

**BRITISH COLUMBIA UTILITIES COMMISSION**  
**IN THE MATTER OF THE UTILITIES COMMISSION ACT**  
**S.B.C. 1996, CHAPTER 473**

**and**

**An Application by British Columbia Hydro and Power  
Authority (BC Hydro) for the Approval of the  
2008 Long-Term Acquisition Plan (2008 LTAP)**

**Vancouver, B.C.**  
**February 27, 2009**

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**PROCEEDINGS AT HEARING**

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**BEFORE:**

<b>A. J. Pullman,</b>	<b>Chairperson</b>
<b>B. Milbourne,</b>	<b>Commissioner</b>
<b>M. Harle,</b>	<b>Commissioner</b>

**VOLUME 9**

## APPEARANCES

G.A. FULTON, Q.C.	Commission Counsel
C. GODSOE K. THRASHER	British Columbia Hydro and Power Authority
D. CURTIS	British Columbia Transmission Corporation
M GHIKAS	Terasen Gas Inc., Terasen Gas (Vancouver island) Inc., Terasen Gas (Whistler) Inc.
F. WEISBERG	Columbia Power Corporation
E. WALKER	Pristine Power Inc.
C. BOIS	NaiKun Wind Energy Group Inc.
D. AUSTIN	Independent Power Producers of British Columbia
B. WALLACE K. SEYMOUR	Joint Industry Electricity Steering Committee
C. WEAVER	Commercial Energy Consumers of British Columbia
J. QUAIL L. WORTH	B.C. Old Age Pensioners' Organization, the Active Support Against Poverty, B.C. Coalition of People with Disabilities, Council of Seniors' Organizations of B.C., End Legislated Poverty, Federated Anti-Poverty Groups of B.C., and the Tenants' Rights Action Coalition
W. ANDREWS	B.C. Sustainable Energy Association; Sierra Club Of Canada, B.C. Chapter
R. GATHERCOLE	Peace Valley Environmental Association
L. BERTSCH	Horizon Technologies Inc./Energy Solutions for Vancouver Island Society; Okanagan Environmental Industry Alliance; Island Transformation.Org; Rental Owners and Managers Society of BC
M. OULTON L. WINSTANLEY	COPE 378
P. COCHRANE	City of New Westminster
R. FLETCHER	Texada Action Now Community Association

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**CAARS**

VANCOUVER, B.C.

February 27, 2009

**(PROCEEDINGS RESUMED AT 8:31 A.M.)**

THE CHAIRPERSON: Please be seated.

Mr. Thrasher.

MR. THRASHER: Mr. Chairman. My name is Kevin Thrasher, and I'll be assisting Mr. Godsoe in representing B.C. Hydro in this application. And of course we have a new panel, so I'd wish to introduce the panel -- the members of Panel 3, the market and portfolio analysis panel.

Beginning with the panel chair in the centre, which is Mr. Randy Reimann, and to his right is Mr. David Ince, and to Mr. Ince's right is Mr. Richard Lauckhart. And at the end of the table is Mr. Rob Youngman -- Robert Youngman. And to Mr. Reimann's left, we have Steven Hobson, and at the end of the table is Mr. Ren Orans.

THE CHAIRPERSON: Dr. Orans, I think.

MR. THRASHER: Dr. Orans. Good catch.

Could we have the witnesses affirmed at this time, please?

**B.C. HYDRO PANEL 3 - MARKET AND PORTFOLIO ANALYSIS**

**ROBERT YOUNGMAN, Affirmed:**

**RICHARD LAUCKHART, Affirmed:**

1 **RANDY REIMANN, Affirmed:**  
2 **STEVE HOBSON, Affirmed:**  
3 **REN ORANS, Affirmed:**  
4 **DAVID INCE, Resumed:**

5 MR. THRASHER: Just on a procedural matter, Mr. Chairman,  
6 Mr. Godsoe will be following up on the undertakings,  
7 some of the undertakings that were out of Panel 2.

8 THE CHAIRPERSON: We're honing his spreadsheet skills,  
9 were we?

10 MR. THRASHER: Yes.

11 THE CHAIRPERSON: Good.

12 MR. THRASHER: I don't know if there's any honing  
13 required for his spreadsheet skills.

14 **EXAMINATION IN CHIEF BY MR. THRASHER:**

15 MR. THRASHER: Q: So, I'm going to begin -- this is --  
16 I'll begin the examination in chief with Mr. Reimann,  
17 and, Mr. Reimann, could you please state your name for  
18 the record, and could you also tell us what your  
19 position at B.C. Hydro is?

20 MR. REIMANN: A: My name is Randy Reimann. I am the  
21 manager of resource planning.

22 MR. THRASHER: Q: And could you confirm that your  
23 direct testimony was filed in Exhibit B-13 to this  
24 application?

25 MR. REIMANN: A: It was.

26 **Proceeding Time 9:03 a.m. T2**

1 MR. THRASHER: Q: And I understand you have some  
2 clarifications to make with regard to that testimony?

3 MR. REIMANN: A: I do.

4 MR. THRASHER: Q: And I understand that they are with  
5 regards to the appendices that you are responsible  
6 for, if I'm not mistaken?

7 MR. REIMANN: A: That's correct. The appendices that  
8 I'm responsible for are all of the appendices in  
9 Appendix F, including the sub-appendices, with the  
10 exception of Appendix F-17, I share that one with Mr.  
11 Hobson. In addition, Appendix O and Appendix P are  
12 also my responsibility.

13 MR. THRASHER: Q: Thank you. And with those  
14 clarifications, you would adopt the testimony as that  
15 as your own in this proceeding?

16 MR. REIMANN: A: I do.

17 MR. THRASHER: Q: Thank you. I think we should  
18 probably bring the panel to the attention of some  
19 errata. Mr. Reimann has -- and I understand you have  
20 some further clerical matters you wish to bring to  
21 attention of the Panel.

22 MR. REIMANN: A: I do. We will be making a revision to  
23 the unit energy costs that are shown in the various  
24 different places in the report -- or the application  
25 rather. When we did the carbon tax adjustments in  
26 Round 1, when we changed from having carbon tax and

1 GHGs counted for gas-fired facilities, we modified the  
2 analysis in Round 1 shown in Exhibit B-3, BCUC 1.94.1.  
3 When we made the corrections to the analysis and in  
4 the portfolios, we did not change the unit energy  
5 costs that were shown in various different places of  
6 the report. So we will be revising those unit energy  
7 costs as shown, primarily Chapter 3, Table 3-21, and  
8 in Appendix F-1 and F-11.

9 I would like to make it clear too that the  
10 analysis as contained in the application is unaltered  
11 by this. Given that the unit energy costs are used by  
12 people as a reference price at various times, we  
13 wanted to make sure that those were updated.

14 MR. THRASHER: So I'd like to file the errata. The IR  
15 errata would be Exhibit B3-7. There's five copies.

16 THE HEARING OFFICER: Marked Exhibit B3-7.

17 (BCUC IR NO. 1.56.1...REVISED RESPONSE ISSUED FEBRUARY  
18 27, 2009, WITH FOUR ATTACHED PAGES, MARKED EXHIBIT B3-  
19 7)

20 MR. THRASHER: And the other revisions that will appear,  
21 the application will appear at B1-13. That's Exhibit  
22 B1-13.

23 THE HEARING OFFICER: Marked Exhibit B1-13.

24 (DOCUMENT HEADED "BC HYDRO 2008 LTAP ERRATA - FEBRUARY  
25 27, 2009", WITH ATTACHMENTS, MARKED EXHIBIT B1-13)

26 **Proceeding Time 8:37 a.m. T03**

1 MR. THRASHER: Q: I'd like to continue with the  
2 introductions and adoption of testimony. Mr.  
3 Youngman, could you please state your name for the  
4 record, and could you also tell us your occupation?  
5 MR. YOUNGMAN: A: Robert Youngman, director of economic  
6 analysis for Natsource.  
7 MR. THRASHER: Q: Is everyone able to catch that?  
8 MR. YOUNGMAN: A: I'll try again.  
9 MR. THRASHER: Q: I'm sorry, it's --  
10 MR. YOUNGMAN: A: It's Robert Youngman, director of  
11 economic analysis for Natsource.  
12 MR. THRASHER: Q: And could you confirm that your  
13 direct testimony was filed in Exhibit B-13 to this  
14 application?  
15 MR. YOUNGMAN: A: Yes.  
16 MR. THRASHER: Q: And do you adopt that testimony as  
17 your own in this proceeding?  
18 MR. YOUNGMAN: A: I do.  
19 MR. THRASHER: Q: Thank you. Mr. Lauckhart, could you  
20 please state your name for the record, and could you  
21 tell us your occupation?  
22 MR. LAUCKHART: A: My name is Richard Lauckhart. I am  
23 the manager, managing director in the economic  
24 analysis group of Black & Veatch.  
25 MR. THRASHER: Q: And could you also confirm that your  
26 direct testimony was filed in Exhibit B-13 to this

1 application?

2 MR. LAUCKHART: A: Yes.

3 MR. THRASHER: Q: And do you adopt that testimony as  
4 your own in this proceeding?

5 MR. LAUCKHART: A: I do.

6 MR. THRASHER: Q: Thank you. And Mr. Ince, we all  
7 recall Mr. Ince from Panel 2. I assume nothing has  
8 changed in your employment status since yesterday?

9 MR. INCE: A: No.

10 MR. THRASHER: Q: So could you confirm your direct  
11 testimony was filed in Exhibit B-13 to this  
12 application?

13 MR. INCE: A: I confirm that.

14 MR. THRASHER: Q: And do you adopt that testimony as  
15 your own in this proceeding?

16 MR. INCE: A: I do.

17 MR. THRASHER: Q: Mr. Reimann. Mr. Hobson, could you  
18 please state your name for the record, and could you  
19 identify what position you hold at B.C. Hydro?

20 MR. HOBSON: A: My name is Steve Hobson. I'm the  
21 director of PowerSmart for B.C. Hydro.

22 MR. THRASHER: Q: And could you confirm that your  
23 direct testimony was filed in Exhibit B-13 to this  
24 application?

25 MR. HOBSON: A: Yes, it was.

26 MR. THRASHER: Q: Do you adopt that testimony as your

1 own in this proceeding?

2 MR. HOBSON: A: I do.

3 MR. THRASHER: Q: Thank you. And finally, Dr. Orans.  
4 Could you please state your name for the record, and  
5 could you also state your occupation?

6 MR. ORANS: A: My name is Ren Orans. I'm managing  
7 partner of Energy and Environmental Economics, Inc.

8 MR. THRASHER: Q: Could you confirm that your direct  
9 testimony was filed in Appendix E to this application?

10 MR. ORANS: A: Yes.

11 MR. THRASHER: Q: And you adopt that testimony as your  
12 own in this proceeding?

13 MR. ORANS: A: Yes, I do.

14 MR. THRASHER: Q: Thank you. I'll turn the panel over  
15 for cross.

16 THE CHAIRPERSON: Thank you.

17 MR. OULTON: Good morning, Mr. Chairman, Commissioner.

18 THE CHAIRPERSON: Mr. Oulton.

19 **CROSS-EXAMINATION BY MR. OULTON:**

20 MR. OULTON: Q: Good morning, witness panel. I'd just  
21 like to begin by first thanking the panel for  
22 accommodating Dr. Shaffer's schedule. I know he's  
23 most grateful for that, and my colleagues as well.  
24 And secondly, I'd like to thank my colleagues for  
25 accommodating my desire to go first this morning, as I  
26 have a court commitment at ten o'clock, which the

1 witness panel will be happy to mean -- note means I'll  
2 likely be brief.

3 THE CHAIRPERSON: Good.

4 **Proceeding Time 8:40 a.m. T4**

5 MR. OULTON: Q: I'd like to begin with a matter that I  
6 had originally raised with Panel 2 and was referred to  
7 this panel. And the reference is the response to COPE  
8 IR 1.2.4 from Exhibit B-3.

9 MR. REIMANN: A: Yes, we have that.

10 MR. OULTON: Q: You'll see that this was a request for  
11 an estimate of the average annual amount of non-firm  
12 and other energy supplies that would be available to  
13 B.C. Hydro and B.C., and tabular responses provided  
14 showing numbers for Heritage Hydro non-firm, IPP non-  
15 firm, and Alcan non-firm for the years F2016 and  
16 F2020.

17 I had asked Panel 2 about the period prior  
18 to 2016 and they referred me to you, and I'm wondering  
19 if you're able to provide an estimate of what the non-  
20 firm power, the annual non-firm power available to  
21 B.C. Hydro would be from the resources indicated in  
22 the response for the period from 2012 to 2015, which  
23 is the planning period prior to 2016 covered by this  
24 application.

25 MR. REIMANN: A: Yeah, I don't have the exact figures  
26 in front of me, but I do know that they do ramp up to

1 fiscal '16 based on the prior Call.

2 MR. OULTON: Q: Is that something that you'd be able to  
3 provide by way of undertaking, with relative ease?

4 MR. REIMANN: A: Yes.

5 MR. THRASHER: I think we have our first undertaking.

6 **Information Request**

7 MR. OULTON: Q: I'd like to turn now to another topic,  
8 again one that I raised with Panel 2, and the  
9 reference for this is the response to BCUC IR 3.270.1  
10 from Exhibit B-12.

11 MR. REIMANN: A: I have that.

12 MR. OULTON: Q: All right, and the specific page that  
13 I'll be taking you to is page 3, but before we get  
14 there, you're generally aware that there's a forward  
15 or futures market for electricity?

16 MR. REIMANN: A: We are.

17 MR. OULTON: Q: And that there are short to mid-term  
18 firm electricity contracts that are available in that  
19 market.

20 MR. REIMANN: A: We're aware, yes.

21 **Proceeding Time 8:43 a.m. T05**

22 MR. OULTON: Q: And one of such contracts is described  
23 in -- on page 3 under the "Contingency resources from  
24 external markets" heading. And it talks about a quote  
25 for a five-year forward product on December 11, 2008,  
26 for firm 7 by 24 electricity delivered to the B.C.

1 border at a cost of approximately \$63 to \$64 per  
2 megawatt hour. Do you see that?

3 MR. REIMANN: A: Yes.

4 MR. OULTON: Q: And a price of \$63 to \$64 per megawatt  
5 hour, it's a relatively low price for firm energy, is  
6 that correct? In current terms?

7 MR. REIMANN: A: Can you be more clear about what --

8 MR. OULTON: Q: Sorry. Perhaps a way to approach this  
9 is, in the Errata that was filed this morning, there's  
10 an updated resource option supply unit energy cost  
11 table. I think it's a revised Table 3.2 -- or 3-21.

12 MR. REIMANN: A: Yes.

13 MR. OULTON: Q: And it's from page 3-35 of the  
14 application, and \$63 to \$64 per megawatt hour, it's  
15 lower than substantially all of the resource options  
16 identified in Table 3-21. Is that correct?

17 MR. REIMANN: A: That's correct.

18 MR. OULTON: Q: And are the resources identified in  
19 Table 3-21, those are predominantly firm resources?

20 MR. REIMANN: A: That's correct.

21 MR. OULTON: Q: All right. And so at least as of  
22 December 10 -- December 11, 2008, the price that was  
23 available for firm energy on the forward futures  
24 market was substantially lower than most of the  
25 options identified in 3-21, correct?

26 MR. REIMANN: A: Yeah, that's correct. I think this

1 issue was taken up on Panel 2, and in Panel 2 I think  
2 we pointed out that the 2500 gigawatt hour Heritage  
3 hydro non-firm allowance was the amount that we've  
4 established up till 2016 that B.C. Hydro would be  
5 comfortable on relying on external markets. And we  
6 have that within our balance up to that point, and at  
7 which point self-sufficiency removes the ability to  
8 rely on the market. So, whereas this market price may  
9 be available at this time for a cheap price, it isn't  
10 necessarily a resource that we can rely upon in our  
11 plans, and as such isn't necessarily a valid  
12 comparison.

13 MR. OULTON: Q: I think Panel 2 addressed this, but in  
14 case I'm incorrect, B.C. Hydro could avail itself of  
15 this price today as part of its 2500 allowance, is  
16 that fair to say?

17 MR. REIMANN: A: Yes.

18 MR. OULTON: Q: I'd like now to turn to another topic.  
19 You're familiar with the concept of dispatchability?

20 MR. REIMANN: A: Yes.

21 MR. OULTON: Q: And as I understand it, that  
22 essentially means B.C. Hydro -- if a dispatchable  
23 resource, B.C. Hydro can choose to run or not run it  
24 in the case of hydroelectric, to store water or  
25 release water, in order to optimize your ability to  
26 use the market or use other supply options to maximize

1 the value of your assets. Is that a fair description?

2 MR. REIMANN: A: Yes.

3 MR. OULTON: Q: All right. And if we look again at  
4 Table 3-21, and I'll use the revised one that was  
5 provided in the Errata filed this morning, again this  
6 sets out, as I understand it, the adjusted unit energy  
7 costs for the various resource options available to  
8 B.C. Hydro. Correct?

9 MR. REIMANN: A: Yes.

10 MR. OULTON: Q: And would you agree with me that no  
11 specific adjustments were made to the unit energy  
12 costs in this table for the differences in  
13 dispatchability of the various resources that are  
14 identified there?

15 MR. REIMANN: A: That is correct.

16 **Proceeding Time 8:48 a.m. T6**

17 MR. OULTON: Q: To turn now to another topic, this one  
18 primarily relating to wind resources. If you turn to  
19 page 3-20 of the application, that's in Exhibit B-1.

20 MR. REIMANN: A: I have that.

21 MR. OULTON: Q: The section numbered 3.3.4.3, wind  
22 integration costs, I'm correct that what's set out  
23 there is a broad summary of B.C. Hydro's approach to  
24 wind integration costs. And if you look at page 3-21  
25 in the last paragraph of that section, there's a  
26 sentence reading:

1           "The 2008 LTAP portfolios include a wind  
2           integration cost of \$10 per megawatt hour."

3           So as I understand it, the LTAP includes this \$10 per  
4           megawatt hour to reflect the particular difficulties  
5           of integrating intermittent wind resources into your  
6           system, is that correct?

7 MR. REIMANN:    A:    It reflects the \$10 per megawatt hour  
8           as a cost of integration.

9 MR. OULTON:    Q:    Yes, and that's -- the intermittent  
10           resources require some backup and other support to  
11           make them of utility to B.C. Hydro, and this \$10 is  
12           intended to reflect the cost of that, is that correct?

13 MR. REIMANN:    A:    So we buy intermittent resources.  
14           Somewhat they have value of capacity, but largely we  
15           buy them for their energy capability and we store them  
16           in the system. The \$10 for the wind reflects some of  
17           the volatility and variability that we have with wind.  
18           That does require us to reserve a certain amount of  
19           our capacity.

20 MR. OULTON:    Q:    I think we're saying the same thing, so  
21           I'll let your -- I accept your answer on that, I  
22           think. We're at the same place.

23                    And if we turn to Appendix F-3 to the  
24           application, this is a more detailed description of  
25           how B.C. Hydro arrived at that \$10 figure, is that  
26           correct?

1 MR. REIMANN: A: Yeah, this is the analysis behind it,  
2 yes.

3 MR. OULTON: Q: And if you turn to page 16 of 17 right  
4 near the end of that appendix, there's a sentence that  
5 begins:

6 "Energy shift costs are estimated to range  
7 between \$6.04 per megawatt hour and \$6.14  
8 per megawatt hour which suggests that there  
9 are significant market opportunity costs  
10 associated with wind generation..."

11 And I'm just wondering if you could describe to me  
12 what those market opportunity costs are that are being  
13 referenced there.

14 MR. REIMANN: A: The volatility of wind and the  
15 difficulties that you have in forecasting, both from  
16 generally speaking the 10-minute hour to day ahead,  
17 requires you to hold a certain amount of capacity  
18 available in the system to handle those variations.  
19 To the extent that you have that capacity held for  
20 that variability, you then aren't able to transact  
21 into the market what that capacity.

22 MR. OULTON: Q: So it's not a reference to the  
23 potential market value of the backup services B.C.  
24 Hydro is providing to the wind generation. It's more  
25 the cost of B.C. Hydro not being able to use its power  
26 to access the market, the power that it's holding in

1 reserve.

2 MR. REIMANN: A: I think, yes, that's correct.

3 MR. OULTON: Q: Has B.C. Hydro done any analysis of the  
4 potential market value of the backup service it  
5 provides to wind producers? i.e., there are other  
6 wind producers out there. Has B.C. Hydro assessed the  
7 potential of it providing the backup services it would  
8 provide to the wind producers that it enters into EPAs  
9 with, just generally, just as providing that service  
10 in and of itself?

11 MR. REIMANN: A: We did look at the transactions that  
12 Powerex does in the market, selling to other entities  
13 to manage some of the wind volatility. And I guess to  
14 be clear, when we think about an opportunity cost, we  
15 generally are talking about if we had this capacity  
16 available to transact in the market, that we'd be able  
17 to sell a service. So to the extent that we can't  
18 sell that service, that revenue doesn't come back to  
19 the customer through the trade account and so it  
20 becomes a lost opportunity cost. And in general,  
21 these are not inconsistent.

22 MR. OULTON: Q: Sorry, I'm not -- I followed you right  
23 up till the last sentence when you said, "In general,  
24 these are no inconsistent." I'm not sure what you're  
25 referring to by "these".

26

**Proceeding Time 8:53 a.m. T07**

1 MR. REIMANN: A: So the wind integration cost, matter  
2 of \$10 a megawatt hour, is not inconsistent with what  
3 Powerex might expect to see in the market.

4 MR. OULTON: Q: Okay. So it is a comparable number.  
5 If you were providing this service in the market, you  
6 expect that it would be around the \$10 that you're  
7 speaking of.

8 MR. REIMANN: A: Generally speaking.

9 MR. OULTON: Q: And is it B.C. Hydro's intention to  
10 apply this \$10 per megawatt hour cost in its  
11 evaluation of any bids received from wind producers in  
12 the Clean Call, or otherwise?

13 MR. REIMANN: A: I'll defer that question to Mr.  
14 Scouras on Panel 4.

15 MR. OULTON: Q: And I think you'll agree with me that  
16 the full cost of wind power is the price that B.C.  
17 Hydro would pay for the power, plus the opportunity  
18 cost of backing up the wind resources, and that's what  
19 this \$10 -- the latter part is what this \$10 is  
20 intended to reflect.

21 MR. REIMANN: A: That's correct.

22 MR. OULTON: Q: Now, Appendix F-3 concludes with a  
23 statement, the last paragraph, which is on page 17 of  
24 17, of Appendix B-3, that a more detailed wind  
25 integration cost analysis was to be completed later  
26 this year. I take that that's a reference to 2008,

1           because that's when the application was filed. Has  
2           B.C. Hydro completed its more detailed wind  
3           integration analysis?

4 MR. REIMANN:   A:   We have not. We have just completed  
5           the wind data study. We've broken this out into two  
6           steps. One was to gather a more detailed  
7           representation of the wind resources that may be  
8           available in the province, and then subsequent to  
9           that, we want to do some additional system modeling.  
10          In the last couple of weeks we went out, back to the  
11          wind proponents and intervenor group, to explore the  
12          results of the wind data study. So that part is  
13          completed. We'd anticipate the rest of the study  
14          should be done in 2009.

15 MR. OULTON:   Q:   Thank you. I'd like now to turn to  
16          another topic, and the reference for this is the  
17          response given to COPE IR 2.5.2, in Exhibit B-4.

18 MR. REIMANN:   A:   I have that.

19 MR. OULTON:   Q:   And you'll see that the request that  
20          was made was for the impact on B.C. Hydro's net system  
21          costs if the Clean Call were deferred for two years,  
22          and as I understand the response, it was that the  
23          present value of the base resource plan would be  
24          reduced by \$100 million. Is that correct?

25 MR. REIMANN:   A:   That's correct.

26 MR. OULTON:   Q:   And so, what that means is, B.C.

1 Hydro's system cost would be estimated to be lower if  
2 it deferred the Clean Call.

3 MR. REIMANN: A: That's correct.

4 MR. OULTON: Q: And is that \$100 million figure the  
5 aggregate change for a two-year deferral? Or is it a  
6 reference to a particular portion of it, like 100  
7 million per year?

8 MR. REIMANN: A: So, actually, I should be careful  
9 here. What we did when we calculated that number was,  
10 a deferral of the Call of two years, the value, the PD  
11 value of that was \$100 million.

