios and which portfolios we ran,  
11 we ran a number of sensitivities that were included  
12 in the evidentiary update that included low-load  
13 growth scenarios and then high-growth scenarios,  
14 and did the evaluation of the project on those. So  
15 I think the analysis is there.

16 With respect to forecasting and what's  
17 happened with that recession, David?

18 MR. INCE: It is true that the 2007 load  
19 forecast was higher than the successive forecast.  
20 I started load forecasting at BC Hydro in 2007, and  
21 I had I guess the unenviable position of seeing the  
22 effects of the recession and how it went on year  
23 after year after year, and in almost unprecedented  
24 duration.

25 So it is the most profound event in

1 BC Hydro's history in terms of effect on the load.  
2 We haven't seen this degree in the '91 recession,  
3 the '82/83 recession, the 2001 recession. We've  
4 never seen a case before where a residential has  
5 flattened out.

6 And so if you look at the load tract, we had  
7 some attrition among our major customers. It was  
8 mentioned earlier that Elk Falls, for example,  
9 which used to be our biggest, single customer, it  
10 had some attrition that used to be about 1,400  
11 gigawatt hours to load. And there were many other  
12 large customers that either scaled back or went out  
13 of business.

14 So I would suggest the 2008/2009 recession,  
15 and how it persisted for many years, in an almost  
16 unexpected fashion, caught every forecaster by  
17 surprise whether it be the Forecasting Council of  
18 BC, who we get advice from, or the banks. It was  
19 really an unprecedented event in terms of the  
20 duration of it.

21 And so, granted, our forecast did drop in  
22 2008. So when I did my first, full forecast in  
23 '08, we had a significant drop, and that was quite  
24 a surprise to the decision-makers. And then we  
25 successfully dropped it '9, '10, '11. And I think

1           for the first time we're starting to see some  
2           stability in terms of recovery. And so we do have  
3           modest load growth considered in our forecast, but  
4           I do recognize that 2008/2009 probably wasn't a  
5           1-in-10 event. It was probably next to the great  
6           depression in terms of its effect on the economy  
7           and BC Hydro's load.

8       MR. HENDRIKS:                    Just to make a quick comment  
9           on that. We also have access to the change in  
10          demand in BC since the 1960s. And I just want to  
11          clarify: are you sure that this drop was by far the  
12          largest seen in British Columbia?

13       MR. INCE:                        I'm not aware of anything  
14          else unless there's some major industrial customer  
15          that predates my knowledge.

16       THE CHAIRMAN:                    Do you have a counter  
17          example, sir?

18       MR. HENDRIKS:                    We will file it tomorrow.

19       THE CHAIRMAN:                    All right. Next.

20       SPEAKER:                         Number three, I asked for a  
21          graph to be posted, and I just wonder if that  
22          could --

23       MR. GODSOE:                       Sorry, Mr. Chair, if I could  
24          just get some clarity here. We're having a bunch  
25          of filings going on, I don't know what the status

1 is, but I would be intending to rebut that as part  
2 of our 24 rebuttal. I mean, it seems a little  
3 unusual to be giving evidence in this late, and I  
4 just want to know what the status is of that, and  
5 if we have a right of reply to that?

6 THE CHAIRMAN: You certainly do. I mean  
7 that's why I insist that anything that people bring  
8 to these hearings be in electronic form so they can  
9 be instantly shared.

10 MR. HENDRIKS: Thank you. We actually  
11 developed that material as we were sitting here in  
12 response to the discussion, so ...

13 So can you, please, explain this graph.

14 MR. GODSOE: So this graph is,  
15 effectively, a differential rate forecast. So the  
16 X axis of this graph is our base resource plan  
17 coming out of the 2013 integrated resource plan, so  
18 that's what we expect to do. The lines on it are  
19 showing alternatives to that base resource plan,  
20 looking at specific things like the portfolios that  
21 exclude Site C, or include a different level of  
22 DSM.

23 So, for instance, that kind of -- the  
24 thickest line that you see on that graph shows -- I  
25 believe that would be the alternative clean

1 generation portfolio without Site C. And what you  
2 see there is you see -- Site C, of course, has a  
3 large, upfront capital cost. So without Site C,  
4 you will see lower rates for, approximately -- I  
5 think it's five to eight years. But after that,  
6 rates would be higher if you did not build Site C  
7 because of the higher cost of the resources that  
8 are replacing Site C in the alternative portfolios.

9 MR. HENDRIKS: So I just want to make sure I  
10 understand that before I ask the question. So  
11 looking at the dark red line, the difference  
12 between the dark red line and the X axis is -- one  
13 contains Site C, and the other contains an  
14 alternative; otherwise, the DSM is the same.  
15 Right? DSM2 is your base case option for DSM;  
16 correct?

17 MR. SAVIDANT: That is correct.

18 MR. HENDRIKS: So when I look at that, it  
19 appears that there are savings in the short term  
20 and higher rate impacts in the longer term. So a  
21 couple of things on that. This is, again, the  
22 block analysis. This is a comparison of blocks;  
23 correct?

24 MR. GODSOE: That is not correct. This is  
25 the actual portfolio PV analysis.



1 MR. HENDRIKS: Okay. But these are the  
2 clean -- this is the clean block, and the clean  
3 plus thermal block; correct?

4 MR. GODSOE: That is not correct. These  
5 are the portfolios --

6 THE CHAIRMAN: Go through the Chair here.

7 MR. GODSOE: Sorry.

8 THE CHAIRMAN: There are assertions that are  
9 being disputed. I want to make sure everybody is  
10 heard, but one at a time, please.

11 MR. HENDRIKS: Okay. Thank you. That  
12 clarifies that.

13 Have you done an MPV analysis of this?

14 MR. SAVIDANT: Yes. The MPV analysis is --  
15 the MPV analysis is shown in the EIS and the  
16 evidentiary update, as well as I think our response  
17 to JRP IR 77A, which discusses this sensitivity  
18 analysis.

19 MR. HENDRIKS: Just to clarify, I meant an  
20 MPV analysis with respect to rates, not with  
21 respect to costs. So if I look at this data and I  
22 create a bar chart of the different -- I have my  
23 savings upfront, and then I have my additional  
24 costs. If I MPV that, you're saying that MPV for  
25 the rate analysis is the same as for the cost

1 analysis?

2 MR. SAVIDANT: Yes. So this rate analysis  
3 is based on the output the system optimizer runs  
4 that are done by the energy planning group. So  
5 those system optimizer runs result in a present  
6 value of cost, the differentials between which are  
7 shown in our analysis -- or our portfolio PV  
8 modelling analysis that is in the EIS and the  
9 evidentiary update. What this does is it takes  
10 those results, takes those resources that are  
11 picked, and the sequencing of those resources and  
12 determines what the differential rate impacts are  
13 between the base case scenario, which is Site C and  
14 the other resources in the long term, compared to  
15 what if you didn't build Site C, which would be  
16 clean, IPP resources, with capacity back-up.

17 THE CHAIRMAN: Can I encourage you to ask  
18 some questions that --

19 MR. HENDRIKS: Sure. Why do the three DSM  
20 options track so similarly and end up at the same  
21 place?

22 MR. SAVIDANT: I can't speak to the  
23 specifics of why the DSM traces end up at the same  
24 place. The rate impact analysis would look at the  
25 cost of service of those, plus whatever additional

1 resources would be required, the IPP resources. So  
2 the actual rate impact in a specific year is  
3 dependent on a lot of detail that I don't have in  
4 front of me.

5 MR. HENDRIKS: Well, could that -- it seems  
6 unusual, statistically highly unlikely. Would it  
7 be possible for Hydro to provide some further  
8 explanation as to how that happens?

9 THE CHAIRMAN: Hydro, can you do that?

10 SPEAKER: Just so I'm clear on what  
11 we're undertaking to do, is to explain why the  
12 three DSM options converge in the figure; is that  
13 correct?

14 MR. HENDRIKS: Yes, why they tract fairly  
15 similarly throughout, and then right at the end,  
16 they seem to confer to the same place.

17 SPEAKER: We can take that undertaking.

18 THE CHAIRMAN: Thank you. Number two.

19

20 **UNDERTAKING 2: Explain why the three DSM options**  
21 **converge in the figure and why they tract fairly**  
22 **similarly throughout, and then right at the end,**  
23 **they seem to confer to the same place**

24

25 MR. HENDRIKS: And I believe this is my last

1 question. We have a few other questions that  
2 others from Treaty 8 First Nations wanted to ask,  
3 so I'll leave them to ask their own questions.

4 This last question deals with exchange rates.  
5 So this is in reference to BC Hydro's response to  
6 your JRP 77A. I understand that BC Hydro explored  
7 a range of exchanges rates from 62 cents to 1.08.5  
8 for the Canadian/US dollar exchange rate based on  
9 its range over the 30 years. The importance of  
10 this issue, as I understand it, is that BC Hydro's  
11 revenues from export, exports decreases as the  
12 value of the Canadian dollar increases. A low  
13 dollar, on the other hand, increases BC Hydro's  
14 revenues at a given market price. It seems  
15 somewhat surprising that you did not choose a  
16 symmetrical range of variations above and below  
17 current levels.

18 By our calculations, the lower end of your  
19 range, namely, 62 cents, represents 36 percent  
20 below the value used in the EIS, which is 97 cents.  
21 But the upper end, 1.08, is just 12 percent higher.  
22 If we extend the range symmetrically above the  
23 current levels, or above 97 cents, you end up at  
24 1.31 instead of 1.08.

25 In that response, you state that the high end

1 of your exchange rate is captured in the low market  
2 price scenario. We're confused by this, and, as  
3 you acknowledge a few pages later, that there is no  
4 known link between exchange rates and market  
5 prices. So these must be seen as independent  
6 variables.

7 Later in the response, you described a  
8 compound, low scenario with low market scenario, a  
9 small gap, and a 10 percent cost overrun. You  
10 describe this scenario as the highest level of  
11 regret for the decision to build the project. And  
12 just to explain that in plainer language, you have  
13 a scenario where you've built the project and made  
14 a commitment to that cost, and you end up with a  
15 low market scenario, a small resource gap, and a 10  
16 percent cost overrun, but this compound low does  
17 not include the exchange rate issue, which seems to  
18 be absent.

19 Later in table 4 in that response, you don't  
20 provide any quantitative values for the compound  
21 low scenario under the clean portfolios, there's  
22 just reference to note one saying that the present  
23 valued cost is expected to be higher than for the  
24 clean plus thermal portfolio.

25 Can you give the panel an idea how much worse

1 the results would be in your compound low scenario  
2 if at the same time the Canadian dollar rose to  
3 1.10, 1.20, or 1.30 compared to the United States  
4 dollar?

5 THE CHAIRMAN: If the Canadian dollar rose  
6 to 1.20, I'll buy you a beer.

7 Hydro, response to that?

8 MR. REIMANN: So let me take this in a few  
9 different pieces. I think the commentary about the  
10 market value encompassing the exchange rate  
11 volatility wasn't intended to say this is  
12 exclusively captured in there, but that the range  
13 was sufficiently broad. And when we do our  
14 portfolio analysis, what we find is we need to  
15 narrow this down to key variables that matter the  
16 most or pretty soon you get so many iterations and  
17 combinations, permutations, that you get lost in  
18 the data.

19 So then to the data -- and when we took a  
20 look at it, we hadn't envisioned a high possibility  
21 for exchange rates to go much above historic  
22 levels, and so we went to the historical track  
23 record and thought that would be reasonable to sort  
24 of bound the exercise. We did not go and try to do  
25 a probability assessment of Canadian dollar being

1 1.30 US.

2 In terms of doing these compound  
3 probabilities, what we find is at the more times  
4 you combine another outlier tail event in your  
5 portfolios; the probabilities just keep going down  
6 significantly, your 10 percent, your 2 percent,  
7 your .02 percent. And they will get so small that,  
8 yes, you can run a number and you can produce it,  
9 but, practically speaking, it's meaningless in the  
10 analysis; it's such a small probability that you  
11 wouldn't put any weight on it.

12 THE CHAIRMAN: Does that answer your  
13 question?

14 MR. HENDRIKS: Well, it's an answer to my  
15 question.

16 THE CHAIRMAN: Thank you.

17 MR. HENDRIKS: We'll leave it at that.  
18 Thank you.

19 THE CHAIRMAN: Thank you. Standing behind  
20 you, Chief ...

21 CHIEF WILSON: Thank you, Chair.

22 I am Roland Willson. R-o-l-a-n-d,  
23 W-i-l-l-s-o-n. I am Chief of the West Moberly  
24 First Nations. I have I think three questions,  
25 depending on how the answers are.

1           Earlier today, we had heard through the  
2 presentations that BC Hydro is guided by policies,  
3 regulations, and legislation. The two rivers'  
4 policy was developed in the 1950s. Since the  
5 1950s, there's been significant legal challenges,  
6 which has changed the landscape of consultation in  
7 BC and in Canada.

8           My question is: how has the two rivers'  
9 policy been addressed to accommodate the legal  
10 precedences set today, which are being guided by --  
11 BC Hydro is being guided by? Does that make sense?

12 MS. YURKOVICH:                   So thank you for your  
13 question.

14           I was using the two rivers' policy. It is  
15 historical. It's not what we are guided by in  
16 terms of our current planning. Our current  
17 planning is guided by the **Clean Energy Act** and by  
18 the policies that are in place from the provincial  
19 government at this point in time.

20           I think there is a recognition that the  
21 process in the '60s did not take into account some  
22 of the important interests of communities and First  
23 Nations. And I think this process that we are  
24 undertaking now is very different, and I think it's  
25 rightfully different and involves much more



1           consultation and engagement with First Nations and  
2           communities.

3       THE CHAIRMAN:                    It's actually quite a good  
4           point.  There's an awful lot of difference between  
5           the 1950s and now, starting with 1982, the Charter  
6           in Section 35.

7                    Wait a minute, you had another question.

8       CHIEF WILLSON:                  Well, I should actually make  
9           a statement before I started.  I want everyone to  
10          understand and realize that the West Moberly First  
11          Nations is not opposed to the creation of energy.  
12          What we are opposed to is the fighting of this  
13          valley.  We believe firmly that there's alternative  
14          means to meet these energy demands, these forecasts  
15          that BC Hydro is planning -- or have presented by  
16          alternative means that are more susceptible.

17                   My -- a follow-up question to that is with  
18          the **Clean Energy Act**, the BC Energy Policy, how  
19          much consultation was taken place with the First  
20          Nations on that, on those ones?  In light of the  
21          two rivers' policy, I would question why BC is not  
22          here to sit with BC Hydro on it?

23       THE CHAIRMAN:                  With respect, I think that's  
24           not a question that Hydro can answer.  The British  
25           Columbia government is not in that sense

1 represented here and has not included in our terms  
2 of reference the ability to challenge the policy  
3 that they have embodied in legislation. But it is  
4 an interesting point and one that we will certainly  
5 note.

6 Thank you.

7 CHIEF WILLSON: My second question would  
8 be -- well, first I need clarification, please.

9 I heard today that LNG was not part of the  
10 forecasting of the rates of the projected power  
11 supply. Was I correct in that? And my question  
12 would be why not?

13 THE CHAIRMAN: Go ahead.

14 MS. YURKOVICH: So for the purposes of the  
15 Environmental Impact Statement, we excluded the LNG  
16 load. We filed this application in January of  
17 2012, as you know. There are a number of proposals  
18 for LNG that are in the books of province of  
19 British Columbia, I believe 12 in total, which have  
20 been proposed. How many of those come into  
21 service, and when, was a question that was unclear  
22 at the time of our filing.

23 So for the purposes of Environmental Impact  
24 Statement, we chose to take -- do the analysis, to  
25 base this project on the need for domestic energy

1 requirements, both energy and capacity, for  
2 residential, industrial, and commercial customers,  
3 excluding LNG.

4 We did, subsequent to filing the  
5 Environmental Impact Statement, as Mr. Reimann has  
6 referred, and as we've mentioned today, file our  
7 integrated resource plan, or update our integrated  
8 resource plan, which does include some initial load  
9 of LNG at 3,000 gigawatt hours. So that's why this  
10 analysis for the EIS excludes LNG.

11 CHIEF WILLSON: Mr. Chair, the First Nations,  
12 my community, is fairly confused with this process.  
13 We are told from the beginning that there was a  
14 demand, we had to have -- if we didn't build  
15 Site C, there had to be rolling brown-outs  
16 throughout the province. Then we were told that  
17 this is for industrial development. Now, we're  
18 being told by BC that this power is to meet the  
19 demand of LNG on this. It seems to be -- whatever  
20 seems to be the excitement of the day, is what this  
21 power is being proposed for, which does not weigh  
22 well with the consultation process.

23 My third question -- I'm not sure I  
24 understand the answer to the second question, but  
25 my third question is, Mr. Chair, what is BC

1 Hydro's -- it was asked earlier, and I didn't hear  
2 the answer; I'm not sure there was an answer --  
3 what is BC Hydro's plan B if this panel denies the  
4 Site C application? What is their alternative to  
5 BC Hydro Site C? Sorry.

6 THE CHAIRMAN: I'd ask Hydro to respond to  
7 that, but with the one proviso that we don't get to  
8 make decisions, we just recommend them to  
9 governments, but that's it.

10 CHIEF WILLSON: Understood.

11 THE CHAIRMAN: Hydro.

12 MR. REIMANN: BC Hydro in the analysis in  
13 the EIS created portfolios, as we described, with a  
14 system optimizer, and we created portfolios both  
15 with and without the project in there. So they're  
16 described in the materials, and, in particular, I  
17 think the technical memo on needs and alternatives,  
18 if I recall right, the portfolios that were  
19 selected are written in there.

20 So the alternative plan, if not Site C, we  
21 looked at the gas capacity that would be available  
22 to us. And then, beyond that, in order to get  
23 reliable capacity, we started undertaking studies  
24 of pump storage, and so we've commissioned a couple  
25 of studies looking across the province of where and

1           how pump storage could be done to provide clean  
2           capacity to the system. That capacity then would  
3           have been combined with - the IPPs, ultimately,  
4           that would bid into our process -- our acquisition  
5           processes, and, most frequently, those are wind,  
6           run of river, and biomass.

7           MR. HENDRIKS:                   An observation that we have  
8           is that LNG is the forefront of what's happening in  
9           BC right now. British Columbia is the only spot in  
10          Canada right now that is doing shale gas  
11          development. This proposal of Site C, and not  
12          having a clear understanding of what the  
13          alternatives is, forces BC into a one-case  
14          scenario, which, end result, would not sit  
15          favourably in a consultation process. There has to  
16          be alternatives to accommodations; there has to be  
17          discussions on reconciliation. There has not been  
18          a converted impact study done on Site C. We have  
19          not engaged in any discussions on an alternative  
20          plan to Site C. You'll hear throughout this week  
21          different proposals and different opportunities and  
22          that.

23                   We are being forced into a consultation  
24          process on Site C as the only source that we can  
25          talk about that. There's no room for

1 accommodations; no room for reconciliation in this.  
2 The effects of Site C, the level of impact, are  
3 non-mitigatable. We have not ever had a discussion  
4 on the commutative impasse of WAC Bennett or Peace  
5 Canyon. They cannot make a determination on  
6 whether or not they should move for -- well, they  
7 should not make a determination on whether or not  
8 it can be forward into an EA process without,  
9 first, understanding the community impacts.

10 West Moberly versus BC states that the  
11 proponent must look at prior impacts, take into  
12 consideration their impacts, and forecast future  
13 development impacts into their decision. This has  
14 not been done in any form. Thank you.

15 THE CHAIRMAN: Thank you, Chief Willson.

16 I'm not sure that that calls for a response, or at  
17 least at this point. I think it's a statement of a  
18 position; is that correct?

19 I wondered, the councillor for Saulteau, we  
20 were scheduled to start hearing from Saulteau about  
21 half an hour ago. I'm wondering if you would like  
22 to move straight into your presentation?

23 MR. MCCORMACK: We'd be happy to do that.

24 THE CHAIRMAN: All right. Thank you.

25 MR. MCCORMACK: Mr. Chair, may I inquire,

1 does that indicate the close of the opportunities  
2 for interested parties to ask questions of this  
3 panel?

4 MR. CHAIRMAN: No, I think you'll probably  
5 have a chance after dinner.

6 MR. MCCORMACK: So are we intending to  
7 adjourn this panel for the Saulteau presentation  
8 and then return to them?

9 Thank you.

10 Good afternoon, panel.

11 THE CHAIRMAN: We're just taking a minute  
12 here to get people's names for the record.

13 MR. MCCORMACK: I believe we're prepared to  
14 proceed.

15 THE CHAIRMAN: Thank you. Proceed.

16 MR. MCCORMACK: Thank you.

17

18 Introductory Remarks of the Saulteau First Nations, by  
19 Jesse McCormick, Carmen Marshall, Councillor Tammy  
20 Watson, Sandra Fuchs, Naomi Owens.

21 MR. MCCORMACK: Jesse McCormack, legal  
22 counsel to Saulteau First Nations, is pleased to  
23 have the opportunity to present on this panel.

24 I'm joined by Councillor Tammy Watson of  
25 Saulteau First Nations immediately to my right, and

1 two members of Saulteau First Nations, who are both  
2 employed in the Saulteau First Nations Treaty and  
3 Lands Department, that would be Carmen Marshal  
4 seated between Councillor Watson, and at the very  
5 end of the table, Naomi Owens.

6 Prior to beginning our presentation, we did  
7 have a couple of questions relating to some of the  
8 discussion that had taken place earlier.

9 I would actually like to go back to a brief  
10 point that Ms. Yurkovich made at the earlier  
11 general session comments, and my apologies for not  
12 bringing up earlier.

13 Ms. Yurkovich, during the introduction, the  
14 panel referenced a study that indicated, I believe,  
15 80 percent support of the project, and we know from  
16 your earlier responses that it was a random survey.  
17 Has Hydro conducted a similar survey to assess the  
18 support within Treaty 8 First Nations?

19 MS. YURKOVICH: We haven't done a poll in  
20 Treaty 8 First Nations.

21 MR. MCCORMACK: Thank you.

22 And has the survey's results been confirmed  
23 through other surveys?

24 MS. YURKOVICH: We undertook a survey,  
25 approximately, a year earlier. The numbers of



1 support are consistent. They're slightly higher in  
2 support in 2013 than they were in 2012. I believe  
3 that poll is also on our website, and I can find  
4 the reference for you.

5 MR. MCCORMACK: And was information relating  
6 to the environmental effects of the project shared  
7 when the survey was administered?

8 THE CHAIRMAN: Ms. Yurkovich?

9 MS. YURKOVICH: The poll did not go into the  
10 entire list of -- didn't go into project effects.  
11 It did -- I can pull the poll and provide the  
12 questions to you in its entirety. It is available  
13 publically, and I will provide it to you.

14 MR. MCCORMACK: Thank you, Ms. Yurkovich.

15 And one last question on it. Was the poll  
16 made available in First Nation languages?

17 MS. YURKOVICH: No, it was not.

18 MR. MCCORMACK: In addition to making the  
19 poll available to Saulteau First Nations, would it  
20 be possible to have that poll filed on the record  
21 as part of the information provided by Hydro in  
22 these proceedings?

23 THE CHAIRMAN: Excuse me, I was talking with  
24 Madam Beaudet. Say again.

25 MR. MCCORMACK: Certainly, Mr. Chairman.

1                   We've received information from BC Hydro  
2                   concerning the results of the poll, and we  
3                   understand that the poll is publically available  
4                   but does not form part of the record, so we'd seek  
5                   an undertaking to have the poll and the results  
6                   filed with the panel.