12 MR. OULTON: Q: Okay.

13 MR. REIMANN: A: And I believe that was calculated  
14 through a portfolio, so it would have been an all-  
15 inclusive cost. That isn't to say that if Hydro had  
16 deferred the Call for some reason, that it wouldn't  
17 have somehow otherwise altered its actions to have  
18 maintained the same relative supply/demand balance.

19 MR. OULTON: Q: If I understand what you're saying,  
20 you're saying the deferral, in and of itself, had a  
21 present value of about \$100 million, but that's not to  
22 say B.C. Hydro wouldn't have taken other actions to  
23 address -- if there was a shortfall, any shortfall in  
24 its supply. As a result of --

25 MR. REIMANN: A: I believe that's what I said, yes.

26 MR. OULTON: Q: Yeah. And this response was given in



1 MR. OULTON: Q: My initial question was: Would the  
2 \$100 million figure change as a result of the changes  
3 made in the evidentiary update? And I think your  
4 response was no. And my follow-up question was:  
5 Well, hasn't the base resource plan changed as a  
6 result of the evidentiary update? And I would have  
7 thought then there may have been, and the reason I'm  
8 asking the question is I don't know.

9 MR. REIMANN: A: Yes.

10 MR. OULTON: Q: So, and a corresponding change.

11 MR. REIMANN: A: Sorry, I misunderstood your question.  
12 I thought you were referring to the changes in the  
13 unit energy cost.

14 Yeah, so with respect to the base resource  
15 plan, since we have reduced the anticipated Clean  
16 Power Call from reliance of 3400 gigawatt hours to  
17 2100 gigawatt hours, that reduction would have reduced  
18 the PB cost of this portfolio change, that's correct.

19 MR. OULTON: Q: Is the new value something that B.C.  
20 Hydro can calculate without too much difficulty? Do  
21 you still have the portfolio that you used to -- or  
22 the program that you used to calculate the original  
23 change?

24 MR. REIMANN: A: I'd have to get back to my people to  
25 check that out.

26 MR. OULTON: Q: All right. If it's --

1 MR. THRASHER: Sorry, what are you getting at?

2 MR. OULTON: I'm asking, in response to COPE IR 2.5.2, a  
3 calculation was done to provide the change in the --  
4 or the present value of the deferral of the Clean  
5 Call. In my questions to Mr. Reimann, I think he's  
6 acknowledged that there may well have been a change as  
7 a result of the evidentiary update, and I'm wondering  
8 if a revised number can be provided of the present  
9 value of the deferral. And if it's not undue, I'd ask  
10 that you undertake -- if it would not put an undue  
11 burden on you, I would ask the undertaker to provide  
12 that information, so that we have a response that  
13 reflects the current evidentiary --

14 MR. REIMANN: A: I mean, this isn't something that we  
15 managed to turn around overnight. This would be at  
16 least a several day exercise.

17 THE CHAIRPERSON: Let me jump in if I may, Mr. Oulton.  
18 Directionally do you think the number has gone up or  
19 down?

20 MR. REIMANN: A: Down.

21 THE CHAIRPERSON: Is it now 80 million or 50 million or--

22 MR. REIMANN: A: I mean notionally it'd be something  
23 like 60 percent of the number, I would think.

24 MR. OULTON: Q: Your estimate would be, it would be  
25 proportionate to the size of reduction of the Clean  
26 Call?

1 MR. REIMANN: A: Correct.

2 THE CHAIRPERSON: Does that help you, Mr. Oulton?

3 MR. OULTON: I'm prepared to accept that, given the  
4 panel's advice that it would take a bit of time to  
5 figure out an actual number.

6 MR. THRASHER: There's several issues related to the  
7 (inaudible) potential deferral to the Call, so -- and  
8 some of those will be dealt with on Panel 4, so.

9 MR. OULTON: Q: All right, which brings me to my next  
10 question which I'd defer to my friend if he tells me  
11 that this is something that should go to Panel 4. And  
12 that relates to the second part of the response given  
13 to 2.5.2, which is B.C. Hydro responds that it is of  
14 the view -- was of the view at least, in October of  
15 2008 that a two-year deferral of the Clean Call was a  
16 high-risk proposition. Do you see that in the  
17 response?

18 MR. REIMANN: A: I do.

19 MR. THRASHER: I'd say that that matter should be  
20 confined to Panel 4.

21 MR. OULTON: All right. I haven't even asked my question  
22 but --

23 MR. THRASHER: You're talking about deferral and the  
24 possible ramifications of deferral of the Call, and  
25 this isn't a Panel 3 matter.

26 MR. OULTON: No, I -- that's what I said I'd defer to



1 ("BC HYDRO 2008 LTAP, MATERIALS REFERRED TO IN CROSS-  
2 EXAMINATION OF PANEL 3 BY THE TERASEN UTILITIES",  
3 MARKED EXHIBIT C13-9)  
4 (DOCUMENT ENTITLED "AVISTA, EVERY LITTLE BIT, NEW  
5 CONSTRUCTION INCENTIVES...", MARKED EXHIBIT C13-10)  
6 MR. THRASHER: Before we continue, I just -- Mr. Youngman  
7 is a little bit stranded at the end of the panel, and  
8 I don't know if he will be heard. I expect that there  
9 will be some queries going his way. So I don't know  
10 if we could do something logistically about getting  
11 him closer to the mike, or --  
12 MR. GHIKAS: Q: Panel, I want to start off by asking  
13 some questions about the RIB, B.C. Hydro's residential  
14 inclining block rate. And first of all, start off by  
15 asking Dr. Orans to confirm --  
16 MR. THRASHER: Sorry, my understanding is that we're in  
17 the middle of the 2008 LTAP. So we're asking  
18 questions about the RIB?  
19 MR. GHIKAS: Chapter 3 is dealing with, Mr. Chairman,  
20 resource options and the RIB is discussed in Chapter  
21 3, and I'm intending to ask a very few questions about  
22 the use of rates as a measure in an overall portfolio  
23 for addressing the supply --  
24 THE CHAIRPERSON: That's fine. Please continue.  
25 MR. GHIKAS: Thank you, Mr. Chairman.  
26 MR. GHIKAS: Q: Dr. Orans, you were an expert witness

1 on behalf of B.C. Hydro in the RIB application  
2 proceedings?

3 MR. ORANS: A: Yes, that's correct.

4 MR. GHIKAS: Q: And you would consider the RIB rate as  
5 part of a portfolio of measures that meet B.C. Hydro's  
6 growing load?

7 MR. ORANS: A: Yes, that's a fair statement, I think.

8 MR. GHIKAS: Q: And it's in essence a rate structure  
9 that drives incremental conservation.

10 MR. ORANS: A: Yes, that was part of its intent.

11 MR. GHIKAS: Q: Okay. And building on that, I think we  
12 can agree that the fundamental rationale for a stepped  
13 rate is that B.C. Hydro's flat rates based on the  
14 embedded costs of supply were inadequate to encourage  
15 the efficient use of electricity.

16 MR. ORANS: A: That was one characteristic of the  
17 existing flat rates, yes.

18 MR. GHIKAS: Q: And having the second tier more closely  
19 reflect the marginal cost of supply, as it was in the  
20 Clean Call -- 2006 Call, pardon me, it would have the  
21 effect of sending better price signals to encourage  
22 conservation.

23 MR. ORANS: A: Yes, I believe that's correct.

24 MR. GHIKAS: Q: Now, if we can just turn briefly to the  
25 package, C13-9, and if you go over to the first page  
26 of the package, this is an excerpt -- the next few

1 pages are an excerpt from the RIB Volume 4 Transcript  
2 of Proceedings, and first of all you'll accept, Dr.  
3 Orans, that this is excerpted from the transcript --

4 MR. THRASHER: Mr. Chair? This has already been dealt  
5 with in another hearing and we're -- you know, the  
6 same panel is not present. So --

7 THE CHAIRPERSON: I honestly feel that Mr. Ghikas has  
8 established the reason for his wishing to go down this  
9 avenue. I really can't stop him doing it, Mr.  
10 Thrasher.

11 MR. GHIKAS: Q: First of all, Dr. Orans, you'll accept  
12 that this is an excerpt from the Transcript of  
13 Proceedings from the RIB application.

14 MR. ORANS: A: Yeah, I don't remember it specifically,  
15 but I'll accept that it is.

16 MR. GHIKAS: Q: That's fine, thank you. And in this  
17 passage, this section, Mr. Fulton was

18 **Proceeding Time 9:09 a.m. T10**

19 MR. GHIKAS: Q: That's fine, thank you. And in this  
20 passage, this section, Mr. Fulton was asking about  
21 whether a RIB structure producing a positive margin  
22 could have the effect of inducing increased  
23 consumption on the other customer classes. And -- but  
24 that's just as a matter of context.

25 What I'm particularly interested in is a  
26 comment that you made on the third page of the package

1 in response to Mr. Fulton's questions, and I'm  
2 starting at line 12, when you were discussing the way  
3 in which the approach to analyzing the success of the  
4 RIB rate, as I understand it, and you said at line 12:

5 "However, I think you want to -- when you're  
6 looking at that analysis, to determine  
7 whether that's good or not, you should  
8 probably be look at the total resource cost  
9 perspective and looking at the choices  
10 customers have and the choices that B.C.  
11 Hydro has for meeting a new supply. And I  
12 believe that most of the evidence that we've  
13 put forward in this case, this is a very  
14 low-cost form of conservation and a very  
15 low-cost resource compared to other  
16 resources."

17 Now, what you were saying there when you  
18 referred to the total resource cost perspective is  
19 that the focus in assessing the effectiveness of the  
20 conservation signals and by the RIB, the focus should  
21 be on the total resource cost for the utility.

22 MR. ORANS: A: I mean, that was part of the discussion.  
23 I think there was a long, lengthy discussion about the  
24 uncertainty of their conservation estimates provided  
25 by the RIB, whether -- and the ranges of those  
26 uncertainty estimates. And so I wanted to place that

1 in context of its potential benefits. And I think the  
2 focus that Mr. Fulton was drawing is there's a lot of  
3 uncertainty and we don't know how much the RIB is  
4 going to produce. And my main point was it looked to  
5 me at that point like a relatively low-cost option, so  
6 the uncertainty shouldn't be prohibitive in stopping  
7 this Commission from considering it as an option.

8 MR. GHIKAS: Q: Right, and the point of comparison that  
9 you were using when you said it's a relatively low-  
10 cost option is the avoided cost of supply for B.C.  
11 Hydro.

12 MR. ORANS: A: Yes, the one referenced in this  
13 discussion.

14 MR. GHIKAS: Q: Okay. Now, I did a little Googling  
15 last night just so that we could get on the same terms  
16 as to what total resource cost is, and I'm just going  
17 to suggest that total resource costs addresses the  
18 question of will the total costs of energy in the  
19 utility service territory decrease over the life of a  
20 measure taken? And in this case the measure taken  
21 that you were using was the RIB rate. Is that a fair  
22 statement?

23 MR. ORANS: A: That's a broad statement. There are  
24 various definitions of total costs. And where it gets  
25 grey is total resource costs can include various  
26 social costs sometimes, and each jurisdiction has

1           their own definition on how far they go. Mr. Hobson  
2           could probably give you more comment on how B.C. --  
3 MR. HOBSON:    A:    I think we've actually provided, within  
4           some of the responses through this proceeding so far,  
5           some of the definitions around the cost tests and in  
6           particular the total resource cost. I think we've  
7           provided the definition that we do use.  
8 MR. GHIKAS:    Q:    But I guess what I want to get out of  
9           this, Dr. Orans, is that the basis for comparison that  
10          we're using for assessing the success of the RIB rate  
11          was the total -- the avoided supply costs for B.C.  
12          Hydro. That we can agree on.  
13 MR. HOBSON:    A:    Yes, I would confirm that.  
14 MR. GHIKAS:    Q:    Okay, thank you.  
15                        Now, under the approved residential  
16          inclining block rate structure, not all residential  
17          customers are going to see the RIB Tier 2 rate. Is  
18          that a fair statement?  
19 MR. HOBSON:    A:    That's consistent with the evidence we  
20          presented in the RIB, yes.  
21 MR. GHIKAS:    Q:    Okay. And so for example, a small  
22          residence that had -- even one that has space and  
23          water heating, electric space and water heating, may  
24          not see the Tier 2 rate, depending on their  
25          consumption.  
26 MR. HOBSON:    A:    Yes, that's possible.

1 MR. GHIKAS: Q: Okay. And so for those customers,  
2 they're still receiving a price signal that entirely  
3 reflects the embedded costs, in effect.

4 MR. HOBSON: A: Well, the whole rates reflects the  
5 embedded cost. So they're seeing a rate that's lower  
6 than the Tier 2 rate.

7 MR. GHIKAS: Q: Right, and they're not getting the  
8 signal from the marginal cost of supply from B.C.  
9 Hydro because that's embedded in the second tier.

10 MR. HOBSON: A: In the periods where their usage is  
11 below the Tier 2 rate, that's correct.

12 MR. GHIKAS: Q: Okay. And the second tier of the RIB  
13 rate is priced based on the results of the F2006 Call,  
14 as I understand. Is that correct? Mr. Ince, you're  
15 nodding there.

16 MR. INCE: A: Yes. In principle, yes.

17 MR. GHIKAS: Q: Thank you. And that figure, if I  
18 recall correctly, was \$88 per megawatt hour?

19 MR. INCE: A: I think you said 88.

20 MR. GHIKAS: Q: 88, yes. That's right?

21 MR. INCE: A: Yes.

22 MR. GHIKAS: Q: Thank you. And so I think going  
23 forward, the figure that B.C. Hydro has been using as  
24 its proxy for the avoided cost of supply is \$120 per  
25 megawatt-hour. Is that fair, Mr. Ince?

26

**Proceeding Time 9:16 a.m. T11**

1 MR. INCE: A: We had an extensive discussion over the  
2 last few days in terms of what is the marginal cost of  
3 new supply, and I think that's a number that has been  
4 established in the last few days. It's not a  
5 definitive number in terms of what we think is going  
6 to be bid into the Calls. Certainly we don't want to  
7 telegraph that number. But of all the numbers that  
8 have been talked about, that seems to be the one  
9 that's most commonly accessed.

10 MR. GHIKAS: Q: Right. No, fair enough, and I'm not  
11 going to --

12 MR. THRASHER: I would just ask my friend -- a lot of  
13 these issues were dealt with on Panel 2, and I just --  
14 if we can steer to the relevancy of Panel 3, I would  
15 appreciate that. So where -- I'd just like some  
16 directional indication of where we're going with this.

17 MR. GHIKAS: Well, actually the issue -- Mr. Wallace  
18 asked about the derivation of the \$120, and it was  
19 bumped to this panel, Mr. Chairman. Page 312 of  
20 transcript Volume 3, Mr. Godsoe says, in response to  
21 those questions, "And I think Panel 3 can assist you  
22 on how that was extracted from the resource options  
23 update." So I'm not sure how far I'm straying from  
24 the round -- from relevance at this point, but --

25 MR. THRASHER: I assume that's a matter of portfolio  
26 analysis, though, correct?

1 MR. GHIKAS: Actually, I was just trying to establish the  
2 benchmarks of what we're dealing with, Mr. Chairman.  
3 We've got \$88 on one hand, and I'm just moving to  
4 where the other benchmark is. And I think it's been  
5 discussed as to -- the figure of \$120 per megawatt  
6 hour has been on the record, and I just wanted to  
7 refresh everybody's memory so that I could continue  
8 asking the questions.

9 THE CHAIRPERSON: I think you're within your scope of  
10 this panel, it seems to me.

11 MR. GHIKAS: Thank you, Mr. Chairman.

12 MR. REIMANN: A: So, there was a number of places in  
13 the application that we estimated costs of supply-side  
14 options. The one derivation came from when we  
15 compared the DSM Option A to no DSM, and DSM Option B  
16 versus DSM Option A. And that resulted in some  
17 acquisition costs. We also updated those numbers, or  
18 provided an estimate of -- based on the resources in  
19 the resource options update, what the estimated firm  
20 energy costs would be, and I can reference those IRs  
21 for you if you'd like.

22 MR. GHIKAS: Q: I'll come back to that. At this point,  
23 the figure we'll use is the \$120, that's the figure  
24 that's used in the evidentiary update, the \$120 for  
25 where B.C. Hydro is going in the future. Right?

26 MR. REIMANN: A: Fine.

1 MR. GHIKAS: Q: Okay. I just -- the transcript won't  
2 pick up a nod, that's all I'm saying.

3 MR. REIMANN: A: Yes.

4 MR. GHIKAS: Q: Thank you. Now, I think, Mr. Ince,  
5 where we were on the Panel 2 was that, if we look at  
6 the time of delivery factors applicable for space  
7 heating, for instance, that \$120 figure would  
8 directionally go up.

9 MR. INCE: A: That's correct.

10 MR. GHIKAS: Q: And so, it's fair to say, given that  
11 the RIB is based on the \$88 per megawatt-hour figure,  
12 that the Tier 2 rate is lagging behind what is the  
13 true marginal cost of supply that B.C. Hydro expects,  
14 going forward.

15 MR. HOBSON: A: One thing I might be able to help out  
16 with is, we're talking about rates that are put  
17 forward and a connection back to a marginal cost of  
18 supply for a Tier 2 level, and then portraying that  
19 out in the future, and if you take a look at what  
20 we've actually modeled with respect to rates within  
21 the DSM plan options that we've put forward, that's  
22 laid out in Appendix K. And if you go to page 132 of  
23 Appendix K, it lays out the actual price points that  
24 were used for Tier 1 and Tier 2. And within that  
25 table, Table 1 on page 132 of 213, you'll find the  
26 second step is laid out, and you'll see that those

1 costs do escalate up to around 11 to 12 cents.

2 The one other thing to note is I think  
3 there's a big leap as to what will happen with rate  
4 structures, and whether or not there will be  
5 automatically a connection to the marginal price as we  
6 go further out into time, and that number increases,  
7 potentially, over time. And I think that's still work  
8 that would need to be done to make that determination.

9 At this point in time, what we put forward  
10 with respect to rate structures and the levels of the  
11 different tiers is based on an understanding of what  
12 we would see it be over our planning horizon. And  
13 when we get into specific rate design, that may or may  
14 not shift. That may or may not change. But I think  
15 we're a long ways away from defaulting to the point  
16 that it would automatically embrace a Tier 2 level up  
17 in those price points or beyond.

18 **Proceeding Time 9:21 a.m. T12**

19 MR. GHIKAS: Q: Okay. My only point here, and I think  
20 we can probably agree on this, is that a customer is  
21 experiencing the Tier 2 rate currently, isn't seeing a  
22 price signal that reflects \$125. I think that's fair.  
23 Are we there?

24 MR. HOBSON: A: Currently I think we'd have to agree  
25 that the math would suggest that, yes.

26 MR. GHIKAS: Q: Okay. Thank you.

1                   So, speaking conceptually, then, Dr. Orans,  
2                   given the fact that the customer isn't seeing a price  
3                   signal that mirrors the \$125 -- or \$120, pardon me,  
4                   that we've been using, I think we can agree that there  
5                   is still room for the conservation price signal to be  
6                   enhanced. Not necessarily through a rate structure,  
7                   but just -- the conservation signal, as we move toward  
8                   market --

9 MR. HOBSON:    A:    I think there's a lot more to consider  
10                  than just the price signal, and I think this would  
11                  come in to impacting the thresholds that you would be  
12                  applying, and the amount of load that would be exposed  
13                  to the various price signals. So I think it's a much  
14                  more complicated exercise than what we're portraying  
15                  to be through these questions.

16 MR. GHIKAS:    Q:    Right. And speaking conceptually,  
17                  though, Dr. Orans, the best conservation price signal  
18                  would be one that mirrors B.C. Hydro's marginal costs  
19                  of supply. Is that fair?

20 MR. ORANS:     A:    I think if that were your only goal in  
21                  rate design. However, if you remember in that  
22                  proceeding, we presented a whole range of options,  
23                  with higher second tiers and lower second tiers. And  
24                  remember, the constraining piece here was the bill  
25                  impact, especially on the large use customers. And  
26                  so, to the extent you increase the second tier, you

1 know, as Mr. Hobson said, you probably have to change  
2 the threshold.

3 So as you pointed out earlier in questions  
4 to me, you know, less customers would probably see  
5 that second tier if you had an embedded cost-based  
6 rate. So you have these trade-offs.

7 So, just to finish this question, you may  
8 see an efficient price signal to a few customers. But  
9 other customers may not see the signal at all. So you  
10 have this trade-off of, are you going to send a very  
11 high price to a few customers, or are you going to  
12 send a price that moves you towards the long-run cost  
13 of supply over time, to more customers? And that's  
14 the trade-off you face.

15 MR. GHIKAS: Q: Yeah, I think you guys are trying to  
16 guess where I'm going here, and I think you're  
17 guessing wrong, so let's just bring it right back to  
18 the simple principles. Let's -- let me rephrase it.

19 The premise of a DSM incentive payment is  
20 to improve the price signal that a customer is seeing  
21 when they're not paying the marginal cost of supply.

22 MR. ORANS: A: I would disagree with that  
23 characterization. I mean, premise of a DSM program is  
24 that there is some kind of broad failure of the  
25 market. And that can be for a whole number of  
26 reasons. Education, technology development, and one

1           might be price response. But DSM programs cover a  
2           whole range of potential market failures.

3 MR. GHIKAS:   Q:   Yeah, and I was referring to the  
4           incentive payment portion. So, when you're -- when a  
5           DSM incentive payment is given, that's directed at  
6           improving a price signal towards the customer.

7 MR. HOBSON:   A:   Yeah, and we've outlined that in the  
8           application. I mean, Dr. Orans has indicated our  
9           approach, really, and our approach is looking at  
10          barriers as a whole. One of those barriers is an  
11          affordability barrier, and incentives are a tool that  
12          we use to try to overcome the affordability barrier as  
13          well as others.

14 MR. GHIKAS:   Q:   Okay. And can someone just confirm for  
15          me the load resource gap in the evidentiary update,  
16          that assumes the current RIB structure? Is that  
17          right? I think we dealt with that on Panel 2, but is  
18          that --

19 MR. HOBSON:   A:   No, and I think we answered an IR -- I  
20          believe it was to ESVI, outlining what we have done.  
21          There was no update in the evidentiary update to  
22          specific DSM initiatives, including rate structures.  
23          We did put forward in that IR response the magnitude  
24          of the impact, which I believe over time was within  
25          about 100 gigawatt hours. So, we maintained the same  
26          modeled rate structure that we had put forward

1 originally.

2 MR. GHIKAS: Q: In the LTAP.

3 **Proceeding Time 9:25 a.m. T13**

4 MR. HOBSON: A: As part of the RIB application, and  
5 that is what is still within the evidentiary update.  
6 We did take a look at if we applied, based on the RIB  
7 decision, what that rate would look like, and then  
8 flowed that out over time, and that's where we came  
9 back to something that was still within the ballpark  
10 of 100 gigawatt hours over time.

11 MR. GHIKAS: Q: Okay. So -- okay, thank you.

12 I just want to -- Dr. Orans, I'm going to  
13 stay with you for a moment, and I'd like to put a  
14 scenario to you and ask you to assume it for a moment  
15 for the purpose of my next couple of questions. I  
16 want you to assume a scenario where the retail rates  
17 paid by customers are far below the utility's marginal  
18 cost of supply. A new customer is faced with  
19 installing space heat, and that customer has a choice  
20 between electric space heating, natural gas heating,  
21 and the heat pump. And considering only the retail  
22 rates that will be paid by that customer, the customer  
23 will never recoup the incremental up-front cost of  
24 installing the natural gas furnace or the heat pump  
25 over the life of the equipment.

26 The utility, and this is my final

1           assumption, the utility can successfully incent the  
2           customer not to adopt electric space heating for a  
3           lower cost than serving the new load. Okay?

4                       Now, leaving aside all policy  
5           considerations, Dr. Orans, can we agree that the most  
6           efficient result in that scenario from the perspective  
7           of the utility's ratepayers, as a whole, is for the  
8           utility to invest in the measures to incent the  
9           customer not to adopt electric space heating, and thus  
10          avoid the cost of serving the new load?

11 MR. HOBSON:    A:    I really think, you know, this is  
12           getting --

13 MR. GHIKAS:    Q:    Well, my question was to Dr. Orans, Mr.  
14           Hobson.

15 MR. HOBSON:    A:    Yeah, I think I have to weigh in a  
16           little bit on this, though. I think we're talking  
17           about a hypothetical situation that's closing off so  
18           many considerations to the issue, that I'm not sure  
19           that it's a fair characterization.

20 MR. GHIKAS:    Q:    Well, that's fine, and we'll leave that  
21           to your counsel to argue that in final argument. But  
22           I'm interested in the economic aspect of it, and I'm  
23           putting the hypothetical to Dr. Orans and I'm just  
24           asking --

25 MR. THRASHER:    You're calling for a huge amount of  
26           speculation in this question. I mean, there's --

1        assuming a scenario, but this is -- you know, I really  
2        must protest. There's a lot of speculation you're  
3        calling for, and if you lay out a simple scenario it's  
4        one thing, but I think that this calls for a fair  
5        degree of speculation, to the point where the  
6        relevancy is definitely in question.

7        MR. GHIKAS: Well, Mr. Chairman, what I am trying to get  
8        at here is the economic approach to things, the  
9        economic analysis, and what the economic benefits are  
10       in isolation from policy considerations. And in my  
11       submission, it's entirely relevant to know what Dr.  
12       Orans believes is the efficient result in the  
13       hypothetical that I propose to you.

14       MR. HOBSON: A: I might be able to help a little bit  
15       with this. I mean, if you're taking a look at just  
16       the pure economics and we take a look at the findings  
17       from the conservation potential view and the fuel  
18       switching chapter, I mean, the economics are such that  
19       it demonstrates that there is economic potential with  
20       respect to fuel switching opportunities. For reasons  
21       we've outlined in the application, largely around  
22       policy, and I think that's probably had some  
23       discussion to date, we didn't investigate that  
24       further. But I mean, the CPR and in looking at it it  
25       identified a number of concerns with respect to  
26       ongoing operating costs, which I think are a number of

1 the issues you're trying to outline with respect to  
2 the different rates offered for gas versus  
3 electricity. And as a result of those, there's  
4 concerns as to whether or not there's achievable  
5 potential that would be realized as a result of that  
6 economic potential, and that was the conclusion from  
7 the CPR.

8 In looking at our demand-side management  
9 plan, based on the policy issues that we've outlined  
10 in the application, we didn't go back and explore fuel  
11 switching opportunities. But I can tell you that if  
12 we had've, we would've looked at the economic  
13 potential first, we would've seen the opportunity  
14 outlined by that economic potential. I think we  
15 would've taken a look at some of the same issues that  
16 the CPR study team had uncovered with respect to the  
17 operating costs, and I think we would've struggled  
18 with initiatives to put forward that would have put us  
19 in a position where we could've arrived at something  
20 that would've had achievable potential of real  
21 significance.

22 We didn't go and do that work, so I can't  
23 tell you what the numbers would be. But I can tell  
24 you that if we look at a situation with say a new home  
25 developer, and the economics of what it would take to  
26 offer an incentive to get the new home developer to

1 put a different system in place, putting forward an  
2 initiative that would overcome that issue would still  
3 leave the homeowner that inherits that system in a  
4 worse situation with respect to the operating costs.

5 **Proceeding Time 9:30 a.m. T14**

6 So, unless, you know, we're able to  
7 envision the specific ongoing initiatives that are  
8 going to leave those homeowners in better shape, I  
9 think we would struggle with those same issues.

10 Similarly, I think if we look at our retro-  
11 fit situation, we could have a situation where, again,  
12 you could have a customer that you could incent, you  
13 could put enough money on the table and you could get  
14 them to act. But if the ongoing operating costs are  
15 such that it's not in their best interest to maintain  
16 that system, I think we'd have concerns about whether  
17 that customer would maintain that system or switch  
18 back.

19 MR. GHIKAS: Q: Okay.

20 MR. HOBSON: A: So I think there's a lot of issues that  
21 we would have to have overcome in moving forward with  
22 this, with our demand-side management plan, policy  
23 issues aside.

24 MR. GHIKAS: Q: Right, okay. So I'm going to take that  
25 up with Panel 4, but just ask you one follow-up  
26 question, and that is that when the assessment of the

1           achievable potential that you've discussed was done,  
2           that was done from the perspective of a customer who  
3           is paying a rate -- a retail rate that is far below  
4           the marginal cost.

5 MR. HOBSON:    A:    That was absolutely part of that  
6           assessment from the CPR, and I think that's an  
7           important distinction, because what it outlines is  
8           some barriers that that customer is going to face, and  
9           that are going to need to be dealt with if you're  
10          going to move forward with initiatives to try to  
11          realize that economic potential. So, what I'm saying  
12          to you is, you know, we didn't go back in putting this  
13          DSM plan together and investigate the specific  
14          initiatives to overcome those issues. But I can tell  
15          you that in looking at the CPR findings, we would have  
16          gone back, looked at the economic potential, I'm  
17          convinced we would have come across the same issues  
18          that the study team had, and we would have struggled  
19          to put initiatives forward that I think would have  
20          overcome those.

21 MR. GHIKAS:    Q:    Now, Mr. Hobson, the economic potential  
22          you're referring to, I'm going to again be pursuing  
23          this with Panel 4, which I think is where it  
24          appropriately lies, but the economic potential looks  
25          at the total resource cost perspective.

26 MR. HOBSON:    A:    In the case of the fuel switching, it

1 had to embrace a perspective similar to that, in the  
2 sense that it had to deal with two different fuel  
3 types in coming up with an understanding of the  
4 economics. In taking a look at other chapters, we  
5 were able to work off of a cost of conserved energy,  
6 because we're only needing to get a reference price to  
7 compare it to.

8 MR. GHIKAS: Q: Okay. So, let's come back to my  
9 hypothetical here. Dr. Orans --

10 MR. THRASHER: I once again protest. I think that we've  
11 covered how far into speculation this is. We have  
12 B.C. Hydro's position on Panel 1, on -- and what B.C.  
13 Hydro considers to be government policy. I think that  
14 that question has been thoroughly vetted on Panel 1,  
15 and I don't think that we're prepared to provide an  
16 answer to a question on such a speculative basis.

17 THE CHAIRPERSON: Mr. Ghikas, I thought you got quite a  
18 lengthy response grounded in the CPR, and therefore in  
19 what I'd describe as evidence that is before this  
20 Commission. I would not suggest you venture off into  
21 too much -- too many hypothetical questions.

22 MR. GHIKAS: Thank you, Mr. Chairman.

23 MR. GHIKAS: Q: Mr. Hobson, in the scenario where the  
24 economic potential -- where a measure as economic  
25 potential, and it's been ruled out based on an  
26 individual customer's payback on that measure, based

1 on the retail rates, will you agree with me that all  
2 customer rates will increase by virtue of the customer  
3 adopting the electric space heating, all else equal?

4 MR. HOBSON: A: Could I ask you to repeat that?

5 MR. GHIKAS: Q: Sure. All else equal, if B.C. Hydro --  
6 if there is a measure that shows in your CPR that it  
7 has economic potential, okay? But it hasn't been  
8 pursued, based on the individual customer's individual  
9 payback, what the payback that they see based on the  
10 retail rates, and the retail rates, as we know, are  
11 less than the marginal -- B.C. Hydro's marginal costs  
12 of supply, the net result of that customer hooking up  
13 to that end use is going to be higher rates for all  
14 B.C. Hydro customers. All else equal.

15 MR. HOBSON: A: That sounds like a different question  
16 than your first one.

17 MR. GHIKAS: Q: Well, answer my last one.

18 MR. HOBSON: A: I'll ask you to repeat it again, then,  
19 because I was trying to pick up the nuances of your  
20 first question, and you went in quite a different  
21 direction.

22 **Proceeding Time 9:36 a.m. T15**

23 MR. GHIKAS: Q: Okay. If -- let's take one of the  
24 measures, and I know there's a lot of them, in the  
25 CPR, that showed economic potential for a fuel-  
26 switching measure, okay? And if we take that measure,

1 and don't pursue it based on the individual customer's  
2 inability to see a payback on that capital cost of the  
3 equipment, because they're paying low rates reflecting  
4 the embedded costs, instead of the marginal cost of  
5 supply, okay? If B.C. Hydro doesn't pursue that  
6 measure, what that means is that, all else equal, B.C.  
7 Hydro's rates for customers as a whole will increase.

8 MR. HOBSON: A: Yeah. That I'm not certain of, because  
9 I think for us to really look at that we would have to  
10 consider what would need to be put in place to try to  
11 move that customer forward. But I mean, I think the  
12 example that you're outlining is akin to saying that,  
13 you know, if we didn't have new supply being added to  
14 our system at a rate higher than our average, that our  
15 rates wouldn't be as high, which I think is rather  
16 simplistic. I think for us to take a look at the  
17 issue with respect to fuel switching we would still  
18 need to take a look at, you know, are we putting our  
19 customers in a better situation or a worse situation  
20 by moving forward with these types of initiatives?

21 Again, though, you know, as we took a look  
22 at this with respect to the DSM plan, we didn't get  
23 into that much detail in taking a look at the specific  
24 initiatives for the reasons we've outlined in the  
25 application already with respect to the policy.

26 MR. GHIKAS: Q: Okay.

1 MR. HOBSON: A: I think we would have had some real  
2 issues in terms of, had we gone down that road, what  
3 types of initiatives we would have had to put in  
4 place, could we put in place initiatives that would  
5 have made customers that would have been participants  
6 better off, and at what cost. And unless we  
7 understood what those costs were, I'm not sure I can  
8 answer your question.

9 MR. GHIKAS: Q: Okay. Well, I think we're going to  
10 meet again on Panel 4, so I'll chase you then.

11 MR. HOBSON: A: Okay.

12 MR. GHIKAS: Q: And move on to another issue. System  
13 extension and connection policies. Dr. Orans, if  
14 desired, system extension and connection policies can  
15 be designed to send price signals to developers or  
16 owners of buildings under construction to discourage  
17 the installation of certain electric appliances,  
18 right? Leaving policy aside.

19 MR. ORANS: A: That's fair.

20 MR. GHIKAS: Q: And as a rate structure, I assume you'd  
21 agree that that would fall within the category of the  
22 low-cost DSM that we referred to in the RIB  
23 proceedings?

24 MR. ORANS: A: Yeah, it's infrequently categorized as a  
25 DSM or a pricing program. It's usually so highly  
26 regulated by a number of other rules that have nothing

1 to do with resource evaluation.

2 MR. GHIKAS: Q: But as a rate structure, the cost to  
3 B.C. Hydro is modest, relative to DSM incentives, et  
4 cetera.

5 MR. HOBSON: A: Sorry, would you repeat that?

6 MR. GHIKAS: Q: Sure. As a rate structure, connection  
7 policies or system extension tests, the cost to B.C.  
8 Hydro of implementing such a measure is lower than  
9 incentive payments, DSM programs.

10 MR. HOBSON: A: Well, I don't know if we could say that  
11 without taking a look at the specific piece that we're  
12 putting forward. I mean, rates still have costs  
13 associated with them, to implement and manage and,  
14 depending on the complexity of what we put forward,  
15 those can be significant. If you take it back to your  
16 concept of a TRC viewpoint, you know, the incentive in  
17 terms of how it's captured within that calculation  
18 would be similar with respect to rates, and that it's  
19 really not factored in, in the sense that you're  
20 really looking at the cost of the action itself. And  
21 that leaves you with, you know, what are the costs  
22 that fall outside of that, and what are the costs to  
23 administer a rate, what are the costs to administer an  
24 incentive program? And that would probably be a more  
25 fair comparison.

26 MR. ORANS: A: Typically in other jurisdictions, you

1 know, interconnection policies and standards are very  
2 hard to change, because they are very much rooted in  
3 the building construction industry. And so, any  
4 change requires a whole number -- a whole education  
5 and consultation process that people have to go  
6 through to make those changes. Even if they are good  
7 policy to make those changes, they're hard to change.

8 MR. GHIKAS: Q: Dr. Orans, the -- a system extension  
9 test or a connection policy can introduce a price  
10 signal that we've referred to previously, to  
11 developers and owners regarding certain end uses, it  
12 can do that without expressing an overt preference for  
13 any particular type of view, right?

14 **Proceeding Time 9:40 a.m. T16**

15 MR. ORANS: A: When you pick a rule on system  
16 extension, you are expressing some kind of tradeoff  
17 between protecting existing customers and funding or  
18 encouraging new development. So that's usually what  
19 the tradeoff is.

20 MR. GHIKAS: Q: Right, but the rate doesn't have to say  
21 overtly what is being preferred relative to the  
22 electric space and water heating, for example.

23 MR. HOBSON: A: I think that would generally be true  
24 with rates, period, in that rates are a fairly broad  
25 tool or instrument that you would use that are sending  
26 a signal with respect to the commodity, as opposed to

1 a DSM initiative that could be more targeted or  
2 tailored toward specific end uses or actions.

3 MR. GHIKAS: Q: Thank you.

4 If we can turn over to page 4, this is an  
5 excerpt from Exhibit C7-10 from the 2007 rate design  
6 proceedings. It's an excerpt from B.C. Hydro's  
7 website that was put to the witnesses in that  
8 proceeding. And the passage that was put to them was  
9 the second -- or the second to last and last  
10 paragraphs there. And I just want to confirm, have  
11 somebody confirmed that this is what appeared on B.C.  
12 Hydro's website at the time of the 2007 rate design  
13 application, and it appeared on the website in that  
14 form for some time prior to that.

15 MR. HOBSON: A: That's a difficult thing to confirm.  
16 You'd be testing my memory to that specific time  
17 period and what was on each page of our website. I  
18 would assume that what you put forward is correct, but  
19 I certainly wouldn't be able to confirm it for how  
20 you're asking the question.

21 MR. GHIKAS: Q: I think I could probably in the break  
22 refer to the -- refer your counsel to the transcript.  
23 So let's just leave it. Subject to check you'll  
24 accept that that appeared on B.C. Hydro's website.

25 MR. HOBSON: A: Yes.

26 MR. GHIKAS: Q: Okay, thank you.

1                   And if you turn over to page 5, this is  
2                   response to an IR from the 2007 rate design  
3                   application. It was Terasen Gas Information Request  
4                   1.3.1 and it was also included in Exhibit C7-10 from  
5                   that proceeding. And will you accept that that was a  
6                   response filed by B.C. Hydro in that proceeding?

7 MR. HOBSON:    A:    I would accept it's a response from  
8                   B.C. Hydro, yes.

9 MR. GHIKAS:    Q:    Thank you.

10                  Now, Mr. Hobson, an incentive payment, a  
11                  DSM incentive payment, is a mechanism that can be used  
12                  to overcome obstacles that you've referred to, such as  
13                  the initial cost of buying an appliance.

14 MR. HOBSON:    A:    That's correct.

15 MR. GHIKAS:    Q:    Okay, if you can just turn over the  
16                  page to page 6 of the package -- first of all I should  
17                  ask you, Mr. Hobson, whether you're aware of any  
18                  utilities that provide incentives to encourage or  
19                  discourage efficient fuel choices for particular end  
20                  uses?

21 MR. HOBSON:    A:    I'm not aware of a lot of the details  
22                  behind those. I would imagine that some may. Again  
23                  as we put our DSM plan together, we didn't investigate  
24                  this area further.

25 MR. GHIKAS:    Q:    Okay. I take it you're familiar with  
26                  Puget Sound Energy.

1 MR. HOBSON: A: I'm familiar with Puget Sound Energy,  
2 yes.

3 MR. GHIKAS: Q: And I think we can agree that Puget  
4 Sound Energy is an electric and gas utility in  
5 Washington State.

6 MR. HOBSON: A: Mm-hmm.

7 **Proceeding Time 9:45 a.m. T17**

8 MR. GHIKAS: Q: Okay. Now, I've provided some  
9 materials in this package relating to a tariff  
10 offering by Puget Sound Energy in relation to the  
11 efficient choice of fuel for particular end uses. And  
12 we have here the -- a tariff sheet on pages 6 and 7  
13 and 8 and 9, and an excerpt from their website on page  
14 10. An issuance from Commission staff of the  
15 Washington Utilities and Transportation Commission on  
16 pages 11 and 12, and a record of a decision of that  
17 Commission on page 13, in respect of this tariff  
18 offering.

19 And first of all, will you accept that,  
20 subject to check, these are copies, true copies of  
21 these documents?

22 MR. HOBSON: A: Subject to check, I suppose I would  
23 accept that, that you would put forward true copies.

24 MR. GHIKAS: Q: Thank you. And if we can just look at  
25 section 2 on page 6, under the "Purpose", can we agree  
26 that this is an instance where an electric utility

1 appears to be providing incentives to discourage  
2 particular end uses, in this case space and water  
3 heating?

4 MR. HOBSON: A: Yeah, I would agree that this is an  
5 example of that type of initiative, but I'd note that  
6 it's coming from a utility that's both electric and  
7 gas.

8 MR. GHIKAS: Q: Okay, we'll come to that.

9 MR. HOBSON: A: Okay.

10 MR. GHIKAS: Q: We'll come to that. I assume you're  
11 noting that because you think it should matter.

12 MR. HOBSON: A: I guess I'm noting it just because you  
13 specifically referred to Puget Sound, I believe,  
14 initially as a gas and electric utility, and then in  
15 the phrasing of your question, you confined it to an  
16 electric utility. So I wasn't sure if that was an  
17 oversight, or if you were trying to put some meaning  
18 behind that.

19 MR. GHIKAS: Q: Thank you. No, no. Thank you for  
20 pointing out that out. That was an oversight.

21 Okay, now, if you can turn over to page 10,  
22 under the heading -- this is on the website under the  
23 heading "Environmental and resource considerations,"  
24 you'll see that PSE recommends using natural gas  
25 directly from home -- for home and space and water  
26 heating, using natural gas directly as the heating

1 appliance as opposed to using it to generate  
2 electricity. It means using about half as much  
3 natural gas.

4 First of all, I'll stop right there. I  
5 assume you'll accept that that's the truth, based on  
6 the relative inefficiency -- of relative efficiency  
7 levels of generating gas in a system --

8 MR. HOBSON: A: I'm not sure what you're asking me. If  
9 you're asking me what they put forward is in fact  
10 here, or whether or not you're asking me to agree to  
11 the facts that they've put forward.

12 MR. GHIKAS: Q: I'm asking you to agree that based on  
13 the -- we've canvassed this on other panels, so I'm  
14 just trying to get on the same page and wavelength  
15 with you. Based on the relative efficiencies of a  
16 combined-cycle gas turbine, being approximately 50  
17 percent, and direct use of natural gas in the home,  
18 90-something --

19 MR. HOBSON: A: Yeah.

20 MR. GHIKAS: Q: -- that it's going to consume more gas  
21 to generate the electricity than it is to burn it in  
22 the home.

23 MR. HOBSON: A: I think --

24 MR. THRASHER: I'm sorry, my friend indicated that this  
25 matter had been dealt with elsewhere on other panels?  
26 And I was just wondering if you could point me to

1           where it's been dealt with previously.

2 MR. GHIKAS:    In fact I don't have the transcripts at my  
3           fingertips, so that's fine.

4 MR. THRASHER:   But in -- just, well, give me a rough  
5           estimate. I just -- I cannot remember who was dealing  
6           with this matter on Panel 2.

7 MR. GHIKAS:    Well, I'll take you -- I got bumped to this  
8           panel in dealing with --

9 MR. THRASHER:   This matter?

10 MR. GHIKAS:    On dealing with the efficiency levels of a  
11           furnace, Mr. Chairman, so I'll come to that in a  
12           moment.

13 THE CHAIRPERSON:   Perhaps after the break, you can --

14 MR. GHIKAS:    Thank you.

15 THE CHAIRPERSON:   -- which we'll be taking shortly. I  
16           mean, just tell me when it's -- you've come to a  
17           convenient point, and we can break for 15 minutes.

18 MR. GHIKAS:    Sure. This is the time, is it?

19 THE CHAIRPERSON:   It's around this time.

20 MR. GHIKAS:    Around the time, okay. No, this is fine,  
21           Mr. chairman, to break now.

22 THE CHAIRPERSON:   Well, I notice the panel is caucusing.  
23           I wondered if the panel had come to any conclusion as  
24           to Mr. Ghikas's last question.

25 MR. HOBSON:    A:   I guess the -- yes. The short answer.  
26           The one qualifier I would put to that is, you know, if

1       you confine it to just looking at the efficiency of a  
2       CCGT and the efficiency of the equipment within the  
3       home, then I think the numbers are what the numbers  
4       are, and it would support this. You know, one of the  
5       things that we've noted, when taking a look at the  
6       actual data with respect to electric and gas  
7       consumption, is that the -- I guess the effective  
8       efficiencies of what is happening within those homes  
9       is different than what those numbers would suggest.  
10      And we've been doing some work, and you may know, with  
11      Terasen, in trying to better analyze that data and  
12      understand the differences. And so to try to  
13      understand whether or not the relative differences  
14      have to do with duct losses within the air that moves  
15      within the home, or whether it's the building envelope  
16      and construction practices from gas versus electric  
17      homes. So that would be an important qualifier.

18               And I guess the other, you know, thing to  
19      note with this is as much as Puget Sound is moving  
20      forward with this, and you've outlined the  
21      initiatives, I'm not sure that changes some of the  
22      concerns that I would have. So, just because Puget  
23      Sound is moving forward with this, I would have the  
24      same concerns as to whether or not they are in a  
25      situation where they're putting their customers into a  
26      situation where, over time, the operating costs for



1 THE CHAIRPERSON: We'll break for 15 minutes, thank you.  
2 **(PROCEEDINGS ADJOURNED AT 9:52 A.M.)**  
3 **(PROCEEDINGS RESUMED AT 10:07 A.M.)** T19  
4 THE CHAIRPERSON: Please be seated.  
5 MR. THRASHER: Mr. Chair, before we continue, I think  
6 that we can deal with an undertaking before the break.  
7 Mr. Reimann.  
8 MR. REIMANN: A: Yeah, Mr. Ghikas has asked a question  
9 about COPE 1 point -- Exhibit B-3, COPE 1.2.4. It had  
10 a table that showed in fiscal 2016 and fiscal 2020 the  
11 non-firm energy that was available, that showed  
12 Heritage hydro non-firm of 4200 in each year, IPP  
13 residual non-firm of 900 each year, and Alcan non-firm  
14 300 of each year. The question he asked is, so if we  
15 went back to fiscal '12, what would it look like?  
16 As a result of the evidentiary update, what  
17 I can confirm now is that between fiscal '12 and  
18 fiscal '20, the Heritage hydro non-firm remains at the  
19 4200 gigawatt hours. In terms of the IPP residual  
20 non-firm, it's 700 gigawatt hours in fiscal '12. For  
21 the remainder of the period from fiscal '13 to fiscal  
22 '20, it's a drop from 900 to 800 as a result of the  
23 evidentiary update and increased attrition on the  
24 calls, and the Alcan non-firm remains at 300 for the  
25 entire period.  
26 THE CHAIRPERSON: I think that was Mr. Oulton who asked

1           you that.

2 MR. REIMANN:    A:    Oulton, thank you.

3 THE CHAIRPERSON:   Thank you, Mr. Ghikas.

4 MR. GHIKAS:     Thank you, Mr. Chairman.

5 **CROSS-EXAMINATION BY MR. GHIKAS (CONTINUED):**

6 MR. GHIKAS:     Q:    Panel, if you can turn to page 14 of  
7           the package, this is an excerpt from the website from  
8           Avista, and the pages from the website continue until  
9           page 19 of C13-9. And there was also that  
10           supplemental piece that's marked as C13-10 that's from  
11           the Avista site.

12                         First of all, will you accept, subject to  
13           check, that these materials are made available by  
14           Avista?

15 MR. HOBSON:     A:    Yes, subject to check.

16 MR. GHIKAS:     Q:    Thank you. And can we agree that  
17           Avista is an electric and gas utility in eastern  
18           Washington and Idaho? You'll accept that subject to  
19           check? Mr. Orans, you probably know this off the top  
20           of your head.

21 THE CHAIRPERSON:   It used to be known as Washington Water  
22           Power, I believe, did it not?

23 MR. GHIKAS:     Q:    And can we agree subject to check that  
24           while Avista has a gas business, a portion of its  
25           service area is served by another unrelated gas  
26           utility? I believe it's Cascade again, as was the

1 case with Puget. Dr. Orans?