7       THE CHAIRMAN:                   Is it already on the website?

8       MS. YURKOVICH:                  Yes, it is.

9       THE CHAIRMAN:                  Then it is part of the record  
10                   already.

11      MR. MCCORMACK:                  Thank you. I may have  
12                   misunderstood.

13                   We do have a couple of additional questions  
14                   in relation to some of the statements that were  
15                   raised earlier --

16      MR. WALLACE:                   Excuse me, Mr. Chair, I  
17                   understand that the document may be on BC Hydro's  
18                   website, but it's not on our website, so ...

19      THE CHAIRMAN:                  Oh. Sorry, I misunderstood  
20                   it. Could we then have an undertaking to provide  
21                   that, to put it on the EAO and CEAA websites?

22      MS. YURKOVICH:                  Certainly.

23      THE CHAIRMAN:                  Thank you.

24      MR. MCCORMACK:                  Thank you, Mr. Chairman.

25                   Thank you, Ms. Yurkovich.

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**UNDERTAKING 3: Provide the poll results  
undertaken about a year ago indicating 80 percent  
support of project**

MR. MCCORMACK: We do have a couple of additional questions, changing topics, relating to some of the discussions that has taken place regarding the need for the project and the associated assessment's consideration of LNG demand. And if I could, please, ask Mr. Martineau to display on the screen part of the Saulneau First Nations information filed on November 25th, 2013; specifically, the document entitled Site C Essential For LNG Development, Clark, energisty.ca.

Thank you, Mr. Martineau.

What you see displayed on the screen panel is a news report from a website called energisty.ca. It's dated February 9th, 2012. You'll note in the paragraph immediately below the heading, a quote from Premier Christy Clark indicating that we cannot create this new industry in British Columbia by adding value to natural gas without the power that would come from Site C. It's an essential part of the plan in long term, to make sure that

1 we're putting British Columbians to work.

2 There's a potential discrepancy between the  
3 information that's being shared by Premier Clark in  
4 this statement and the information that's been  
5 shared by BC Hydro and the recent comments from the  
6 panel.

7 Could you, please, clarify whether the  
8 information that Premier Clark has provided here in  
9 this statement is accurate?

10 THE CHAIRMAN: Ms. Yurkovich.

11 MS. YURKOVICH: This is a high-risk activity.

12 I can tell you that the way our system is --  
13 it's an integrated system, so we actually -- we're  
14 not able to track an electron. So an electron that  
15 comes from the Bennett dam can't exactly be tracked  
16 to a industrial facility or a home or a business,  
17 specifically. It's an integrated system that  
18 serves the entire domestic load.

19 I think what is true is that, as industrial  
20 activity grows, there will be an increasing need  
21 for electricity in the province, including from  
22 LNG. While we didn't include it, as I said, in our  
23 EIS because the total load was unclear, we did  
24 include it in our IRP, and I'll asked Randy Reimann  
25 just to talk about how it is included in our

1 integrated resource plan.

2 MR. REIMANN: So we ran two cases within  
3 the integrated resource plan: the case similar to  
4 the EIS prior to LNG, and then we took the range  
5 that it has been mentioned in the EIS application  
6 of 800 to 6,600 gigawatt hours. And after some  
7 discussion with the government and LNG producers,  
8 we included, and expected, LNG demand of 3,000  
9 gigawatt hours.

10 If LNG demands were to come along, we planned  
11 the Site C for domestic need, but it would be  
12 available through supply LNG producers. Plus, we'd  
13 identified in the IRP some need for some additional  
14 gas fire capacity in the north coast. And so it  
15 would be helpful, but not the case for why we need  
16 Site C.

17 THE CHAIRMAN: I would remark that taking  
18 the headline comments of political leaders as  
19 technically 100 percent accurate in an energy sense  
20 is fraught with difficulties.

21 MR. MCCORMACK: Certainly, Mr. Chairman,  
22 we're aware of that. We merely sought to test some  
23 of the evidence in relation to what's been  
24 provided, and understand a little bit more,  
25 certainly, some of these concerns that have been

1 expressed by the Chief of West Moberly First  
2 Nations and those are shared by Saulteau First  
3 Nations.

4 If I may also touch on one similar, yet  
5 slightly distinct, piece of information. If I can  
6 ask Mr. Martineau to bring up one additional  
7 document filed by Saulteau First Nations on  
8 November 25th, 2013, that document being titled  
9 "Rich Coleman, Minister of Everything", *Vancouver*  
10 *Sun*, June 14, 2013. If we could, please, see the  
11 last page of that document. I believe it's  
12 displayed there.

13 If you'll look -- perhaps if we can zoom in  
14 on the top half of the page.

15 Thank you.

16 You'll see displayed on the screen a  
17 collection of questions and answers. This is an  
18 interview of Minister Rich Coleman. The first  
19 question, the first answer, and then the second  
20 question, it's the second answer which I'll direct  
21 your attention to. Minister Coleman is asked:

22  
23 "In terms of ensuring the  
24 plants and energy supply for their  
25 operations, how much of a challenge

1 is that for the province?"

2

3 And Minister Coleman responds:

4

5 "Not as much as it was two  
6 years ago. As we've drawn into  
7 this file, we recognized that a  
8 large plant like Shell's can  
9 conceivably take all the  
10 electricity out of a Site C dam  
11 project (by itself)."

12

13 Is that statement accurate?

14 MS. YURKOVICH: Assuming that the transcript  
15 is correct, I'm assuming that that is a direct  
16 quote. I think what he's referring to is the size  
17 of the total amount of energy that a Shell-sized  
18 plant would require. I think most of the LNG  
19 proponents have been -- in discussions, have made  
20 it clear that they will be doing their compression  
21 loads, self-generating their compression load. The  
22 electricity load that might be anticipated from a  
23 Shell-type project would be ancillary load, lights,  
24 et cetera, in the balance of plant and the  
25 facility.

1 THE CHAIRMAN: Just to clarify, the 3,000  
2 megawatts that's in the current IRP is  
3 non-compression; is that correct?

4 MR. REIMANN: There was a couple of  
5 different ways that we could have come into that  
6 number. For the large plants, by and large,  
7 they're interested in doing their own compression,  
8 and 15 percent balance of plant is what they've  
9 been in discussions with Hydro about.

10 There are a couple of smaller LNG plants that  
11 it's not as economic to be doing their own  
12 compression, and so some of those could come along  
13 and take full demand, but it would be a much  
14 smaller plant.

15 THE CHAIRMAN: Thank you. Sure.

16 MR. MCCORMACK: Thank you, panel.

17 And one last clarification, just based on the  
18 responses received, I understand that the Site C  
19 project is intended to serve the entire domestic  
20 load, and that it's not possible to attract the  
21 location in which an electron may flow. So am I  
22 correct in my understanding that the energy  
23 produced by the project, if it is constructed,  
24 would not necessarily be restricted from serving  
25 LNG purposes, but is not tended for LNG purposes;



1 is that correct?

2 MS. YURKOVICH: The electricity, should the  
3 project come online, would go into the grid to  
4 serve all load, that means residential, industrial,  
5 and commercial customers.

6 MR. MCCORMACK: Thank you, Ms. Yurkovich.

7 And if we may now proceed to a brief  
8 presentation in relation to alternatives on the  
9 project. Thank you.

10 So I've been asked to present here before you  
11 here today to share some of the concerns of the  
12 Saulteau First Nations relating to the need,  
13 purpose, and alternatives to the project. There  
14 will be a particular focus on term of needs of  
15 carrying out the project, and the representatives  
16 from Saulteau First Nations, who are here with me  
17 today, may also share some information.

18 I'd like to acknowledge I'm not a technical  
19 expert, but the materials that we will be sharing  
20 were prepared in part by Blackwell & Associates,  
21 who certainly have more technical knowledge than I.

22 I would also like to note that Saulteau First  
23 Nations are strongly of the view that the  
24 assessment of the alternative means of carrying out  
25 the project should be informed by the potential

1 impacts of the proposed measures or the exercise of  
2 Aboriginal and Treaty rights by Saulneau First  
3 Nations.

4 The information that we shared derives, in  
5 part, from the assessment of those impacts. And we  
6 consider this information to be important to the  
7 evaluation of the possible alternatives to what has  
8 been proposed.

9 To begin, we would like to state that  
10 Saulneau First Nations encourages the panel to give  
11 those alternatives that have been presented strong  
12 consideration and to critically evaluate the manner  
13 in which those alternatives have been presented and  
14 assessed by the proponent.

15 I would like to briefly discuss two aspects  
16 of the alternative means of carrying out the  
17 project that have been presented by BC Hydro, and  
18 the materials that have been filed with the panel.  
19 The first is the expansion of the transmission line  
20 corridor, and the second is the proposed road  
21 upgrades and new road construction on the south  
22 side of the Peace River and the associated use of  
23 the Del Rio pit.

24 In addition to the transmission line  
25 corridor, BC has proposed to use and expand the

1 existing of right of way, which travels through the  
2 area of critical community interest in the  
3 Peace-Moberly Tract, which will result in increased  
4 linear disturbance, increased access, and a direct  
5 loss of habitat in an area of significance to the  
6 Saulteau First Nations.

7 So, briefly, I mentioned this morning the  
8 area of critical community interest, and the  
9 Peace-Moberly Tract are very important to Saulteau  
10 First Nations.

11 In understanding the Saulteau First Nations,  
12 and, I would submit, in the understanding of the  
13 Supreme Court of Canada, Saulteau First Nations  
14 have the right to fish and hunt in their preferred  
15 locations in reasonable proximity to where they  
16 live. The Peace-Moberly Tract is a preferred  
17 location in one of the primary areas relied upon by  
18 that by Saulteau First Nations for subsistence  
19 harvesting. The area is characterized by a mosaic  
20 of mixed conifer and deciduous trees, lakes, river  
21 valleys, wetlands, and peat bogs. It provides  
22 habitat for a diverse array of wildlife, including  
23 several species of ungulates, bears, wolves, fur  
24 bearers, rodents, song birds, game birds, and  
25 waterfowl. There are also many species of sports

1 fish present in the waters forming part of the  
2 Peace River system of which the Peach-Moberly Tract  
3 is part, is a place of sustenance, sanctuary, and  
4 cultural significance for the people of Saulteau  
5 First Nations.

6 The Peace-Moberly Tract continues to be used  
7 intensively by Saulteau First Nations for Treaty  
8 purposes. Trapping and fishing and hunting remain  
9 an important part of Saulteau First Nations life,  
10 and the Peace-Moberly Tract is considered to be a  
11 bread basket for country foods. The area also  
12 provides opportunity to gather medicinal plants.  
13 Their products are used in cultural ceremonies, and  
14 to make a variety of functional items such as  
15 hides, snow shoes, canoes, and drums.

16 If I can, please, ask Mr. Martineau to  
17 display volume 1, section 4, figure 411, Site C  
18 project activity zone. I believe that is the next  
19 figure.

20 That would be the one there. Thank you,  
21 Mr. Martineau.

22 So this map displays the location of the  
23 transmission line. And you'll see the transmission  
24 line corridor is located within the area of  
25 critical community interest in the Peace-Moberly

1 Tract. The project proposes a significant  
2 expansion of the existing right of way.

3 If we can, please, see, Mr. Martineau, volume  
4 1, section 4, figure 4-26B, cross-section B, east  
5 of Jackfish Lake Road, looking east. That would be  
6 the display with the trees.

7 Exactly. Thank you.

8 I'm not sure if you'll be able to see them  
9 from your position at the panel; however, at the  
10 bottom of this is displayed a set of numbers  
11 indicating the width and size of the proposed  
12 expansion. The existing cleared right of way is  
13 46 metres. The proposed new clearing will be 89  
14 metres, and there will be an additional 17 metres  
15 widening to accommodate a proposed project access  
16 road. That is total of 135 metres, which is little  
17 bigger than two hockey rinks placed end to end.  
18 They wanted two and a half olympic swimming pools,  
19 or just short of 7 bowling allies, all lined up one  
20 after another. I'm not sure if I'm entirely  
21 accurate, but I would expect it to be somewhere in  
22 the range of double the length of this room in a  
23 corridor cut through the forest in an area used by  
24 animals and other species.

25 For the Saulteau First Nations, the presence

1 of that amount of clearing with the Peace-Moberly  
2 Tract, and the area of critical community interest,  
3 presents a serious concern. In light of those  
4 concerns, Saulteau First Nations has concerns about  
5 the quality of the analysis that was conducted by  
6 BC Hydro to support their proposed expansion of the  
7 transmission corridor that was provided in the EIS.

8 If we could, please, look to volume 1,  
9 section 6, alternatives means at Adobe page 24.

10 Thank you.

11 You'll see here in the red underline text,  
12 section 6.5, substation and transmission line to  
13 Peace Canyon, some of the analysis that has been  
14 conducted by BC Hydro in relation to the  
15 transmission corridor. They have proposed two  
16 alternatives for transmission lines outside of the  
17 area of critical community interest in the  
18 Peace-Moberly Tract, those include locating the  
19 transmission corridor on the north side of the  
20 Peace River, and connecting the submarines  
21 transmission cables in the reservoir.

22 You'll note at line 18 of the 15 or so lines  
23 that have been occupied by BC Hydro on this topic,  
24 in this section, that BC Hydro has reached the  
25 conclusion that the widening of the existing right

1 of way would have lesser environmental effects.  
2 What is notably missing is any justification for  
3 that statement. There's no comparative effects  
4 analysis of impacts on social, economic,  
5 environmental, and physical characteristics  
6 presented to justify the statement. The First  
7 Nation values that are impacted by the proposed  
8 alternative lines are not assessed within the  
9 alternative section, appear to be ignored.

10 The greatest impact on Saulteau traditional  
11 practices and resources will occur within the area  
12 of critical community interest and Peace-Moberly  
13 Tract. And to properly evaluate transmissional  
14 alternatives, it is necessary to consider how  
15 alternatives would effect both traditional  
16 practices and resources. This comparison has not  
17 been completed for transmission. This could  
18 include impacts on hunting, traditional use plants,  
19 fragmentation of ecosystems and the associated  
20 impacts of construction, operation, and maintenance  
21 of the transmission line within this area. These  
22 analysis have not been completed.

23 In our view, BC Hydro has failed to provide  
24 the information necessary for the panel to make an  
25 informed assessment of how the processed assessment

1 of the transmission line corridor will impact  
2 Saulteau First Nations. We note that the  
3 comparative analysis of alternatives for dam  
4 locations provides a much more defensible,  
5 technical approach to evaluation of alternatives.  
6 We lack the information from that approach for the  
7 alternatives relating to the selection of other  
8 elements of the project like transmission line  
9 options.

10 The EIS states that widening the existing  
11 right of way would have lesser environmental  
12 effects if the impacts of widening have either not  
13 been fully assessed or they have not been  
14 adequately documented. With regard to Saulteau  
15 First Nations interest, this statement is  
16 incorrect, as the widening of the current right of  
17 way would have the greatest impacts on the resource  
18 values that are considered most important to  
19 Saulteau First Nations.

20 Overall, the brief section on transmission  
21 line alternatives appears to be an afterthought  
22 within EIS, and largely ignores the importance of  
23 the location of the transmission corridor as it  
24 relates to the interest of Saulteau First Nations  
25 community.



1           Accordingly, Saulteau First Nations invites  
2           the panel to critically assess whether the proposed  
3           option for transmission is the best option. In  
4           light of the limited information that has been  
5           provided, and to favour alternatives options, which  
6           would limit the impact of the project on the  
7           Peace-Moberly Tract and the area of critical  
8           community interest.

9           Along a similar set of considerations, the  
10          project also proposes development relating to roads  
11          and the use of the Del Rio pit to supply the  
12          materials that would be necessary for those roads  
13          to be constructed or improved. I'd like to briefly  
14          touch upon those points.

15          The Saulteau First Nations are concerned that  
16          the proposed changes will increase access to the  
17          area and have direct impacts on habitat and result  
18          in increased fragmentation of moose habitat.

19          If I can, please, ask Mr. Martineau to  
20          display volume 1, section 6, alternative means,  
21          page 34. And if we can, please, see the bottom of  
22          the page. At the very bottom.

23          Thank you, Mr. Martineau.

24          In this section 6.7.3.1, Del Rio pit, we see  
25          that it is a proposed source of gravel, and that

1 sourcing from other locations would require the  
2 development of new pits and greater haul distances  
3 with greater traffic and emissions, according to  
4 BC Hydro. However, no supporting analysis is  
5 provided to justify this conclusion; nor, is there  
6 any comparative assessment of the potential effects  
7 of using alternative sites outside of the area of  
8 critical community interest being assessed. No  
9 consideration has been given to the environmental  
10 effects of the use of the loaders, the bulldozers,  
11 the crushing plants, or the service vehicles,  
12 that'll be part of the day-to-day operations of the  
13 Del Rio pits. This section fails to detail the  
14 environment effects associated with the proposed  
15 use of the Del Rio pit, and no comparison is  
16 offered with the use of aggregates from other  
17 sources. The plans for the Del Rio pit are  
18 detailed in the Del Rio pit pit development plan.  
19 If I could, please, ask Mr. Martineau to display  
20 volume 1, appendix C5, Del Rio pit development  
21 plan, page 8 of 9.

22 So here on the screen, we see a map of the  
23 proposed work that will occur within the Del Rio  
24 pit. You'll note the large, white box, which  
25 indicates the boundary of the pit; it's operated by

1 MOTI. BC Hydro will require, approximately,  
2 250,0000 cubic metres of aggregate from the Del Rio  
3 pit and the Del Rio pit plans claims that it can be  
4 obtained from within the existing boundaries of the  
5 reserve.

6 Noting the square, white box, the boundary of  
7 the pit, you'll observe that this is forested area  
8 that likely provides habitat to wildlife. It's not  
9 possible to discern from the Del Rio pit plan, or  
10 the figure that we see displayed here, the amount  
11 of the existing boundary that'll be subject to  
12 expansion. And the effects have not been assessed  
13 or quantified in any meaningful way.

14 Saulteau First Nations request that the use  
15 in the Del Rio pit be limited or avoided in order  
16 to minimize project effects in the area of critical  
17 community interest.

18 The last topic I would like to briefly touch  
19 on is the development of new roads and the  
20 improvement of roads within the area of critical  
21 community interest.

22 So roads present a variety of concerns for  
23 the Saulteau First Nations. They provide new  
24 access, inviting new hunting pressures, increased  
25 use of the area of critical community interest.

1 They increase direct mortality through wildlife  
2 collisions, they facilitate predator movement, they  
3 destroy habitat and may fragment important moose  
4 habitat. BC Hydro has proposed to construct new  
5 roads and improve existing roads within the area of  
6 critical community interest and the Peace-Moberly  
7 Tract. Well, we do not have a proposed alternative  
8 measure for your consideration at this time.

9 Saulteau First Nations would encourage the panel to  
10 seriously consider recommendations for the project  
11 that would limit the construction in upgrading a  
12 both permanent and temporary roads within the area  
13 of critical community interest.

14 So, in closing, in these remarks, I have  
15 sought to share with you some of the concerns of  
16 the Saulteau First Nations, and to press upon you  
17 the importance of the area of critical community  
18 interest to the Saulteau First Nations where BC  
19 Hydro has failed to conduct a reliable and thorough  
20 analysis of the alternatives to the proposed  
21 project components, and failed to include analysis  
22 of the impacts on Aboriginal and Treaty rights.

23 We would submit to you that the burden of  
24 establishing that the proposed option is the best  
25 option, has not been yet, and alternatives options

1           which would minimize impacts within the area of  
2           critical community interest, and the Peace-Moberly  
3           Tract should be favoured.

4   THE CHAIRMAN:                    Thank you very much.

5   MR. MCCORMACK:                    Thank you.  And if we may  
6           have a few moments for a couple comments from some  
7           of the representatives of Saulteau First Nations.

8   MS. OWENS:                        I just want to clarify that  
9           the ACCI, area of community, community interest,  
10          was established by both West Moberly First Nations  
11          and Saulteau First Nations because this area,  
12          obviously, is important to us, and we do our best  
13          to protect it.

14   THE CHAIRMAN:                    Is it now part of the  
15          provincial system of --

16   MS. OWENS:                        No, it's not acknowledged in  
17          that aspect, but it's acknowledged by the First  
18          Nations that use the area.

19   THE CHAIRMAN:                    Understood.  Thank you.

20   MS. OWENS:                        Yeah.

21   MS. MARSHAL:                     I would just like to add on  
22          to Naomi's comments.  So this area is very  
23          important to our people.  It's important to the  
24          Treaty 8 First Nations.  And it's not only a place  
25          that we visit often, it's our grocery store, it's

1           our drugstore, it's our church, it's where our an  
2           assessors lie. So when you're looking at impacts  
3           to this area, there's a huge social and cultural  
4           impacts to our people. And those impacts aren't  
5           always properly assessed in the EIS, they're very  
6           hard to put on paper. They're very hard to put  
7           into a graph or a chart. And that's a challenge we  
8           face within our department, but we want to share  
9           that this area is very significant to our people.

10       THE CHAIRMAN:                    Thank you.

11       MS. MARSHAL:                    In closing, I want to thank  
12           these young people that have been brave to sit up  
13           here with us to voice their concerns. I'm really  
14           proud of them. And they are two success stories of  
15           our nation; they went to university and came back  
16           to work for our community. And they are the voice  
17           of our people in our next generation for sure.

18           I want to -- I just had some comments about  
19           today and this morning. I was taught to seek first  
20           to understand, and then be understood. And I want  
21           to share with you a little story my grandfather  
22           taught me about energy and saving. And growing up  
23           on the trap line, we only had candlelight and  
24           daylight for our source of energy, and we used, of  
25           course, a wood stove. And I was young and I wanted

1 to stay up later and I know we had kerosine lamp  
2 and I said to my grandpa I don't want to go to bed,  
3 we have the kerosine lamp, why can't we use that?  
4 And he said, simply, because we don't need it. And  
5 so I listened this morning why does BC Hydro need  
6 Site C? And listening to all the presentations and  
7 the discussions which was really, really hard to  
8 understand, and I knew I should have stayed in  
9 school finished rocket science, but I still  
10 remained and listened intently, and I appreciated  
11 the questions that came forward after their  
12 presentations, and I thought, yeah, that's right.  
13 Why didn't I think of that? And, you know, I sat  
14 in many meetings and such with BC Hydro, and I sit  
15 here today and I wonder why didn't that come up  
16 before? And I wish there was really good dialogue.

17 So as we continue to move forward, let's not  
18 forget the questions that you think of that we  
19 should ask because that's important. So when I  
20 take this information back to the community, I can  
21 present them with a fair understanding of all the  
22 facts.

23 So I sit on the BC First Nations health  
24 council, and I represent the northeast region of  
25 British Columbia, and I take that role with much

1 responsibility. And I understand fully the  
2 struggles that our people experience today with the  
3 impacts of industry, and it's discussed at length  
4 how do we fix these problems.

5 And as we move forward in our BC health  
6 transfer, and we understand a traditional approach  
7 to wellness, we know fully, as First Nations  
8 people, that healthy land means healthy people.  
9 And we know with the Site C project, it's going to  
10 bring an increase in addictions and violence in our  
11 community, an increase in traffic in the highways.  
12 And I travelled up here this morning from Moberly  
13 Lake, 5:30 this morning, and I can tell you I put  
14 my life in my hands like many of us today have done  
15 to travel today, and that's going to get worse.

16 The air quality will not see improvements.  
17 There will be housing shortages that we'll be  
18 dealing with, that's a high high-risk activity.

19 So as we move forward, let's really, really  
20 do our best, our personal best, to attempt to bring  
21 all this accurate information to our discussions  
22 and share that with the communities. That's so  
23 important. And so when I go home today, I'll think  
24 about how we can do this because our community  
25 meeting is coming up over the next day or so at



1           home, at Saulteau, and I just really want to  
2           present that fairly. I thank you.