2 MR. ORANS: A: I think that's correct, yes, subject to  
3 check.

4 MR. GHIKAS: Q: Thank you. And so if we turn over to  
5 page 17 under the heading in the middle of the page  
6 "Conversion from Electric Straight Resistance", you'll  
7 see that Avista is offering incentive payments with  
8 respect to conversion from electric straight  
9 resistance heating. And then if you flip over to --  
10 actually it's in the supplement C13-10, on the first,  
11 or I guess it's the -- over on the second page of  
12 that, you'll see "High Efficiency Equipment  
13 Incentives" there for air source heat pumps, ground  
14 source heat pumps, natural gas furnace and boiler, et  
15 cetera.

16 So can we agree that this is an example of  
17 a utility that is providing incentives in relation to  
18 fuel choice, Mr. Hobson?

19 MR. HOBSON: A: Yes.

20 MR. GHIKAS: Q: Thank you.

21 MR. REIMANN: A: So Mr. Ghikas, in terms of the fuel  
22 switching and B.C. Hydro's perspective on this, I  
23 think the management panel, Panel 1, addressed that  
24 one of our primary concerns with fuel switching was  
25 that it incented -- that is, in fuel switching from  
26 electric to gas is that it incented the production of

1 additional GHGs in the province, and that was counter  
2 to the Energy Plan and the carbon emission reduction  
3 offsets that the province has set about. And what we  
4 concluded was that if we were to undertake additional  
5 DSM measures, it wouldn't change at the end of the day  
6 Hydro's net long position. We wouldn't export more  
7 power and we're not a gas utility on the margin.

8 So as between Puget Sound and Avista, I'm  
9 not 100 percent sure what these utilities have in  
10 terms of their marginal generation. But most of the  
11 utilities in the States these days have gas as their  
12 marginal new construction.

13 So, with respect, I think these are  
14 fundamentally different situations than what we're  
15 looking at in the province. We have these legislated  
16 GHG reduction targets.

17 **Proceeding Time 10:12 a.m. T20**

18 MR. GHIKAS: Q: Yeah. No, I understood that's what  
19 Panel 1 was saying, and I'm not going to re-invent the  
20 wheel here, and I think we can just agree to disagree  
21 on that one, for the time being.

22 MR. REIMANN: A: But to be clear about it is that you  
23 have shown a couple of examples where utilities may  
24 well be encouraging fuel-switching, and they may have  
25 reasons that they're doing that. Their situation is  
26 different than ours.

1 MR. GHIKAS: Q: The --

2 MR. THRASHER: I really want to get that on the record.  
3 Although this is more of a legal argument, but we all  
4 know what the purpose of cross-examination is, and I  
5 don't have anyone to test on these matters, and  
6 although my client and my witnesses might agree to  
7 what you state as a fact, the bottom line is, I'm not  
8 going to be able to test anyone about jurisdictional  
9 issues on any one of these documents during this  
10 proceeding. So, I -- you know, the relevance of these  
11 documents is very limited.

12 MR. GHIKAS: I think, Mr. Chairman, the appropriate place  
13 to deal with that is in final argument. There's no  
14 need to deal with it here.

15 MR. THRASHER: Well, there is a place to deal with this  
16 in argument, I fully accept. But this is a procedural  
17 matter, an ongoing matter, and there's no witness I'm  
18 going to be able to test on any of these documents,  
19 unless my friend wants to be a witness and remove  
20 himself from counsel position.

21 THE CHAIRPERSON: I don't think that will happen. So, I  
22 mean --

23 MR. GHIKAS: They are what they are, Mr. Chairman. And  
24 the Commission --

25 THE CHAIRPERSON: They are -- you took the words out of  
26 my mouth, Mr. Ghikas.

1 MR. GHIKAS: And the Commission can deal with them as  
2 they see fit, and give as much weight as they feel  
3 appropriate, and I think that would be the normal  
4 approach with respect to evidence.

5 THE CHAIRPERSON: Thank you.

6 MR. GHIKAS: Q: Now, before the break, Mr. Hobson, you  
7 referred to natural gas prices as being a concern with  
8 respect to the pursuit of measures that related to the  
9 choice of fuel. And I took from that -- and first of  
10 all, do you recall mentioning natural gas prices in  
11 the course of your answers?

12 MR. HOBSON: A: I think my characterization would have  
13 been around the ongoing operating costs, that  
14 customers would have faced.

15 MR. GHIKAS: Q: Right. So there's a concern that  
16 you're -- that customers who adopted another fuel  
17 choice, in this case natural gas, would be  
18 experiencing ongoing operating costs due to the cost  
19 of natural gas.

20 MR. HOBSON: A: Correct.

21 MR. GHIKAS: Q: Okay.

22 MR. REIMANN: A: And again, I would add to that that  
23 that is in the context of B.C., where we don't have  
24 natural gas as the marginal fuel that we're pursuing.

25 MR. GHIKAS: Q: Okay.

26 MR. REIMANN: A: To be clear about that, if the gas

1 prices are at a point now where they have a bit of  
2 lull, there is this future risk, and we have it shown  
3 in our gas price forecasts that there is a potential  
4 for significantly higher gas prices.

5 MR. GHIKAS: Q: Okay. Well, first of all, you'll agree  
6 with me that there doesn't appear to be any risk  
7 associated with the fact that B.C. Hydro's marginal  
8 cost of supply is increasing, Mr. Reimann?

9 MR. REIMANN: A: It has increased.

10 MR. GHIKAS: Q: Right. And so, between 2006 and now,  
11 it's gone from 88 bucks to 120, is that fair?

12 MR. REIMANN: A: Well, again, we've done some analysis  
13 on the resources options update. We're not predicting  
14 at this point what the results of the current  
15 acquisition process are.

16 MR. GHIKAS: Q: Right. And the proxy price you're  
17 using is 120 bucks, is that fair?

18 MR. REIMANN: A: Yes.

19 MR. GHIKAS: Q: Yes, okay. And so we go back to Mr.  
20 Ince, and we talk about the weighted average delivery  
21 factors from the pricing, and we're north of 120 bucks  
22 then, aren't we? For space and water heating load.  
23 Mr. Ince?

24 MR. INCE: A: If you're looking at incremental use  
25 during the winter period, yes. That would be north of  
26 \$120.

1 MR. GHIKAS: Q: Right, okay. And so, if B.C. Hydro has  
2 to acquire IPP power at those prices, to serve space  
3 and water heating load, Mr. Reimann, you'll agree that  
4 there is little doubt that the rates for B.C. Hydro  
5 customers will be increasing as a whole, all else  
6 equal.

7 MR. REIMANN: A: Sorry, could you repeat the question?

8 MR. GHIKAS: Q: Sure. I'd be happy to. All else  
9 equal, given what we've just talked about, there is  
10 little doubt that adding additional space and water  
11 heating load to the system will result in increases in  
12 rates for B.C. Hydro customers as a whole.

13 **Proceeding Time 10:17 a.m. T21**

14 MR. REIMANN: A: Yeah, so within the context of how  
15 large the DSM program is and what we're targeting, if  
16 the end result of all of that was that we needed to  
17 purchase additional supply-side resources, those are  
18 at a higher cost than our marginal rate, yes.

19 MR. GHIKAS: Q: Okay. Now, I had prepared a witness  
20 aid for Panel 4, but because this was raised on this  
21 one I was going to put this to the panel, and what it  
22 is it's just a calculation, a fuel cost comparison  
23 between -- based on converting the per kilowatt hour  
24 price to GJs for simple cost comparison purposes  
25 between the cost of natural gas and the cost of  
26 electricity. And so what I'd like to do is pass that

1           around, Mr. Chairman, and then I will ask an  
2           undertaking on this one.

3 MR. THRASHER:    So are you -- you're asking for an  
4           undertaking?

5 MR. GHIKAS:     Yes. I'll put my undertaking on the record  
6           and then, Mr. Thrasher, if you want to make  
7           submissions on it you're most welcome to do so.

8 MR. GHIKAS:     Q:    So my request is that the calculations  
9           on this sheet be confirmed, and if not confirmed, then  
10          if B.C. Hydro can provide what they believe the  
11          response to the calculations is.

12                       And finally, if the panel can confirm in  
13          item number 3 the current Terasen residential gas  
14          commodity cost and midstream charge is at 8.551 per  
15          gigajoule. That's my request, Mr. Chairman. I don't  
16          believe it's that onerous.

17 MR. REIMANN:    A:    Yes, so I guess just looking at this,  
18          seems to me a somewhat simplistic analysis and  
19          comparison of fuel costs, and it doesn't address any  
20          of the issues that Mr. Hobson was talking about  
21          earlier in terms of overall building design system  
22          efficiencies, localized heating within the home. So I  
23          mean, this, I think it almost gets to the heart of has  
24          anybody done a comprehensive analysis of fuel heating  
25          changes? And I think Hydro's position is that we  
26          haven't looked at it in any particular detail. I

1 think there may well be some opportunities to do fuel  
2 switching. And again, our concern is that at this  
3 point we'd be encouraging people to move to gas a time  
4 when the province has got legislated carbon emission  
5 reduction targets.

6 MR. GHIKAS: Q: So, and I appreciate, Mr. Reimann, you  
7 giving me that pitch again. My request is a simple  
8 one and it's just to confirm the calculations. I  
9 appreciate that you have different views on this than  
10 I do, and my request to you is just that you confirm  
11 the calculations and confirm the 8.551 per GJ price on  
12 the Terasen website.

13 MR. REIMANN: A: So you're asking us to go through your  
14 calculations here and make sure the calculations be  
15 done correctly?

16 MR. GHIKAS: Q: Yes.

17 MR. REIMANN: A: As opposed to the context of whether  
18 or not this has any relevance to the use of gas or the  
19 encouragement of fuel switching.

20 MR. GHIKAS: Q: Yes, at this point I'm most interested  
21 in the math. Thank you.

22 THE CHAIRPERSON: And the conversion factor. Not having  
23 an iron ring myself, I'm not sure what the -- but I'm  
24 sure one of these gentlemen will tell me if one  
25 gigajoule is equivalent to 177.78 kilowatt hours.

26 MR. GHIKAS: That's what I'm hoping, Mr. Chair.

1 MR. THRASHER: I think that we can take that undertaking  
2 and I think we would probably perform that at the  
3 break, yes.

4 THE CHAIRPERSON: Okay.

5 **Information Request**

6 MR. GHIKAS: Thank you, Mr. Chairman. Thank you, Mr.  
7 Thrasher.

8 Yeah, it's C13-11. I believe it's already  
9 marked as C13-11, isn't it, or is it not?

10 THE CHAIRPERSON: It is now.

11 MR. GHIKAS: It is now, thank you, Mr. Chairman. Sorry  
12 about that.

13 THE HEARING OFFICER: Marked Exhibit C13-11.

14 (WITNESS AID "FUEL COST COMPARISON", MARKED AS EXHIBIT  
15 C13-11)

16 **Proceeding Time 10:23 a.m. T22**

17 MR. GHIKAS: Q: Mr. Reimann, we alluded to this  
18 previously, and you'd provided some helpful background  
19 on where the \$120 figure came from. And there was  
20 just a little bit of uncertainty on my part in going  
21 through the previous transcripts where Mr. Wallace had  
22 been asking some questions about this. And his  
23 questions got bumped to this panel. You provided a  
24 bit of information about what the \$120 is based on.  
25 But I'm wondering if you can just provide a little bit  
26 more detail on where that figure came from.

1 MR. REIMANN: A: So, let's start by going to the  
2 evidentiary update. And there is a footnote there  
3 that references an IR that shows where the calculation  
4 came from.

5 MR. GHIKAS: Q: And actually, I think the IR is in the  
6 package that I circulated, I believe. Yeah, it's BCUC  
7 1.120.1, is that the IR you're referring to? I think  
8 that's the one that's referred to in the evidentiary  
9 update.

10 MR. REIMANN: A: Yeah, that's correct, yes.

11 MR. GHIKAS: Q: Okay. So, just for the record, that's  
12 found on page 20 of the package, C13-9.

13 MR. REIMANN: A: So the reference within the  
14 evidentiary update was on page 25. It's footnote 31  
15 that does indeed refer to BCUC IR 1.120.1.

16 And, yeah, so the IR, Exhibit B-3, BCUC  
17 1.120.1, is the updated analysis of the DSM options  
18 that was in Chapter 5 of the application. And what  
19 this analysis does is it looks at, over the range of  
20 portfolios that we considered, what the costs of DSM  
21 options as against no DSM options, and within that IR,  
22 page 4 of 6 shows Table 5-15A amended, and what that  
23 did is, it compared a portfolio in which we had DSM  
24 Option A as against a portfolio with no DSM, and  
25 comparing the difference of the two prices, the prices  
26 of the two portfolios, and including the cost of the

1 DSM programs, you end up with Column F, which is the  
2 present value supply-side avoided cost.

3 So to be clear, what we've done in the  
4 portfolios is we've created a resource options update,  
5 and we've created bundles of resources that we use for  
6 the purposes of the portfolio analysis to give general  
7 indications within the LTAP of what various resource  
8 alternative choices look to be. Using a weighted  
9 average against the 11 different portfolios we  
10 calculated, we ended up with \$120 per megawatt hour  
11 cost as the incremental cost of supply-side options,  
12 if you were to not do DSM Option A.

13 MR. GHIKAS: Q: Okay. Thank you for that. Now, when  
14 B.C. Hydro has referred to the \$120 per megawatt hour,  
15 there's been some reference to that amount reflecting  
16 the levelized cost of supply. Can you describe what  
17 B.C. Hydro means when it says it's using a levelized  
18 cost of supply?

19 MR. REIMANN: A: Levelized costs, we're -- these  
20 figures are shown in what we call real levelized  
21 dollars, so it's taking a 2008 dollar and taking the  
22 cost over the life of the portfolio and fixing it to  
23 one level payment in real terms over the life of the  
24 asset. Or the life of the portfolio, rather.

25 MR. GHIKAS: Q: And if we were to -- well, let me back  
26 up. Can we agree that, to get the true avoided cost

1 of IPP supply for comparison, for the -- to DSM, that  
2 it's necessary to include an amount for generation,  
3 transmission, distribution and line losses for  
4 transmission and distribution?

5 **Proceeding Time 10:28 a.m. T23**

6 MR. REIMANN: A: So within the portfolio analysis, when  
7 we do a portfolio analysis, we try to model the  
8 generation transmission to the area transmission  
9 order, where the loads are, and we do a full dispatch.  
10 We recognize transmission losses, we try to recognize  
11 the major bulk transmission lines that would be built  
12 or not be built depending on which program you do.  
13 What would be missing in that is the distribution  
14 system capital costs and losses, but Mr. Hobson did  
15 address those in his Appendix K, the DSM plan, the  
16 cost-effectiveness in that.

17 MR. GHIKAS: Q: So does the hundred and -- you may have  
18 answered this already but I'm just struggling a little  
19 bit. Does the \$120 per megawatt price include all of  
20 those things I identified except for the capital costs  
21 of the distribution system and distribution system  
22 losses?

23 MR. REIMANN: A: So could you repeat all of this, the  
24 things that were included?

25 MR. GHIKAS: Q: Oh sure, sure. So let's start off,  
26 does it include an amount for generation?

1 MR. REIMANN: A: Yes.

2 MR. GHIKAS: Q: Okay, and does it include an amount for  
3 transmission?

4 MR. REIMANN: A: Bulk transmission, yes.

5 MR. GHIKAS: Q: Bulk transmission, okay. And does it  
6 include an amount for distribution?

7 MR. REIMANN: A: No.

8 MR. GHIKAS: Q: Okay. And does it include line losses  
9 for transmission?

10 MR. REIMANN: A: Yes.

11 MR. GHIKAS: Q: Okay. Does it include line losses for  
12 distribution?

13 MR. REIMANN: A: No.

14 MR. GHIKAS: Q: Okay. Do you have a sense as to how  
15 much that \$120 would have to increase to include  
16 distribution costs?

17 MR. HOBSON: A: What I can tell you, they become a  
18 little bit difficult to compare. The analysis we do  
19 within the DSM plan models use fixed values, and so  
20 it's somewhat of a static analysis. So it's using  
21 value, an assumed value for energy and an assumed  
22 value for capacity and such going out into time.

23 One of the benefits of doing the LTAP  
24 analysis is it's a little bit more dynamic and it's  
25 looking at what you're truly displacing as opposed to  
26 using these assumed values.

1                   What I can tell you is in the DSM analysis  
2                   we do conduct the distribution capacity amounts and  
3                   the regional transmission capacity amounts would not  
4                   be significant amounts within those values.

5 MR. GHIKAS:    Q:    There's an IR that deals with  
6                   transmission and distribution line losses, and I think  
7                   just for reference it's on page 26 of the package,  
8                   C13-9. It seems to be -- this response doesn't  
9                   address it directly, but as I -- this is Terasen IR  
10                  3.7.1 in Exhibit B-12, but it seems to be suggesting  
11                  that the distribution line losses are about 4 percent.  
12                  Is that --

13 MR. INCE:     A:     That's correct.

14 MR. GHIKAS:   Q:     Okay. And so the \$120 figure would  
15                  have to be grossed up by 4 percent to include that  
16                  factor.

17 MR. HOBSON:   A:     Well, you'd be grossing up -- what  
18                  you'd be grossing up would be the 4 percent with  
19                  respect to the demand-side management amounts. And  
20                  then, you know, in terms of -- yeah, you'd be grossing  
21                  the demand-side management component specifically up  
22                  by that.

23 MR. GHIKAS:   Q:     Okay. If you can turn -- I have a  
24                  question just briefly about offsets. If you can turn  
25                  to -- and unfortunately this isn't in the package.  
26                  Exhibit B-12, IPPBC 3.18.7. Exhibit B-12, IPPBC

1 3.18.7.

2 **Proceeding Time 10:33 a.m. T24**

3 MR. YOUNGMAN: A: I have it.

4 MR. GHIKAS: Q: Thank you. I'll just -- IPPBC 3.18.7,  
5 okay? And the part that -- this is a question  
6 relating to Burrard, but I'm -- at the end of the  
7 first page there, it deals with the issue of offsets  
8 in respect of Burrard, and the part that I'm  
9 interested in is, in talking about the social licence,  
10 the last sentence on the first page, where it says:

11 "While locating GHG offsets associated with  
12 Burrard GHG emissions within the ..."

13 -- like, is that "Lower Fraser Valley"? Is that LFV?

14 MR. REIMANN: A: Yes, that's correct.

15 MR. GHIKAS: Q: Okay.

16 "... within the LFV or even the Province of  
17 B.C. may not be required by law, it may be  
18 necessary for Burrard to maintain its social  
19 licence, and would almost certainly increase  
20 the costs of the GHG offsets."

21 So, I take what that is saying is that any requirement  
22 to purchase offsets within the province would almost  
23 certainly increase the costs of those offsets to B.C.  
24 Hydro. Is that fair?

25 MR. YOUNGMAN: A: Since I'm responsible for all  
26 offsets-related questions, I should probably pick that

1 up. In the sensitivity cases that we considered in  
2 looking at GHG costs, we considered two cases. One in  
3 which B.C. would limit eligible offsets to offsets  
4 located within B.C., the second case accepting offsets  
5 within the WCI region. And based on available data,  
6 we concluded that costs would be significantly higher  
7 if you limited offsets to the WCI area. So, that's  
8 consistent with the statement here in this IR.

9 MR. GHIKAS: Q: Okay. And Mr. Youngman, the costs of  
10 the offsets eventually find their way into customer  
11 rates. It's a cost to B.C. Hydro, and the customers  
12 pick up that tab, ultimately.

13 MR. REIMANN: A: Yes, I can answer that question. Yes.

14 MR. GHIKAS: Q: Yes, okay, thanks. And so I would  
15 assume that within the framework -- you know, the  
16 policy framework provided, I would assume that B.C.  
17 Hydro would, if possible, seek to minimize the GHG  
18 offset costs, at least to the extent that, you know,  
19 it's possible without jeopardizing the social licence  
20 for Burrard, as is discussed in this response.

21 MR. YOUNGMAN: A: I assume that's fair, subject to  
22 other constraints.

23 MR. GHIKAS: Q: All right. I'm just going to give you  
24 just a scenario here, it's very simple. So I don't  
25 think my friend will have to stand on this one.

26 So let's assume that B.C. Hydro were to



1 I recognize this panel speaks to Chapter 3.  
2 Was the material prepared under the direction of this  
3 -- or was the approach that was taken decided by  
4 members of this panel? Or was it elsewhere?

5 MR. REIMANN: A: I would say that we have direct  
6 oversight of what's produced, but as with everything  
7 that Hydro does, it was approved by and endorsed by  
8 management.

9 MR. WALLACE: Q: Yeah. Well, no, I assumed that. So,  
10 you're familiar with the decision on taking the  
11 different approaches, in any event that, are shown in  
12 Chapter 3.

13 MR. REIMANN: A: Yes.

14 MR. WALLACE: Q: Thank you. And when we look at DSM,  
15 which is the first part of Chapter 3, we do not -- we  
16 see really two options for DSM, A and B. We don't see  
17 the options in order of ascending cost, we don't see  
18 the programs in the order of ascending cost, in the  
19 same way we do in the supply side. Would you agree  
20 with that characterization?

21 MR. HOBSON: A: Yeah, I mean, we do build them with  
22 individual components, but you're right, within the  
23 analysis, within Chapter 3, they're looked at as --  
24 the DSM portions are looked at as large blocks, if you  
25 will, of demand-side management.

26 MR. WALLACE: Q: And you don't show a unit energy cost

1 for each DSM program in the same sense that, on the  
2 supply-side, you show a unit energy cost for the  
3 different supply potential sources.

4 MR. HOBSON: A: Not within the analysis within Chapter  
5 3, but in arriving at those blocks of energy, we do  
6 look at the individual initiatives.

7 MR. WALLACE: Q: Okay. Why did you take a different  
8 approach on DSM rather than the supply side?

9 MR. HOBSON: A: Well, I think part of it with demand-  
10 side management, when we take a look at putting in  
11 place demand-side management, it's like putting in  
12 place a supply Call. You're looking at a variety of  
13 options. Demand-side management is not a lot  
14 different, and there's a lot of synergies and  
15 interplay between the different options. So, when we  
16 go and we put forward a significant plan or portfolio  
17 for demand-side management, we're looking to meet a  
18 number of different objectives with respect to what we  
19 put in place. And we're looking at the breadth of the  
20 offer we put in place, we're looking at the cost-  
21 effectiveness of the different initiatives that we put  
22 forward, but we tend not to look at them on  
23 specifically individual items and think, "If we only  
24 went forward with one program, what would that look  
25 like?" We look at it differently, and we look -- and  
26 traditionally, we've looked at it differently in that

1 way.

2 MR. WALLACE: Q: Yeah, you looked at it very  
3 differently, and maybe I'll just follow through on a  
4 few more -- what?

5 MR. REIMANN: A: Maybe I could add to that that I think  
6 the question that we're answering ultimately on the  
7 DSM side is slightly different than the supply-side,  
8 in that, on the DSM, we're looking to do all cost-  
9 effective DSM. So it was really looking to say, how  
10 big of a program and how many different areas can we  
11 look at, and what is all cost-effective DSM? And I  
12 think it was that question that landed us to these two  
13 large blocks of DSM that we then considered.

14 MR. WALLACE: Q: Okay, I think I'll come back to that  
15 in just a second. Just, again, to explore the  
16 difference in the approach, you provide at Figure 3-4,  
17 and it's at page 3-10, your -- a graph showing DSM  
18 capacity savings for Option A and B, and again, that  
19 is for the options as a whole. It is not for  
20 individual programs by any means. And you -- sorry,  
21 go ahead.

22 MR. HOBSON: A: That's correct, yes.

23 MR. WALLACE: Q: And you don't do something equivalent  
24 by supply. You don't talk about -- you don't treat  
25 supply as a package, you treat it as individual.

26 MR. REIMANN: A: Yes, we generally make purchase

1 decisions in acquisition processes within the LTAP on  
2 the supply-side. Really, all we're looking to do is  
3 identify relative volumes of the resources that we  
4 buy.

5 **Proceeding Time 10:42 a.m. T26**

6 MR. WALLACE: Q: And similarly, Table 3-5, 3-6 and 3-7  
7 really show the costs, or the costs and savings by  
8 programs, rates, codes and standards, again not by  
9 individual programs.