3           THE CHAIRMAN:                    Thank you. I think -- we'll  
4           have a question, and then we'll have a break.

5           MS. BEAUDET:                    Thank you, Mr. Chairman. I  
6           believe in the EIS, you may correct me, I would  
7           like to address a question about the Del Rio pit.

8                    There was a question mark as to how much you  
9           would use that pit, or need that pit, and I was  
10          wondering if there was any progress, since you  
11          prepared EIS, in relation to that? Have you looked  
12          to get whatever aggregates you need there? Can it  
13          be done somewhere else?

14          MS. YURKOVICH:                Thank you.

15                    We'll be using materials from a variety of  
16          sources for the project; in most cases, where we  
17          have gone is existing pits because there is less  
18          disturbance with existing pits. I would like to  
19          just note that our -- a couple other questions that  
20          were raised today around alternates and  
21          transmission and the use of pits will be covered by  
22          our group tomorrow, including our chief project  
23          engineer and our director of transmission, Melissa  
24          Holland, who can speak perhaps better on those  
25          questions --

1 THE CHAIRMAN: Yes. Thank you.

2 MS. YURKOVICH: -- if that's all right, with  
3 the panel?

4 THE CHAIRMAN: Then I think it's time to  
5 take a bit of a coffee break. I would like to  
6 thank the Saulneau First Nations for their  
7 presentation. Thank you.

8 (Brief Break).

9 THE CHAIRMAN: Can we reconvene, please.

10 As forecast, this session is more popular  
11 than the schedule allowed. What I propose we do in  
12 the two hours remaining this afternoon is to hear  
13 presentations from the Peace Valley Environment  
14 Association and from Richard Koechl and Mike  
15 Kroecker, if that's anything like the way they're  
16 pronounced. We should hear from them and have a  
17 chance to question them a little bit before we  
18 break up.

19 We will have a session again this evening at  
20 7:30 that will run not later than 9:00, I hope, but  
21 that will be time for people to come back and  
22 address the questions to Hydro that they haven't  
23 yet, I suppose, heard answers to, as well as any  
24 remaining matters from the day so that we can get  
25 -- so we're at a clean start for tomorrow morning.

1                   That said, can I invite -- it's Dr. Marvin  
2                   Shaffer, is it, from the Peace Valley Environment  
3                   Association to take the floor?

4       MR. HOWARD:                   Mr. Chairman, Tim Howard for the  
5                   PVA. If I may, I would just like to take the  
6                   opportunity to provide those brief opening remarks  
7                   to introduce my client to the panel, and then  
8                   Dr. Shaffer will immediately take a seat at the  
9                   table, if that's acceptable?

10                   Thank you.

11

12       Introductory Remarks by the Peace Valley Environmental  
13                   Association.

14       MR. HOWARD:                   The PVA stands for the Peace  
15                   Valley Environment Association. It's a local,  
16                   non-profit organization based here in northeast BC.  
17                   And the PVA has been in existence as long as the  
18                   plan to dam to site -- to dam the Peace River with  
19                   Site C has been in existence.

20                   Generally speaking, the PVA's purpose is to  
21                   promote the protect and conservation of the unique  
22                   environmental values of the Peace River valley.  
23                   And to that end, the PVA has participated in every  
24                   attempt to bring the Site C project forward. They  
25                   were interveners in the BCUC process in 1983. The

1 subsequent review by the BC government in the '89  
2 to '91 period, and they are here again today before  
3 you to speak, once again, to the project that won't  
4 take no for an answer.

5 The membership of the PVA is, approximately,  
6 400 people, and included within that number are  
7 people who will feel the direct impact of this  
8 project. Farm owners who will lose part or all of  
9 their farmlands, families who will lose properties,  
10 and residents of the Peace River valley who will  
11 see the valley that they cherish inundated and  
12 lost, in essence, and perpetuity. They are -- in  
13 many respects, they're for the voice of the people  
14 that will feel the blunt end of this project, not  
15 the benefits, but the impacts. And it is for this  
16 reason that the PVA is pleased to be before you and  
17 to ask you to do one thing, which is to take a  
18 very, very careful look at this project. And of  
19 course you're going to have to look carefully at  
20 the impact side, environmental impacts, the impacts  
21 to the agricultural economy, the impacts to First  
22 Nations, et cetera. But, in particular, the PVA is  
23 asking this panel to take a very close look at the  
24 fundamental question of is this project needed? Do  
25 we need an \$8,000,000,000 investment in this dam at

1 this point in time, here today?

2 That takes me to the evidence of Dr. Marvin  
3 Shaffer. If I could ask Dr. Shaffer to come to the  
4 table.

5 I will be providing a brief introduction to  
6 Dr. Shaffer simply to do an extremely brief  
7 summation of his credentials and experience. For  
8 your reference, panel members, Dr. Shaffer's report  
9 is marked as filing 1817. A summary of his  
10 relevant reports and experience was provided to the  
11 agency on November 25th. I don't see it on the  
12 website, but I trust it is available to the panel  
13 in the event you wish to review that document to  
14 ascertain his credentials and experience, as I  
15 cannot do justice to them in the short time  
16 available.

17 Dr. Shaffer holds a Ph.D. in economics from  
18 the University of British Columbia. He's currently  
19 an adjunct professor at the school of the public  
20 policy with Simon Fraser University and for  
21 30 years has conducted a consultancy business  
22 through Marvin Shaffer & Associates. And in that  
23 capacity, Dr. Shaffer has worked for a variety of  
24 clients in the government First Nations, corporate  
25 and non-profit sectors. And some highlights of

1 Dr. Shaffer's work, he has been a consultant to  
2 both BC Hydro and the government of British  
3 Columbia with respect to evaluating the options for  
4 the Burrard Thermal Plant and a Vancouver Island  
5 gas pipeline. He advised the government of British  
6 Columbia on the preparation of the 1991 energy  
7 policy paper: Our Energy Future.

8 He has also been recognized, and a frequent  
9 expert witness before the BC Utilities Commission,  
10 including on the 2006 BC Hydro long-term  
11 acquisition plan.

12 And, finally, Dr. Shaffer's qualification,  
13 which I enjoy the most, is that he was, in fact,  
14 employed as a consulting economist by the BC  
15 Utilities Commission in 1982/1983 on the first  
16 application for approval of the Site C project. I  
17 will hand over the podium to Dr. Shaffer for his  
18 presentation.

19

20 Presentation by Dr. Shaffer:

21 DR. SHAFFER: Thank you. When I hear that,  
22 it reminds me that people have described  
23 consultants like a book with no punctuation; it  
24 just goes on and on and on, but so be it.

25 As Mr. Howard explained, I was asked by the

1 Peace Valley Environmental Association to prepare  
2 an independent assessment of the need for an  
3 alternatives to the Site C proposal. And I was  
4 asked, and I did undertake to look at some key  
5 questions, here; in particular, that what are the  
6 key factors underlying BC Hydro's assessment of  
7 need? What are the key factors underlying its  
8 conclusion that Site C is a preferred way to meet  
9 that need? And is there a better alternative than  
10 what BC Hydro has proposed, all with the view to  
11 the bottom line, which is is there, in fact, a need  
12 for a justification for the Site C project as  
13 proposed by BC Hydro?

14 And as presented in the evidence, and this  
15 morning's discussions, BC Hydro has said there's a  
16 need for additional energy capability by 2027 and  
17 capacity by 2020. And that's the need without LNG.  
18 And there has been some discussion about whether  
19 Site C is needed or not for site -- for LNG.

20 And I think it -- their evidence is very  
21 clear on that. In the evidentiary update, they  
22 state very clearly that they see the unique  
23 requirements of LNG, which, of course, are  
24 uncertain at this time, as being best met by North  
25 Coast Supply. So they're not proposing Site C for

1 LNG.

2 And the question is: What is the need for  
3 the non-LNG requirements within the province? And  
4 is Site C the best way of meeting that need.

5 In my submission, I identify two key factors  
6 underlying need. One is on the demand side, and it  
7 relates to your discussion today about the  
8 elasticity of demand. And, if you'll bear with me,  
9 I want to refer to a more economic jargon on this.  
10 One of the reasons for the BC Hydro's estimate of  
11 need, and one of the factors underlying the demand  
12 forecast is, what economists term, a very serious  
13 market failure in the pricing of electricity. And  
14 that is where the price of electricity doesn't  
15 reflect the marginal cost to supply it; it doesn't  
16 reflect the cost consequences of the demands for  
17 electricity.

18 And so when we look to where's the fastest  
19 rate of growth in the demand forecast? BC Hydro  
20 identified it as in the oil and gas, mining  
21 sectors; very electric intensive loads rapidly  
22 growing at least for the next ten years. And when  
23 we look at the pricing regime, we see the  
24 industrial rate, weighted average, it depends on  
25 capacity factors. But for energy, it'd be around



1           \$40, and, yet, their assessment of the marginal  
2           cost of supply, whether it's from Site C or other  
3           sources, is over \$80. And that, clearly, has to  
4           attract more demand than what economists would  
5           consider to be economically justified, whether it's  
6           a willingness to pay for the cost consequences of  
7           the supply that people are seeking, and that is a  
8           significant issue; albeit, a policy one, that is a  
9           factor underlying the assessment of need.

10           Most importantly, however, is the second  
11           factor discussed in the submission, and that is the  
12           elimination of the Burrard Gas Fire Thermal Plant,  
13           the existing plant, as a source of dependable  
14           energy, capability, or capacity.

15           Historically, BC Hydro used to assume that  
16           the Burrard plant could provide up to 6,100  
17           gigawatt hours of energy and 900 megawatts of  
18           capacity.

19           And table 1 and table 2 of the submission, on  
20           pages 9 and 10 of the submission, indicate how  
21           significant it is that BC Hydro is no longer able  
22           to include any capability or capacity from the  
23           Burrard plant.

24           Basically, had BC Hydro retained its planning  
25           assumptions of 6,100 gigawatt hours of energy

1           capability from Burrard, as well as 900 megawatts  
2           of capacity from Burrard, there would be no need  
3           for energy until 2033 or beyond. And there would  
4           be no need for additional capacity until 2027 --  
5           sorry, 2029, I believe, which is the same year that  
6           BC Hydro's saying it will need additional capacity,  
7           even if it builds a Site C plant. In other words,  
8           eliminating Burrard is what's giving rise to the  
9           need that BC has identified. And without that  
10          elimination of Burrard, there would be no need.

11                 I think it's very important to understand the  
12          role of Burrard because it can be misunderstood.  
13          Nobody's suggesting that an old plant, relatively  
14          inefficient plant like Burrard, should be used as a  
15          base-load facility. That isn't what Burrard has  
16          done for many years now.

17                 What Burrard provided was peak capacity in  
18          the lower mainland, where capacity is, in fact,  
19          needed; it's in the load centre. And it's  
20          available if there's any forced outages on the  
21          transmission lines coming into the lower mainland,  
22          south coastal area.

23                 And from an energy point of view, it provided  
24          a backup to the hydro system, a very cost-effective  
25          backup to the hydro system. What it enabled BC

1 Hydro to do is take much greater advantage of all  
2 of the non-firm hydro that's generated within its  
3 system, as well as the opportunistic purchases of  
4 spot-market energy that we know are available and  
5 are very low cost. And in BC Hydro's, all of its  
6 evidence, is telling us, it will be low cost for  
7 many years.

8 I believe BC Hydro's forecasting market price  
9 is at around \$33 per megawatt an hour in 2024, up  
10 to \$41 by the end of their planning period. With  
11 some uncertainty around that, but the  
12 expectation -- not only by BC Hydro, but by most  
13 market forecasters, is there will be low cost  
14 energy available, and that includes not only  
15 spot-market purchases, but the non-firm hydro; that  
16 if you can't effectively use to meet your load,  
17 it's simply dumped on the market at whatever it  
18 will provide.

19 And BC Hydro's evidence shows there is a lot  
20 of non-firm hydro potentially available. Non-firm  
21 hydro, of course, is the difference between the  
22 hydro production you might get in any particular  
23 year, and the amount you would get in the severe  
24 drought year under critical water conditions. And  
25 that could amount to as much as 30 percent of the

1 output of the system. It's a very large amount.

2 I think the difference -- Hydro provided  
3 evidence suggesting that in critical water could  
4 count on producing some 43,000 gigawatt hours of  
5 energy from its hydro system. In the highest water  
6 years, it would be up to 56,000.

7 It also provided evidence that IPPs now, I  
8 assume the run of the river primarily provide  
9 non-firm hydro, as well, about 2,000 gigawatt hours  
10 is what they said they estimated for 2017.

11 It's a large resource, as is, of course, the  
12 spot market. And I did want to say because there's  
13 often reference that when you talk about the spot  
14 market, some people say, oh, you mean dirty coal in  
15 the United States? It isn't dirty coal in the  
16 United States. It's a wide range of resources.  
17 Probably the largest, single resource. It's very  
18 economic and generally available. It's a so-called  
19 fish-flush energy that comes out of the Pacific  
20 Northwest, and that's the hydro that's produced in  
21 the Columbia River system because Bonville has to  
22 release water for fish. It produces large  
23 surfaces; consistently low prices.

24 It's increasing available because of wind  
25 events, and the increasing amount of wind

1 production in the northwest and other  
2 justifications where if you get a combination of  
3 high wind and low demand. Or, for other reasons,  
4 when the wind isn't required, prices can fall to  
5 zero; in fact, we've seen negative prices in those  
6 events. And as well there is the off-peak thermal  
7 that's available.

8 You have to ask, well, why is this so  
9 important, about the role of Burrard, because  
10 BC Hydro has already told us, well, the government  
11 said you have to shut down Burrard.

12 Well, there's two points that I think are  
13 very important to consider here. One is it's not  
14 at all clear to me, at least, and I think to many  
15 other people who are looking at this, how  
16 well-informed the government was by BC Hydro about  
17 the consequences of the elimination of Burrard;  
18 that is going to force BC Hydro to look at other  
19 sources like Site C at great expense and with  
20 significant environmental consequences. And that's  
21 something that may be appropriate to reconsider,  
22 some analysis. BC Hydro's own analysis said it  
23 could cost in excess of a billion dollars to  
24 replace what Burrard provided.

25 The other thing is it's important to

1 understand the problem, which is what is giving  
2 rise to need, if you want to find the best  
3 solution. And I think what's really important here  
4 is to understand what is the need? Oh, the need is  
5 to replace what we've lost from Burrard, and that  
6 is a combination of capacity and that very  
7 cost-effective backup capability that Burrard  
8 provided that's no longer available to the system.  
9 Because the first thing you want to do in any hydro  
10 system, when there's widely varying water  
11 conditions, is figure out how you can take best  
12 advantage of this non-firm hydro, as well as the  
13 spot-market energy available in other jurisdictions  
14 that BC Hydro is uniquely capable of taking  
15 advantage of because of the storage in its storage  
16 capability and it's hard to assist them.

17 BC Hydro's analysis of alternatives focussed  
18 on two blocks; we'll call them the clean, which is  
19 a mix of basically wind, and, as I understand it,  
20 waste energy or municipal solid waste sources, as  
21 well as some hydro capacity. And the other was the  
22 clean plus thermal, which contained a similar block  
23 of energy, wind plus municipal solid waste, but it  
24 -- instead of all of the hydro capacity, it used  
25 single-cycle gas turbines, which are a relatively

1 low cost source of capacity and provide some  
2 associated energy.

3 And its analysis concluded -- its portfolio  
4 analysis concluded that Site C was preferred. It  
5 was lower -- more cost effective. And, basically,  
6 the reason for that is, it's very clear, the unit  
7 energy cost that BC Hydro is estimating for Site C  
8 is significantly less than the unit energy cost of  
9 the clean sources in both of those blocks. You  
10 know, you're comparing Site C at, say, \$90 to the  
11 wind and other clean at 125 or more. And that cost  
12 advantage outweighs the disadvantages, which is the  
13 lumpiness of Site C, the fact that you have to  
14 bring in a big block of energy that, at least for  
15 the initial period, would be sold at a loss in  
16 export markets.

17 What's the problem with that analysis? Well,  
18 the problem is BC Hydro, when it looked at the  
19 clean plus thermal, which includes the single-cycle  
20 gas turbines, failed to consider how the  
21 single-cycle gas turbines, which are an important  
22 source of capacity, we all agree, but they could  
23 also have provided the backup capability that the  
24 Burrard plant used to provide, and is no longer  
25 available to them. And it could have done that

1 very economically.

2 Basically, BC Hydro's analysis did a quick  
3 calculation; suggested that they would run the gas  
4 turbines at an 18 percent capacity factor. And  
5 that could well be quite right. And we heard some  
6 discussion about that this morning, that that's  
7 what you might need in order to utilize those  
8 facilities at the peak periods.

9 But the fact is, in terms of the capability,  
10 not in terms of how much you would actually run it,  
11 but in terms of its capability, a plant like that  
12 could run at 90 percent capacity factor or somewhat  
13 more than that.

14 And if you look at the difference between  
15 90 percent capacity factor, which is the rate of --  
16 the amount of time that the plant could be  
17 operated, if you look at the difference between  
18 90 percent and 18 percent of the gas turbines in  
19 the clean plus thermal blocks that BC Hydro  
20 presented to you, that's some 3,700 gigawatt hours  
21 of energy.

22 So in BC Hydro's analysis, what they have  
23 done is they forced the corporation in simulating  
24 this alternative to go out and buy some very  
25 high-cost energy, over \$125 per megawatt hour,



1 because it doesn't want to recognize the backup  
2 capability, the Burrard-like capability that the  
3 single-cycle gas turbines could have provided, and  
4 it's buying that instead of using non-firm to a  
5 much greater extent, and the spot market to a much  
6 greater extent, that's going to cost not \$125, it's  
7 going to cost, by their calculation, some \$30 or  
8 \$40 per megawatt hour. The savings are enormous.  
9 They're in the hundreds of millions of dollars per  
10 year. That's how much they've exaggerated the cost  
11 of their clean plus thermal.

12 So I think it's just very important for you,  
13 and for everyone, to be aware that if you would  
14 allow the single-cycle gas turbine charger, the  
15 clean plus thermal strategy, to operate like you  
16 would want a hydro system to operate, to provide  
17 the reliability, the confidence, that you can use  
18 non-firm -- you can use non-firm hydro, you can go  
19 to the stock market, and, yet, you have the  
20 reliability that you could if you actually, in  
21 fact, had to because of some unusual circumstance,  
22 a combination of very extreme drought, an  
23 extraordinarily high or inaccessible spot-market  
24 energy, you would have the energy, you would have  
25 the reliability to produce it in British Columbia

1 with your turbines; you wouldn't necessarily want  
2 to, but you could do it in those years that you had  
3 to.

4 And based on BC Hydro's analysis of the  
5 economics of Burrard, which, at the 2008 LTAP,  
6 long-term acquisition plan hearing, it estimated  
7 the rating, the energy capability at Burrard just  
8 by 4,000 gigawatt hours, it would cost the system  
9 at that time a billion dollars. It would be a  
10 billion dollars more expensive than the present  
11 value system costs. And that's in the BCUC  
12 decision on the LTAP hearing. It's one of the  
13 reasons why the BCUC didn't agree with any  
14 significant derating of the Burrard plant. That's  
15 the kind of saving we could see here vis-à-vis a  
16 Site C proposal, as we have it.

17 It's clear from the statements this morning  
18 that BC Hydro's position on this is, well, that's  
19 all very interesting, but we can't do that. And we  
20 can't do that because we're constrained by the  
21 self-sufficiency and the clean provisions in the  
22 **Clean Energy Act.**

23 And, yet, in its own evidence, in the IRP,  
24 chapter 6, it recognizes -- those restrictions,  
25 firstly, are ambiguous. I'm not convinced that

1           there isn't an argument. We've got enough lawyers  
2           in the room. I'm sure many of them could make a  
3           very strong case that that clean plus thermal  
4           strategy is, in fact, consistent with the  
5           self-sufficiency and clean provisions of the Act.  
6           Why? Because in accordance with the  
7           self-sufficiency provisions, we would have the  
8           energy capability within the province to meet our  
9           requirements. And with respect to the clean  
10          requirements, it's very clear; it's got to do with  
11          production.

12                 The fact of the matter is we wouldn't be  
13          producing the energy from the gas turbines anymore  
14          than we had to; we could live within that because,  
15          at least in most years, normally, we would be using  
16          whatever non-firm -- hydro would be available, and  
17          we would be using the opportunistic purchases of  
18          spot-market energy, which all forecasts tell us  
19          we're going to be the lowest cost source of energy  
20          for the system.

21                 So I think there is a case, that it's  
22          consistent with the Act. And, in any event, to say  
23          that the government accepted the IRP, which had  
24          BC Hydro's interpretation of why it restricted, in  
25          effect, the clean plus thermal case here in the way

1           that it did, I don't think is a reasonable position  
2           to accept because there was no analysis of what  
3           that meant. There was no analysis.

4           I don't think the government wants to force  
5           on BC Hydro customers an extra billion dollars of  
6           cost. I don't think the BC government wants to  
7           force the development of resources and with the  
8           environmental consequences that it can have that  
9           aren't needed and aren't cost-effective.

10          So I think we would want to see at least the  
11          kind of analysis that's spelt out the consequences  
12          of the different interpretations that one might  
13          have for those provisions, to either get a  
14          favourable interpretation, or perhaps a  
15          reconsideration of those restrictions, which we've  
16          heard the government does.

17          You know, if the government hadn't changed  
18          the self-sufficiency and insurance provisions,  
19          which it did in 2012, BC Hydro would be telling us  
20          we don't need one Site C, we need three of them.  
21          And that was just a regulation. And everybody was  
22          saying, well, that's what we have to do.

23          But you don't have to do things that don't  
24          make sense.

25          So it's important to consider what is, in

1 fact, the most cost-effective way to meet the  
2 growth that we see in the system, and that we're  
3 forecasting.

4 So my conclusions -- I don't want to belabour  
5 it -- you have the submission -- but are  
6 essentially these:

7 number 1, the need that's been identified for  
8 new resources is due directly to the elimination of  
9 the Burrard thermal plant. There are other  
10 factors, including the market failure and pricing,  
11 which is an important one, the policy one, but it's  
12 directly related to the elimination of 6,100  
13 gigawatt hours of capability and 900 megawatts of  
14 peak-generating capacity that didn't have to be  
15 retired in the manner that it was. It could have  
16 been maintained with appropriate investments and  
17 refurbishment.

18 Site C is preferred, in BC Hydro's  
19 submission, because of the severely restricted role  
20 of the single-cycle gas turbines, and it's clean  
21 plus thermal, and it wouldn't have been preferred  
22 otherwise.

23 There is, in fact, a more cost-effective  
24 alternative than Site C, and it would be a  
25 single-cycle gas turbine strategy for the capacity

1           that's required, combined with utilizing that to  
2           firm up more non-firm hydro and spot-market  
3           purchases.

4           And I, finally, want to say that if the  
5           panel -- and you'll see this often in CEAA type and  
6           joint panels like this, if you find that there are,  
7           in fact, unavoidable and significant adverse  
8           environmental and social effects, there is, in my  
9           view, at least, no basis to conclude that they're  
10          justified in the circumstances because of the need  
11          for and alternatives. In fact, the need is  
12          unnecessary. And, in any event, there are, in  
13          fact, more cost-effective alternatives that could  
14          be pursued. Thank you.

15         [Applause]

16         THE CHAIRMAN:                     Thank you very much,  
17           Dr. Shaffer.

18           Instead of applause, I would like people to  
19           ask incisive questions of Dr. Shaffer while we have  
20           him before us.

21         MR. GODSOE:                     Mr. Chairman, I'll try to  
22           deliver on the incisive.

23           The first question should probably be the  
24           easiest question for you, Dr. Shaffer. You don't  
25           have the curse of being a lawyer; do you?

1 DR. SHAFFER: No. Someone told me to shoot  
2 myself first when I thought about that.

3 MR. GODSOE: Can I ask you to turn to  
4 page 17 of your report.

5 DR. SHAFFER: Yes.

6 MR. GODSOE: Now, bearing in mind, you  
7 recognize the concluding remark, 2; that is, the BC  
8 government that is the party that should reconsider  
9 rates based on BC Hydro's historic average cost to  
10 supply -- and that's what I take you to be  
11 disputing. I have some questions for you on that  
12 topic.

13 You referred to it as a policy issue, I'm  
14 going to submit it's much more than that.

15 Did you review the terms of the 2003 heritage  
16 contract, and, in particular, Schedule B, to the  
17 terms of reference to the heritage contract report,  
18 listing off the heritage beneficiaries when you  
19 made your submission?

20 DR. SHAFFER: No, I didn't. I'm generally  
21 familiar with that. No.

22 MR. GODSOE: Do you agree with me that in  
23 2008, the BC government established the heritage  
24 contract in perpetuity?

25 DR. SHAFFER: I wasn't aware of that, but

1 I'm not surprised by that.

2 MR. GODSOE: And this next question might  
3 be better addressed through written, closing  
4 comments, but let me try it on for size.

5 Dr. Shaffer, are you aware that since the  
6 heritage contract came in in 2003, the **Utilities**  
7 **Commission Act**, the **Heritage Act**, and, really, the  
8 regulations have been amended some ten times and at  
9 no time has the BC government chosen to move off  
10 the heritage contract?

11 DR. SHAFFER: I am aware of that.

12 MR. GODSOE: Those are my questions.

13 Thank you.

14 THE CHAIRMAN: Are there any other questions  
15 for Dr. Shaffer?

16 I have one. Do you know of any utility in  
17 the country or in the United States that actually  
18 uses marginal cost pricing?

19 DR. SHAFFER: Well, I think the utilities  
20 that are based on power poles are closest to  
21 marginal cost pricing. But in North America, I'd  
22 say it's more limited. In Europe, it's more  
23 expensive.

24 THE CHAIRMAN: M'mm-hmm. M'mm-hmm.

25 DR. SHAFFER: You know, the marginal cost



1 pricing -- and I didn't pursue it to any great  
2 degree here because I realize this is a major  
3 policy issues, but I would point out liberal  
4 government came to power and they had their energy  
5 task force, and that task force reported in 2002.  
6 One of the things they said was that our current  
7 pricing of electricity, on the basis of average  
8 costs, is not sustainable. And it's particularly  
9 problematic when the difference between the average  
10 cost of energy, let's say, \$40, and the marginal  
11 cost of energy is something like 85 or more.  
12 That's a huge problem, and it's a huge problem with  
13 very large loads. And there are ways to deal with  
14 that, and I am aware of other jurisdictions that  
15 look at that and try to limit the sharing of  
16 heritage power and low-cost power, if you like,  
17 with new, electric, intensive loads because the  
18 more you add, the less there is to share with  
19 everyone else.

20 THE CHAIRMAN: I am aware that economists  
21 have been breaking their heads against this for a  
22 long, long time, and I am familiar with it, in the  
23 water supply area. And it's a very hard sell, I  
24 think, but, nonetheless, I take the point.

25 Are there further comments or questions of

1 Dr. Shaffer?

2 In that case, thank you very much.

3 DR. SHAFFER: Okay. Thank you.

4 THE CHAIRMAN: Do we have Richard Koechl and  
5 Mike Kroecher here?

6 Gentlemen, would you come forward and tell me  
7 how, actually, to pronounce your names.

8

9 Presentation by Mr. Kroecher and Mr. Koechl:

10 MR. KROECHER: Thank you. We are no  
11 experts, but we are very concerned citizens.

12 Much of what we have heard and read and  
13 studied in BC Hydro's publications doesn't make a  
14 lot of sense to us.

15 During consultation we asked questions, and  
16 many of the answers that we received did not really  
17 answer the questions. We were frequently told that  
18 since the chairperson there didn't have the precise  
19 information in front of him, he could not answer  
20 the questions. So we were generally very  
21 dissatisfied with the consultation process. To us,  
22 it was an exercise in frustration.

23 And we had the distinct feeling that, for  
24 BC Hydro, it was an opportunity to spread a  
25 post-Site C spin and post-Site C propaganda.

1                   Our -- one of the main reasons why we are  
2                   here today is we have studied a coal generation  
3                   project and we feel that it is very cost effective.

4       MR. KOECHL:                   Mike, that would be co-gen, I  
5                   guess, eh?

6       MR. KROECHER:                Co-gen, yes. That it is very  
7                   cost effect. And we feel, by the figures that we  
8                   have seen, that is actually more cost effective  
9                   than Site C.

10                   One major advantage of co-gen would be that  
11                   very little money would have to be spent on  
12                   mitigation. We have studied the booklets here, the  
13                   publications, and we have noticed that substantial  
14                   amounts of the estimate for Site C will go to  
15                   mitigation. And this particular mitigation, for  
16                   example, the loss of extremely valuable  
17                   agricultural land, we think that loss cannot be  
18                   mitigated. That valuable resource will be lost  
19                   forever. So mitigation does not apply to that.

20                   We also feel that the co-gen generating  
21                   system is highly efficient. It will be about  
22                   90 percent -- 92 percent efficient versus about  
23                   52 percent for Site C. Therefore, we think that  
24                   BC Hydro, or the BC government for that matter,  
25                   should have a very close look at the co-gen

1 proposal.

2 We also feel that Site C, which BC Hydro  
3 consistently tells us is clean, we feel it is not  
4 nearly as clean as BC Hydro claims.

5 BC Hydro does not deny that the construction  
6 phase will be dirty, but BC Hydro brushes this all  
7 aside by simply saying the construction phase will  
8 not be any different from every other similar  
9 project. Now, I personally consider that a  
10 cop-out.

11 Furthermore, about 1.5 million cubic metres  
12 of waste vegetation will likely be burned, which,  
13 according to our calculations, will produce more  
14 than a million tons of CO2 being released into our  
15 atmosphere. We consider that very, very serious.

16 And since BC Hydro did not provide any  
17 figures as to what amounts of greenhouse gases will  
18 be released during the construction phase, we don't  
19 really know what the environmental impact will be  
20 on our atmosphere.

21 Furthermore, BC Hydro says the greenhouse gas  
22 emissions from Site C will be low because the  
23 reservoir will be small.

24 Since most of the water which will drive the  
25 turbines is stored behind the WAC Bennett dam,

1 BC Hydro, in our assessment, should make public how  
2 many times of greenhouse gases are being emitted by  
3 that large reservoir. To the best of our  
4 knowledge, BC Hydro has never published those  
5 figures. It is distinctly possible that BC Hydro  
6 doesn't even know of how many tons of greenhouse  
7 gases are released there.

8 Furthermore, we find no suggestion that the  
9 Site C reservoir or the WAC Bennett or the  
10 Williston Reservoir releases any methane. It is  
11 simply not mentioned anywhere in these  
12 publications.

13 Now, methane is a very potent gas which is  
14 created by vegetation such as trees who decay at  
15 the bottom of reservoirs. So I think, we think,  
16 that is a very serious omission.

17 We, furthermore, question some of the  
18 accuracy of BC Hydro's estimates which are listed  
19 in the business case summary. BC Hydro allows a  
20 contingency of less than 10 percent.

21 THE CHAIRMAN: Your microphone.

22 MR. KROECHER: I'm sorry. I'm sorry.

23 BC Hydro allows a contingency of less than  
24 10 percent of the total cost.

25 Now, there is plenty of evidence that major

1 projects such as Site C have or may have massive  
2 cost overruns. The latest publically funded  
3 project, large project, was the Vancouver  
4 Convention Centre, which had a cost overrun of more  
5 than 200 percent.

6 There is a dam in northern Manitoba, the  
7 Wassim dam (phonetic), which went into production  
8 last year. It has a cost overrun of 82 percent.

9 Earlier this year, BC Hydro built a dock and  
10 tailor (phonetic), which is just downstream from  
11 Fort St. John, as part of the Site C project. The  
12 estimate was 1.5 million dollars. The final costs,  
13 according to our local newspapers, was close --  
14 over 4.5 million, which is a cost over-run of more  
15 than 200 percent.

16 Furthermore, the NTL, which is the Northwest  
17 Transmission Line which BC Hydro is building to  
18 actually power up to the northwest corner of this  
19 province, apparently, according to the *Globe and*  
20 *Mail*, has a substantial cost overrun.

21 Therefore, we are concerned that with a  
22 figure of less than percent provided for cost  
23 overruns, this estimate cannot possibly be  
24 accurate.

25 MR. KOEHL: Mike, maybe we should carry

1 on with this.

2 MR. KROECHER: Yeah, do you want to take  
3 over?

4 MR. KOECHL: Sure. Is that right? Okay,  
5 we're good.

6 All right. In the same connotation here, we  
7 wanted to do a little exploration and demonstrate  
8 some of the issues about specificity with respect  
9 to the estimates that we were given in the manual  
10 here, the business case and the executive summary,  
11 so we looked at some of the mitigation problems  
12 related to the project cost estimate.

13 THE CHAIRMAN: Can you slow down.

14 MR. KOECHL: Oh I can. Sure.

15 THE CHAIRMAN: Thank you.

16 MR. KOECHL: So here's what we looked at.

17 On page 24, project cost estimate breakdown where  
18 we have a series of categories, so it starts off  
19 with regulatory, construction insurance, project  
20 engineering, and management. I think I'm missing  
21 one here. Mitigation compensation were lumped  
22 together in the last category as well.

23 So in that one category called development,  
24 hydro has allotted 1.005 billion dollars, and that  
25 would include the mission/compensation category.

1           What we didn't know, and what we have no idea  
2 of is how much is allotted to each one of those  
3 separate categories which would be under the  
4 1.005 billion value.

5           So what we thought we would have to do is  
6 find out. We assumed it might be about I guess  
7 about a 5th of that value, so around 250 billion  
8 dollars -- or million dollars, pardon me. But  
9 there was no financial breakdown given by Hydro, so  
10 we were in a bit of a quandary as well.

11           Assuming that that is the case, that it  
12 really is in that category, we then proceeded to  
13 look at some of the mitigations that Hydro was  
14 looking at dealing with over the course of this dam  
15 building.

16           So there's 26 different separate mitigation  
17 topics. And each one of those subsequently is  
18 broken down again into a number of additional  
19 measures requiring mitigation.

20           To give you an idea, fish and wildlife had 37  
21 additional measures requiring mitigation.  
22 Agriculture had 19.

23           So when we looked at that, we did a quick  
24 estimate. We thought there's no doubt that we  
25 might have something in the range of three to four



1 hundred mitigations that are required. And as you  
2 probably know, each mitigation is going to have  
3 some cost connected with it.

4 We decided to look at just one of those  
5 avenues and see what you thought about this. We  
6 weren't sure if this was real or not. But it's in  
7 their manual right here. Here it is. Under  
8 "potential effects", it is -- and I quote from  
9 their manual -- "relocation of suitable soil in  
10 selected locations."

11 So, again, we just point out that this is  
12 class 1 and 2 soils that they're talking about.  
13 The reservoir would flood up to we assume 5,000  
14 hectares of that land.

15 So what we did is we actually went off to a  
16 contractor here locally and we had -- I have  
17 provided that for you folks under appendix 1. It  
18 was not available at the time, but it is now, in a  
19 booklet we've given you.

20 Anyway, what he was able to do for us was to  
21 kind of break down what he assumed -- what his  
22 price would be for -- these are oilfield prices as  
23 well, by the way -- stripping one hectare lease,  
24 20 centimetres of topsoil, approximately \$10,000,  
25 okay, per hectare. To load and move it about a

1 half a kilometre distance would be an additional  
2 \$10,000. And keep in mind that's one-half  
3 kilometre. Moving each piece of heavy equipment,  
4 like a DA CAT, would be probably about \$5,000  
5 approximately.

6 Here is what we weren't able to get. We  
7 don't know the extra distances required to move  
8 that top soil to wherever it needs to go. It  
9 doesn't include mobilizing or demobilizing of the  
10 equipment to do that. It does not include heavy  
11 duty graders required to distribute top soil in the  
12 new location. It does not include mixing of new  
13 top soils with the soils that are in situ. And it  
14 wouldn't include weed control which might be  
15 required under the PRD regulations for appropriate  
16 mitigation required for weed infestation in a new  
17 location.

18 So based on those numbers alone, what we were  
19 able to determine is it's going to be somewhere in  
20 the range of 50,000 to 100,000 dollars per hectare,  
21 depending on policies of the day.

22 Now, if you moved 1,000 hectares, just 1,000  
23 of the 5,000, you're looking at, again, 50,000 --  
24 we took the minimum price, 50,000 per hectare, you  
25 multiply that times a thousand, you get 50 million

1 in 2013 dollars. 50 million. So you have one  
2 mitigation problem here, one, that's going to cost  
3 somewhere in the range of 50 million or potentially  
4 as much as 100 million dollars.

5 Keep in mind, we don't know the exact amount  
6 that's in the mitigation/compensation pie, but if  
7 it's 250 million, that's just one mitigation we're  
8 looking at, just one, out of potentially three to  
9 four hundred other mitigations.

10 And, again, granted they are not all going to  
11 cost the same, but we had some in here that were  
12 under that allotment. So it does beg the question:  
13 What is the actual amount, Hydro? And what -- have  
14 they really properly planned for this? Because  
15 we're taking just one example.

16 I guess our next phase of the presentation is  
17 we wanted to really get into the meat of the matter  
18 with respect to comparing the Site C project  
19 economically or financially with another project  
20 which Dr. Shaffer referred to. He looked at single  
21 cycle gas turbines and we're looking at combined  
22 cycle turbines in this case, or co-gen.

23 And so what we did is, just to give you a bit  
24 of a brief history, we came across a site, just one  
25 such facility in Calgary southwest called the

1 Shepherd Energy Facility. And it will go into  
2 production next year, in 2014. It's going to be  
3 producing, well, a comparable amount of megawatts  
4 of power, 840 megawatts of power. It is run, as I  
5 say, natural gas turbine system. It will be, in  
6 comparison to the Site C project, which is around  
7 1100 megawatts of power, tops -- Mike had mentioned  
8 earlier that there's an efficiency rating  
9 difference which is really quite compelling. The  
10 Shepherd is rated at 92 percent, or will be rated  
11 at that, and Site C, based on its overall energy  
12 output of 5100 gigawatt hours, we calculated that  
13 at 52 percent. So that is a compelling difference  
14 that needs to be looked at. So that, for starters,  
15 tells us that there will be more energy coming out  
16 of the Shepherd, obviously not peak power, not  
17 quite up to what Site C is, at 1100, but it is  
18 still very significantly close.

19 Up on the screen, you'll notice that we've  
20 got a chart that we presented to numerous groups  
21 here about the differentials between the two  
22 facilities because they are comparable in terms of  
23 what we're talking about today.

24 So the capital cost is 7.9 billion, compared  
25 to 1.3 billion. We can assure you that the

1 Shepherd is on budget. It was audited exterior, or  
2 outside auditing.

3 At this point, we have never been able to get  
4 a fixed price from Hydro. They have never actually  
5 said 7.98 would be the final price, as Mike pointed  
6 out here a couple moments ago. That's very  
7 disturbing when you think about it.

8 So megawatt for megawatt, you're looking at  
9 about six times the cost for the Site C project.

10 In the manual, their page -- I think it's  
11 page 26 of the executive summary or page -- sorry  
12 page 9, you're going to find that the operational  
13 cost in 2013 dollars for Site C is rated, EUC  
14 rating that is, 110 dollars per megawatt hour. EUC  
15 is energy unit cost. The calculation for the  
16 Shepherd is 30 dollars per megawatt hour. So  
17 there's, again, a very significant difference in  
18 production cost between two facilities.

19 If they're producing at that rate, suffice it  
20 to say that the Shepherd will be able to sell power  
21 at, well, with a surplus; whereas Site C would go  
22 in the hole about three-fold at 33 or 35 dollars,  
23 as Dr. Shaffer pointed out here as well, what we  
24 would be paying at today's rates.

25 As far as footprint is concerned, we know

1           that the Shepherd, for example, will be built on  
2           approximately 60 acres of land; 60 acres compared  
3           to the reservoir at 23,000 to 25,000 acres of  
4           flooded reservoir. Again, that's a significant  
5           amount of differential between the two.

6                       We're dealing with farmland mitigations that  
7           are phenomenal. And in respect or in comparison  
8           with the Shepherd, it's, it's -- the mitigation is  
9           absolutely minimum. In fact, the only mitigation  
10          that the Shepherd really needs to deal with will be  
11          with CO<sub>2</sub>, CO<sub>2</sub> release, which of course being a  
12          fossil fuel, there's a high concern for.

13                      We would like to point out that there are  
14          numerous secondary industries chomping at the bit  
15          to take that CO<sub>2</sub> waste, which is collectible, and  
16          utilize it for other purposes. It can be turned  
17          into, for example, building materials in some  
18          cases. I know it under the -- that's just under  
19          the early stages. CO<sub>2</sub> with a catalyst can actually  
20          be used to convert into another fuel known as blue  
21          fuel, which is very usable. And it can also be  
22          used directly. Methane, CH<sub>4</sub>, can be used in fuel  
23          cells which gives zero emission -- zero emission --  
24          if it's used in that manner.

25                      So depending on how you want to use the

1 methane gas, it has a number of possibilities which  
2 a reservoir, as Mike pointed out earlier, does not.  
3 Reservoirs, you cannot collect CO2 and methane  
4 under normal circumstances. It's lost to the  
5 atmosphere.

6 And may me point out that Hydro is under no  
7 legal obligation to mitigate CO2 or methane. The  
8 nature gas industry is regulated by the OGA, which  
9 is *Oil and Gas Activities Act* from 2008 or '9. And  
10 it has very tight restrictions on things like, for  
11 example, what has to happen with that carbon, that  
12 carbon dioxide. So carbon capture is a problem or  
13 potential issue for them. Sequestration would have  
14 to possibly another consideration. And then  
15 there's also taxation involved, right, on the waste  
16 carbon, which has been talked a lot about in the  
17 media of late.

18 All of these things make it an uneven playing  
19 field for nature gas which has a lot of mitigation  
20 requirements compared to reservoirs which have no  
21 requirements with respect to the gas that they  
22 emit. We see that as a real problem. And I think  
23 that has to be looked at through a different set of  
24 eyes.

25 We understand, of course, that there is a

1           **Clean Energy Act** in place, but let's bear in mind,  
2           with the stroke of the regulatory pen, that went  
3           into effect, and it can just as easily be changed  
4           if need be.

5           Dr. Shaffer pointed that out as well; that it  
6           could easily fit the bill of meeting the criteria  
7           if it were used in certain capacities. We're  
8           speaking of co-gen as being used for firm power,  
9           for the ability to use that power in lieu of a  
10          Site C, on a regular basis. So it's consistent and  
11          it's there if you need it. That's the assumption  
12          that, you know, we're making; that we would need  
13          that power.

14          May I ask the Chair how we're doing on time.  
15          Are we okay, or can we wrap it up for the --

16          THE CHAIRMAN:                    You're just about through  
17          your time.

18          MR. KOEHL:                        Oh, thank you, sir. Thank  
19          you.

20          Maybe I can finish off with something you'll  
21          be pleasantly surprised with, as will the audience.

22          The Shepherd is going to be opening next  
23          year. It's owned and operated entirely by a  
24          company called Enmax, with is owned by the City of  
25          Calgary at this point anyway.



1 Oh, again, my apologies. I guess as a  
2 teacher I tend to get going, wound, wound up.

3 Maybe I can tell you what they're going to be  
4 offering their customers. You'll find this one  
5 very interesting. They have a guaranteed rate of  
6 8 cents per kilowatt hour -- that's the price they  
7 will sell it at to their customers -- until 2020.  
8 Six years. Unaffected by rate changes or rate  
9 increases.

10 Does that sound a bit vaguely disconcerting?  
11 Here we are. We're now in the motions of moving up  
12 that treadmill or that ladder very, very quickly.  
13 And this is what, as I understand it, about 26,  
14 28 percent increases in the next three to four  
15 years, no end in sight.

16 So we just wanted to point out that this  
17 facility, as Dr. Shaffer, I think, has previously  
18 stated, clearly has got some, some economic  
19 benefits that are huge. And maybe we need to ask  
20 the question: What are they doing right and what  
21 are we doing wrong?

22 Thank you.

23 THE CHAIRMAN: Thank you very much. I'm  
24 struck by the coincidence between your presentation  
25 and Dr. Shaffer's. The Shepherd plant more or less

1 looks like a Burrard gas plant --

2 MR. KOECHL: It does.

3 THE CHAIRMAN: -- in terms of what its -- in  
4 the same ballpark and it's the same ballpark as  
5 Site C.

6 MR. KOECHL: The efficiency is better,  
7 though, because it is more modern and it's a  
8 co-gen, which is a combined cycle.

9 THE CHAIRMAN: Yes, but that means that you  
10 must have a use for the waste heat right on site.

11 MR. KOECHL: That's correct.

12 THE CHAIRMAN: And that takes a little art  
13 sometimes.

14 MR. KROECHER: May I make a comment about  
15 that, sir?

16 Co-gen may produce steam. And steam can also  
17 be used to generate electricity by using steam  
18 power turbines.

19 THE CHAIRMAN: Yes, of course.

20 MR. KROECHER: So it would actually  
21 increase the output.

22 THE CHAIRMAN: Yes, but to get to the  
23 kind of efficiency numbers that you're talking  
24 about, you have to use all of the pig with the  
25 squeal. You've got to use every bit of energy that

1           that's coming out of that gas one way or another.  
2           And that usually means elaborate schemes for using  
3           waste heat, such as district heating, which may be  
4           available in Calgary, an advanced city, I  
5           understand.

6       MR. KOECHL:                    There was an interesting  
7           comment made by the Deputy Minister to Mr. Bennett  
8           here that I thought I'd -- if I could -- just a  
9           sentence that he said. He was commenting about  
10          these co-gen facilities and I thought the audience  
11          would find this interesting. These facilities --

12       MR. KROECHER:                 Slow down.

13       THE CHAIRMAN:                 You've got to slow down.

14       MR. KOECHL:                    Right.

15                    These facilities generate both electricity  
16           and heat or steam, as you mentioned, for industrial  
17           processes. This has the advantage, he states, of  
18           very high efficiency and splits the capital and  
19           operating costs between the electricity customer  
20           and the heating customer.

21       THE CHAIRMAN:                 Yeah, thank you.

22                    I wonder if there are any other questions  
23           that would like to be posed. Hydro.

24       MR. GODSOE:                    Mr. Koechl and Mr. Kroecher,  
25           I hope I'm saying your name right.

1 MR. KOECHL: Koechl.

2 MR. GODSOE: Sorry.

3 MR. KROECHER: And Kroecher.

4 MR. GODSOE: I'm trying.

5 My name is Craig Godsoe and I'm BC Hydro's  
6 in-house counsel. And we have a couple of  
7 questions just so we can understand the assumptions  
8 you put forward on the table on the screen and, in  
9 particular, the unit energy cost for the  
10 800 megawatt combined cycle gas turbine facility  
11 called the Shepherd Energy Centre in Alberta.