10 MR. HOBSON: A: That's right. Again, when we build the  
11 blocks, we are looking at the individual programs or  
12 individual initiatives within each of these.

13 MR. WALLACE: Q: Okay. Now, you mentioned that you --  
14 this is because you take a block of all cost-effective  
15 DSM, and presumably that's Panel 4 to discuss that.

16 MR. HOBSON: A: Correct.

17 MR. WALLACE: Q: But can you tell me, and it may be  
18 Panel 4 and that's fine, when you decide what is all  
19 cost-effective DSM, is that based on -- well, I won't  
20 ask what it's based on. Does that assume that if it's  
21 cost-effective it is prudent also? Are they taken as  
22 synonymous?

23 MR. THRASHER: I would hazard a guess that's probably a  
24 legal consideration.

25 THE CHAIRPERSON: I'm sure it isn't. I mean, this people  
26 are in the business of determining -- management is

1 prudent. These people are management, Mr. Thrasher.

2 MR. THRASHER: I guess I'm referring to the

3 considerations of prudence in other BCUC proceedings.

4 Are you asking -- what specifically are you asking?

5 MR. WALLACE: Q: I'm asking if their test of prudence,

6 is it cost-effective? If it's cost-effective it's

7 prudent. Are they synonymous?

8 MR. HOBSON: A: Well, I think when we look at cost-

9 effectiveness we look at a number of different things.

10 I think when we take a look at putting our initiatives

11 together, we're following an approach where we're

12 trying to put forward what the initiative is we think

13 needs to be put in place to motivate the customers to

14 act in the case of demand-side management. So, you

15 know, I think responsible use of the expenditures is

16 something that's certainly on our minds as we're

17 building those initiatives and developing the streams

18 of values.

19 MR. WALLACE: Q: No, but if it's cost-effective is it,

20 in your opinion, prudent to undertake it? Or is there

21 a distinction in your minds?

22 MR. REIMANN: A: I would say there's not a distinction

23 in our minds.

24 MR. WALLACE: Q: Okay. And again this may be Panel 4.

25 Is the general test for cost-effectiveness the total

26 resource cost test?

1 MR. HOBSON: A: When we take a look at demand-side  
2 management, and this would be specifically in Chapter  
3 6 and in Appendix K, you'll see the total resource  
4 cost test you used as a determination of cost-  
5 effectiveness of the resource. When we look at the  
6 LTAP analysis, you won't see the total resource cost  
7 per se, but essentially it's the same streams of  
8 values that are used.

9 MR. WALLACE: Q: Thank you.

10 Now, and I think this may be Panel 4, in  
11 the resource -- or in the DSM resource options,  
12 there's no competitive acquisition, whereas on the  
13 supply side you're assuming competitive acquisition  
14 for a very large portion of those resources.

15 MR. HOBSON: A: The offers within demand-side  
16 management, and this probably is getting a little bit  
17 into Panel 4, are often using a fixed incentive amount  
18 as an offer that's put forward into market.

19 MR. WALLACE: Q: Okay. But there is no going to the  
20 market and saying what will you supply DSM for.

21 MR. HOBSON: A: We have done that in the past where we  
22 put competitive processes in play with demand-side  
23 management within the last number of years, and one of  
24 the concerns or issues that we face with that is  
25 making sure that we have a truly competitive process  
26 that's driving a downward pressure on the incentive

1 price.

2 MR. WALLACE: Q: Okay now, should details of that go to  
3 Panel 4?

4 MR. HOBSON: A: I think that would be more appropriate  
5 in the context of 4, yes.

6 MR. WALLACE: Q: I'm happy to do that.

7 Now, on the supply side, by contrast, you  
8 show options in ascending order of cost, and that's  
9 found in Table 3-2, I hope I got the number right, 3-  
10 21 at page 3-35?

11 MR. REIMANN: A: That's correct. Yeah, Table 3-21  
12 shows the resource option, unit energy costs. That  
13 was what we updated this morning for the thermal  
14 resources. But while the UEC is an indicative  
15 pricing, we actually price the supply options within a  
16 portfolio, and we select for each condition an optimal  
17 portfolio of resources, and take into account  
18 transmission capacity loss issues.

19 **Proceeding Time 10:47 a.m. T27**

20 MR. WALLACE: Q: Okay. And why couldn't you take that  
21 same approach -- well, you could take that same  
22 approach with DSM programs, couldn't you?

23 MR. HOBSON: A: I think it gets a little bit more  
24 complicated to take DSM programs in isolation, in that  
25 one of the things we have to look at with demand-side  
26 management is there is a lot of interplay between the

1 different items that we put forward. So whether  
2 that's looking at codes and standards or rates, or  
3 programs, you know, it becomes more difficult to look  
4 at them in isolation. If we put that forward and only  
5 looked at them in isolation, it wouldn't be  
6 recognizing how they change when you actually put them  
7 together.

8 MR. WALLACE: Q: No, but isn't that exactly what you do  
9 in supply? You put them forward individually and then  
10 you do portfolios and that takes the interplay?

11 MR. HOBSON: A: Well, I'm not sure the interplay is  
12 quite the same. So --

13 MR. WALLACE: Q: Well, it may not be the same, but  
14 can't you do that?

15 MR. HOBSON: A: I think what we could do is we could  
16 build a greater variety of options for DSM, and in  
17 building a greater variety of options you could  
18 package different programs or different levels of  
19 program expenditures or assumptions around codes and  
20 standards and rates. And you could have different  
21 volumes of demand-side management and costs as a  
22 result, which is partly the approach that we've taken.

23 You know, traditionally, what you see in  
24 jurisdictions that look at demand-side management is  
25 they build a plan, and they put a plan forward. We  
26 wanted to test that a little further, and in this

1 approach we went to some extent to try to build  
2 different options so that there was more of an  
3 analysis at play. And, you know, in reviews that  
4 we've had of groups that have taken a look at our plan  
5 and our planning process, we had Summit Blue come in  
6 and do an overview review of our approach, you know.  
7 That was one of the things that they noted. One of  
8 the things they also noted in that is there is  
9 opportunities for us to expand beyond just two options  
10 and look at additional options as, as we could feed  
11 in.

12 MR. WALLACE: Q: So, sorry, Mr. Reimann, you had  
13 something to add?

14 MR. REIMANN: A: I would add to that, I guess there's  
15 both a sort of theoretical discussion about why you'd  
16 want to do it and how you'd go about it. There's also  
17 the practical application of putting that many options  
18 into our system optimizer program, and all I can say  
19 is, in order to get the interplays, the correlations  
20 between those resources and still have a linear  
21 optimization program pick and solve within a weak  
22 portfolio, we start getting into a number of variables  
23 that we can't manage, practically.

24 MR. WALLACE: Q: Okay. Well, you list on those two  
25 pages, and I can't count them, but roughly supply-side  
26 options, there's about 30 to a page. There's probably

1 about 40 different supply-side options that are listed  
2 in Table 3-21.

3 MR. REIMANN: A: Yeah. So we -- and when -- as we go  
4 through and we model these, we try to test to see how  
5 resources get picked up in different situations, so  
6 that we can narrow that list down. But practically  
7 speaking, we can't and we don't model all of the  
8 bundles at the same time.

9 MR. WALLACE: Q: No, but there are about 40 there that  
10 you have as inputs initially, and you put into your  
11 portfolio models. Either by cutting them back a bit  
12 or not, using some judgment.

13 MR. REIMANN: A: So I guess what I'm thinking, and  
14 maybe Mr. Hobson can help me out here, but --

15 MR. WALLACE: Q: Well, first, before you go there, can  
16 you just answer whether there are 40 and you do put  
17 them into your supply-side portfolios.

18 MR. REIMANN: A: All 40?

19 MR. WALLACE: Q: Approximately.

20 MR. REIMANN: A: I'm not sure that we put all 40 in.  
21 We may even reduce it from there. The number of  
22 options you get, the number of durations the program  
23 actually ends up not solving, it just -- it takes too  
24 long. And what I was thinking is, on the DSM side,  
25 you have what might come from your codes and  
26 standards. You'd have, what, your rates and then I

1 think we have some -- well, there's 28 different  
2 programs. And if you're to toss in the different  
3 levels and iterations of that, the number really is  
4 just an exponential increase.

5 MR. WALLACE: Q: Okay, but if you -- you handle roughly  
6 40. If you reduce a bit, let me know how much. On  
7 the supply side, on the DSM side, if you look at Table  
8 3-3, for DSM programs, you don't have any more than  
9 40. You probably have less than 40 there, don't you?

10 MR. HOBSON: A: One of the things, though, you'd have  
11 to recognize is, when we would go forward with any of  
12 these initiatives, depending on what you're packaging  
13 them with, with respect to codes and standards or  
14 rates, there are going to be adjustments made to the  
15 modeling of each of those initiatives. You know, one  
16 to look at it is, we're doing within Appendix K the  
17 type of modeling work that's going on, to a degree,  
18 behind these options. So, prior to getting to a block  
19 of DSM that's going forward, we're doing some of that  
20 analysis work.

21 MR. WALLACE: Q: Okay, well --

22 MR. HOBSON: A: To get at, I guess, more of a discrete  
23 block of energy to be modeled within the process that  
24 Mr. Reimann --

25 **Proceeding Time 10:52 a.m. T28**

26 MR. WALLACE: Q: So what you're saying to me is that

1           when you get your blocks, effectively the portfolio --  
2           when you get your DSM blocks, the portfolio analysis  
3           that you carry out in the supply side has already been  
4           carried out through Appendix A and Panel 4 and I can  
5           talk to them?

6 MR. HOBSON:    A:    There's been some analysis that's been  
7           done and screening, where we take a look at cost tests  
8           on the individual initiatives prior to them moving in,  
9           let's say to Option A or Option B.

10 MR. WALLACE:   Q:    And are you suggesting to me that that  
11           is equivalent to the type of portfolio analysis that  
12           you do and report on in Chapter 3?

13 MR. HOBSON:    A:    No, it would be different.  The  
14           modelling and the analysis is different, and I touched  
15           on this earlier.  It's more of a static analysis that  
16           we would look at within the demand-side management  
17           model.  So for an example, if you look at the  
18           benefit/cost ratios that we would draw out of that  
19           model, it's working off of a fixed assumption of \$88  
20           for the energy tied back to the last call, versus a  
21           dynamic process that is used in the LTAP analysis,  
22           which is taking a look at what are the true supply  
23           options that are being deferred, and what are the  
24           costs associated with those.

25 MR. WALLACE:   Q:    Now, if I want to go to the details of  
26           an analysis under -- for DSM Options A and B, and what

1           you've just spoken of, that's Panel 4.

2 MR. HOBSON:    A:    I think that's more appropriate in  
3           Panel 4, yes.

4 MR. WALLACE:   Q:    And when you get it, then you simply  
5           take it as a block and treat it as you set out in  
6           Chapter 3.

7 MR. REIMANN:   A:    That's correct.

8 MR. WALLACE:   Q:    Thank you.  I'd just like to look at--

9 MR. REIMANN:   A:    I guess I would point out that we did  
10          test DSM Option A and Option B and no DSM.  So it's  
11          not to the level of granularity perhaps that you're  
12          suggesting, but we did test what an across-the-board  
13          incremental commitment to DSM would be and what would  
14          it look like.

15 MR. WALLACE:   Q:    I understand that, but as a block.

16 MR. REIMANN:   A:    Yes.

17 MR. WALLACE:   Q:    Thank you.

18                   I'd like to take a look at Figure 3-10 at  
19          page 3-34, and this is a supply curve summary based on  
20          the adjusted unit energy costs.  Do you have that  
21          table before you, or that graph?

22 MR. REIMANN:   A:    I do.

23 MR. WALLACE:   Q:    And that graph tells you a fair amount  
24          about how much of each resource is available and at  
25          likely costs?

26 MR. REIMANN:   A:    It does provide an indication, yes.

1 MR. WALLACE: Q: Okay. You don't have the same info --  
2 or you don't provide in Chapter 3 the same information  
3 with respect to DSM programs, do you?

4 MR. HOBSON: A: Not in Chapter 3, no.

5 MR. WALLACE: Q: Do you elsewhere?

6 MR. HOBSON: A: Well, what I'm looking at is Appendix F  
7 -- well, a few places, yes. So not in the specific  
8 form, but with respect to the amount of energy and the  
9 relative costs of the energy. Appendix F-17, which  
10 deals with resource options associated with Chapter 3,  
11 does take a look at the relative -- all ratepayers'  
12 costs and plant energy savings.

13 MR. WALLACE: Q: Okay.

14 MR. HOBSON: A: And then again as we get into Chapter 6  
15 and Appendix K, which is the DSM plant itself, we  
16 provide tables that'll show the benefit/cost ratios,  
17 which would be an indication of the relative costs  
18 similar to what would be shown here. And I think  
19 we've answered a couple of different IRs that have  
20 asked for different views of benefit/cost ratios and  
21 some of levelized costs that presumably could be used  
22 for that same comparison.

23 MR. WALLACE: Q: Now, I guess what I'm asking you is,  
24 in -- or can you provide for the major DSM programs a  
25 supply curve summary of the same sort that is provided  
26 in Figure 3-10?

1 MR. HOBSON: A: Again, I can't recall if we've already  
2 provided that or not in a graphical format, but we  
3 certainly have in a tabular format.

4 MR. WALLACE: Q: Okay. Well, I would ask as an  
5 undertaking, if you have provided it, then simply  
6 provide me the information responses. And in  
7 addition, I would ask for the five or ten, and I'd  
8 leave it to you to select, major programs that it be  
9 provided in a supply -- or in a DSM curve summary, in  
10 a manner similar to Figure 3-10.

11 MR. THRASHER: We'll take that undertaking.

12 MR. WALLACE: Thank you.

13 **Information Request**

14 MR. THRASHER: Mr. Wallace, if we find similar evidence  
15 and come up with at lunch, and take a look at it.

16 MR. WALLACE: That's fine. If it comes before Panel 4,  
17 I'm sure that I can follow up on Panel 4.

18 MR. THRASHER: Okay.

19 **Proceeding Time 10:57 a.m. T29**

20 THE CHAIRPERSON: You are one of these people, Mr.  
21 Wallace, who believes that a picture is worth a  
22 thousand words.

23 MR. WALLACE:

24 Very much so. Thank you. I simply find Figure 3-10 a  
25 very useful figure.

26 MR. WALLACE: Q: I'd like to turn to an issue that's

1       been followed by Mr. Ghikas, and that was a matter  
2       that was referred by Mr. Godsoe to this panel, and Mr.  
3       Ghikas followed part of it, but I think it went a  
4       little further, and I want to invite you to comment.  
5       And at page 312, line 22 of the transcript, and you  
6       may wish to or may not look at it, Mr. Godsoe says:

7               "Right, and I think you're looking at  
8               Exhibit B-12, response to JIESC IR 3.29.2.  
9               And I think Panel 3 can assist you on how  
10              that was extracted from the resource options  
11              update, what was used in terms of clean  
12              power Call terms and conditions and how we  
13              arrived at that, and then how that would  
14              relate to a proxy for the clean power Call  
15              prices."

16       And I wonder if you could follow up on his invitation  
17       and respond to that.

18   MR. REIMANN:    A:    So the -- in JIESC 3.29.2, we have  
19       shown in there a figure of \$124 per megawatt hour for  
20       firm energy.  And that related to the incremental cost  
21       of taking the Clean Call.  So, the Clean Call, what  
22       we've put into the evidentiary update was an  
23       acquisition target of 3,000 gigawatt hours per year,  
24       that would be 2100 gigawatt hours firm.  And we had  
25       originally had 5,000 gigawatt hour target, which would  
26       be 3400 firm.  So the incremental to go from 2100 to

1 3500 gigawatt hour firm, differential of 1400 gigawatt  
2 hours.

3 So in order to estimate what an impact  
4 might be based on resource options update data is we  
5 went through the selection process that our  
6 optimization program selected for that initial block.  
7 We then took the second block of resources. Taking  
8 those prices based on the evidence in Chapter 3 and  
9 the resource options database, we took those IPP costs  
10 and worked them out for the life of the contracts.  
11 But the adjustment that we made to that is, we  
12 escalated the projects to have an in-service date of  
13 2016. We made adjustments as per the UEC table, and  
14 we priced just the firm energy by taking the non-firm  
15 energy that these resources would have, and we priced  
16 those at market.

17 So it's a similar calculation to the  
18 adjusted UEC in Appendix F-11, and then Table 3-21,  
19 with the exception that, what we tried to do in this  
20 one is just look at the firm energy costs.

21 That resulted for the incremental 1400  
22 gigawatt hours, an IPP cost of \$124 per megawatt hour.

23 MR. WALLACE: Q: When you say priced them at market, is  
24 it that at the market electricity prices that we see  
25 graphed in Chapter 3?

26 MR. REIMANN: A: That's correct.

1 MR. WALLACE: Q: And that's, I think -- could you just  
2 give me the graph reference on that? I think you may  
3 be able to find it faster than I can.

4 MR. INCE: A: So, Mr. Wallace, you're talking about  
5 market electricity prices?

6 MR. WALLACE: Q: Yes.

7 MR. INCE: A: Those are Figures 4-5 and 4-6.

8 MR. WALLACE: Q: Thank you. Okay. And that, I think,  
9 sets out how you related to it. Does that -- I guess  
10 and that's how, in Mr. Godsoe's words, how -- or what  
11 was used in terms of Clean Power Call terms and  
12 conditions, and how that relates to a proxy for the  
13 Clean Power Call prices?

14 MR. REIMANN: A: That's correct.

15 MR. WALLACE: Q: Okay, thank you.

16 MR. REIMANN: A: I guess I would add to it that we,  
17 within our resource options update, we've tried to  
18 take a look at projects in terms of the cost to build  
19 them, including a reasonable economic return. We  
20 haven't tried to get into bid behaviour at all, and I  
21 think that's a major difference that might see in an  
22 acquisition process.

23 **Proceeding Time 11:02 a.m. T30**

24 MR. WALLACE: Q: Thank you. And I'm not -- actually I  
25 won't ask you whether you think the actual prices will  
26 be higher or lower. We'll leave that to see.

1                   Could you turn to Exhibit B-1, page 4-17.  
2           Oh, actually, just before I finish that, in terms of  
3           the proxy for the Clean Power Call and the market  
4           prices, did you assume anything for renewable energy  
5           credits?

6   MR. REIMANN:    A:   I don't believe we did.

7   MR. WALLACE:    Q:   And why is that?

8   MR. REIMANN:    A:   We pretty much just followed the  
9           units, energy cost adjusters that we had in Appendix  
10          F-11. We hadn't included those originally. I think  
11          we were looking at the cost as opposed to any revenues  
12          that may be derived by selling attributes off of it.  
13          I guess, as opposed to a credit, which is something  
14          that you could Mr. Scouras about in the acquisition  
15          process, but within the analysis that we're doing in  
16          the portfolios, we're looking at the cost of the  
17          resources and we're working to maintain a 90 percent  
18          clean portfolio.

19   MR. WALLACE:    Q:   Okay, but I would have -- so you were  
20          basically assuming you would be retaining the credits  
21          for B.C. Hydro.

22   MR. REIMANN:    A:   Correct.

23   MR. WALLACE:    Q:   Thank you.

24                   I'd like to then have you turn to page 4-  
25          17, Figure 4-3. And that's the natural gas forecast  
26          prices. Do you have that before you?

1 MR. REIMANN: A: We do.

2 MR. WALLACE: Q: And obviously things have changed.

3 I'm wondering, is it possible to update this graph  
4 with the actual price to current period?

5 MR. THRASHER: I'm looking at my panel and I think yes.

6 MR. WALLACE: Thank you. They were looking at you also.

7 **Information Request**

8 MR. WALLACE: Q: And am I right that prices there, the  
9 actual shows a price of about \$6, and today actual  
10 would be about \$4 U.S. or lower?

11 MR. LAUCKHART: A: A little lower, \$4 at Henry Hub,  
12 right?

13 MR. WALLACE: Q: Thank you.

14 MR. INCE: A: But I should add, Mr. Wallace, that's a  
15 spot price that's current within the next 24 hours or  
16 so. If you look at a forward curve for natural gas,  
17 you're looking at something that's sharply sloping  
18 upwards. So you're looking at \$7 and beyond within a  
19 couple of years.

20 MR. WALLACE: Q: Yes, but at a current level, we are in  
21 the \$4 range.

22 MR. INCE: A: If you expect delivery in the next month,  
23 yes.

24 MR. WALLACE: Q: Thank you. And approximately what is  
25 the variable cost of generation at Burrard at today's  
26 gas prices?

1 MR. INCE: A: I believe the heat rate of the plant is  
2 somewhat under 11. So you take the gas price,  
3 multiply it by 11, and that comes up with the pure  
4 cost of the fuel. Now, I'm not including variable  
5 operating costs in that calculation.

6 MR. WALLACE: Q: Okay. So we'd be looking at \$44  
7 approximately, plus variable cost of operation of  
8 Burrard?

9 MR. INCE: A: Yes, again subject to the caveat that  
10 we're looking at for the next month or so in terms of  
11 gas pricing.

12 MR. WALLACE: Q: I understand that.

13 THE CHAIRPERSON: \$44 U.S. Right?

14 MR. WALLACE: Yes.

15 THE CHAIRPERSON: I think Mr. Lauckhart gave you a U.S.  
16 price and you have to convert it.

17 MR. WALLACE: Okay, and thank you.

18 MR. WALLACE: Q: Do you know what the Canadian price at  
19 Sumas is these days?

20 **Proceeding Time 11:07 a.m. T31**

21 MR. LAUCKHART: A: It's about \$3.70 in U.S. dollars.

22 MR. WALLACE: Q: I'm sorry, Sumas is \$3.70 U.S.?

23 MR. LAUCKHART: A: Yeah. This is cash prices.

24 MR. WALLACE: Q: Yeah.

25 MR. LAUCKHART: A: For the day.

26 MR. WALLACE: Q: Okay. And Mr. Ince, do you know what

1 the variable operating cost at Burrard is?

2 Approximately?

3 MR. INCE: A: No, I'm sorry, I don't.

4 MR. WALLACE: Q: Is that something that could be  
5 provided by way of undertaking?

6 MR. INCE: A: Mr. O'Riley was the perfect person to  
7 answer that question.

8 MR. WALLACE: Q: Oh, okay. Sorry I missed the  
9 opportunity there.

10 MR. INCE: A: I think we could, yes.

11 MR. WALLACE: Q: Okay. Thank you.

12 MR. THRASHER: I guess we're going to take that  
13 undertaking.

14 **Information Request**

15 MR. WALLACE: Q: And similarly, can you tell me at  
16 today's prices what the variable cost of generation at  
17 Island Cogen would be?

18 MR. THRASHER: I don't think that that's -- this is the  
19 --

20 MR. WALLACE: Sorry. Okay.

21 MR. THRASHER: I just don't think that it's evidence for  
22 this panel.

23 MR. WALLACE: Q: Can you tell me what the heat rate of  
24 Island Cogen is, approximately?

25 MR. INCE: A: No, sorry.

26 MR. WALLACE: Q: Okay. I'd like to turn you to page 5-

1 17 in the application. It says:

2 "From an operations perspective, based on  
3 current forecasts of market prices, natural  
4 gas-fired generation located in B.C. would  
5 never be dispatched unless there was either  
6 a peak period capacity shortfall or a market  
7 access restriction."

8 And do you agree with that statement?

9 MR. REIMANN: A: So, you're on page 5-17?

10 MR. WALLACE: Q: Yes.

11 MR. REIMANN: A: What lines?

12 MR. WALLACE: Q: Well, I don't have it by lines. It's  
13 -- the wording --

14 MR. QUAIL: Thirteen to fifteen.

15 MR. WALLACE: Q: Thirteen to fifteen, I'm told. Yes.

16 MR. REIMANN: A: Yes, I see that.

17 MR. WALLACE: Q: Okay, and do you agree with that  
18 statement?

19 MR. REIMANN: A: I do.

20 MR. WALLACE: Q: Okay. Now, we've heard that the  
21 Island Cogen facility is at least partially  
22 dispatchable. Has that been your experience with it,  
23 that it is only dispatched during a peak period  
24 capacity short-fall or a market access situation?

25 MR. REIMANN: A: I think that would be a question for  
26 Mr. Scouras on Panel 4.

1 MR. WALLACE: Q: Okay. And I'll just give Mr. Scouras  
2 advance notice, I would also be looking for a graph  
3 showing dispatch of Island Cogen for the last 12  
4 months. Thank you.