12 It might be handy if you had your additional  
13 document in front of you as well. And there I'm  
14 interested -- I counted in pages 36 and 37 into it.  
15 It starts with your --

16 MR. KOECHL: Are we talking about the one  
17 from the Shepherd facility, the approval one, or --

18 MR. GODSOE: It begins -- your response to  
19 Mr. Conway. I could show you if you'd like.

20 MR. KOECHL: Yeah, I think you'd have to  
21 because I may not have it in front of me right now.

22 THE CHAIRMAN: Through the Chair, please.

23 MR. GODSOE: Mr. Chairman, why don't I  
24 give you a copy and the presenters copies.

25 THE CHAIRMAN: Thank you.

1 MR. KOECHL: Thank you. Okay.

2 MR. GODSOE: So on page 6 of your  
3 presentation, which is on the board, you quote a  
4 unit energy cost of 30 dollars per megawatt hour.

5 MR. KOECHL: M'mm-hmm.

6 MR. GODSOE: And then could you confirm  
7 for me that that's the same unit energy cost on  
8 page 37 of your background documents that reads  
9 30.38 per megawatt hour?

10 MR. KOECHL: It would be the same, yes.

11 Yeah.

12 MR. GODSOE: Thank you.

13 MR. KOECHL: That would be dependent, too,  
14 on the price of natural gas to some degree, based  
15 on the goings up and down. Just so you know, this  
16 is based on \$4 per giga joule.

17 MR. GODSOE: Okay. And I'm interested in  
18 the \$14 per megawatt, a figure quoted for Shepherd  
19 Energy Centre operating costs at page 36.

20 MR. KOECHL: Right.

21 MR. GODSOE: Can you please confirm that  
22 the \$14 figure includes fuel costs only or --

23 MR. KOECHL: It includes fuel costs --  
24 okay, so you say it includes fuel cost plus?

25 MR. GODSOE: Does it include fuel costs

1           only, or does it also have operating and  
2           maintenance costs?

3       MR. KOECHL:                    The operating and maintenance  
4           costs I cannot absolutely state. We went with  
5           ratios that were based on the figures given to us  
6           from their outfit as well as your outfit, so I  
7           tried to blend the two together to make them I  
8           guess make a bit of sense. Of course they had to  
9           be comparing apples to apples, right, so it was a  
10          bit tricky. But it would be in that \$14 range.

11                 Bear in mind that water turbines require  
12           maintenance, as do electric turbines. I don't know  
13           if you're aware of it, but Spectra right now is  
14           running 60-year-old single cycle gas turbines.  
15           60 years old.

16       MR. GODSOE:                   What did you base your  
17           estimate of fuel consumption on in your calculation  
18           of \$14 per megawatt hour figure?

19       MR. KOECHL:                   \$4 per giga joule.

20       MR. GODSOE:                   So that's the gigawatt joule  
21           -- gigawatt joule per hour?

22       MR. KOECHL:                   Not gigawatt joule. It's  
23           giga joule.

24       MR. GODSOE:                   Yeah.

25       MR. KOECHL:                   Well, I'm sorry it would be,

1 I guess, but. Yeah.

2 MR. GODSOE: How much fuel are they  
3 consuming? Did you draw that from page 38 of the  
4 Alberta Utilities Commission application?

5 MR. KOECHL: It came from the application  
6 that we submitted to the board, you bet. And  
7 that's a 60-page document. And I think it was on  
8 page 38 or 37 where you can find that information  
9 as to the amount of fuel that they are consuming  
10 per hour.

11 MR. GODSOE: Thank you. This is my last  
12 question. This time on capital costs at page 36 of  
13 your additional documents, can you confirm for me  
14 that to arrive at your capital cost for Shepherd  
15 Energy Centre, you divided the Site C capital cost  
16 by six.

17 MR. KOECHL: That is correct. You know,  
18 we took it on the same basic ratio based on your  
19 capital cost, 7.9 billion projected, and the 1.3  
20 fixed, which Shepherd presently is slated to be  
21 finished on. Yeah.

22 MR. GODSOE: Thank you, gentlemen. Those  
23 are my questions.

24 MR. KOECHL: Thank you.

25 THE CHAIRMAN: Thank you.

1                   Are there further questions or comments?

2                   In that case, thank you very much. We're  
3                   doing slightly better for time than I thought we  
4                   were going to be doing. And if we're very lucky,  
5                   we can avoid an evening session if we -- and asking  
6                   people to come back after dinner.

7                   I would like to continue with the questions  
8                   from interested parties to Hydro regarding their  
9                   initial presentation on the need for the project,  
10                  the alternatives to it. Thank you.

11       MR. KOECHL:                   Thank you.

12       THE CHAIRMAN:                Are there no questions?

13                   There was one earlier.

14       MR. HENDRIKS:                Thank you, Mr. Chairman. I  
15                   have been speaking with your staff as I wished to  
16                   have a visual aid to my questioning. I apologize.  
17                   I am responsible for the late delivery of the  
18                   visual aid to your staff. I was rather hoping  
19                   there might be other takers on the questioning  
20                   opportunity thus allowing me to get my question up  
21                   on the screen, but --

22       THE CHAIRMAN:                Well, let me just ask the  
23                   question; is there anyone else who wishes to speak?  
24                   There's a gentleman behind you. This ought to buy  
25                   you a few minutes.



1 MR. HENDRIKS: Thank you.

2 THE CHAIRMAN: Thank you.

3 MR. ATKINS: Thank you, Mr. Chairman. I  
4 have a couple of questions.

5 THE CHAIRMAN: Your name again, please.

6 MR. ATKINS: My name is Tony Atkins,  
7 A-t-k-i-n-s. I would like to -- it may be slightly  
8 repetitive, but they are different questions.

9 Has BC Hydro tried to change the government's  
10 mind regarding Burrard thermal? Nature gas is  
11 clean when it's producing electricity from liquid  
12 natural gas, but it's not clean for residential  
13 use, especially for the 45,000 -- 450,000 homes  
14 that BC Hydro says Site C will provide electricity  
15 for.

16 I mean, it is a possibility; has BC Hydro --  
17 and I know they talk back and forth to the  
18 government. Have they tried to do that?

19 THE CHAIRMAN: Ms. Yurkovich.

20 MS. YURKOVICH: Thank you, Mr. Chair.

21 It's correct, we do engage with the  
22 government on a variety of policy-related issues  
23 and we provide our guidance. Ultimately the policy  
24 decisions are the jurisdiction of the provincial  
25 government. We are the Crown corporation that

1 executes on those public policies.

2 I think on Burrard, Burrard has -- there's  
3 been quite a good deal of consistency around  
4 Burrard. I'll just let Randy take a minute to  
5 explain the direction we have had over the last few  
6 years for Burrard thermal.

7 MR. REIMANN: I think the clearest intent  
8 of providing information on this would be the  
9 position that Hydro took in the 2008 LTAP, as  
10 Dr. Shaffer referenced. And in that, we have  
11 proposed to reduce the Burrard thermal reliance  
12 maintaining 900 megawatts but reducing the energy  
13 from some 6100 gigawatt hours per year to 3,000.  
14 And we run successful in the application. And the  
15 Commission didn't agree with us.

16 Following that, the government implemented  
17 the policy to longer allow us to rely on Burrard.  
18 And the current policy, as a result of the **Clean**  
19 **Energy Act** now where we have reliance on capacity  
20 until fiscal 2016 when we have replacement capacity  
21 in terms Mica five and six.

22 The interior lower mainland transmission line  
23 is another transformer. In the meridian  
24 substation, thereafter, we're no longer able to  
25 count on Burrard for either energy or capacity.

1                   And in the November 26th government  
2                   announcement on the rates, they also stated, I  
3                   guess, that the Burrard was no longer going to be  
4                   funded or relied on, even for emergency purposes,  
5                   beyond 2016.

6                   So I think, yes, we've -- they have been  
7                   clear what the value of the plant is and what  
8                   benefits burning gas would be, but not consistent  
9                   with what they're asking us to do within the **Clean**  
10                  **Energy Act.**

11                THE CHAIRMAN:                   Thank you.

12                                Mr. Atkins.

13                MR. ATKINS:                    Thank you.

14                                Other than Site C, it seems to me that  
15                   BC Hydro is restricted to what commercial interests  
16                   and IPPs can bring to the market through BC Hydro  
17                   for resale. Does that mean that BC Hydro cannot  
18                   lead but has to follow?

19                THE CHAIRMAN:                   Ms. Yurkovich.

20                MS. YURKOVICH:                It is true that the direction  
21                   that we have had is, with the exception of Site C,  
22                   that new generation would -- and I must say with  
23                   the exception of Site C and the reinvestment in our  
24                   heritage assets, so the build-out of Mica 5 and 6,  
25                   Revelstoke unit 5, and also at a later date

1           Revelstoke unit 6. The desire is that we would  
2           complete those projects including, if we are  
3           successful with Site C, and the balance would be  
4           brought through the market through clean power  
5           calls.

6                        As I mentioned, we have had a number of --  
7           independent power has actually been part of the  
8           system for years prior to even the current  
9           administration or previous liberal governments. We  
10          have had some independent power in the system, but  
11          certainly over the last number of years, the level  
12          to which they are providing input into our system  
13          has grown to the place where we are now, which is  
14          edging up towards when these 2010 projects are in,  
15          we will be up close around 25 percent of the  
16          system.

17        THE CHAIRMAN:                        Supplementary here, is your  
18          direction from the government independent of the  
19          price of IPPs? In other words, are you constrained  
20          to buy expensive IPPs when something cheaper is  
21          available within your domain?

22        MR. REIMANN:                         I think Ms. Yurkovich caught  
23          it right that, with the exception of the heritage  
24          assets, which we continue any improvements in that,  
25          and so there's a number of projects in that.

1 Site C would be one of them. The remaining units  
2 at Mica Revelstoke are in there.

3 Beyond that, the direction from the  
4 government is originally contained in the 2002  
5 energy plan was that outside of those heritage  
6 facilities, we were to outsource and look for  
7 independent power producers to produce that energy.  
8 That was reaffirmed in the 2007 energy plan that we  
9 were still to build on that base and --

10 THE CHAIRMAN: And that direction was  
11 independent of price?

12 MR. REIMANN: Yes.

13 THE CHAIRMAN: Thank you.

14 Sorry, Mr. Atkins.

15 MR. ATKINS: I was disappointed to see or to  
16 hear that the options did not include geothermal  
17 and/or the repatriation of the Columbia River  
18 Treaty.

19 I understand that geothermal couldn't be  
20 considered because you have to wait for the private  
21 sector to bring it forward; whereas you do have the  
22 okay by the government to go ahead with planning  
23 for Site C. They didn't give you the go-ahead to  
24 plan for geothermal, and I was disappointed in  
25 that.

1                   Do you have a comment about that or is that  
2                   something that we just have to live with?

3       MR. REIMANN:                   We have looked at geothermal.  
4                   And, again, yes, we're not the investment vehicle  
5                   to look at independent power producer technologies.

6                   We do, as a technology, rather like  
7                   geothermal. If it can be proven out, it provides  
8                   capacity.

9                   It's probably the best experience we have  
10                  with geothermal in the province is the South Meagre  
11                  Creek project up in the Whistler region. And  
12                  that's been looked at since the '80s and most  
13                  recently in the last 10 years. And their drilling  
14                  program ultimately up there ran afoul the fault  
15                  lines and it wasn't just proven out to be feasible.

16                  So we've actually been working with the  
17                  government trying to see what sort of tenures could  
18                  be granted and how this industry possibly could get  
19                  kick-started.

20                  But at the end of the day, there's just a  
21                  huge amount of uncertainty about drilling holes  
22                  into the ground to try to discover this heat and  
23                  whether or not you could ever get the steam to come  
24                  back. And so with that degree of uncertainty, it's  
25                  just not a feasible option for us to count on.

1                   We've seen the one project looked at; for the  
2                   amount of money spent on it, nothings ever been  
3                   bid.

4       MR. ATKINS:                   Okay. I just have one more  
5                   question. I have a couple more, but I'll just go  
6                   with one.

7                   I think it was in 2006, 2007, BC Hydro came  
8                   out with five plans to meet energy needs over the  
9                   next 20 years. And they sound very similar to the  
10                  five scenarios that you have at the present moment.

11                  They went from including Site C and all the  
12                  dirty stuff that we could think of, which was  
13                  obviously the cheapest option, coal, oil, natural  
14                  gas, Site C, the whole works.

15                  And then they came up with what they said was  
16                  the cleanest option. And the cleanest option was  
17                  no Site C, no Burrard thermal, but enhanced  
18                  PowerSmart and a whole pile of other good things,  
19                  all green.

20                  And the difference in the price -- and this  
21                  was when Site C was going to cost less than  
22                  5 billion dollars -- the difference in the cost  
23                  between the dirtiest provision for electricity for  
24                  the next 20 years, and the cleanest, was  
25                  200 million dollars.

1                   And to think that you're going to flood the  
2 valley to save 200 million dollars is really  
3 disappointing.

4                   Is there any way that we can convince you  
5 that Site C is not the way to go?

6 THE CHAIRMAN:                   Ms. Yurkovich.

7 MS. YURKOVICH:                  I'm not exactly sure which  
8 document you're referring to. I do know, thinking  
9 back in recent history, we produced an integrated  
10 electricity plan in 2004, one in 2006, and then a  
11 long-term acquisition plan in 2008 that went before  
12 the Commission.

13                   So I'm not, I'm not really sure which  
14 document you're referring to when you're talking  
15 about five --

16 MR. ATKINS:                    I think it was the 2006  
17 document. I'll provide a copy for that -- for you  
18 later.

19 THE CHAIRMAN:                  Okay.

20 MR. ATKINS:                    Okay? Thank you.

21 THE CHAIRMAN:                  Thank you, Mr. Atkins.

22                   We have another intending speaker,  
23 Mr. Hadland.

24 MR. HADLAND:                   Yes, Randy Hadland,  
25 H-a-d-l-a-n-d.



1 I'm willing to stand in for a minute here,  
2 but my battery is going to die anytime, so I'm  
3 going to run out of my questions very quickly. But  
4 I'll start.

5 If I could ask Hydro just to look at their  
6 need for, purpose of, and alternatives to the  
7 project, Section 5-1, Introduction.

8 If you go to lines 27 through 31, over the  
9 last 7 years, BC Hydro purchased large quantities  
10 of intermittent clean or renewable energy resources  
11 such as run of river and wind. They have minimal  
12 dependable capacity. Intermittent resources are  
13 not dispatchable. That is, their electricity  
14 output cannot be controlled to respond to  
15 variations in customer demand.

16 So I just want to clarify that what you mean  
17 by that is that until you have their power within  
18 their system, it isn't dispatchable within your  
19 system?

20 MR. REIMANN: I think I understand the  
21 question.

22 THE CHAIRMAN: Then carry on, please.

23 MR. REIMANN: The -- when we look at the  
24 intermittent resources as they're characterize in  
25 the resource options report and in the EIS, it's

1 based on building the facility and capturing all  
2 the energy possible from them.

3 And what we try to do with our system is  
4 integrate them and follow their outputs by  
5 adjusting the hydro, so one goes up, we go down and  
6 vice versa. And how much ability do we have to  
7 cycle up and down and how quickly can we do it,  
8 there is potential to actually make these resources  
9 dispatchable, and primarily dispatchable down, in  
10 that if there's certain times when you don't want  
11 the energy, then you turn them off.

12 The impact of doing that is a pretty  
13 significant increase in the cost of them. And we  
14 have had some examples where operationally we start  
15 to have problems in the freshet periods.

16 We have a heavy freshet inflow with our own  
17 heritage hydro resources. And so the number of run  
18 of river resources, we have the same thing.

19 And as Dr. Shaffer was mentioning, there's  
20 times in the market that in the freshet period  
21 prices go negative, and so we're not able to dump  
22 it.

23 So we have had at times where we go back to  
24 the IPPs and said if we need to, we want to come  
25 back to you and get you to shut down because we

1 don't want to have to pay somebody to take the  
2 energy. And they found that. But what we end up  
3 with a take-or-pay contract and we're still paying  
4 for the energy.

5 MR. HADLAND: I believe I understand what  
6 your response was. It was, again, a little more  
7 than what I was looking for.

8 I guess the point I was making was that once  
9 you have that electricity output in the system, it  
10 is dispatched as well as Hydro is capable of doing?

11 THE CHAIRMAN: Mr. Hadland, I'm sorry, I'm  
12 having trouble hearing you. Could you speak more  
13 directly into the mic. Thank you.

14 MR. HADLAND: My question, then, is once  
15 Hydro has that electricity output in their system,  
16 it is dispatched as well as Hydro is capable of  
17 doing?

18 MR. REIMANN: The simple answer is we  
19 generally don't have dispatch agreements with them.  
20 We've tried to do some of this for the freshet, but  
21 generally, no, we --

22 MR. HADLAND: I'm not sure what you mean by  
23 a dispatch agreement. But if you are taking in  
24 power, then you are dispatching it as you are  
25 capable of doing.

1 MR. REIMANN: So we dispatch our system to  
2 absorb that energy.

3 MR. HADLAND yes.

4 MR. REIMANN: The intermittent resources  
5 operate as they would naturally produce power.

6 Mr. HADLAND: Thank you.

7 So if you have a significant number of  
8 intermittent clean or renewable resources such as  
9 run of wind -- run of river, wind, geothermal,  
10 small dam hydro, solar, tidal, etc, etc, etc,  
11 options feeding their power into the grid, there's  
12 a potential to dispatch that power more  
13 beneficially than you can with fewer and less  
14 diverse intermittent power sources.

15 THE CHAIRMAN: Sorry, sir, what was the  
16 question? If you have all these sources?

17 MR. HADLAND: You have all these sources,  
18 and they're all feeding into the system, is Hydro  
19 capable, then, of taking -- of dispatching those  
20 sources more easily once you have a disbursed and  
21 larger segment of intermittent power sources coming  
22 in?

23 THE CHAIRMAN: Sorry, I understand that.

24 Thank you.

25 Hydro.

1 MR. REIMANN: So the largest two resource  
2 options that we've seen bid in is wind and run of  
3 river. And they have different issues associated  
4 with them.

5 The issue we have with run of river is the  
6 energy coming in the freshet. And we don't have  
7 that issue to the same degree with wind.

8 The issue we have with wind is the volatility  
9 and how quickly it can move up and down. And so  
10 we've done the analysis on the amount of wind that  
11 we could integrate and how the system could  
12 respond.

13 It's probably better to have some of each.  
14 And that's what we've got.

15 Ultimately, at the end of the day, it becomes  
16 a question of what is the most cost-effective  
17 resource that can be purchased includes (sic) of  
18 the integration costs or the issue with absorbing  
19 freshet energy.

20 MR. HADLAND: Well, I want to get into what  
21 the different options that Hydro has ruled out in  
22 its processes.

23 But just for the purposes of this discussion,  
24 for water, for example, does Hydro keep -- water  
25 power, does Hydro keep record of the amount of

1 snowfall in the various areas where there might be  
2 small and run of river projects and determine from  
3 that and weather forecast when that flow might come  
4 so that it is more easily dispatchable?

5 MR. REIMANN: We mainly forecast our major  
6 basins and then -- the John Hart system on the  
7 Island. And we haven't gotten to the point where  
8 we're doing snow forecast, to my knowledge, at  
9 least. I'd have to check this with the operation  
10 folks.

11 I don't think we've gone to the subregions  
12 where we have IPPs. Albeit, as we get operational  
13 experience with them, we become more knowledgeable  
14 about when and how they react.

15 MR. HADLAND: Thank you.

16 And the same for wind, I presume. You are  
17 getting more windmills coming on stream. Are you  
18 examining weather forecasts to determine when large  
19 fronts are coming through and whether the wind  
20 power that's going to be from those projects is  
21 more easily dispatchable once it's in your system  
22 because you have held back in expectation of seeing  
23 that wind power come in?

24 MR. REIMANN: We have done studies on wind  
25 integration, and it's certainly true that

1 forecasting of wind to the extent that you can do  
2 that is beneficial. And so you can start to  
3 anticipate and not get caught out. We've looked at  
4 that and tried to see what sort of forecasting  
5 methodology would be the best to do it. And we  
6 tried different approaches to it. And that's all  
7 inclusive into the 10 percent cost that we put in  
8 for wind in terms of how much of our system we need  
9 to hold back to respond to the variability.

10 MR. HADLAND: Thank you. This question  
11 came up earlier this morning, and that was the  
12 question of what is the maximum amount of  
13 intermittent clean or renewable resources that  
14 Hydro could manage with the existing grid. And I  
15 understood your response to be 2,000 megawatts. Is  
16 that ...

17 THE CHAIRMAN: Is that correct?

18 MR. REIMANN: This is actually opportune.  
19 I have one of my technical people watching in the  
20 backroom, and they corrected me on this. The  
21 actual number that we've estimated for wind  
22 integration is 3,000 megawatts, not 2,000.

23 MR. HADLAND: Okay. And that's just wind?

24 MR. REIMANN: Yes.

25 MR. HADLAND: I'm sorry.

1 MR. REIMANN: Yes, yes.

2 MR. HADLAND: Should I pose that as a  
3 question? If -- you're saying now that it's 3,000  
4 megawatts for wind, is there an extension of that  
5 limit for hydropower, small hydropower or -- to the  
6 extent the tidal is intermittent? Is there an  
7 extension for -- of that amount for tidal power?

8 MR. REIMANN: Different issues for  
9 different resources. And so maybe the simplest  
10 thing is to reiterate what we said earlier is that  
11 integration of wind or other resources, we didn't  
12 see a hard cap that would cause us any problems in  
13 the alternative portfolio. So it really wasn't an  
14 issue in the portfolios were ran. But in terms of  
15 the integration issue of wind, is again, the  
16 ability to deal with the volatility. And that's  
17 one issue.

18 The problem we have with run of river is that  
19 we have a hard time absorbing the freshet energy.  
20 But that can be handled through the calculations  
21 and the analysis in terms of how much of that  
22 energy is firm. And so it starts to come into the  
23 economics.

24

25



1 THE CHAIRMAN: Mr. Hadland, do you have  
2 further questions?

3 MR. HADLAND: I have quite a few,  
4 Mr. Chairman. Quite a few, Mr. Chairman, but my  
5 battery is now down to 10 percent here. Is there  
6 any place a person can plug one in up here?

7 THE CHAIRMAN: Not where you are, I don't  
8 think.

9 MR. HADLAND: No. How are you doing?  
10 Okay. I think it would be very handy if you  
11 could ask the hotel to put in a plug up here for  
12 people who have unfortunately put their information  
13 and questions on their computers.

14 THE CHAIRMAN: Perhaps we could give you  
15 some time to recharge your battery and hear the  
16 gentleman who is having trouble getting his slides  
17 up on the screen.

18 MR. HADLAND: That would be good. Thank  
19 you very much, sir.

20 THE CHAIRMAN: Thank you.

21 MR. HOWARD: Thank you, Mr. Chairman. I  
22 am pleased to advise that I will shortly be able to  
23 put the section I want to refer to up on the  
24 screen. I'll be -- this is from the 2013 IRP.  
25 I'll be turning to that shortly, but I wanted to

1 ask a couple --

2 THE CHAIRMAN: Can I ask you also to lean  
3 into the microphone. I'm having a little trouble  
4 hearing you.

5 MR. HOWARD: And I should also identify  
6 myself again I guess for the transcript. Tim  
7 Howard on behalf of the PVA, and I will endeavour  
8 to speak slowly.

9 MR. WALLACE: Mr. Chairman, Mr. Chairman,  
10 if I may interrupt for a moment. Apparently the  
11 IRP is not part of the record at this point.

12 THE CHAIRMAN: I didn't hear you either.

13 MR. WALLACE: Oh, sorry. Apparently the  
14 IRP is not part of the record at the moment, and it  
15 should be made such. So this is what is being  
16 referred to here. But it isn't part of the  
17 Commission's record, and it should be put on our  
18 website and identified properly as well.

19 THE CHAIRMAN: Thank you.

20 MR. HOWARD: Yes, Mr. Wallace, would you  
21 like us to take that step or can the Commission  
22 staff take care of that?

23 MR. WALLACE: No, we will deal with that.  
24 I just wanted to identify the fact that it was not  
25 yet on the record, but we will mark it and add it

1 to the website.

2 MR. HOWARD: I would just like to ask some  
3 questions to try to get a picture of the total  
4 amount of non-firm hydro energy capability that is  
5 potentially available to BC Hydro.

6 Now, can you confirm for me in the 2013 IRP,  
7 in Mr. -- Dr. Shaffer referred to this. There was  
8 an estimate of 2,100 gigawatt hours of non-firm  
9 from the IPP sector for 2017. Can any of you  
10 confirm that?

11 MR. REIMANN: Subject to check, I think the  
12 number's in the order of 1,500 gigawatt hours, I  
13 believe.

14 MR. HOWARD: Well, I can give you the page  
15 reference which is IRP page 2-24. And so perhaps  
16 that is something that could be confirmed. Do you  
17 have that document available to you? So that was  
18 chapter 2, page 2-24.

19 THE CHAIRMAN: While he's finding that, I  
20 invite the audience to note the vast numbers of  
21 binders up here behind the Hydro tables. This is  
22 the 27,000 pages of material that your panel was  
23 required to read since August.

24 Mr. Howard, please continue.

25 MR. HOWARD: I don't know whether

1           condolences or a hug or what's required after that  
2           comment.

3       MR. REIMANN:                    So I see that reference.

4       MR. HOWARD:                    You can confirm that for me?

5                    Pardon me, you can confirm that?

6       MR. REIMANN:                    Yes.

7       MR. HOWARD:                    Thank you.

8                    Now, turning to the heritage assets, the  
9           evidentiary update then as well, the IRP, I believe  
10          it's the chart that immediately precedes the IPP  
11          number there, it identifies a range of energy  
12          capability for the heritage hydro generation  
13          ranging from 43,000 to 56,000 gigawatt hours; is  
14          that correct.

15       MR. REIMANN:                    That is correct. I think we  
16          have the same graph in one of the IRs. Do you know  
17          which one, Mike?

18       MR. HOWARD:                    It's at the evidentiary  
19          update at page 18 as well.

20       THE CHAIRMAN:                  Mr. Howard, if you're just  
21          quoting their stuff, let's assume that it's there.  
22          You're doubtless moving towards some point. What  
23          is it.

24       MR. HOWARD:                    I am indeed, but I do note  
25          that the witness did need to confirm one of the

1 facts, so I'm simply -- I wish to ensure that they  
2 are in agreement with the numbers I'm providing in  
3 fairness to the panel. And my --

4 MR. REIMANN: So that same figure is on  
5 page 18 of the evidentiary update.

6 MR. HOWARD: Thank you. So subtracting  
7 the annual average water capability which Hydro  
8 uses for planning purposes of 48,500 gigawatt hours  
9 from the maximum high water year potential of  
10 56,000 gigawatt hours, you're left with about 8,000  
11 gigawatt hours in non-firm potential from the  
12 heritage hydro generation assets; is that correct?

13 MR. REIMANN: So when a high-water  
14 condition or the highest that we've seen, we could  
15 get up to that level of 56,000. But I would  
16 observe, again, that the self-sufficiency  
17 requirement has us to rely on the heritage system  
18 for average water.

19 MR. HOWARD: Yes. And my questions are  
20 directed towards the non-firm capabilities. So if  
21 you take that IPP non-firm and the heritage hydro  
22 generation non-firm and combine them, you've got a  
23 potential of about 10,000 gigawatt hours of  
24 non-firm hydro electric energy located within the  
25 province; is that correct?

- 1 MR. REIMANN: In some years it could be  
2 that high, yes.
- 3 MR. HOWARD: Okay. And those are all from  
4 projects that are clean, is that correct, by the  
5 definition used in the *Clean Energy Act*?
- 6 MR. REIMANN: Yes.
- 7 MR. HOWARD: And they're all located  
8 within the province?
- 9 MR. REIMANN: Yes.
- 10 MR. HOWARD: Now, I take it, and this is  
11 perhaps to state the obvious, that non-firm energy,  
12 it wasn't factored into BC Hydro's load resource  
13 balance or LRB for purposes of the Site C  
14 submission. Am I correct?
- 15 MR. REIMANN: It was factored into the  
16 analysis, but it didn't form part of the energy  
17 that we would plan to for firm energy.
- 18 MR. HOWARD: Thank you. And the  
19 difficulty is that it's non-firm, that's the reason  
20 why you can't rely on it in terms of looking at  
21 your firm capacity going forward?
- 22 MR. REIMANN: Agreed.
- 23 MR. HOWARD: Okay. Now, I'd like to just  
24 look at the options for backing up that non-firm  
25 energy. I take it that the Site C project itself

1 is a -- one of its values is that it provides firm  
2 capacity that can be used to back up the system as  
3 a whole. I may not have phrased that exactly  
4 right. But one of the values of Site C is that it  
5 offers firm capacity?

6 MR. REIMANN: Yes. In terms of firm or  
7 dependable capacity --

8 MR. HOWARD: Yes.

9 MR. REIMANN: 1,100 megawatts and 5,000 --  
10 5,100 gigawatt hours of firm energy.

11 MR. HOWARD: Now, when Site C comes online  
12 let's say 2024, in a high-water year, that  
13 potential 10,000 gigawatt hours of non-firm energy  
14 from the IPP and heritage hydro generation, will  
15 that be surplus energy once Site C is online?

16 MR. REIMANN: We would plan the system  
17 under the current **Clean Energy Act** requirements so  
18 that in any year if we had a high-water year, we  
19 would be surplus that amount.

20 MR. HOWARD: If I understand your answer  
21 correctly, is your answer, yes, that 10,000  
22 non-firm energy would be surplus?

23 MR. REIMANN: We would see that surplus in  
24 a high-water year for that to occur.

25 MR. HOWARD: Since it would -- and would

1           you -- and what would you do with that surplus?

2           You would sell it on the spot market?

3       MR. REIMANN:                   And there comes the fly in  
4           the ointment. The problem is is when you have  
5           high-water years as we experienced in the last, I  
6           think, two years ago, we end up getting a huge  
7           amount of energy in the freshet period. And we now  
8           have the run of river IPPs in our system as well,  
9           and the markets have a surplus in that same period.  
10          And as Dr. Shaffer noted, they've got wind  
11          resources that are being built particularly in the  
12          mid-Columbia's area that tend to have most of their  
13          output also in the freshet period. And so what we  
14          end up seeing is a huge amount of surplus energy in  
15          the freshet that we can neither store in our dams  
16          nor can we find much value in the markets. And at  
17          some point it just gets spilt.

18       MR. HOWARD:                   So it's not just that you  
19          have to sell; some instances you just spill it, you  
20          don't actually harness the energy potential of that  
21          water at all?

22       MR. REIMANN:                   Yeah, I mean, depending on  
23          the degree. But certainly if you're at the top end  
24          where you're quoting the 56,000, our ability to  
25          absorb that energy into the system is pretty much



1 nil. So we just can't take advantage of it. It  
2 comes at a time when there's no load to consume it,  
3 there's no market to sell it into and no capability  
4 in the dam to store it.

5 MR. HOWARD: Okay. And I take it that the  
6 characteristics of Site C certainly wouldn't solve  
7 that problem, am I -- Site C is another impoundment  
8 dam that would exhibit the same characteristics.  
9 It doesn't solve the problem of there being ...

10 MR. REIMANN: As a general comment, Site C  
11 is the third dam on the river that would generate  
12 based on what is able to be stored in the Williston  
13 Reservoir. So to the extent that we have any  
14 ability -- and what ability we have in the  
15 Williston Reservoir, Site C would just multiply  
16 that out one more time for the ratio of its output  
17 to the total of the system.

18 MR. HOWARD: Okay. Now, am I correct in  
19 understanding that one of the comparative  
20 advantages of a thermal asset is it's a  
21 dispatchable resource, and so it would enable you  
22 to, in a high-water year, to actually make better  
23 use of that non-firm energy from the IPP and  
24 heritage hydro generation sectors?

25 MR. REIMANN: I think that's generally

1 right. If you have thermal resources, they can be  
2 dispatched off, particularly in the freshet. And  
3 that for -- to the extent that we can build gas  
4 fire generation into the system has been taken into  
5 account in the portfolio analysis. It gets  
6 dispatched that way.

7 MR. HOWARD: Now, I'd like to now move to  
8 section 6.2.2 of the 2013 IRP. And I'm  
9 wondering -- unfortunately, the most relevant  
10 section is not shown on the screen. But perhaps  
11 we'll just scroll through it. So if I could ask  
12 you simply to note there that Hydro interprets the  
13 CEA 93 percent clean or renewable objective which  
14 uses the phrase:

15  
16 "And to generate electricity  
17 at least 90- --"

18  
19 Pardon me:

20  
21 "To generate electricity, at  
22 least 93 percent of the  
23 electricity."

24  
25 I don't know whether that's actually an

1 error. In any event, as applying to the actual  
2 output of generation of facility as opposed to the  
3 plan reliance on the facilities.

4 So is the point there in simple terms that in  
5 Hydro's view, the objective is to achieve the  
6 93 percent clean target with respect to what is  
7 actually generated in a given year rather than in  
8 relation to the generation capability that is  
9 housed in the province?

10 MR. REIMANN: Just, one observation; I see  
11 there that you're dealing with the August 2013  
12 version which was a draft. And that's been  
13 replaced with a November 2013 version. But for the  
14 point, the wording is pretty much the same.

15 Yes, repeating what we talked about earlier  
16 today is that we viewed the 93 percent as of what  
17 was actually generated.

18 MR. HOWARD: Okay. Now, if I could ask  
19 the staff please to scroll down. There are A, B  
20 and C scenario that Hydro identified. And am I  
21 correct that in essence you looked at three  
22 different possible interpretations of what that  
23 clean energy requirement could require? And in  
24 general terms, that's what's done here?

25 MR. REIMANN: Yes, we looked at three

1 alternatives.

2 MR. HOWARD: Okay. Now, if I could ask  
3 the Commission staff to scroll down a little  
4 further so we can see C and the comment that  
5 follows. Oh, right. Okay.

6 So, sir, pausing there, C strikes me as being  
7 an approximation of the type of portfolio that  
8 Dr. Shaffer has examined in his report; that is,  
9 reliance on significant amounts of natural gas fire  
10 generation as firm backup with the intention to  
11 displace that natural gas fire generation with  
12 market energy import to meet load during  
13 operations.

14 Is C the closest -- the scenario Hydro looked  
15 at that that is closest to the scenario that  
16 Dr. Shaffer is advocating for?

17 MR. REIMANN: Yes.

18 MR. HOWARD: Okay. And I guess what we  
19 could do is add to that, the sentence there states:

20  
21 "Intention to displace natural gas  
22 fire generation with market energy  
23 import."

24  
25 We could add to that, and non-firm hydro

1 energy from the IPP and heritage generation assets.  
2 Isn't that correct?

3 MR. REIMANN: Generally, I think that's  
4 right. I guess I would observe that we already  
5 have gas fire generation in the system in the form  
6 of the Island cogeneration or Island generation  
7 project. That's got some 2,1-, 2,200 gigawatt  
8 hours of energy reliance. And we also -- we  
9 already currently have that thing off and  
10 dispatched off and absorbed the non-firm IPP clean  
11 energy.

12 With respect to the heritage hydro, if we  
13 were in an above average water year, we would  
14 certainly look to consume that energy first and  
15 make economic use of it if we could.

16 MR. HOWARD: Okay. Thank you. And if I  
17 could ask the Commission staff to scroll down  
18 further. And if you could stop there. Sir, you  
19 see there the IRP goes on to conclude that:

20  
21 "BC Hydro ruled out approach C  
22 since this would defeat the intent  
23 of CEAA in setting out the  
24 electricity self-sufficiency  
25 requirement and the 93 percent

1 clean or renewable objective."

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And I'd like to deal with each of those criteria separately. The self-sufficiency requirement and the 93 percent clean and renewable objective. Can you or anyone else on your panel explain how it is that Hydro, owning and having the rights to the electricity from single cycle gas turbines located in the province available as firm capacity would not meet the electricity self-sufficiency requirement of the **Clean Energy Act**?

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MR. REIMANN: I guess -- let me re-walk the discussion we had earlier today and see if I can repeat it on a consistent basis. But, yeah, we identified this as an option early on that what one could do is build nothing but the cheapest gas plants available out there and know that they could probably run for 90 percent of the time if they're required to, and you could then import from the market and not have a problem with the 93 percent clean. And we could have met all of our needs going forward for quite a long time with this sort of an interpretation of the rules. And that, we found, was completely inconsistent with what the

1 government was trying to achieve in the **Clean**  
2 **Energy Act** where our understanding is the 7 percent  
3 would provide us some headroom to help us out with  
4 capacity and to integrate resources. But we were  
5 to develop the clean energy industry. And we've  
6 gone through several iterations of the IRP and  
7 drafted different versions that have been in front  
8 of the government. And ultimately they've approved  
9 it, and said, yes, they agree that our  
10 interpretation is correct.

11 THE CHAIRMAN: Mr. Howard, it strikes me  
12 that you're bumping up against the BC government's  
13 policy limits which we all understand to have  
14 substantially constrained Hydro. But are you going  
15 to suggest that they be changed or where are you  
16 leading with this?

17 MR. HOWARD: Thank you, Mr. Chairman. It  
18 is our view, and I think it's a reasonable one,  
19 that the **Clean Energy Act** is far from crystal clear  
20 as to what the self-sufficiency -- well, there's a  
21 degree of clarity on self-sufficiency requirement,  
22 and I do wish to return to that. But the  
23 93 percent clean energy requirement is not so  
24 clear. And what I want to explore is the level of  
25 detail and work that went in to supporting that

1 conclusion. Because that conclusion is the pivotal  
2 conclusion. If it went another way, we might not  
3 even be here because there would be no case for  
4 need for Site C. And what I want to explore is the  
5 detail of assessment and evaluation that went into  
6 that conclusion. And I think that's a helpful area  
7 to explore.

8 THE CHAIRMAN: Okay. Please proceed.

9 MR. HOWARD: Thank you.

10 Now, sir, I take it from your answer that the  
11 real -- Hydro's real concern is 7 percent headroom;  
12 it's not the self-sufficiency requirement? Because  
13 if you own the SCGT, and they're located in BC, and  
14 you have the right --

15 THE CHAIRMAN: You'd better slow down.

16 MR. HOWARD: Pardon me. Getting excited.

17 And you have the right to every gigawatt hour  
18 of energy that comes out of that SCGT, that would  
19 meet the intent and indeed the letter of the  
20 self-sufficiency requirement. Do you agree with me  
21 on that?

22 MR. REIMANN: No.

23 MR. HOWARD: And why not?

24 MR. REIMANN: Well, I think I can just  
25 reiterate what I just said about --



1 MR. HOWARD: Well, let me try this:  
2 Section 6.2 of the **Clean Energy Act**, I take it  
3 you're familiar with it?

4 MR. REIMANN: Yes.

5 MR. HOWARD: And you're familiar with it  
6 because it states the self-sufficiency requirement;  
7 it provides the standard that defines  
8 self-sufficiency requirement?

9 THE CHAIRMAN: Do you have that in front of  
10 you?

11 MR. REIMANN: I do.

12 THE CHAIRMAN: Could you read that into the  
13 record for us.

14 MR. REIMANN: **Clean Energy Act** section 6.2:

15

16 "The authority must achieve  
17 electricity self-sufficiency by  
18 holding, by the year 2016 and each  
19 year after that, the rights to an  
20 amount of electricity that meets  
21 the electricity supply obligations  
22 solely from electricity generating  
23 facilities within the province."

24

25 Under 6.2:

1

2

"(a) assuming no more in each year

3

than the heritage energy

4

capability, and (b) relying on

5

Burrard Thermal for no energy and

6

no capacity except as authorized by

7

regulation."

8

9

THE CHAIRMAN:

Thank you.

10

MR. HOWARD:

Sir, now that you've had a

11

chance to refresh yourself on 6(2). I'm going to

12

put it to you again: if Hydro owned the rights to

13

all the electricity to be generated by a backup

14

thermal system, by SCGTs, such that taken into

15

account the heritage energy capability and the IPP

16

contracts, the other sectors that you rely on and

17

the thermal backup, it would meet that -- it would

18

meet the letter of that self-sufficiency

19

requirement?

20

MR. GODSOE:

Mr. Chairman, we are getting

21

into legal interpretation issues here, which I

22

think are more appropriately handled in the written

23

submission phase of the hearing.

24

THE CHAIRMAN:

I think we have heard from

25

Hydro orally that they do not feel that they can

1 take a more aggressive reading of that section.

2 MR. HOWARD: Indeed, Mr. Chairman, we have  
3 heard from them. And my point is a simple one;  
4 that their position with respect to  
5 self-sufficiency requirement is at odds with the  
6 plain language of the section itself.

7 Now, I appreciate Mr. Godsoe is pointing out  
8 that we can only go so far in statutory  
9 interpretation here together. And I am content to  
10 leave it at that point for now.

11 THE CHAIRMAN: Thank you.

12 MR. HOWARD: Sir, I'd like to turn to the  
13 second aspect.

14 I've never used a laptop so much in  
15 questioning before. It's a novel proposition.

16 The second aspect of that conclusion there,  
17 which is that the option C which is the closest  
18 option to the portfolio addressed by Dr. Shaffer  
19 would defeat or not meet the intent of the  
20 93 percent clean or renewable objective. Now, can  
21 you please identify the studies that were done, the  
22 work that was done, the analysis performed by  
23 BC Hydro to support that latter conclusion? And if  
24 they're in the record, please provide us with the  
25 exhibit reference.

1 MR. GODSOE: Mr. Chair, my panel is in  
2 desperate need of a break. I don't know if this is  
3 an opportune time to break, but ...

4 MR. HOWARD: I only have about two more  
5 questions, Mr. Chairman, so we can wrap the whole  
6 evening up. This is my last point to question on.

7 THE CHAIRMAN: You may not be the only one  
8 with questions.

9 Sorry, you would like a break for 10 minutes?  
10 Then let's take a break for 10 minutes.

11 (Brief break)

12 THE CHAIRMAN: Now we are reconvening.  
13 We're back in session. Thank you.

14 MR. HOWARD: If I could ask panel staff to  
15 bring the exhibit back up. Is someone there?

16 Thank you.

17 THE CHAIRMAN: Carry on.

18 MR. HOWARD: Thank you, Mr. Chairman.

19 Sir, I trust everybody is more comfortable.  
20 We left -- pardon me. We left off with my question  
21 as to asking you to identify the studies and  
22 analyses that were prepared by BC Hydro to support  
23 the conclusion that the approach C would defeat the  
24 intent of the 93 percent clean or renewable  
25 objective.

1 MR. REIMANN: I guess I would observe this  
2 in a couple ways: One might be to understand the  
3 consequence I think similar to what you've been  
4 doing is we can look at this by inspection and say  
5 if I were to take these things literally by the  
6 letter I could interpret it this way, and then my  
7 plan would become let's build gas, let's count on  
8 it for 90 percent, let's not run it, let's import.  
9 And is that what we were looking to do. And so  
10 it's pretty obvious that we just looked at Burrard.  
11 We've been down that path of having a thermal  
12 facility sit there and not be counted on but relied  
13 on and to import electricity instead. And Burrard  
14 is no longer available to us. So similar with this  
15 interpretation of this, we looked at it, we  
16 realized you could read the words in that way. But  
17 if you look at the 16 energy objectives and what  
18 the **Clean Energy Act** was looking for us to do,  
19 develop a clean energy industry, that this didn't  
20 meet it. And we've confirmed that with the  
21 government to say, here's how we think we should  
22 interpret it and IRP has approved.

23 MR. HOWARD: Sir, when you say we've  
24 confirmed that with government, I take it you're  
25 referring to by virtue of approving the IRP, you

1 take that confirmation of this interpretation?

2 MR. REIMANN: Yes. I'd also say that we do  
3 consultation on the IRP as we go. And we have the  
4 Ministry folks sitting with us. And as we go  
5 through and look at these different issues. So  
6 they're in discussions with us. But ultimately,  
7 yes, the approving is by having submitted the IRP  
8 and having it recommended for and approved by the  
9 Cabinet.

10 MR. HOWARD: Sir, I was interested, you  
11 began your earlier response by saying we could, you  
12 know, interpret this by the letter and could look  
13 at this and say we can build gas turbines. So do I  
14 take from that that it's your view that on a  
15 literal or black letter interpretation of the **Clean**  
16 **Energy Act**, option C could fit the requirements of  
17 the Act, taken on a black letter law basis?

18 MR. WALLACE: Mr. Chairman --

19 THE CHAIRMAN: Again, I think we're getting  
20 into issues of statutory interpretation here which  
21 are not well dealt with by a panel including  
22 engineers.

23 If I may say, I have had some experience in  
24 government. And while the government may  
25 legislate, it also directs. And a minister may

1 tell his deputy minister or his Crown corporations  
2 that this is how it is to be interpreted, this is  
3 what you're to do. This is entirely normal. So  
4 I'm a bit troubled by where you're going here. It  
5 seems to me that you're inviting Hydro to really  
6 try it on with the government when your complaint  
7 is with the government in the first place; is that  
8 right.

9 MR. HOWARD: Not -- allow me to say this,  
10 Mr. Chairman, and thank you for raising it, there's  
11 a distinction between compliance with statutory and  
12 regulatory requirements. Those are the law. But  
13 where Hydro is taking a position with respect to  
14 what it must do to comply, that is not in fact  
15 grounded in the statute. It's instead grounded in  
16 a more generalized sense of what the objectives  
17 are. I think this panel can legitimately and  
18 should legitimately inquire into that discretionary  
19 zone. That's what I want to explore. That's what  
20 I'm trying to explore. It may not be that this  
21 panel can draw conclusions and make recommendations  
22 that require statutory amendment. But this panel  
23 can draw conclusions and make recommendations that  
24 are consistent with the actual stated language of  
25 the Act. And that's the direction I'm headed in.

1 THE CHAIRMAN: I understand your argument.

2 MR. HOWARD: Yes.

3 THE CHAIRMAN: Carry on.

4 MR. HOWARD: Now, sir, did Hydro -- I  
5 mean, option C contemplates you're going to have  
6 SCGT facilities located somewhere in the province  
7 and they're going to be running on a backup basis  
8 and they're going to be supporting the non-firm and  
9 the firm hydro resources. Did Hydro model  
10 scenarios? Did you model -- we're going to do two  
11 SCGTs close to the Lower Mainland base load, we  
12 will model them running for 1 percent of the year,  
13 2 percent of the year, 30 percent of the years,  
14 what are the emissions? Did you do any of the  
15 modelling to get a sense of how much of that  
16 7 percent headroom you'd be using up?

17 MR. REIMANN: I guess I have a couple  
18 different answers to that. One would be that I  
19 don't think the analysis for modelling is  
20 substantially different than what we had seen with  
21 Burrard, for one. The other is that we -- we have  
22 not gone into a detailed modelling of what would a  
23 system look like if you're to build a whole bunch  
24 of gas capacity and then not run it. And so what  
25 does that look like? I mean, we've given some



1 thought to it, detailed analysis. Sort of things  
2 that come to my mind are operational studies. And  
3 so how often would the gas turbines have to run?  
4 And so -- let me just jump to the evidentiary  
5 update for a minute.