5 I'd like to turn, then, to renewable energy  
6 credits. Is this the appropriate panel for that, I  
7 take it?

8 MR. LAUCKHART: A: Yes.

9 MR. WALLACE: Q: I understand you can sell the  
10 renewable energy credit independent of the  
11 electricity. Is that correct?

12 MR. LAUCKHART: A: That's correct.

13 MR. WALLACE: Q: But B.C. Hydro can't sell the  
14 renewable energy credit and also claim that power as  
15 part of its 90 percent clean?

16 MR. LAUCKHART: A: Yeah, the plan, of course, is to  
17 avoid double-counting of these renewable attributes.  
18 So that would be yes.

19 MR. WALLACE: Q: Okay. Now, I'd like you to turn to  
20 Table 4-3 at page 4-23. And specifically the column  
21 on geographic restrictions that's contained in that  
22 table. And am I correct that renewable energy credits  
23 created in British Columbia would not be eligible in  
24 Oregon or Washington?

25 MR. LAUCKHART: A: That's -- my understanding under the  
26 current rules, that's probably the case. Although



1 "Facilities outside the US must operate in a  
2 manner that is protective of the  
3 environment, similar to facilities located  
4 in California."

5 MR. LAUCKHART: A: Yes. The environmental community  
6 across the country and in California is pretty strong,  
7 and they're in the permitting processes in California,  
8 they go through rigorous environmental review, and  
9 they want to make sure they're not damaging the  
10 environment.

11 When they decided that maybe we could get  
12 RECs or renewables from outside of California, the  
13 environmental community wanted to provide the same  
14 protections, so that if something is environmentally  
15 bad in California and somebody deemed it's  
16 environmental bad in British Columbia, that we weren't  
17 paying to have a power plant be built in British  
18 Columbia that they felt was environmentally damaging.  
19 So that's the rules they put in.

20 MR. WALLACE: Q: Okay. And have you done any  
21 comparison, I guess, between B.C. Clean and California  
22 standards, green or whatever it would be?

23 MR. LAUCKHART: A: I have not. Every one of these  
24 projects is very custom on what's allowed, even in  
25 California. So there are a lot of debates in the  
26 California licensing processes for California plants.

1 But I suspect they're very similar to what they are in  
2 British Columbia.

3 MR. WALLACE: Q: Okay. And presumably standards are  
4 still developing in any event. Is that correct?

5 MR. LAUCKHART: A: I sense it's kind of like laws that  
6 are treated through various court orders, and they're  
7 constantly evolving.

8 MR. WALLACE: Q: Okay, but it goes even further,  
9 doesn't it? I mean, this is a new area and  
10 everybody's feeling their way and they're emotional  
11 subjects that -- getting these stan -- there isn't a  
12 universal set of standards yet, or codified, is there?  
13 I mean, can you do a comparison at this point between  
14 B.C. Clean and California renewable energy credit  
15 standards?

16 MR. LAUCKHART: A: Well, I think, isn't the question  
17 would there be a different environmental review and  
18 decision in British Columbia than there might be for a  
19 similar plant in California? Is that the question?

20 MR. WALLACE: Q: No, the question is that there's this  
21 one sentence:

22 "Facilities outside the US must operate in a  
23 manner that is protective of the  
24 environment, similar to facilities located  
25 in California."

26 Is that codified what that means anywhere, such that

1           you could take it to our B.C. Clean standards and  
2           compare it to the California?

3 MR. LAUCKHART:    A:   Well, I would say not really tightly  
4           codified. So for example, if you're trying to build a  
5           hydro project in California that was going to take  
6           some flow out of the stream, and there's an instream  
7           flow requirement, there's a big debate even in  
8           California, well, what is the instream flow  
9           requirement got to be? How much flow do we have to  
10          leave in the stream to protect some species that might  
11          be in that stream? You know, that's a big debate and  
12          there are not clear answers. There's experts making  
13          opinions. I would assume that the same thing happens  
14          in B.C.

15 MR. WALLACE:    Q:   Okay, so am I right then that if you  
16          want to know -- or if you want to determine if a  
17          facility is renewable -- or is eligible for renewable  
18          energy credits in California, you have to do it on a  
19          facility-by-facility basis at this time?

20 MR. LAUCKHART:    A:   Yes, just like we have to in  
21          California, facility-by-facility basis, to get them  
22          permitted.

23 MR. WALLACE:    Q:   Thank you.

24 MR. REIMANN:    A:   I would like to add to what Mr.  
25          Lauckhart is saying, that the use of the RECs within  
26          the portfolio analysis, we did a couple of

1 sensitivities both with Burrard and with the Clean  
2 Power Call, to see what would happen if the RECs that  
3 we forecast happened, and what would that do to the  
4 portfolio cost results. The basic fundamental,  
5 though, of the LTAP analysis is that these conclusions  
6 stand without any RECs being required. It was really  
7 just an intent to say where might this be going. And  
8 I think Mr. Lauckhart could probably also expand, but  
9 it's at least our impression that the U.S. markets  
10 have some fairly significant RPS standards that they  
11 are nowhere close to meeting, so we do have some  
12 expectation that these markets will develop and --

13 **Proceeding Time 11:17 a.m. T33**

14 MR. LAUCKHART: A: And I might expand, just on that  
15 point, that the renewable goals in the Western United  
16 States and in California particularly, are very  
17 aggressive. And everybody recognizes it's going to be  
18 very difficult to meet those, and they're looking out  
19 -- you see PG&E, for example, looking to British  
20 Columbia. And one of the questions that comes up is,  
21 well, do we have to deliver the power -- do we have to  
22 build the transmission to deliver power, or can we  
23 just do tradable RECs? And that's treated differently  
24 in different jurisdictions. There's a lot of desire  
25 to allow the RECs to happen, because we think we could  
26 meet the renewable goals more cost-effectively if that

1 happens. There are some people who are wanting to  
2 say, well, we want the renewables built in our state,  
3 because of economic development purposes. That might  
4 be very expensive.

5 So this is kind of up in the air. But  
6 there is a lot of REC trading going on today, and I  
7 don't think what's going on today will diminish. The  
8 only question is, how much will it expand.

9 MR. WALLACE: Q: Okay. And those are questions we're  
10 likely to see over the next two to five years -- or  
11 the answers for over the next two to five years.

12 MR. LAUCKHART: A: We'll learn more over time, that's  
13 what I will say.

14 MR. WALLACE: Q: Okay. Thank you. I'd just like to  
15 finally then ask you to go to Figure 5-7 -- or 4-7 at  
16 page 4-26, which is your market price scenarios. And  
17 the curves look so nice and even. My understanding is  
18 that this is a developing market and that at least --  
19 and I'm talking internationally at the moment, even --  
20 that it's shown a lot of volatility to this point. Am  
21 I right, or --

22 MR. REIMANN: A: So, I guess -- let me start this  
23 answer, and then Mr. Lauckhart can carry on. Table 4-  
24 4 on the prior page, I think, shows global energy's  
25 expected range of REC prices. And Mr. Lauckhart can  
26 speak to that. Figure 4-7 shows how we took what

1 Ventex had given us, or Global, and translated that  
2 into scenarios that we would use within the portfolio  
3 modeling for the purpose of these sensitivities. And  
4 we did try to pick perhaps somewhat more conservative  
5 values than the full range, than -- that Mr. Lauckhart  
6 had suggested.

7 So that's why they're pretty symmetrical.  
8 They were chosen that way.

9 MR. WALLACE: Q: Fair enough. This is again a  
10 developing market we're going to learn a lot more  
11 about over time?

12 MR. LAUCKHART: A: Well, it's the existing market  
13 that's developing, and I think a lot of people expect  
14 it will expand significantly. But, you know, there's  
15 a lot of uncertainty here.

16 MR. WALLACE: Q: Okay. And what's been the experience  
17 in Europe? Would you say that's been a volatile  
18 market or stable?

19 MR. LAUCKHART: A: Yes.

20 MR. WALLACE: Q: Which?

21 MR. LAUCKHART: A: It's been volatile.

22 MR. WALLACE: Q: Pardon me? Oh, it's volatile.

23 MR. LAUCKHART: A: It's a volatile market.

24 MR. WALLACE: Okay. Thank you, I'll leave it at that.

25 Thank you, Mr. Chairman. That completes my  
26 questions.

1 THE CHAIRPERSON: Thank you, Mr. Wallace.

2 **Proceeding Time 11:21 a.m. T34**

3 **CROSS-EXAMINATION BY MS. WORTH:**

4 MS. WORTH: Q: Good morning, Mr. Chair, members of the  
5 Panel, members of the B.C. Panel. I'm going to begin  
6 by making the observation that it appears the 5L83 ILM  
7 upgrade project is a resource that plays a fairly  
8 significant role in the analysis supporting the 2008  
9 LTAP filing. Would you agree with that?

10 MR. REIMANN: A: Our assumption in the 2008 LTAP was  
11 that ILM would be in service in whatever it is,  
12 October 2014.

13 MS. WORTH: Q: Okay. Now, I also note that according  
14 to Chapter 2 of the LTAP, the load resource balance in  
15 the Lower Mainland/Vancouver Island region is pretty  
16 tight.

17 MR. REIMANN: A: Tight?

18 MS. WORTH: Q: Okay. Are you not willing to agree with  
19 that? I can refer you to a part of the application  
20 that sort of indicates that it's constrained within  
21 that region.

22 MR. REIMANN: A: Yes, I would agree that we -- we have  
23 in Chapter 6, and this is probably a question that I  
24 should probably more appropriately take on Panel 4,  
25 but we do have, in Chapter 6, some indication of the  
26 reliance that we would make on Burrard as a capacity

1 resource and the Canadian entitlement in order to meet  
2 peak loads under various conditions with and without  
3 ILM, and yeah, we are drawing or would be planning to  
4 draw on the Canadian entitlement.

5 MS. WORTH: Q: Okay. Now, is the constraints on the  
6 system in the Lower Mainland/Vancouver Island regions  
7 that cause B.C. Hydro to come to the conclusion that  
8 it must continue to rely on Burrard for its full  
9 capacity of 900 megawatts until either 5L83 is in  
10 service or some other comparable resource becomes  
11 available to satisfy this outstanding need.

12 MR. REIMANN: A: I think those are questions that  
13 should have been put to Mr. O'Riley on Panel 2.

14 MR. THRASHER: A: Actually, I actually think they were.

15 THE CHAIRPERSON: Many times. But I mean, I take your  
16 question, Ms. Worth, might have something to do with  
17 building the portfolio models?

18 MS. WORTH: Yes, it does.

19 THE CHAIRPERSON: I think you are talking to the right  
20 person when it comes to the portfolio models.

21 MR. REIMANN: A: I would say, or agree with Mr. O'Riley  
22 that our primary reliance and the value that we see in  
23 Burrard is the capacity in the Lower  
24 Mainland/Vancouver Island region which is 70 percent  
25 of our load and maybe 30 percent of our generation.  
26 So yeah, it is an important resource in this region.

1 MS. WORTH: Q: Now, I understand that there was a five-  
2 year time horizon chosen based for the delay, the  
3 potential delay of this project, based in part on  
4 risks that BCTC identified in its application  
5 including technical and project management risks, but  
6 B.C. Hydro has taken it further with the knowledge  
7 that there are significant but unquantifiable  
8 challenges to projects like these that may arise that  
9 fall out of the control of parties responsible for  
10 these two controls, and that lead time from a planning  
11 perspective including acquisition of new resources is  
12 typically five years with anything occurring with a  
13 shorter time frame being dealt with through  
14 operational contingency plans. And that the  
15 significant impact that would be felt, should there be  
16 a shortage of capacity in the Lower Mainland/Vancouver  
17 Island requires some degree of -- I don't know, just  
18 sort of some degree of caution in your planning going  
19 forward. Is that right?

20 MR. REIMANN: A: Do you have a reference from what you  
21 are reading from?

22 MS. WORTH: Q: Just throughout the entire application  
23 we were looking at the five-year delay that B.C. Hydro  
24 has built into it. I think it was in Chapter 2.5.2,  
25 page 222. And there were a number of things that we  
26 saw as being considerations B.C. Hydro would likely



1 switching from electricity to natural gas, imports and  
2 exports of electricity, and the province's policies  
3 and laws about greenhouse gases. Are you familiar  
4 with that testimony?

5 MR. REIMANN: A: Generally.

6 MS. WORTH: Q: Okay. Would it be helpful if I allowed  
7 you a little time to refresh your memory?

8 MR. REIMANN: A: Please. It's 811 to 817?

9 MS. WORTH: Q: Yes.

10 Okay. I note on page 816, line 19, Ms. Van  
11 Ruyven commented in response to a question regarding  
12 the way the cap and trade system would come into play,  
13 by saying:

14 "Well, this is a mystery to me, this whole -  
15 - how this marketplace is unfolding."

16 And do you see that?

17 MR. HOBSON: A: No, can you give us the reference  
18 again?

19 MS. WORTH: Q: Sure. It was page 816, line 19.

20 MR. REIMANN: A: Okay, yes.

21 MS. WORTH: Q: Okay? And immediately after,  
22 Commissioner Milbourne described that as "really not  
23 helpful". Do you see that?

24 MR. REIMANN: A: Right.

25 MS. WORTH: Q: At page 817, line 20, Mr. Godsoe  
26 indicated that this is a subject for your panel.

1 MR. REIMANN: A: Right.

2 MS. WORTH: Q: Okay.

3 MR. REIMANN: A: Okay, I guess -- I think the premise  
4 that was being put to Panel 1 was that Manitoba Hydro  
5 was claiming environmental credits, and our  
6 understanding is that Manitoba Hydro is actually  
7 building facilities for export, and that they're  
8 finding contracts on the U.S. side, and they're  
9 building resources specifically for that. And to the  
10 extent that you would build clean resources in B.C.  
11 and you were to sell that into the U.S., you would  
12 expect that that would have some impact on the U.S.,  
13 and maybe Mr. Lauckhart can speak to that in a second.

14 I think within B.C. Hydro's current policy  
15 and regulatory regime, we have a self-sufficiency  
16 target that we need to build to, and that self-  
17 sufficiency criterion defines a certain degree to  
18 which we are long electricity in the system. And so  
19 that, if we do fuel-switching or if we're having other  
20 resources in the province, it either impacts our load  
21 or it impacts our supply. At the end of the day we  
22 would modify our future actions in such a way as to  
23 maintain the same net position.

24 So, from that perspective, I think the  
25 discussion was that we would not, as a result of doing  
26 fuel switching programs, in the longer term intend to

1 export more electricity as a result of that. We would  
2 look to modify our actions to come back down to meet  
3 the self-sufficiency criterion.

4 I guess the other perspective on that is if  
5 you then move that clean energy into the U.S. markets,  
6 what is the use of that electricity? And Mr.  
7 Lauckhart may want to comment on that.

8 MR. LAUCKHART: A: Sure. As we were talking about  
9 before, there is a great desire both for renewable  
10 resources -- or at least the renewable attributes in  
11 the United States. There is a lot of uncertainty  
12 what's going to happen with the greenhouse gases  
13 rules. But it's clear that renewables will help  
14 climate change issues.

15 And in California, they have -- their plan  
16 for greenhouse gases is that in part we're going to  
17 meet our goals by being 33 percent renewable by 2020.  
18 So, and then that doesn't get us all the way, so then  
19 they're on top of that, they're talking about cap and  
20 trade, and WCI and all those things. But it's clear  
21 that the renewables will be a very important part of  
22 it and they have aggressive goals.

23 **Proceeding Time 11:31 a.m. T36**

24 So if B.C. Hydro or B.C. has some  
25 renewables that they don't need, there will be a great  
26 desire down there to have them. They will take those

1 as more cost-effective than having to build higher-  
2 cost renewables, solar photovoltaic take kind of  
3 things, in California. So if they can be shown to be  
4 cost-effective either through just RECs or delivered  
5 energy, they will buy those and not build their  
6 higher-cost stuff.

7 MR. REIMANN: A: And so why that's important is that if  
8 the premise is is that we have more efficient use of  
9 gas in the province, and we sell clean electricity,  
10 that may still be a beneficial thing to do, but it may  
11 not necessarily reduce the GHG emissions because it  
12 may not be thermal generation that you displace in the  
13 States.

14 MR. LAUCKHART: A: Yeah, I would say if you do fuel  
15 switching here, there will be necessarily more  
16 greenhouse gases here. That doesn't necessarily  
17 translate to less greenhouse gases in the United  
18 States, because they're not going to be avoiding gas,  
19 they're going to be avoiding building their  
20 renewables.

21 MR. GHIKAS: Mr. Chairman, I might just cut in here with  
22 an objection that -- to questions that are please  
23 argue your case for us, I think would stray well into  
24 the friendly cross zone, and I would hope that my  
25 friend wouldn't continue to ask question that just  
26 allow the platform for the panel to argue their case.

1 THE CHAIRPERSON: Ms. Worth?

2 MS. WORTH: I had one question and that was at -- I  
3 didn't know what kind of an answer I would be getting  
4 from this panel at length. I was expecting something  
5 rather shorter. So I just wanted to sort of clarify  
6 that it was referred to this panel and it has been  
7 answered.

8 THE CHAIRPERSON: At length, yes, thank you.

9 MS. WORTH: Thank you.

10 MS. WORTH: Q: Now, I noted from the B-12, the Exhibit  
11 B-12 update, that there was not an update of natural  
12 gas or electricity price forecast. Is that right?

13 MR. REIMANN: A: Sorry, the reference?

14 MS. WORTH: Q: Sorry, Exhibit B-12, the evidentiary  
15 update. There wasn't actually an update included in  
16 the evidentiary update indicating a new natural gas or  
17 electricity price forecast.

18 MR. INCE: A: No electricity price forecast update.

19 MS. WORTH: Q: Okay. Is it B.C. Hydro's view that the  
20 current economic slowdown is having an effect on near-  
21 term market prices for natural gas and electricity?

22 MR. INCE: A: Well, I'll speak to the electricity side.  
23 All things being equal, yes, there has been some  
24 demand destruction as a result of the current economic  
25 conditions, which has resulted in lower electricity  
26 prices. But again, this is a short-term effect we're

1       seeing. And I'll turn it over to Mr. Lauckhart on the  
2       gas side.

3 MR. LAUCKHART:   A:   The gas side is experiencing the  
4       same thing, demand destruction, surplus gas bubble,  
5       prices dropping. The only question is how long are  
6       they going to be down.

7 MR. INCE:       A:   One factor we're seeing is -- both on the  
8       electricity and gas side is that projects are being  
9       cancelled. So this may come back to us some day in  
10      the future with respect to a shortfall. So there's a  
11      lot of curtailments with respect to drilling programs,  
12      generation construction, exploration budgets. You're  
13      hearing a lot of things on Calgary with respect to  
14      slowdown in the industry there. So it may come back  
15      and forth at some point with respect to higher energy  
16      costs.

17 MR. LAUCKHART:   A:   Now, in your opinion, has this  
18      short-term effect potentially going to have any impact  
19      on B.C. Hydro's view going forward past 2011 in  
20      regards to the natural gas or electricity price  
21      forecasts?

22 MR. LAUCKHART:   A:   Well, I can start by saying there is  
23      some uncertainty how long this worldwide economic  
24      crisis is going to be impacting everybody. As Mr.  
25      Ince said, there is already a supply-side response in  
26      the gas business. People are stopping doing drilling

1 and a lot of things. That will have an impact on the  
2 supply side, and then of course what's going to happen  
3 on the demand side is somewhat unknown.

4 I would say people are currently saying,  
5 "Well, probably sometime next year the recover will,  
6 you know, begin to kick in," which would suggest that  
7 we might be back towards normal conditions by 2011.  
8 You know, I'm sure there are some people who believe  
9 that's the case, and it is probably a reasonable  
10 assumption at this point.

11 **Proceeding Time 11:36 a.m. T37**

12 MR. INCE: A: So Ms. Worth, with respect to our  
13 electricity and gas price scenarios, they are laid out  
14 in the application and as I indicated, we didn't  
15 change them for the evidentiary update. There's a  
16 very wide band in terms of those scenarios. So we are  
17 looking at gas prices ranging from 4 to 10 dollars and  
18 electricity prices ranging from the high 30s to about  
19 80 dollars a megawatt hour, and that covers a  
20 considerable amount of territory and potential  
21 futures. So then it becomes a challenge in how you  
22 weight those scenarios given current conditions.

23 But in terms of changing the LTAP, changing  
24 the recommendations, at least on the electricity price  
25 forecasts, I wouldn't recommend any changes at this  
26 point.

1 MS. WORTH: Q: I'm going to refer you to BCUC IR  
2 3.238.2, and that's in Exhibit B-12, and that's  
3 attachment 4 to that particular IR response. On page  
4 16, there's material indicating, or at least  
5 suggesting, that the housing market in the U.S. may  
6 not recover until 2012. And I'm wondering if this  
7 would suggest some uncertainty as to whether things  
8 truly will return to growth as usual by 2010.

9 MR. INCE: A: Well, Ms. Worth, I think we covered that  
10 extensively in terms of the economic conditions and  
11 where things, where B.C. Hydro thinks things are going  
12 with respect to economic conditions and load on  
13 previous panels.

14 MS. WORTH: Q: Okay. Now, I note that Option A, the  
15 non-firm energy pricing option from the Clean Power  
16 Call is based on a market price forecast and that B.C.  
17 Hydro has the discretion to amend the RFP as required  
18 up to the submission deadline. I was wondering if you  
19 could provide the date of the electricity price  
20 forecast used in establishing Option A prices for the  
21 non-firm energy and the proposal submitted to B.C.  
22 Hydro by the Clean Power Call proponents?

23 MR. INCE: A: So the electricity price forecast laid  
24 out in Chapter 4, that's specifically figures 4-5, and  
25 4-6, that were generated and issued March/April  
26 timeframe, 2008 and then included in the application,

1 of course, for June 2008.

2 MS. WORTH: Q: So B.C. Hydro did not modify its  
3 forecasts between when that was filed and when the  
4 proposals were received?

5 MR. INCE: A: It has not.

6 MS. WORTH: Q: Okay. So we've established that  
7 natural gas and market energy prices are lower than  
8 what they were in the LTAP filing in previous  
9 testimony. Will B.C. Hydro be reviewing its  
10 electricity price forecast in preparation for the  
11 evaluation phase of the Clean Power Call RFPs?

12 MR. INCE: A: I think that's a question for Mr.  
13 Scouras.

14 MS. WORTH: Q: Okay.

15 MR. INCE: A: And Ms. Worth, I should add, I feel that  
16 was somewhat unfair in that we are talking about very  
17 short-term prices again, so Mr. Lauckhart and myself  
18 indicated where things have gone in the very short  
19 term, and when we are talking about very long-term  
20 contracts perhaps it is unfair to be always modifying  
21 our forecasts or perhaps even the terms and conditions  
22 of those contracts based on very short-term  
23 information.

24 MS. WORTH: Q: My question was whether you were going  
25 to actually be reformulating those in order to  
26 actually look at the value of those projects, and I



1 MR. REIMANN: A: Our assumption on that REC sensitivity  
2 was that we would take -- if we had surplus energy,  
3 and if there was an ability to sell a clean energy  
4 associated with a renewable project -- not necessarily  
5 a large hydro, that we would sell the high-value  
6 electricity to maximize the return to the ratepayer,  
7 in essence.

8 MS. WORTH: Q: Okay, so what you're saying is that you  
9 would essentially be preferring to sell IPP energy  
10 because it would have a higher value due to the  
11 associated REC, than selling the comparable  
12 hydroelectric Heritage electricity.

13 MR. REIMANN: A: The Heritage hydro non-firm?

14 MS. WORTH: Q: Okay.

15 MR. REIMANN: A: Yeah, I think that's right. The  
16 portfolio, 90 percent clean portfolio standard that  
17 we're aiming for within the province does recognize  
18 this large hydro as being a clean resource, so it  
19 meets it for that requirement.

20 MS. WORTH: Q: Okay.

21 MR. LAUCKHART: A: Just to pick up a little bit on your  
22 point, you said that all of these rules require this.  
23 We're -- I'm really reporting here what some of the  
24 rules are primarily for the investor-owned utilities,  
25 and most states, including California, the public-  
26 owned utilities have pretty much *carte blanche* about

1           how they approach renewables, and there are some that  
2           count large hydro, there are some that count old  
3           stuff, some will purchase RECs as long as it's a  
4           renewable resource, you know, that looks like  
5           renewables and smells like -- that will purchase RECs  
6           and count it. So, I just don't want to overstate the  
7           fact that nobody's going to purchase anything from a  
8           resource that's older than 2005, because while some  
9           are restricted from that, not all are.

10 MS. WORTH:   Q:   Okay. I just want to confirm that B.C.  
11           Hydro retained a third-party expert to develop its  
12           outlook for the GHG policy, and associated price  
13           forecasting.

14 MR. LAUCKHART:   A:   They retained me to do that as a  
15           third-party expert.

16 MS. WORTH:   Q:   Thank you, Mr. Lauckhart.

17 MR. YOUNGMAN:   A:   You said GHG, correct?

18 MS. WORTH:   Q:   Yes, I did.

19 MR. LAUCKHART:   A:   Oh, GHG.

20 MR. YOUNGMAN:   A:   Yes, I was that --

21 MR. LAUCKHART:   A:   I don't want to steal your thunder.

22 MS. WORTH:   Q:   Thank you. Perhaps Mr. Youngman can  
23           answer the following questions then.

24 MR. LAUCKHART:   A:   I'll give you the REC stuff.

25 MS. WORTH:   Q:   Okay, I'm also -- I'm wondering if you  
26           could confirm that the GHG price forecasts provided



1 15 percent in the price cap scenario, to 60 percent  
2 for the linked market or middle scenario, to 25  
3 percent for the aggressive scenario. Would it be fair  
4 to say that at that time, February 2008, there was  
5 considerable uncertainty as to how the future would  
6 unfold with respect to GHG policy, regulation and thus  
7 pricing?

8 MR. YOUNGMAN: A: There was uncertainty then, and there  
9 continues to be a significant uncertainty.

10 MR. WORTH: Q: Have you received any more recent advice  
11 from that source as to how the future of GHG is likely  
12 to unfold?

13 MR. YOUNGMAN: A: I can provide an update, brief update  
14 on what's currently being discussed in the U.S., if  
15 that would answer your question.

16 MS. WORTH: Q: Certainly, if it won't be sort of overly  
17 onerous in terms of time.

18 MR. YOUNGMAN: A: There's a number of changes that have  
19 occurred. We now have a new president who has made  
20 very aggressive statements on cap and trade policy.  
21 Just yesterday or two days ago He announced that EPA  
22 will be proposing a cap and trade system with  
23 aggressive targets and 100 percent auctioning.  
24 Congress is picking up consideration of legislation.  
25 In the House they are going to try to pass -- develop  
26 legislation and pass it out of the Energy and Commerce

1           Committee by Memorial Day, by end of May, and in the  
2           Senate they will be following the lead of President  
3           Obama on this. The most optimistic scenario would be  
4           that we would pass legislation out of Congress by the  
5           end of the year in time for Copenhagen in November, to  
6           be able to present international negotiations for the  
7           next five years of climate agreements, the U.S.  
8           position. We think that that is highly optimistic  
9           given how this legislation affects the economy and the  
10          broader situation.

11 MR. WORTH:    Q:    The reality is that until the actual  
12           Congress passes any of these types of measures, the  
13           future does remain uncertain.

14 MR. YOUNGMAN:   A:    It remains uncertain, but I would add  
15           that the situation has changed, and the nature of the  
16           uncertainty has changed from February 2008 when we  
17           wrote this memo. The election of President Obama, the  
18           fact that now Representative Henry Waxman is the  
19           chairman of the House, Energy and Commerce Committee,  
20           and he is very ambitious on climate change. He  
21           replaced Representative Dingle, who had been in that  
22           position for a long time and was known in part for not  
23           raising fuel economy standards for cars to protect his  
24           district.

25                            Now you have a representative from  
26           California who supports very aggressive targets. You

1 know, the president has come out for very aggressive  
2 targets. Nancy Pelosi is the majority leader in the  
3 house, the Speaker of the House. California supports  
4 very aggressive targets. In short, there are a number  
5 of signs, in terms of the people who are making the  
6 policy, that favour more aggressive decisions.

7 MS. WORTH: Q: Thank you. Now, these may be referred  
8 to Panel 4, so I'm going forward with a bit of  
9 caution.

10 THE CHAIRPERSON: Well, before you do that, Ms. Worth,  
11 it's probably a convenient time to break for lunch.

12 MS. WORTH: Certainly.

13 THE CHAIRPERSON: We'll return in an hour and a half.  
14 Thank you.

15 MS. WORTH: Thank you.

16 **(PROCEEDINGS ADJOURNED AT 11:51 A.M.)**

17 **(PROCEEDINGS RESUMED AT 1:20 P.M.)**

**T40**

18 THE CHAIRPERSON: Please be seated.

19 Ms. Worth.

20 MS. WORTH: Mr. Chair, members of the panels, after  
21 reviewing my questions, my remaining questions, I  
22 think I'm going to pose those to Panel 4. So thank  
23 you very much.

24 THE CHAIRPERSON: Thank you, Ms. Worth.

25 MR. THRASHER: Mr. Chair, I have some procedural matters  
26 to look after before we find our next cross-examiner.

1                   So I've got responses to B.C. Hydro  
2           Undertaking No. 4, and the transcript reference for  
3           the record is Volume 5, page 767, line 6, to page 768,  
4           line 13. And it was a request from Commission Chair.  
5           And I've got response to B.C. Hydro Undertaking No.  
6           12.

7   MR. FULTON:     That should be marked Exhibit C-23, Mr.  
8           Chairman.

9   THE CHAIRPERSON:   So it shall so be.

10   VOICE:     B.

11   MR. THRASHER:    B. B-23. B-23.  
12           (B.C. HYDRO UNDERTAKING NO. 4, VOLUME 5, PAGE 767,  
13           LINE 6 TO PAGE 768, LINE 13, MARKED EXHIBIT B-23)

14   MR. THRASHER:    And sorry, I have response to B.C. Hydro  
15           Undertaking No. 12, and the transcript reference for  
16           the record is Volume 7, page 1076, line 23, to page  
17           1078, line 8, and page 1148, lines 1 to 2. And that  
18           should be marked Exhibit B-24.

19   THE CHAIRPERSON:   Thank you.  
20           (B.C. HYDRO UNDERTAKING NO. 12, VOLUME 7, PAGE 1076,  
21           LINE 23 TO PAGE 1078, LINE 8 AND PAGE 1148, LINES 1 TO  
22           2, MARKED EXHIBIT B-24)

23   MR. THRASHER:    I have two more undertakings. Response to  
24           B.C. Hydro Undertaking No. 21, and the transcript  
25           reference is Volume 8, page 1442, line 14, to page  
26           1443, line 3. And that was a request by Commission

1 Chair and it is Exhibit B-25.

2 (B.C. HYDRO UNDERTAKING NO. 21, VOLUME 8, PAGE 1442,  
3 LINE 14 TO PAGE 1443, LINE 3, MARKED EXHIBIT B-25)

4 **Proceeding Time 1:22 p.m. T41**

5 MR. THRASHER: And the last undertaking is a response to  
6 B.C. Hydro undertaking number 22, twenty-two,  
7 transcript reference is volume 8, page 1454, lines 5  
8 to 24. It's again a request from Commission Chair.  
9 It's marked Exhibit B-26.

10 (B.C. HYDRO UNDERTAKING NO. 22, VOLUME 8, PAGE 1454,  
11 LINES 5 TO 14, MARKED EXHIBIT B-26)

12 MR. THRASHER: That is all.

13 THE CHAIRPERSON: Thank you, Mr. Thrasher.

14 **CROSS-EXAMINATION BY MR. AUSTIN:**

15 MR. AUSTIN: Q: Good afternoon, Commissioners, good  
16 afternoon, panel. You can tell it's just after lunch,  
17 because Mr. Austin is cross-examining.

18 Panel, I'd like to refer you to Exhibit B-  
19 1, page 4-21. And while you're doing that, I'd like  
20 to hand out some material that I'd like to be marked  
21 as an exhibit.

22 I am advised that this is going to be  
23 marked Exhibit C17-17.

24 (B.C. HYDRO UNDERTAKING NO. 35 FROM B.C. HYDRO F09/F10  
25 REVENUE REQUIREMENTS APPLICATION, RE: VOLUME 7,  
26 OCTOBER 10, 2008, PAGE 160-1161, LINES 1 TO 26 AND

1 PAGE 1162, LINES 1 TO 16, MARKED EXHIBIT C17-17)

2 **Proceeding Time 1:24 p.m. T42**

3 MR. AUSTIN: I have another set of material that will be  
4 marked Exhibit C17-18.

5 (EXCERPT FROM TRANSCRIPT VOLUME 12 OF F2009 AND F2010  
6 REVENUE REQUIREMENTS APPLICATION OF OCTOBER 20, 2008,  
7 MARKED EXHIBIT C17-18)

8 MR. AUSTIN: Q: I'd also like to draw the Panel's  
9 attention to page 498 of the transcript.

10 THE CHAIRPERSON: Volume?

11 MR. AUSTIN: Q: Volume 4. So that's volume 4, page 498  
12 of the transcript. Do you have that?

13 MR. INCE: A: Yes.

14 MR. AUSTIN: Q: I'd like to turn your attention to  
15 lines 17 through 21 of the transcript, and it says:

16 "And with B.C. Hydro's capability to store  
17 energy, and subject to transmission access,  
18 that might not necessarily represent the  
19 price that B.C. Hydro could obtain, for  
20 example, by selling more of its energy into  
21 high-load hours versus low-load hours?"

22 Mr. Elton responded:

23 "That's correct."

24 And that's an answer in relation to a question about  
25 Figure 4-6.

26 **Proceeding Time 1:26 p.m. T43**

1                   And if you look at Exhibit C17-17, on the  
2 first page under the heading "Response", second  
3 paragraph, it says, second sentence:

4                   "B.C. Hydro optimizes the operation of its  
5 system based on forecasts of load, inflow  
6 and market prices, as well as the forecast  
7 availability of all resources, including IPP  
8 purchases. This optimization also takes  
9 into account B.C. Hydro's licences,  
10 coordination and operating agreements, as  
11 well as the Columbia Treaty and Water Use  
12 Plans, and explicitly considers the  
13 uncertainty and inflows and forward prices  
14 in the process."

15                   And then if you turn to Exhibit C-17-8,  
16 page 2194, lines 4 through 6 -- C-17-18, I'm sorry.  
17 If you turn to C-17-18, lines 4 through 6, it says:

18                   "Okay, so describe how we optimize the  
19 system and then talk a little bit about  
20 critical water is all about?"

21                   And then if you go to page 2196 of C-17-18, lines 11  
22 through 12, it says:

23                   "The objective function, as I have mentioned  
24 therefore [sic] is to maximize the net  
25 revenue."

26                   And in lines 23 through 26 on the page, same page, it



1           that B.C. Hydro could either obtain at or sell into  
2           the market on a day-to-day spot market basis, looking  
3           out into the future. These are expected spot market  
4           prices going forward.

5 MR. AUSTIN:   Q:   However, with B.C. Hydro's ability to  
6           optimize using its system, do these prices necessarily  
7           represent B.C. Hydro's ability to optimize? For  
8           example, to be able to sell into high-load periods?

9 MR. INCE:    A:   Well, I think Mr. Reimann and I will tag-  
10          team on this. But, B.C. Hydro, because of its system,  
11          presumably can do better than this, in that it can  
12          obtain power at light load hours, during the middle of  
13          the night, and obviously sell during heavy load hours,  
14          at better prices. So these are average prices, and  
15          presumably B.C. Hydro is going to optimize to obtain  
16          perhaps better value than they would have just buying  
17          or selling at these prices.

18                    But keeping in mind that this would use up  
19          some portion of the system.

20 MR. REIMANN:   A:   I think Mr. Ince is right. So what  
21          would constrain you from selling into the market is  
22          when, obviously, you have capacity in the system that  
23          you can then move the energy into the market. So that  
24          that restricts us in terms of when our peak loads are,  
25          and when we need the generation ourselves. So I would  
26          expect that, if you -- and I'm not sure how you go

1           about doing this, but if you were to try to forecast  
2           how you would move energy into a market, that you  
3           would expect to do better than the average price.

4                       I would add that, in the portfolio analysis  
5           we do, we do put in a price curve, low-load and high-  
6           load hours with the monthly shape to it, and that we  
7           do capture the majority of this analysis within -- or  
8           the majority of the value within the analysis that we  
9           do.

10 MR. AUSTIN:   Q:   And I notice that the time period for  
11           which these prices are forecast ends at 2026. Do you  
12           see that?

13 MR. INCE:    A:    Yes. I think, due to the chart itself,  
14           the last index point marker is 2026. But I believe  
15           the end date is 2027. If you look at the chart  
16           carefully, I believe, just due to the way the chart is  
17           plotted out, we actually do have a point for 2027.

18 MR. AUSTIN:   Q:    Subject to that minor modification,  
19           would you agree with me that there are independent  
20           power producer contracts that extend well beyond 2027?

21 MR. INCE:    A:    Yes. Both existing and potentially  
22           future.

23 MR. AUSTIN:   Q:    And this morning I heard that there  
24           seems to be a market, or may be a market developing  
25           for renewable electricity in the United States that  
26           has the renewable energy credits attached. And I know

1 this is a complicated topic, and we'll get into a  
2 little of that a little bit later. But would the  
3 prices reflected in 4-6 have anything to do with this  
4 potential market, or market as it already exists?

5 And maybe Mr. Lauckhart could jump in, and  
6 maybe Mr. Reimann could jump in.

7 **Proceeding Time 1:33 p.m. T45**

8 MR. INCE: A: So Mr. Austin, I'll start off.

9 MR. AUSTIN: Q: And if Mr. Ince wants to jump in,  
10 that'd be great too.

11 MR. INCE: A: In terms of what these prices are. These  
12 are simulated market prices that do include greenhouse  
13 gas offset costs as provided to us by a Natsource, Mr.  
14 Youngman. So there is some consideration for the  
15 projected increased cost of carbon going forward in  
16 these simulated market prices.

17 MR. REIMANN: A: And just to add to what Mr. Ince is  
18 saying is the Figure 4-5 actually shows the amount of  
19 the price impact due to the degree of the GHG offset  
20 that we were foreseeing at the market at that time.  
21 And Mr. Ince I think should probably try to explain  
22 that too.

23 MR. INCE: A: Right, perhaps I can elaborate more on  
24 Figure 4-5. It shows two curves, the lower curve  
25 being the long-term market price forecast without  
26 greenhouse gas, and then the second higher curve is

1           when you superimpose Mr. Youngman's GHG costs. And  
2           it's not a big difference, two to three dollars per  
3           megawatt hour. And I'll start in -- there's a bit of  
4           a long explanation there but I'll start into it, in  
5           that there's something called a performance standard  
6           in that you look at a plant, a thermal plant, and  
7           there's a point at which below they don't have to  
8           offset their greenhouse gas costs in terms of tonnes  
9           per gigawatt hour.

10                       Beyond that point, we made the assumptions  
11           in terms of their emissions, that they would have to  
12           offset. And this performance standard varies  
13           depending on the region, varies depending on the  
14           plant. In most regions that we've looked at, we've  
15           assumed 360 tonnes per gigawatt hour, and that is the  
16           performance roughly of a combined cycle gas turbine.  
17           So if you've got a CCGT plant that operates at 360  
18           tonnes per gigawatt hour in terms of emissions, there  
19           will not be an offset cost associated with that. If  
20           you've got a more polluting plant, let's say a coal  
21           plant that emits beyond that level, the greenhouse gas  
22           offset cost will be applied to that plant. So as  
23           we've indicated elsewhere in this application, natural  
24           gas plants --

25 MR. AUSTIN:   Q:    Maybe I could stop the witness right  
26           now. We're not getting any recording here.

1 MR. INCE: A: Oh.

2 (DISCUSSION OFF THE RECORD)

3 MR. INCE: A: Are we okay? Okay.

4 So backing up a little bit, the difference  
5 between these two curves was due to the application of  
6 the greenhouse gas adders as provided by Natsource,  
7 and two to three dollars a megawatt hour difference,  
8 largely due to the performance standard, that natural  
9 gas plants are generally setting the market price.  
10 And because of the application of this performance  
11 standard, most gas plants, efficient plants are at  
12 that cusp in terms of being hit by this greenhouse gas  
13 offset cost. So it's not as much of an adder as you  
14 would initially think.

15 Obviously if the performance standard is  
16 decreased, then this would be a larger impact. Or if  
17 the greenhouse gas offset costs went from \$15 or \$30  
18 to a much higher number, you would see a proportional  
19 increase in these. So this is the basis of this  
20 chart, and the delta between the with and without  
21 greenhouse gas costs.

22 So, Mr. Austin, yes, we have to some extent  
23 reflected greenhouse gases in this, but I know there's  
24 a broader discussion regarding RECs and carbon offsets  
25 and so on.

26 MR. AUSTIN: Q: Exactly, and maybe, Mr. Lauckhart, you



1                   So, the plant could get these prices, maybe  
2                   some capacity prices, but you say, "Well, yeah, but  
3                   what is it going to cost me to build this plant?"

4 MR. AUSTIN:    Q:    Just hang on a second.  So when you're  
5                   referring to these prices, the ones that are reflected  
6                   in Figure 4-6?

7 MR. LAUCKHART:  A:    That's correct.

8 MR. AUSTIN:    Q:    Thank you.

9 MR. LAUCKHART:  A:    Oh, 4-5, I think.

10 MR. AUSTIN:    Q:    4-5.  That's fine.

11 MR. INCE:      A:    Sorry, I should make a clarification in  
12                   that 4-5 shows the comparison between market prices  
13                   before and after the application of greenhouse gas  
14                   adders.  I want to assure everybody in Figure 4-6, the  
15                   base electricity prices that we generate do include  
16                   the application of those greenhouse gases.  So, if you  
17                   look at Figure 4-5, the higher of the two lines, it  
18                   should be a match for the mid-price scenario in Figure  
19                   4-6.

20                   So our base assumption with respect to  
21                   market prices are that they include greenhouse gases.

22 MR. AUSTIN:    Q:    Mr. Lauckhart, keep going.

23 MR. LAUCKHART:  A:    So, with that clarification, I'm  
24                   saying the wind plant could sell into a day-ahead  
25                   market.  We actually have these prices broken down  
26                   hourly, so they're shaped hourly, but in general

1           they're going to get these prices as energy for the --  
2           value for their energy. They might get a little  
3           capacity. But when they compare that to their revenue  
4           requirement, they don't have enough money.

5 MR. AUSTIN:    Q:    They'd be losing their shirt.

6 MR. LAUCKHART:  A:    They're not going to be fine --  
7           well, they're not going to be financed, is the point,  
8           unless they can come up with another source of  
9           revenue, and that source of revenue now is being  
10          derived by a requirement by these many states that  
11          people meet RPS goals. And if they have to pay more  
12          to meet those goals, they do. So what we -- that  
13          determined the price of the RECs will be the  
14          difference between the revenues they get from the  
15          capacity and these energy prices, and what the revenue  
16          requirement is, and that's going to be setting the  
17          price of the REC.

18 MR. YOUNGMAN:  A:    And if it would be helpful, I can  
19          contrast that with an offset system, which is  
20          something very different, as Mr. Austin indicated.

21                        An offset system, under a cap and trade  
22          program, is intended to obtain verifiable, certifiable  
23          reductions below business as usual in sectors that are  
24          not covered under a cap and trade program. And the  
25          important thing to remember with an offset system is,  
26          if you are -- if you need to preserve the integrity of

1 the cap, of covered sectors, you need to make sure  
2 that the reductions occurring in non-covered sectors  
3 actually would not have occurred under business as  
4 usual. So as a result, there's a number of sort of  
5 complex considerations including this additionality  
6 question. Would it have occurred? And different  
7 tests that are applied. And this is a matter that, in  
8 -- currently in the U.S. and debates over this, there  
9 is a lot of concern that you need to prove very  
10 carefully that they are additional, the offsets are  
11 additional to what business as usual would have been.  
12 Otherwise, you sacrifice the integrity of the cap.

13 Completely different from a REC system,  
14 which is, as we were discussing, more a matter of  
15 subsidizing and thereby promoting renewable energy  
16 standards. They occur -- they can occur side by side,  
17 but often in practice the policy decision has been  
18 made to keep them separate and not to allow  
19 overlapping, because you want to avoid double-  
20 counting.

21 MR. AUSTIN: Q: And while you're on the cap and trade  
22 system, under the cap and trade system, does the cap  
23 ratchet down over time?

24 MR. YOUNGMAN: A: It can, and it typically does, in  
25 practice.

26 MR. AUSTIN: Q: And the reason for that is because if



1 but we understand it to be a generation standard. And  
2 so of what we produce in the province, 90 percent of  
3 it is supposed to remain to be clean. Large hydro  
4 qualifies as clean. So that's what we'd be doing  
5 within the province. If we could then optimize our  
6 revenues by selling the RECs with the surplus energy  
7 into the U.S. market, and receive more revenues to  
8 offset our domestic costs, we'd do that.

9 MR. AUSTIN: Q: So when I look at the prices in Figures  
10 4-5 and 4-6, and going back to what one of the panel  
11 members said, that essentially represents the brown  
12 market prices, correct?

13 MR. LAUCKHART: A: That's kind of the slang that's come  
14 out on those kind of prices.

15 MR. AUSTIN: Q: And for the purposes of Figure 4-6 on  
16 page 4-21 of Exhibit B-1, and every time -- once in a  
17 while you have to do that just so that when you read  
18 the transcript, people know what they're talking  
19 about, you're talking about. With respect to Figure  
20 4-6, what do the prices in Figure 4-6 assume about the  
21 relationship between the Canadian and U.S. dollars?

22 MR. INCE: A: These were based on exchange rate  
23 assumptions at the time the forecast was generated,  
24 *circa* March 2008, and I believe the long-term  
25 assumption is a 93 cent Canadian dollar. Long term.

26 MR. AUSTIN: Q: And for the purposes of generating

1           these prices, did you use the gas price forecast that  
2           was produced by Mr. Lauckhart?

3 MR. INCE:    A:    The gas price forecast is one of the key  
4           assumptions built into these electricity prices.

5 MR. AUSTIN:  Q:    Is it Mr. Lauckhart's gas price  
6           forecast?

7 MR. LAUCKHART: A:    Yes.

8 MR. INCE:    A:    Yes.

9 MR. LAUCKHART: A:    My understanding it is.

10 MR. INCE:    A:    Yes.

11 MR. AUSTIN:  Q:    And for the purposes of these prices,  
12           what did you assume about the ability of these prices  
13           to attract new entrants into the market with new  
14           sources of supply?

15 MR. INCE:    A:    These are simulated spot market prices  
16           that make no assumptions with respect to new  
17           generation additions.  So these are largely variable  
18           costs.  So once a plant is built to meet whatever  
19           regional, state, provincial requirement, then  
20           obviously you can run based on variable costs.  So if  
21           the plant is built and it's sitting there ready to  
22           serve capacity or whatever requirements in that  
23           region, as long as you could afford to put fuel in it  
24           and pay for the variable costs, it will run.  And  
25           therefore these prices largely represent variable  
26           costs for the generation.

1 MR. LAUCKHART: A: I'd expand on that by saying that  
2 when these prices were created, it was based on a  
3 resource buildup that had been developed, and the ones  
4 that were used here were the California CEC scenarios  
5 resources build-outs for the three cases that have  
6 been identified in the testimony.

7 MR. AUSTIN: Q: So could you just be a little bit  
8 clearer, just that I understand that? This is the CEC  
9 build-out, and where is that referred to in the  
10 evidence?

11 MR. LAUCKHART: A: Well, it's referred to, I think, in  
12 a number of places in the evidence, but --

13 MR. AUSTIN: Q: Just broadly, can you explain --

14 MR. LAUCKHART: A: We could start about in my Exhibit  
15 -- the gas price report which is Appendix 1 -- is it  
16 I? Appendix I. There's one place where it talks  
17 about the scenarios project and it will describe some  
18 of the details about the resource buildup in the three  
19 scenarios.