6 Or no, sorry, this is in the EIS section 5,  
7 page 554. I mean, we looked at what the headroom  
8 was and, you know, how much gas could you build  
9 into the system. And I mean, if you were to build  
10 it and rarely count on it, you could use the  
11 gigawatt hours that are there to build a huge pile  
12 of gas turbines. You could build 2,000 megawatts  
13 into the system.

14 And so then you start getting into the  
15 questions, well, so how well does the market  
16 actually perform and how much transmission access  
17 do you have to it and could always rely on the  
18 market to get you all of that energy? Or at some  
19 point do you start becoming uncomfortable about it  
20 and do you start having operation problems with the  
21 reliability, stability of the system?

22 And those take complex operational studies  
23 that actually my group doesn't do but other parts  
24 of Hydro do. The other -- you start getting into  
25 issues of contracting of gas. When you start

1           having the ability to run gas and start contracting  
2           for a couple thousand megawatts of gas, and it's  
3           bought, now you have to turn around and remarket  
4           it. And so what's the cost of the pipe, what's the  
5           cost of the remarketing, and what are you actually  
6           doing to the gas market, and are people going to  
7           start anticipating what you're doing? You start  
8           looking at premiums.

9                        So there becomes all sorts of operational  
10           issues if you want to start building a whole bunch  
11           of gas and never run it.

12                       Now -- but I come back to it again is we  
13           looked at the words and said you know what, just  
14           looking at those two clauses, one could interpret  
15           those. But we thought that was inconsistent. And  
16           so we put it out, we laid it out in detail and  
17           said, like, what is this going to be, do we want  
18           this gas future that's not operated?

19                       And I guess at the end of the day I observed  
20           that the way the **Clean Energy Act** is written is  
21           that we submit our integrated resource plan to the  
22           government for approval. And they get first kick  
23           at it because they want to know that the things  
24           that we're doing are right. And then they approve  
25           the plan. So I'm -- to me that's pretty clear

1           then. We've given them an interpretation. We show  
2           them the plan and the actions that we plan to take.  
3           And they've said, yes, that's what we want to do.

4       MR. HOWARD:                       We are circling back to a  
5           place that I'm actually not asking questions about,  
6           which is the government policy. What I want to --  
7           you just noted that you could do detailed  
8           operational plans. I take it, sir, there were no  
9           detailed operational plans prepared to look at  
10          option C scenarios; is that correct?

11                       You're nodding. Is that a yes?

12       MR. REIMANN:                    It failed before we needed to  
13          get into operational model, so we did not undertake  
14          those detailed studies. We can see problems, but  
15          it didn't need to go there.

16       MR. HOWARD:                    Thank you. Now, did you --  
17          or to your knowledge, and this is directed to  
18          everyone on the panel because it may be you're not  
19          the best person to answer it, but to your  
20          knowledge, did BC Hydro initiate any discussion  
21          with the provincial government about the  
22          feasibility of designating fully offset gas thermal  
23          facilities as clean? And by "fully offset" I mean  
24          facilities for which there's a hundred percent  
25          greenhouse gas emission offsets purchased.

1 MR. REIMANN: So within the Act, there's a  
2 definition of -- and I guess I'd have to look for  
3 the reference if I need to. But there is a  
4 definition of what clean resources are, and that  
5 didn't include thermal resources with a hundred  
6 percent offsets to my knowledge.

7 MR. HOWARD: And so let me ask you my  
8 question again. To your knowledge did anyone at  
9 BC Hydro engage with the provincial government  
10 about a potential amendment to that regulation to  
11 have fully offset thermal facilities designated as  
12 clean?

13 MR. GODSOE: Mr. Chairman, I do object to  
14 this question. We have a clear definition in the  
15 **Clean Energy Act** in section 1, and that's the  
16 definition that we have to work with. I don't see  
17 the relevancy of this question.

18 THE CHAIRMAN: Oh, I see the relevancy to  
19 the question all right, but I am worried about its  
20 propriety and at about, if you will, discussions  
21 between Hydro and its political owner which are a  
22 little bit in for a dig.

23 Suppose the answer were no, what then?

24 MR. HOWARD: Well, let's find out.

25 Is the answer no, sir.

1 THE CHAIRMAN: I'm sorry, I'd like to rule  
2 that question out of order.

3 MR. HOWARD: Mr. Chairman, there has been  
4 discussion today of the discussions that Hydro has  
5 received from the government. We've just heard  
6 that outside the formal IRP document, Hydro engages  
7 with government all the time. Today has been  
8 replete with references to Hydro receiving  
9 direction from government. And with all due  
10 respect, I think my question is -- falls squarely  
11 within the ambit of that evidence. I'm asking,  
12 what kind of conversations have you had. There's  
13 no privilege that attaches to those discussions.

14 THE CHAIRMAN: Mr. Godsoe.

15 MR. GODSOE: Well, Mr. Chairman, I think  
16 you have it right. So if the answer is yes or no,  
17 there's nothing I would submit that this panel can  
18 do with that. There's a definition section 1 of  
19 the **Clean Energy Act** that clearly does not include  
20 natural gas fire generation with or without  
21 offsets.

22 THE CHAIRMAN: You're making, I think, a  
23 valuable point which is that Hydro ought to be  
24 pushing the limits, doing everything that is  
25 rational within the law as they understand it, the

1 directions that they've been given. Where we're  
2 going next, though, is the question of overturning  
3 energy policy or changing energy policy in the  
4 province, which is not something that the panel can  
5 make recommendations on. And so I'm coming back to  
6 the terms of reference of this panel which have to  
7 do with assessing Site C and its alter answers and  
8 so on.

9 And I think you've made a very good point  
10 about there may be some alternatives particularly  
11 with respect to thermal resources that have not  
12 been pushed to the limit.

13 Is that -- have I conceded your point?

14 MR. HOWARD: You -- that is an interesting  
15 question to receive from the Chair of the panel. I  
16 believe you have correctly identified the nub of my  
17 point, yes.

18 And so if I may, I have just one further  
19 question which I hope is not a step too far. And  
20 it is this:

21 Sir, can you confirm that the regulations  
22 under the **Clean Energy Act** have already been  
23 amended once to remove natural gas fire generation  
24 for LNG facilities from the requirement of clean  
25 energy generation?

1 MR. REIMANN: Yes.

2 MR. HOWARD: Those are my questions.

3 Thank you for your patience, and for your patience  
4 as well, panel Members.

5 THE CHAIRMAN: Thank you very much. You've  
6 made some interesting points.

7 We have I believe Mr. Hadland and Mr. Koechl  
8 and the panel.

9 MR. HADLAND: Mr. Chairman, as I mentioned  
10 I have quite a few questions. I'm happy to go if  
11 you want to continue now.

12 THE CHAIRMAN: Well, I'm just wondering  
13 here. It's been a long day. And I don't think we  
14 should take too much longer. Can you perhaps hit  
15 the most important of your questions?

16 MR. HADLAND: Well, Mr. Chairman, we've  
17 been at this for 40 years, as I mentioned earlier.  
18 They're all important. Every one. I will try.

19 I guess my first question is going back to  
20 what I was talking about before. And that is the  
21 integration of some of the renewables into the  
22 system. You said that there was an analysis  
23 showing the wind integration limit could increase  
24 by 900 megawatts with the addition of this proposed  
25 project. This afternoon you mentioned that.

1 MR. SAVIDANT: That's correct. It's in  
2 section 7 of the EIS.

3 MR. HADLAND: It is section 7 of the EIS?

4 MR. SAVIDANT: It's provided in section 7.  
5 I can give you a more specific reference if you'd  
6 like.

7 MR. HADLAND: Yes, please. Yeah.

8 MR. SAVIDANT: It's section 7.4.3 page 7-22.

9 MR. HADLAND: Page 7-22?

10 MR. SAVIDANT: Yeah, that's where the  
11 section starts. The 900 megawatt reference is on  
12 7-23.

13 MR. HADLAND: Okay. Now, that's the  
14 reference, but that's not the actual study?

15 MR. SAVIDANT: No.

16 MR. HADLAND: Is that study available and  
17 can we have a look at it?

18 MR. SAVIDANT: It's a -- what these studies  
19 are, they're very preliminary pieces of work.  
20 We're still getting to the point where we  
21 understand these things. In general -- sorry, just  
22 let me ... We can look into providing that, but  
23 I'm not sure that study has been published in a way  
24 that we can provide.

25 MR. HADLAND: Okay. Thank you. I guess it



1 would be here tomorrow if that was possible. Thank  
2 you.

3

4 **UNDERTAKING 4: Provide the study regarding the**  
5 **900 megawatt reference in section 7.4.3, page 7-23**  
6 **of the EIS**

7

8 MR. HADLAND: So my earlier reference is  
9 back at the introduction of chapter 5. If you can  
10 go to line 34 through 39. And it says to address  
11 growth in the demand for dependable capacity in  
12 recent years, Hydro has benefited from being able  
13 to install additional generating units at each of  
14 its two -- I'm sorry -- at each of its two heritage  
15 hydroelectric facilities which is Mica and  
16 Revelstoke.

17 And I'm just wondering if Hydro is giving the  
18 impression that those are the only two heritage,  
19 so-called heritage hydroelectric facilities. But  
20 that's not the case; right? Williston is  
21 considered a heritage hydroelectric facility?

22 MR. REIMANN: Agree. Yes.

23 MR. HADLAND: Okay. And --

24 MS. YURKOVICH: Maybe just to clarify,

25 Revelstoke and Mica were built with four units with

1 the capacity to install an additional two units at  
2 a later date, which is why those were referenced  
3 because those -- those add -- those two -- each one  
4 has two capacity additions at about 500 megawatts.

5 MR. HADLAND: Thank you. And Williston or  
6 W.A.C. Bennett Dam is -- Gordon Shrum station is  
7 currently going through updates, upgrades to bring  
8 on another about 280 megawatts of capacity?

9 MR. REIMANN: The number I recall is 220.

10 MR. HADLAND: 220?

11 MS. YURKOVICH: But there's -- yeah, there's  
12 some potential to upgrade those units. And it was  
13 one of the resource smart projects that we saw some  
14 potential in coming in the future. And I believe  
15 we've included them in our stack when we do these  
16 portfolio runs.

17 A bit of an issue with those in terms of how  
18 you build them is that you actually have to take a  
19 unit out of services for over a year so you end up  
20 losing like some 350 megawatts. But then at the  
21 end you gain 30 megawatts. So we would be looking  
22 at doing that at the appropriate time. I believe  
23 it's in the portfolios.

24 MR. HADLAND: I missed that last ...

25 MR. REIMANN: They are in the portfolio, PV

1 analysis when we did the alternatives to the  
2 project as well as in the project portfolios as an  
3 available capacity resource.

4 MR. HADLAND: So all of the upgrades at  
5 Gordon Shrum are included?

6 MR. REIMANN: Yes.

7 MR. HADLAND: Because you only talk about  
8 the first five generators, that I noticed.

9 MR. REIMANN: Right. And so those are the  
10 ones that have been done to date. But we did --  
11 maybe it was in the evidentiary update that add the  
12 additional capacity units that we worked our way  
13 through.

14 MR. HADLAND: Okay, okay. Thank you. And  
15 just Keenleyside and Duncan, there's been talk for  
16 a lot of years about installing generating capacity  
17 in those projects. Where do they stand now within  
18 BC Hydro?

19 MR. SAVIDANT: Sir, I think the resource  
20 options -- sorry, the resource smart options,  
21 that's the upgrades at BC Hydro facilities,  
22 including the Duncan dam upgrade, was in page 5-58  
23 of the original EIS, section 5.5.2.9.

24 MR. HADLAND: Just in order to save some  
25 time, can you just give me a brief summary of what

1           was said there?

2       MR. SAVIDANT:                    So the Duncan dam new  
3           generation project was looked at in table 5.36. It  
4           would provide approximately 103 gigawatt hours of  
5           energy per year. The UEC at the point of  
6           interconnection was \$115 per megawatt hour and  
7           fiscal 2013 dollars. It would provide \$30 --  
8           sorry, 30 megawatts of capacity and its unit  
9           capacity cost, if we looked at it that way, would  
10          be \$396 per kilowatt year.

11       MR. HADLAND:                    Okay. And do you have that  
12          information for Keenleyside?

13       MR. SAVIDANT:                    Keenleyside, I don't believe  
14          that is one of the resource smart projects we're  
15          currently looking at. There's no generation  
16          associated with it. Keenleyside is a project that  
17          has -- it's a water-control facility. There is an  
18          expansion facility that was built by the Columbia  
19          Power Corporation which provided some capacity and  
20          energy, but we're currently not looking at  
21          providing generators to that facility. There's not  
22          really room.

23       MR. HADLAND:                    I'm sorry --

24       MR. SAVIDANT:                    Sorry, there's not really  
25          room there.

1 MR. HADLAND: I still didn't catch that.

2 MR. SAVIDANT: There's not room for the  
3 generating facilities there.

4 MR. HADLAND: So for the next little bit  
5 I'm going to be referring to the questions that I  
6 asked through the panel through the review earlier  
7 in the process.

8 And to the answers that I got from Hydro,  
9 0605.

10 MR. SAVIDANT: Sorry, could you please  
11 provide the IR reference.

12 MR. HADLAND: The number was 008 060500 --  
13 018.

14 THE CHAIRMAN: Mr. Hadland, can I ask you  
15 where you're going with these questions? Sorry,  
16 what is your intent?

17 MR. HADLAND: Well, in my experience of  
18 this kind of process, which is solely of the Site C  
19 hearings in 1982, I found it very useful to get an  
20 answer to any questions that I could possibly get  
21 an answer to so that I was better informed about  
22 where BC Hydro was going and where we might go as  
23 an alternative.

24 THE CHAIRMAN: Well, I'm minded to remind  
25 you I guess of our terms of reference; that the

1           purpose of these hearings is to make sure that the  
2           panel is as well informed on things that are  
3           crucial to its decisions, recommendations,  
4           conclusions and so on. So I would appreciate it if  
5           you could direct your questions to things that the  
6           panel ought to know and hasn't heard otherwise.

7           Thank you.

8           MR. HADLAND:                           Well, I will certainly try  
9           and do that, Mr. Chairman. I appreciate the fact  
10          that you're here and you're very interested. I  
11          would point out that I did complain during the  
12          review process that, as individuals, we did not  
13          have enough time to examine Hydro's documentation.  
14          So if I am asking questions which the panel has  
15          already reviewed, that is the reason for it. And I  
16          have no problem with the panel explaining to me  
17          that they are familiar with the questions that I'm  
18          asking and the answers that we should get from it.  
19          Thank you.

20                        If I go down to 605019, does Hydro have  
21                        evidence that increased and varying forms of  
22                        dispersed energy alternatives feeding into the  
23                        system will reduced the ELL -- ELCC in a harmful  
24                        manner?

25          MR. REIMANN:                           Sorry, could you repeat the

1 question?

2 MR. HADLAND: As a business planning tool,  
3 and I'm quoting from Hydro here, BC Hydro's  
4 long-term resource planning process supports the  
5 informed decision-making --

6 THE CHAIRMAN: Slow down. Here I'm telling  
7 you to hurry up and slow down.

8 MR. HADLAND: -- on resource acquisition by  
9 providing an analytical framework for assessing  
10 resource investment tradeoffs.

11 So my question at 0605019 is, does Hydro have  
12 evidence that increased and varying forms of  
13 dispersed energy alternatives feeding into the  
14 system will reduce ELCC in a harmful manner?

15 MR. REIMANN: I don't think that's the  
16 point of the IR. I think what we had tried to  
17 describe here is for intermittent resources, ones  
18 that have on their own very little dependable  
19 capacity i.e., you couldn't count on them to be  
20 available at a particular hour or a particular day  
21 like you could with dispatchable hydro or gas fire  
22 generation resources.

23 But what we have done is something that a  
24 number of utilities across North America have done,  
25 is said, well, so if the wind blows 35 percent

1 capacity factor, so it blows 35 percent of the time  
2 or a lot more frequently at some level, what is the  
3 probability that that resource would actually be  
4 available when we need it over peak hours in the  
5 wintertime?

6 And so the analysis we've done said, okay,  
7 let's look at these wind forms, let's do the  
8 probabilistic assessment and see what it looks  
9 like. And our observation is one that most of the  
10 value comes not from the wind itself. You wouldn't  
11 have a wind turbine trying to feed a load directly.  
12 You need something with it. The benefit it's  
13 providing to the system comes from the strength of  
14 the system. And we do recognize, for wind,  
15 24 percent of its capacity is effective load  
16 carrying capability. And the more of this that you  
17 add, you've got a decreasing contribution to the  
18 system.

19 And so I think that's really the intent of  
20 the words. Not to say it's harmful. Actually, in  
21 fact, we're saying wind can be -- we believe it  
22 might and should add some capacity value to the  
23 system.

24 MR. HADLAND: Well, I think maybe you're  
25 oversimplifying our options by constantly going



1 back and saying wind power or just simply run of  
2 river hydro. And that oversimplification is a  
3 problem for me. I don't know about the panel. But  
4 we have a multitude of options and a multitude of  
5 characteristics for each option for delivering  
6 power into the system. And what I'm asking is, do  
7 you have evidence that increased and varying forms  
8 of dispersed energy, not one energy, feeding into  
9 the system will reduce the LCC in a harmful manner?

10 MR. REIMANN: I don't often get accused of  
11 simplifying things too much, but I think the answer  
12 is no.

13 MR. HADLAND: Thank you.

14 THE CHAIRMAN: Mr. Hadland, our teacher  
15 friends behind you are looking anxious. Would you  
16 yield the floor to them.

17 MR. HADLAND: I would be quite happy to.

18 THE CHAIRMAN: Thank you, sir.

19 MR. KOEHL: Mr. Chair, we were just  
20 commenting on your facial expression.

21 However, I'm going to keep this very simple,  
22 and there are two questions, and that's it.

23 The first question goes back to mitigation.  
24 Again, something that we spoke about here briefly  
25 initially. Of the allocation from the project cost

1 estimate, that was in your executive summary, for  
2 the Site C project, it's under the heading of  
3 "Indirect Costs", our list again of those five  
4 specific areas. I think it's page 24. The last  
5 area is mitigation/compensation put together.  
6 Okay? So the total for the five categories is  
7 1.005 billion. And the question that we had asked  
8 during our presentation and still continue to ask  
9 is how much is actually allotted to mitigation in  
10 that value, the 1.005 and then separately to the  
11 compensation as well?

12 MR. SAVIDANT: So we generally don't break  
13 out our cost estimates by that level because those  
14 items are of a commercial nature. So they're  
15 subject to future negotiations because the  
16 negotiation and compensation amounts include  
17 potential impact benefits -- so we don't break that  
18 out for commercial reasons.

19 The impact benefit -- the  
20 mitigation/compensation amounts include potential  
21 impact benefits agreements with First Nations that  
22 would be subject to future negotiations. In  
23 addition, it includes specific works that would be  
24 subject to potential contracting in the future.

25 The scope of the amounts that we do have is

1 outlined in the environmental impact statement. I  
2 think it's in sections 35 where we have  
3 environmental management plans and in section 39  
4 where we have our actual mitigation options.

5 I can tell you when we developed that cost  
6 estimate, we looked at the specific items we would  
7 be looking at around mitigation/compensation. And  
8 we did some testing around with other jurisdictions  
9 both in Canadian and outside for what appropriate  
10 amounts would be.

11 THE CHAIRMAN: So if you said a billion  
12 dollars, I'd say that's a plugged number, but if  
13 you say it's 1.005, I suspect there's some actual  
14 arithmetic behind it; is that right.

15 MR. SAVIDANT: There's no calculation behind  
16 it like that. The item of 1.005 billion included  
17 not just mitigation and compensation but the  
18 development cost, the cost of the regulatory  
19 process for us, and the previous stages. It  
20 included construction insurance. And it included  
21 management and engineering. We do round to the  
22 nearest 5 million, but the proximity to a billion  
23 is a coincidence.

24 THE CHAIRMAN: And just for the record, do  
25 you intend to transport class 1 soil to the tune of

1 a quarter of a billion dollars.

2 MR. SAVIDANT: I can tell you that there is  
3 not a line item in the mitigation and compensation  
4 budget for a quarter billion dollars to transport  
5 class 1 soil. There may be some transport  
6 associated with mitigation plans, but that is not  
7 there.

8 MR. KOEHL: Can you give us a ballpark  
9 figure? I mean, I'm just wondering, were we  
10 correct in assuming it would be maybe about 1/5th  
11 of that value, maybe around 200 million for  
12 mitigation/compensation? Are we in the ballpark?

13 MR. SAVIDANT: To me, that's just getting to  
14 the number a different way. We don't provide that  
15 level of detail in our cost estimate because it's  
16 commercially sensitive and subject to negotiations.

17 It's the same thing for the direct capital  
18 cost above that. We've provided the direct capital  
19 cost in a group because the actual contracts that  
20 will make up those direct construction costs will  
21 be subject to a future procurement process if we  
22 receive authorization to proceed. We wouldn't  
23 break it down to that level because that could harm  
24 our commercial position in the future.

25 MR. KOEHL: Surely you must have some

1           idea about this value as you would have for example  
2           for insurance. So give me maybe the insurance  
3           value. What would that be out of the  
4           1.005 billion?

5       MR. SAVIDANT:                    Again, trying to get to the  
6           mitigation and compensation budget by subtracting  
7           the other items is again getting to the mitigation  
8           and compensation budget which we do not release,  
9           I'm sorry.

10       THE CHAIRMAN:                   I sense you're not going to  
11           get very far with that one.

12       MR. KOEHL:                     I agree, Mr. Chairman. Thank  
13           you for noticing.

14           Maybe I can maybe add some enlightenment to  
15           my second question, then, which will hopefully  
16           maybe add to some of the doubt that we have.

17           So Hydro, throughout this executive summary,  
18           and we've read through all the various mitigations  
19           as I had mentioned were potentially up to 3-, 400  
20           different types of sub mitigations. Throughout it  
21           it states using your terms -- these are terms that  
22           are included after the mitigation -- where  
23           appropriate, when appropriate, where practical,  
24           where feasible. My question is more of a legal  
25           question then. These terms are used in the context

1 of many of the mitigations mentioned or discussed.

2 My question is: How will it be determined  
3 that a mitigation will or will not happen based on  
4 the above escape clauses? Do these escape clauses  
5 allow Hydro to be free of any legal obligation or  
6 culpability for not following up when one of the  
7 above clauses is used in the context of this  
8 document? It's a legal question I guess, but if  
9 you've got 1. -- well, let's not even go there.  
10 Clearly you're not telling us how much money has  
11 been allotted for mitigation/compensation, but this  
12 to me strikes as me being an escape clause and how  
13 much legality is involved in actually fulfilling  
14 these mitigations that you speak of throughout the  
15 executive summary.

16 THE CHAIRMAN: Hydro.

17 MS. YURKOVICH: We have a very comprehensive  
18 set of mitigation measures that are included in  
19 section 39. And we have done an internal costing  
20 exercise for each of them to get an estimate that  
21 we have come up with. We are not going to disclose  
22 that because we don't want to fetter our ability to  
23 do a good procurement going forward. There are  
24 panels that are coming forward that are going to be  
25 spending a good deal of time on each of the

1 mitigation, all the areas of mitigation proposed.  
2 And if it would be all right with the panel we  
3 would be happy to discuss all of them at that time.

4 MR. KOEHL: One final question I'm  
5 curious about, why did you put mitigation with  
6 compensation? Why not separate it out into a  
7 separate component? I would consider them to be  
8 two separate entities. Why are they together?

9 MS. YURKOVICH: So what we're doing through  
10 the environmental assessment is we're determining  
11 whether there's an effect of the project. And then  
12 we look -- first, can we avoid that effect by  
13 changing something in design or how we're going to  
14 construct. If we can't do that, we look to  
15 mitigate the effect of the project. And in some  
16 cases there's not an ability to mitigate the  
17 effect, and therefore in some cases we will provide  
18 compensation. So we put those two together.

19 THE CHAIRMAN: And your position is that the  
20 answer to his question about where feasible, where  
21 possible, if we feel like it will be discussed  
22 under the individual mitigation schemes as they  
23 arise in the course of these hearings.

24 MS. YURKOVICH: Yes. Mr. Chair, maybe just  
25 the example of the moving of the -- I think you

1           were referencing class 1 soils. And we've  
2           certainly -- that rate was raised in public  
3           consultation. And in our EIS we say we will  
4           consider that. As people in this room will know  
5           better than me, class 1 soils, it's partly -- the  
6           actual soil and partly the climate that makes those  
7           soils classified as such. So in some cases it may  
8           be possible and practical to do so. It may not be  
9           feasible or in all cases. So that would be an  
10          example.

11       MR. KOECHL:                        Mr. Chairman, am I to assume  
12    then that we will eventually get these numbers from  
13    Hydro based on what was just stated.

14       THE CHAIRMAN:                    I think what I'm hearing is  
15    they're saying that the individual numbers are  
16    going to be the consequence of negotiation of  
17    specific mitigation plans and some kind of  
18    procurement mechanism when negotiated or bid or  
19    something like that. And I would guess that the  
20    first time we will ever see real detail on this is  
21    after the agreements have been signed.

22       MR. KOECHL:                        Perhaps that's correct. I  
23    mean, just as a final thought I speak again to the  
24    3- to 400 different mitigations.

25       THE CHAIRMAN:                    Yeah.



1 MR. KOECHL: And my question still  
2 remains, is there enough money in the kitty --

3 THE CHAIRMAN: Yeah.

4 MR. KOECHL: -- to basically deal with  
5 this. There's a great deal of doubt in my mind --

6 THE CHAIRMAN: Yeah.

7 MR. KOECHL: -- about where this is going.

8 THE CHAIRMAN: I think you've raised a  
9 valid question, and we will certainly be paying  
10 attention to it as we go through the rest of these  
11 hearings.

12 MR. KOECHL: Thank you, folks. Thank you.

13 THE CHAIRMAN: Thank you.

14 MR. KROECHER: Mr. Chairman, I have some  
15 questions which I think are straightforward to the  
16 panel and deal with amortization. I noticed that  
17 in the business case summary, amortization is not  
18 part of the plan. Now, I would like to know why  
19 that is.

20 MR. SAVIDANT: So from your, I think,  
21 interested parties submission, I'm going to assume  
22 you're referring to the unit energy cost  
23 calculation. And the business case isn't part of  
24 the evidentiary record, but we do provide the unit  
25 energy cost breakdown in volume 1, appendix F,

1 part 1, page 5.

2 So when you ask about amortization, what  
3 you're talking about is amortization of the capital  
4 cost. And what we have is we have an amount in the  
5 unit energy cost associated with that capital cost.  
6 So the distinction is that the capital cost is what  
7 the project will cost for construction, whereas the  
8 amortization is the mechanism that we recover that  
9 from rate payers over time.

10 So when you look at the table, table 3 on  
11 page 5, the capital cost is what it will cost to  
12 build the project and amortization is how we will  
13 recover that. So amortization is included in the  
14 unit energy cost.

15 MR. KROECHER: Well, it states on page 31:

16

17 "To reduce the rate impact on  
18 customers, BC Hydro anticipates  
19 that the costs for Site C would be  
20 amortized over a long period. The  
21 duration of which would be  
22 determined for future regulatory  
23 process with the BCUC."

24

25 Now, to my understanding, this \$8 billion are

1 borrowed to pay for the dam, this money needs to be  
2 paid back.

3 Now, this indicates to me, this paragraph,  
4 that there is no plan for that. And according to  
5 my calculation, at a 5 percent interest rate,  
6 compounded annually, the interest would be about  
7 \$400 million per year. Now, how does BC Hydro plan  
8 to deal with that amount of interest?

9 MR. SAVIDANT: So we do have a plan to  
10 recover it. However that plan is subject to  
11 decisions by the British Columbia Utilities  
12 Commission. As Ms. Yurkovich had talked about  
13 earlier, this project, when it came into service,  
14 comes into service subject to construction. We  
15 would expect the BCUC to do a prudency review and  
16 to determine the mechanism for recovery from rates.  
17 We assume the project capital will be amortized  
18 over the 70-year economic planning life given that  
19 is the effect of amortization period that would be  
20 seen for our other projects.

21 When we look at the interest amounts that is  
22 included in the cost of service that is reflected  
23 in the analysis of the portfolio PV modelling, so  
24 the analysis of cost of service that we've provided  
25 in both sections 7 of the EIS and in the response

1 to the JRP IRs does include the financing costs of  
2 the project. It does include the financing costs  
3 of the project. It includes depreciation of the  
4 capital and the financing interest payments.

5 THE CHAIRMAN: So the short answer to your  
6 question is interest would be capitalized during  
7 construction and the whole business amortized over  
8 70 years.

9 MR. SAVIDANT: That's correct.

10 MS. YURKOVICH: Subject to the --

11 THE CHAIRMAN: Thank you.

12 MR. KROECHER: Well, my figure of  
13 \$400 million per year in interest on the borrowed  
14 money would suggest that the interest rate is low.  
15 Now, it is predicted that the interest rates will  
16 not remain low particularly over a time span of  
17 70 years. Now, how -- where would the money come  
18 from if the interest rate would go up, let's say,  
19 by 2 or 3 percent? Who would pay for that? Would  
20 it come out of our electricity bills, or where will  
21 it come from?

22 MR. SAVIDANT: So we are assuming right now  
23 that interest rates will go up in the long-term,  
24 and that is built into both our interest during  
25 construction amounts and the capital cost estimate

1           and into the long-term weighted average cost of  
2           capital that is used for the portfolio PV modelling  
3           and the unit energy cost. Significant increase to  
4           interest rates beyond that, I would say currently  
5           appears to be unlikely. But if it happened  
6           post-construction, and that was the cost of the  
7           financing of the project, that would be borne by  
8           ratepayers.

9           MR. KROECHER:                   Well, it seems to me that  
10           your answers don't really answer my questions. I  
11           have the feeling that you're sort of beating around  
12           the bush. This \$8 billion is a horrendous amount  
13           of money that you are committing on our behalf.  
14           And I would have appreciated to get some maybe more  
15           precise answers. This -- your answers to me are  
16           absolutely nothing. And I don't mind saying that  
17           I'm really kind of disappointed in that. You're  
18           probably really highly qualified people and you  
19           cannot really effectively answer some of the  
20           questions. I leave you with that thought, and  
21           maybe you could think about that.

22                           Thank you, Mr. Chairman.

23           THE CHAIRMAN:                   I'd like to turn now to  
24           Madam Beaudet.

25           MS. BEAUDET:                    Thank you, Mr. Chairman.

1                   A few things here I want to get some  
2                   clarification on. The first one, this morning when  
3                   you give us what the LNG inclusion would require,  
4                   you mentioned a number of 3,000. And sometimes you  
5                   said 3,000 megawatts and at other times you say  
6                   3,000 gigawatts. Can we get -- I mean, it's a  
7                   mistake, but we would like to have exactly what's  
8                   the capacity required and what's the energy  
9                   required.

10           MR. REIMANN:                   Yeah, the number we've  
11                   included in the IRP is 3,000 gigawatt hours.

12                   And, Mike, what's the capacity number?

13           MR. SAVIDANT:                   The capacity number in the  
14                   IRP I don't have in front of me.

15           MR. REIMANN:                   Sorry, I don't recall the  
16                   capacity number offhand. I can probably do the  
17                   math. In the IES we included 800 to 6,600 gigawatt  
18                   hours as a range.

19           MS. BEAUDET:                   Can you give us the answer,  
20                   the right answer tomorrow, please.

21           MR. REIMANN:                   Oh, sure.

22           MS. BEAUDET:                   Yes, thank you. It would  
23                   been undertaking number 4.

24           THE CHAIRMAN:                   Ah-hah, undertaking number 4.

25           MR. HENDRIKS:                   And I can add some clarity,

1 in fiscal '20, we start with a tranche of a 1,000  
2 gigawatt hours a year, and then we increase that by  
3 a thousand every subsequent year, so 1,000, 2,000,  
4 3,000.

5 MS. BEAUDET: Thank you.

6

7 **UNDERTAKING 5: Advise what the LNG inclusion**  
8 **would require**

9

10 MS. BEAUDET: The other thing is in the  
11 conversation we had this afternoon, you were  
12 talking that -- you said earlier that after -- with  
13 respect to IPP, you said that after using the  
14 heritage resources, the direction would not --  
15 would be independent from pricing. Am I correct  
16 that we understand well what you say?

17 MR. REIMANN: Yeah, can I answer this one  
18 and then ask you to repeat? I missed the last part  
19 of your question.

20 MS. BEAUDET: Okay.

21 MR. REIMANN: The megawatts are  
22 360 megawatts and 3,000 gigawatt hours.

23 MS. BEAUDET: Thank you. So my question  
24 was that it's something you were saying earlier  
25 when there was a question asked about how do you

1 include the IPP, and you said that first your  
2 direction would be you use the heritage resources.  
3 And with the IPP, you say that it would be  
4 independent of price. And I wasn't sure that was  
5 clear or that we understood what you said.

6 MR. REIMANN: Yeah, sorry, let me go  
7 through that again. I ... From the 2002 and 2007  
8 energy plans, Hydro has been asked to do the  
9 heritage resources, and that includes any  
10 improvement to them. And the Site C project is the  
11 third project on an existing -- sorry, the existing  
12 river system. Other than that, we'd be looking to  
13 IPPs to deliver the generation resources.

14 And so I don't think we would buy them at any  
15 price, but I think we've got a belief that with our  
16 competitive procurement process, that we usually  
17 have a good response in terms of number of project  
18 being bid into our acquisitions. And I think  
19 similarly for gas, if we've identified a number of  
20 gas capacity resources associated with LNG and the  
21 IRP, we'd also look to procure that from third  
22 parties. So I don't think it means that we don't  
23 think we can find cost-effective resources, but I  
24 think in response to the Chairman's question, are  
25 we only pursuing IPPs if Hydro doesn't have a



1 cheaper alternative, I think the answer is no, we  
2 do have Site C, but really everything else is  
3 provided by IPPs. And we believe that can be done  
4 cost-effectively, but I doubt we'd chase them at  
5 any price.

6 MS. BEAUDET: My next question regarding  
7 that is I thought it was a little bit confusing in  
8 this portfolio scenario is that you did because you  
9 based the first choice -- and correct me if I'm  
10 wrong -- on price and availability during time.  
11 You don't necessary -- the first step that you do  
12 in the screening is price or financial aspects and  
13 availability in the time frame. Am I correct?

14 MR. REIMANN: Right. So we started with  
15 the broad sweep of resource options, and then we  
16 looked at those resource options and tried to  
17 characterize them into those that we thought were  
18 available to us and that we could count on for  
19 future portfolios. And once we had it down to that  
20 list, we then used our system optimizer program.  
21 And it looks at the different characteristics and  
22 prices of these resources and selects the optimal  
23 combination to be built into these portfolios for a  
24 given set of circumstances, so depending how big  
25 the gap is, what we think the market price is, what

1 the cost of resources are. And this system  
2 optimizer runs thousands of combinations of  
3 portfolios to try to pick the one that gives you  
4 the best net present value cost.

5 MS. BEAUDET: Would it be a better option  
6 if you looked at how you could fill the gap without  
7 putting the first constraint on cost and finance?  
8 Because if we look, for instance, at table 4 --  
9 table 543, you can see that the land footprint of  
10 the project is much higher than any other -- than  
11 the two other combinations. And then table 544 in  
12 terms of long-term jobs during operations, I think  
13 the two other options, another project would be  
14 more profitable.

15 So where the aspects of the real impact on  
16 people, whether beneficial -- whether negative or  
17 positive, where does it fit in the system that  
18 you've used? How do you weigh these two things  
19 that are for people very important.

20 MR. REIMANN: Yes. So I guess we created  
21 the portfolios looking at those that we believed  
22 were permissible and technically viable. And then  
23 we picked them for their contribution to the system  
24 in terms of reliability and cost effectiveness.  
25 And then having done that, I think that's when we

1           then looked at the alternative portfolios and said,  
2           so what are the impacts and how do those weigh off  
3           against the cost, and maybe Mr. Savidant can speak  
4           to those.

5       MR. SAVIDANT:                   We talk about this a bit in  
6           the technical memo on alternatives to the project.  
7           And what we looked at was the portfolios were built  
8           on the -- on, as Randy says, the cost effectiveness  
9           and technical capabilities. And then we reviewed a  
10          suite of environmental and economic development  
11          attributes for those portfolios. What we saw was  
12          the project offered superior financial attributes  
13          from the lower and -- lower PV cost and UEC values.  
14          And we saw that it did have a larger footprint on  
15          land, that's correct.

16                 However, we were cognizant of the fact that  
17                 that was not a facility footprint. What you're  
18                 looking at there is a conversion of land from  
19                 terrestrial use to an aquatic reservoir. So when  
20                 you look at that change, you have a land footprint,  
21                 but you are also creating a productive environment.  
22                 In addition to the land footprint, we also look to  
23                 the atmospheric footprint of these portfolios as  
24                 well. So while the Site C portfolio is expected to  
25                 have a higher land footprint, it would have a lower

1 emissions fingerprint because we're not looking at  
2 the SCGT component and the clean plus thermal  
3 portfolio, and we're not looking at the municipal  
4 solid waste, both which provide local air emissions  
5 and greenhouse gases.

6 Similarly, in the economic development  
7 attributes, we saw a mix again. While the Site C  
8 project has a significantly higher job number  
9 during construction, which is effectively because  
10 it's a capital intensive project, it does have a  
11 lower operations job amount because of course the  
12 operations costs are low as well. That's a  
13 combination into the -- that's all built into our  
14 low operating cost. So when we looked at the  
15 portfolios together, we saw a mix on both the  
16 environmental attributes and the economic  
17 development attributes and significant benefits to  
18 rate payers from a financial perspective, and that  
19 led to the selection of this as the preferred  
20 alternative.

21 MS. BEAUDET: Thank you. I would like to go on  
22 some very precise data here that we'd like to have.  
23 I go back to your annual reports, and I look here  
24 at the 2011. You have in the economic bottom line,  
25 a performance indicator that is EU12, which is

1 transmission and distribution losses as a  
2 percentage of total energy. And there's an  
3 attachment to that. And we get to the loss for  
4 transmission lines which is from 2008 to 2011. But  
5 it's just a percentage. And you have for the  
6 distribution line, the same thing. And the  
7 transmission, it refers to the real power losses  
8 for transmission percentage as documented in the  
9 open access transmission tariff schedule 10.

10 I was wondering if, instead of having  
11 percentages on this table, EU12, if we could get  
12 actual numbers in terms of energy loss.

13 MR. GODSOE: Mr. Chairman, I must say I'm  
14 struggling with the relevancy of that. It might be  
15 better asked if whether losses have been taken into  
16 account in a portfolio analysis for the project.  
17 But giving broad transmission losses for the entire  
18 system, I am struggling with.

19 MS. BEAUDET: No, I am not struggling. My next  
20 question is relevant to what I'm asking now.

21 When you look at the tables that you provide  
22 in the IES, especially with respect to load  
23 forecasts, you have in table 5.1, it's for the year  
24 2022, which is after the DSM would be accounted  
25 for, you give in terms of energy what is required

1 as 70,800 gigawatt per hour. And then when we look  
2 at table 5.3, we have 64,500 without losses. And  
3 that's where it comes.

4 Where are the losses? How are they accounted  
5 for?

6 And then table 5.4 we get 62,900. And so for  
7 the table 5.1, does it include contingency or  
8 safety margin? Why is it higher than the others?  
9 Does it include IPP, any intermittent source or  
10 stabilization reserve you need which we were  
11 discussing this morning, asking what's the capacity  
12 you can integrate to the system?

13 And then when you get to the tables where  
14 this surplus of deficit, you give the gap that you  
15 feel is missing and has to be, justifying in a way,  
16 the Site C. We have to take it for granted because  
17 all the other tables, it is impossible to see how  
18 you arrived at this gap.

19 And so I was wondering if it's possible to  
20 give us more detailed tables on the demand and the  
21 supply with all the different assumptions that  
22 we've discussed today. And I would ask you to do  
23 it only for the mid energy or the -- the mid load  
24 forecast. I won't ask you for the low or the high  
25 one. Taking into account where there's the DSM,

1           where there's -- what is required or not required  
2           for LNG, where can we see the losses, et cetera.  
3           Because we -- this is like -- if you look at the  
4           table as I said for the surplus or the deficit, we  
5           have to take for granted that the figure is there.  
6           Where are they from? There's no details on that.

7   THE CHAIRMAN:                   This sounds like an extension  
8           of my request this morning to include the supply  
9           side and an accounting of losses. Can that be  
10          done? Can you extend that undertaking?

11   MR. GODSOE:                    We can provide that  
12          information as undertaking number 5.

13   MS. BEAUDET:                   Thank you.

14

15                   **UNDERTAKING 6: Provide more detailed tables on**  
16                   **the demand and the supply**

17

18   THE CHAIRMAN:                   I have one last question  
19          which is an extension of Jocelyne's, and I thought  
20          she was going to go there.

21                   In this wonderfully technocratic decision  
22          process that Mr. Reimann and Mr. Savidant had  
23          described, how do you deal with the completely  
24          ineffable, the spiritual connection that's felt in  
25          the land by some of the people who appeared today

1           and will appear for the rest of the month, people  
2           who fear the loss or appreciate the loss of  
3           long-term multigenerational connections to  
4           particular pieces of land that will be inundated  
5           with some -- how in the choice of elements in a  
6           portfolio, in the sequencing of events in a system  
7           optimizer program, do you deal with that? Is it  
8           simply a residual to be dealt with by regulators?

9           MS. YURKOVICH:                    I think we'll answer this in  
10           two parts. Mr. Reimann will start, and then I will  
11           just conclude just addressing from your first  
12           comments.

13           MR. REIMANN:                    And I guess it's never an  
14           easy question. And we -- when we look at other  
15           portfolios we've run in issues in other places --  
16           and one in particular comes to mind, some of the  
17           concerns that were raised in Squamish-Lillooet  
18           Regional District as we were buying lots of run of  
19           river projects, and almost every stream in that  
20           whole region were mapped one way or another, and it  
21           starts to raise the question of how much should you  
22           do in one region and what are the impacts there,  
23           so -- let me start again.

24                                    It's never an easy question. And I was just  
25           making the observation that as we looked at other



1 options and the one that came to mind was run of  
2 river that we looked at and some of the concerns we  
3 heard in the Squamish-Lillooet Regional District as  
4 we're buying run of river and people are starting  
5 to plot all the rivers. And it inundates the area.  
6 And we have transmission lines running all over.  
7 And so I guess at the end of the day, is there  
8 anything that you can build that doesn't have  
9 impacts? But ultimately I think that's right,  
10 those have to be weighed off and ... Over to  
11 Susan.

12 MS. YURKOVICH: Thank you. It's a really  
13 important question. And I think Mr. Reimann is  
14 right, there are -- this is -- this does involve  
15 tradeoffs. And I think as important as -- we  
16 obviously believe that this is the right thing to  
17 do. But what's equally important is how we  
18 undertake this work. And we do recognize that this  
19 has effects for people who live in the communities  
20 where this project will be located. And so part of  
21 what we have tried to do as a project team is to  
22 understand that and to respect that and to hear  
23 from all voices to make changes where we can, to  
24 think carefully about how we mitigate, how we  
25 involve communities, how we do our First Nations

1           consultation.

2                    Because we do recognize that there are  
3           effects and for -- we understand that.  People's  
4           sense of place.  And so we work very hard at taking  
5           those things into consideration and to doing this  
6           project in a different way than what was done  
7           perhaps a couple of generations ago.

8   THE CHAIRMAN:                    Thank you.  I'm glad to have  
9           your advice on that because it's something the  
10          panel has to wrestle with, too.

11                   For a session which I promised would end at  
12          6:00, we're a little over time, but I thank you  
13          very much for your patience, and we will reconvene  
14          tomorrow morning at 9 o'clock.  Thank you.

15   MR. GODSOE:                     Sorry, Mr. Chairman.  I did  
16          have one thing -- two things.

17                   First of all, I can acknowledge that we don't  
18          have any 10-minute response.  We're usually  
19          entitled to a 10-minute response.

20   THE CHAIRMAN:                    I'm sorry, was that not  
21          discussed with you earlier?

22   MR. GODSOE:                     It was not.

23   THE CHAIRMAN:                    I thought the idea would be  
24          that we would have a comprehensive response from  
25          you at the end of the day tomorrow.

1 MR. GODSOE: Okay. Well, the second issue  
2 I wanted to raise -- although I see Mr. Hadland  
3 there. I can come back to it.

4 MR. HADLAND: Your choice, Mr. Chairman.

5 MR. GODSOE: Before we finish questioning  
6 this panel, Mr. Chairman, I raise the issue of  
7 Dr. Eunall, and he had some questions in his  
8 registration form. And he's not here today. I  
9 don't see him. And I wanted to ensure his question  
10 could be put to this panel, so I thought there was  
11 two ways of doing that.

12 Essentially they are: Has Hydro considered  
13 Kleana as an alternative, and second has Hydro  
14 taken into account climate change impacts?

15 I think the second question has been  
16 responded to in the response to JRP IR 76 which is  
17 CEAR number 1640. However, that first question has  
18 not been dealt with. And I think there's two ways  
19 of doing that; either the questions get put to  
20 you -- through to you to the panel or through our  
21 rebuttal on 24th December, we can provide a written  
22 response, whichever way you think is the most  
23 appropriate way to handle that.

24 THE CHAIRMAN: My understanding is that  
25 Mr. Eunall has some kind of legal action still

1           afoot; is that correct?

2       MR. GODSOE:                   That is correct. But we were  
3           also clear that we could describe a technical  
4           attribute basis, Kleana versus Site C. And I think  
5           that is his question.

6       THE CHAIRMAN:                I think that would be useful.

7       MR. GODSOE:                   Sorry?

8       THE CHAIRMAN:                I think that latter would be  
9           useful.

10      MR. GODSOE:                   Okay. So then the question  
11           is, do you want to put that question to the panel  
12           now, or do you want me to respond in writing?

13      THE CHAIRMAN:                I think it would be more  
14           logical to hear the response after the plea, as it  
15           were. So we'll let Mr. Eunall say his piece and  
16           then hear what Hydro's response will be rather than  
17           rebut him in advance.

18      MR. GODSOE:                   I guess I'm understanding  
19           that my panel can respond after Dr. Eunall  
20           tomorrow.

21                   Thank you.

22      THE CHAIRMAN:                Mr. Hadland, I understand you  
23           have some more questions. Could I -- given the  
24           hour, may I suggest that you discuss with the  
25           Secretariat how much time you will need tomorrow or

1           at another time, and we will do our best to  
2           accommodate.

3       MR. HADLAND:                    I would appreciate that.  
4           Thank you.

5       THE CHAIRMAN:                  Thank you.

6                                        That said, we're adjourned for the evening.

7  
8       (Proceedings adjourned at 6:43 p.m.)

9       (Proceedings to reconvene on Tuesday, December 10, 2013  
10                                        at 9:00 a.m.)

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11 to the best of my skill and ability.

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**\$115** [1] - 308:6  
**\$125** [2] - 224:25; 225:6  
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