20 MR. INCE: A: So, Mr. Austin, maybe I could be helpful,  
21 in that these three scenarios I think are a  
22 significant improvement to what we did in the 2007  
23 price forecast, in that in that previous forecast we  
24 just buried the gas prices. We made no changes of  
25 assumptions with respect to how gas prices would  
26 affect the future generation build-out in the United

1 States or Canada. With these set of scenarios, it's  
2 an integrated whole. So you have gas prices, oil  
3 prices, and also future resource additions, a  
4 consistent, internally consistent, logical scenario.  
5 Each one represents something that's internally  
6 logical. And those scenarios are described in detail  
7 -- sorry, it's Appendix I. Yes.

8 **Proceeding Time 1:48 p.m. T48**

9 MR. AUSTIN: Q: Are the actual details of the build-out  
10 included in Appendix I? Or is there a reference where  
11 they can be found?

12 MR. LAUCKHART: A: Appendix I references the California  
13 Energy Commission website, where there's massive data  
14 available. I don't know if we've got other places  
15 where it's available.

16 MR. INCE: A: I'm struggling, but we did answer an IR  
17 on this, in terms of what are the high-level  
18 assumptions built into these scenarios. And there  
19 was, in fact, a web link that took you to the  
20 California Energy Commission website. But I concur  
21 with Mr. Lauckhart, that the materials involved in the  
22 development of these scenarios are voluminous.  
23 They're literally thousands of pages, and have been  
24 thoroughly vetted through a number of extensive  
25 regulatory hearings in California.

26 MR. AUSTIN: Q: I'd like to move to another area, and

1           that's the Natsource 2007 GHG offset forecast report.  
2           And I provided to your counsel a press release, and  
3           this is in relation to the Western Climate Initiative,  
4           and I'll just get that marked as an exhibit before we  
5           go into it.

6                           I am advised it should be marked Exhibit  
7           C17-19.

8           (NEWS RELEASE, "IPPBC ISSUE UPDATE: WCI PLAN MOVES  
9           B.C. CLOSER TO CLEANER, GREENER ECONOMY", FEBRUARY 20,  
10          2009, MARKED EXHIBIT C17-19)

11 MR. AUSTIN:    Q:    And first off, this is not a press  
12           release of the Independent Power Producers of B.C. I  
13           just had -- I had trouble locating the actual  
14           government press release, but I don't think anything  
15           turns on it. And Mr. Youngman, as you did this  
16           morning in relation to updating the Commission with  
17           respect to changes in the United States, in particular  
18           at the Presidential level and at the Congressional  
19           level, I would like you to give us an update on what's  
20           happening with respect to the Western Climate  
21           Initiative and, in more -- in particular in relation  
22           to the information contained in a press release by the  
23           Ministry of Environment from the province of British  
24           Columbia on February the 20<sup>th</sup>, 2009.

25 MR. YOUNGMAN:   A:    Let's see. This press release --  
26           let's see, is relating to -- it dates back to February

1 -- okay, I'm sorry. Let's take a step back.

2 MR. AUSTIN: Q: Take your time -- as I described this,  
3 this is cross-examination dead zone after lunch.

4 MR. YOUNGMAN: A: I'm trying to determine what the key  
5 milestone has been -- I can tell you in the meantime  
6 -- right, the work plan, okay. Well, thank you.

7 Right now, states are -- and provinces are  
8 considering implementing legislation for WCI in  
9 different jurisdictions, and in different states, that  
10 discussion is at different points in the process. And  
11 so, there is a good amount of uncertainty as to which  
12 states are going to accept.

13 California has a law, AB-32, in place and  
14 they will follow through to meet their target and also  
15 they are committed to acting within WCI.

16 **Proceeding Time 1:52 p.m. T49**

17 Other states, the governor signed on to  
18 WCI, but that's not enforceable under law and the  
19 targets that they adopted were not enforceable under  
20 law, and therefore there are some questions as to  
21 whether implementing legislation will be adopted in  
22 these jurisdictions. So there's a lot of attention  
23 right now, for example, to Washington State to see  
24 whether they're going to adopt it. I understand that  
25 it's currently in committee implementing legislation,  
26 and I think a decision needs to be made perhaps in

1 March, sort of key deadline for making that decision.  
2 So that's sort of a rough idea of where things are.

3 But the picture I've gotten from people  
4 close to WCI is that there's a strong will to  
5 implement it, and what complicates it is the current  
6 economic situation, and that applies more broadly to  
7 cap and trade legislation in the U.S.

8 MR. AUSTIN: Q: And I'd like to refer you to Appendix  
9 G-1 of Exhibit B-1, which is the Natsource 2007 GHG  
10 offset forecast report. And I'd like to refer you to  
11 page 13 of 79. Do you have that?

12 MR. YOUNGMAN: A: Yes, I do.

13 MR. AUSTIN: Q: And at the top of the page there's  
14 reference to a Supreme Court of the United States  
15 decision with respect to the Environmental Protection  
16 Agency, with respect to the authority that it has to  
17 regulate carbon dioxide and other GHG emissions in  
18 others. Do you see that?

19 MR. YOUNGMAN: A: I do.

20 MR. AUSTIN: Q: And it's my understanding that under  
21 the former administration in the United States,  
22 meaning the Bush administration, the EPA was  
23 essentially told not to proceed with presumably  
24 drawing up a plan with respect to GHG emissions. And  
25 under the new presidential administration in  
26 Washington, that has now been changed. Can you bring

1 us up to date on that?

2 MR. YOUNGMAN: A: Under the previous administration,  
3 EPA issued an advance notice of rule making on this  
4 question of whether to regulate GHGs, but it was seen  
5 as a regulatory stall tactic, that that was so of  
6 determined by the Bush administration. Now the Obama  
7 administration has taken steps that suggest that he's  
8 taking a different position on EPA looking into a  
9 regulatory approach, and at the same time he is  
10 developing with EPA a legislative proposal that he  
11 just announced in his budget. So there's sort of --  
12 there's two potential paths. The regulatory path is  
13 seen now as sort of a backup that could become  
14 relevant if Congress doesn't act. But now it's the  
15 legislative proposal that has taken precedence.

16 MR. AUSTIN: Q: So with respect to the weathervane  
17 shifting towards movement in the United States with  
18 respect to some form of plan with respect to GHGs, we  
19 have potentially two ways to go. We have the  
20 congressional route, which is the legislative route,  
21 and we also have the Environmental Protection Agency  
22 route, which presumably required no new legislation.

23 MR. YOUNGMAN: A: There would have to be the  
24 endangerment finding first, and that has not been made  
25 yet. There are signals that it will be made, but it  
26 hasn't been made yet.

1 MR. AUSTIN: Q: But that's not a legislative amendment.  
2 It's already prescribed as per the EPA legislation.

3 MR. YOUNGMAN: A: If EPA makes this endangerment  
4 finding, then it can -- it has the authority, if the  
5 administration requests, to develop regulations. And  
6 it's also my understanding that even under the  
7 previous administration, EPA had made some progress in  
8 developing a framework. And that's probably the basis  
9 of the current legislation that the Obama  
10 administration has just proposed.

11 **Proceeding Time 1:57 p.m. T50**

12 MR. AUSTIN: Q: I'd like to move to another area, and  
13 this is in relation to the natural gas price forecast,  
14 and I believe that's you, Mr. Lauckhart. And I'd like  
15 to refer you to BCUC Information Request 1.74.2, which  
16 is in Exhibit B-3. So, that's Exhibit B-3, B.C.  
17 Utilities Commission Information Request 1.74.2.

18 MR. LAUCKHART: A: Okay, I have that.

19 MR. AUSTIN: Q: And I'd like to refer you to the last  
20 bullet, and it says:

21 "In 2009, for all three forecasts, are due  
22 to the transition out of the global and  
23 energy scenarios and into the constant  
24 escalation factor. These factors were  
25 calculated separately for each forecast and  
26 are based on the global energy gas forecast



1 20.

2 (EXCERPT FROM BC HYDRO 1995 INTEGRATED ELECTRICITY  
3 PLAN, MARKED EXHIBIT C17-20)

4 MR. AUSTIN: Q: Do you have that, Mr. Ince?

5 MR. INCE: A: Yes.

6 MR. AUSTIN: Q: And just for historical purposes, on  
7 the second page of that, in terms of just photocopy  
8 order, it says, under "Light fuel prices":

9 "Crude oil prices are projected to remain  
10 below U.S. \$20.00 (1993 \$) per barrel in  
11 real terms, for the rest of the century and  
12 then trend up to U.S. \$23.00...by the end of  
13 the forecast period."

14 And the editorial comment is, "I wish we could be so  
15 lucky." And then I'd like to refer you to the last  
16 page of this material. And this is the first full  
17 paragraph on the last page, and it says:

18 "B.C. Hydro regularly prepares and updates  
19 an outlook of natural gas prices. The  
20 present outlook assumes market prices at the  
21 Huntingdon Hub, considering the three key  
22 variables described above, and includes a  
23 real price escalation of approximately 1.5  
24 percent per year."

25 Do you see that, Mr. Ince?

26 MR. INCE: A: Yes, I do.

1 MR. AUSTIN: Q: Could you tell us what sort of constant  
2 factor you applied to Mr. Lauckhart's forecast to  
3 extend it out to 2027?

4 **Proceeding Time 2:02 p.m. T51**

5 MR. INCE: A: I don't specifically remember, but they  
6 would have been trends based on the last periods of  
7 the last few years of the global scenario, so we would  
8 have taken what the growth rate would have been on the  
9 global scenarios leading up to the end of the forecast  
10 period, and projected them outwards. And that would  
11 have been specific to each scenario. So it would have  
12 been a growth rate in the global scenarios, in the  
13 last years extended outward.

14 MR. AUSTIN: Q: Do you have any --

15 MR. INCE: A: Now, keep in mind that the global  
16 scenarios were in real dollars, so I think we're  
17 talking about real increases here.

18 MR. AUSTIN: Q: Do you have any idea what those are, or  
19 could you undertake to provide that information?

20 MR. INCE: A: Yes. Yes.

21 MR. THRASHER: We'll take that undertaking.

22 **Information Request**

23 MR. INCE: A: Mr. Lauckhart has been very useful in  
24 terms of pointing out within the application itself,  
25 so page 4-16, figure 4-2, and we have graphically at  
26 least what those escalations are. And so, for the low

1 scenario -- well, I think it's self-evident what each  
2 of those area.

3 MR. AUSTIN: Q: Thank you, that's helpful. That's  
4 something we didn't pick up.

5 MR. INCE: A: But you look at the high gas case, there  
6 definitely is a real dollar increase to the gas price  
7 assumptions. So, we have not assumed no inflation in  
8 these numbers.

9 MR. AUSTIN: Q: I'd like to refer the panel to Exhibit  
10 B-16, B.C. Hydro's service plan. And page 9 of the  
11 service plan. And for ease of reference, I've --  
12 there's a graph on page 9 that doesn't make a lot of  
13 sense unless it's in colour, so I have colour copies  
14 of that graph. There's no need to mark anything as an  
15 exhibit, it's just a colour version of it. Just pass  
16 these around.

17 On this graph, there's a green line that  
18 says "Natural gas", and it's footnoted, and the  
19 footnote says:

20 "Natural gas index is full service charge,  
21 including delivery charge and commodity  
22 cost."

23 Do you see that?

24 MR. INCE: A: Yes.

25 MR. AUSTIN: Q: Would it be possible to provide this  
26 graph with a line that just has the commodity price of

1 natural gas in it, as opposed to the full service  
2 cost?

3 MR. INCE: A: So you're asking that we use 1996 as a  
4 baseline point for natural gas prices, and show the  
5 same, like Sumas natural gas prices --

6 MR. AUSTIN: Q: For the purposes of the forecast  
7 prepared by Mr. Lauckhart, it would be probably better  
8 off to be Henry Hub, just for consistency.

9 MR. THRASHER: Sorry, before I take that undertaking,  
10 sorry, Mr. Austin, could you just explain to me what  
11 you're getting at?

12 MR. AUSTIN: Well, what we're getting at here is, we've  
13 got a natural gas price, and it's called the "full  
14 service price".

15 MR. THRASHER: Right.

16 MR. AUSTIN: So it includes, in a sense, the matters such  
17 as Terasen's costs, and presumably pipeline costs.  
18 And what I'd like to see on the graph is just the  
19 straight commodity cost put on this graph.

20 MR. THRASHER: I guess my question is why.

21 MR. AUSTIN: Well, a picture is worth a thousand words,  
22 so I'd like to see what the trend line has been. This  
23 is from 1996, just purely for natural gas, to 2007.

24 MR. THRASHER: Subject to my witnesses, that --

25 MR. INCE: A: I don't think it's particularly onerous.  
26 I think we've hit the lowest point in gas prices in

1 1996, and so --

2 MR. THRASHER: So are we saying -- you know, there's an  
3 issue of relevancy here, obviously.

4 MR. AUSTIN: Well, the issue in terms of relevancy is, if  
5 we look at what's happened since 1996, we've got Mr.  
6 Lauckhart's forecast, so it's a nice visual comparison  
7 of where we've been and where we're going.

8 MR. THRASHER: If it's not too onerous, I -- we'll  
9 undertake that.

10 THE CHAIRPERSON: Well, don't you have it almost on page  
11 4-17, Mr. Austin, of Exhibit B-1?

12 **Proceeding Time 2:07 p.m. T52**

13 MR. AUSTIN: I almost have it, are the correct words.

14 THE CHAIRPERSON: You've got it from 1995 to 2007 when  
15 they put this document together.

16 MR. AUSTIN: I'm sorry, I don't have the full document in  
17 front of me. Maybe somebody could pass it to me.

18 I appreciate that, Mr. Chairman, but I'd  
19 like to see it in reference to all the other matters  
20 that are currently on page 9 in the graph.

21 THE CHAIRPERSON: Cablevision and auto insurance?

22 MR. AUSTIN: Well, also B.C. Hydro and CPI.

23 MR. THRASHER: I question the relevancy, but I'm in your  
24 hands, Mr. Chairman.

25 MR. AUSTIN: If I graph it against CPI, then I get a good  
26 view of what the real --

1 THE CHAIRPERSON: Commissioner Milbourne also points out  
2 in this graph that you've given us from the service  
3 plan, you've got a red line that has Terasen Gas  
4 excluding commodity.

5 MR. AUSTIN: That's correct.

6 THE CHAIRPERSON: I wouldn't -- maybe need to take one  
7 from the other and that would be the difference.

8 MR. AUSTIN: That's all they have to do, Mr. Chairman.

9 THE CHAIRPERSON: Well, if it's going to make you feel  
10 happier, Mr. Austin.

11 MR. AUSTIN: It doesn't take a lot.

12 MR. THRASHER: We will take that undertaking.

13 **Information Request**

14 MR. AUSTIN: Q: I'd like to move to the topic of REC  
15 forecast, and I'd like the panel to look at Exhibit  
16 A2-2. And I just want to check with the panel to make  
17 sure that I've got the right exhibit number on this.  
18 And I'd like to refer you to page 2 of that exhibit.  
19 And can anyone on the panel, and that's probably you,  
20 Mr. Lauckhart, translate this into English? There are  
21 a lot of acronyms and I just would like to know what  
22 this means. It's marked "Draft". You're from  
23 California. Maybe you can just help us out here.

24 MR. LAUCKHART: A: Ren may want to step in here at some  
25 point too because he's also from California, but --

26 In California, the issues that are dealt

1 with by the California PEC, they hold a hearing much  
2 like this. But they have an administrative law judge  
3 sitting too. They don't have the commissioners  
4 sitting through most of the hearing. And so they have  
5 a lot of testimony, you know, evidence, transcripts.  
6 And then the administrative law judge will draft what  
7 he believes should be the order, which -- I'm not sure  
8 what happens internally, but ultimately gets out on  
9 the street as a draft, and then parties get to comment  
10 on that draft and there may be several go-rounds of  
11 some revised proposed decisions, and there might be an  
12 alternative proposed decision put forth by one of the  
13 commissioners. And at some point the Commission at a  
14 meeting makes a decision.

15 So this is a draft, and there's been a lot  
16 of comments, et cetera, et cetera, and there is no  
17 filed decision yet, as far as I know. Is that right,  
18 Ren?

19 MR. ORANS: A: I don't have the documents.

20 MR. LAUCKHART: A: It's the draft renewable REC order.

21 MR. ORANS: A: At least as far as I've seen, I haven't  
22 seen a final decision.

23 MR. LAUCKHART: A: Yeah, I mean, I just talked to some  
24 guys in California last week that said, this isn't out  
25 yet, it's delayed, and you know, there's people  
26 debating things on it, but --

1 MR. AUSTIN: Q: Could you help me out and tell me what  
2 a tradable renewable energy credit is? They call it a  
3 TREC. Is that the same thing as a REC?

4 MR. LAUCKHART: A: Well, there are some nuances here  
5 that makes a little bit of difference. If you have a  
6 resource that has these green attributes, very good,  
7 we'll decide that it's got a REC. And you can sell  
8 that output of that resource along with this bundled  
9 REC, and somebody gets to count that. And if you've  
10 done that for the life, there is no tradeable thing to  
11 go for. That has been sold. But, it's also possible  
12 to strip them apart and say, "Well, you know, we're  
13 going to let somebody buy this and sell them to  
14 somebody else another time," and that became the  
15 tradeable REC.

16 **Proceeding Time 2:12 p.m. T53**

17 MR. AUSTIN: Q: Okay, so it is possible to strip the  
18 REC from the underlying form of electricity and when I  
19 do that, what happens to that underlying form of  
20 electricity, which formerly presumably would have been  
21 green energy, because the REC was attached to it, if I  
22 strip the REC from it, what does it become now?

23 MR. LAUCKHART: A: Well, it's that exact same electron,  
24 except it just turned brown. So you can -- it's  
25 energy, it has value, you can sell it to somebody,  
26 they don't get to count it towards their RPS.

1 MR. AUSTIN: Q: I'd like to refer the panel to B.C.  
2 Utilities Commission Information Request 1.102.1, and  
3 that's in Exhibit B-3. So that's Exhibit B-3, B.C.  
4 Utilities Commission 1.102.1.

5 And I'd like to refer you to page two of  
6 that exhibit, Figure 5-9. And these questions are  
7 just intended to try and get a better understanding of  
8 what this exhibit is or isn't. It says:

9 "Effective incremental REC sales on the PV  
10 of Burrard firm energy capability analysis."

11 So the first question is, sales to whom?

12 MR. REIMANN: A: So in the calculation of this figure,  
13 and it's really showing the results of a Table 5-8  
14 amended, we created a portfolio at the different  
15 levels of Burrard reliance across the different GHG  
16 gas cost options. So we have five scenarios across --  
17 well, actually 4, operation -- assumed operation  
18 levels, and we did a PV analysis of each of those  
19 portfolios. If you then take those average cases and  
20 apply to it -- and so in each of those cases, if  
21 there'd be surplus energy to the portfolio, the energy  
22 would have been moved into the market -- into the so-  
23 called "brown" spot market, a model for high and low  
24 load-hour and monthly profiles.

25 We then took the three different levels of  
26 assumed REC credits that you would get and, to the

1 extent that we were surplus of energy and clean, we  
2 sold that into the market at those REC values. Taking  
3 those REC credits off of the portfolio costs, what  
4 starts to show is that, at some REC level, up towards  
5 the high that we modeled, those portfolio costs come  
6 pretty close together.

7 MR. AUSTIN: Q: So as I understand it, if I look at the  
8 graph, I see the top line being 2,000 GWh and the  
9 bottom line being 6,000 GWh in terms of the plots, is  
10 that correct?

11 MR. REIMANN: A: That's correct.

12 MR. AUSTIN: Q: And could you please explain to me  
13 again why they merge once I get out to the high level?

14 MR. REIMANN: A: The -- to the extent that you increase  
15 your planned reliance on Burrard, you would purchase  
16 less clean and renewable resources to offset that.  
17 And so to the extent you purchase less of those clean  
18 and renewable, you actually now physically have the  
19 energy versus the economically dispatched off Burrard,  
20 and in those portfolios you'd then have that much more  
21 energy to move into the market. And so if you have  
22 more energy to move into the market, then you have  
23 more RECs associated with that, so the REC impact will  
24 increase based on the portfolio being relatively  
25 longer.

26 MR. AUSTIN: Q: And if I look at the bottom line across

1 the graph, there is -- there is references to low, mid  
2 and high. Do you see those?

3 **Proceeding Time 9:03 a.m. T2**

4 MR. REIMANN: A: Yes.

5 MR. AUSTIN: Q: And could you explain what those are  
6 and what they relate to?

7 MR. REIMANN: A: If you go back to Chapter 4, those are  
8 the low and high REC price forecasts that we had shown  
9 in Chapter 4. Let me just cite the table for -- or  
10 the figure for you.

11 MR. AUSTIN: Q: Thank you. I'd like to refer you to  
12 Exhibit B --

13 MR. REIMANN: A: I'll just --

14 MR. AUSTIN: Q: Sorry.

15 MR. REIMANN: A: Let me just reference the figure.  
16 It's Figure 4-7 on page 4-26 of Exhibit B-1.

17 MR. AUSTIN: Q: I'd like to stay with Exhibit B-3, and  
18 this time I'd like to refer you to BCUC IR 1.148.1.  
19 That's Exhibit B-3, BCUC 1.148.1. And I'd like to  
20 refer you to Attachment 1 of BCUC IR 1.148.1, and page  
21 7 of 8 and 8 of 8. And on page 8, at the end of the  
22 bulleted items or the last bulleted items it says,  
23 "Pooled results of five residential TOU pilots  
24 conducted in the late 1970s," and there's a footnote  
25 that says "40". And then when we look at the footnote  
26 it says, "See Appendix C for more in-depth description

1 of these studies and these results." And we attempted  
2 to try and track down Appendix C and we think we have  
3 it.

4 So what we'd like the panel to do is just  
5 confirm that we have the right Appendix C. So I'd  
6 like to have it marked as an exhibit, at least the one  
7 we have.

8 I'm advised that it'll be marked Exhibit C-  
9 17-21.

10 (DOCUMENT ENTITLED "APPENDIX C. INTENSITY OF CUSTOMER  
11 DEMAND RESPONSE", MARKED AS EXHIBIT C17-21)

12 MR. AUSTIN: Q: And Mr. Orans or anybody else on the  
13 panel, are you familiar with this exhibit?

14 MR. ORANS: A: I've seen a draft of this appendix  
15 before, but I can't confirm this was the final one  
16 that was attached to the final report.

17 MR. AUSTIN: Q: Could you confirm it or provide that  
18 Appendix C by way of undertaking?

19 THE CHAIRPERSON: Well, perhaps if this isn't the  
20 document you are suggesting it is, Dr. Orans can let  
21 us know.

22 MR. AUSTIN: Well, that's exactly what I've asked. I've  
23 asked him either to confirm it, or if it's not,  
24 provide --

25 THE CHAIRPERSON: This wasn't quite what you asked him,  
26 but --

1 MR. THRASHER: Do you need to time to look at this to see  
2 if it's relevant, or advise on it at all? He's just  
3 had this document in front of him, so.

4 MR. ORANS: A: I'd like to take time to see if this is  
5 the right Appendix C attached to the final report.

6 MR. THRASHER: And we'll take that undertaking.

7 THE CHAIRPERSON: Fine.

8 **Information Request**

9 MR. AUSTIN: Q: Because the only question that we'd  
10 have out of it is it's just in relation to page 88.

11 MR. THRASHER: Before we get that on the record let's  
12 just see where we're going, see if this is the right  
13 document. And I want to consult with my witness in  
14 terms of relevancy as well. We've just been presented  
15 this.

16 MR. AUSTIN: Would it be a convenient time to take the  
17 mid-afternoon break?

18 THE CHAIRPERSON: It's a little early but I guess we can  
19 break for 15 minutes.

20 MR. AUSTIN: Thank you.

21 **(PROCEEDINGS ADJOURNED AT 2:22 P.M.)**

22 **(PROCEEDINGS RESUMED AT 2:37 P.M.)** **T55**

23 THE CHAIRPERSON: Please be seated.

24 MR. THRASHER: Sorry, Mr. Chair, I have a brief  
25 housekeeping matter to deal with, and sorry I don't  
26 have copies of this exhibit. But it's in response to

1 a query by Commissioner Milbourne, and it's from page  
2 807, lines 6 to 9, Mr. Godsoe took an undertaking from  
3 Commissioner Milbourne, where he stated, "I  
4 understood. I just -- we do have a long portfolio  
5 modeling exercise and I want to check that again to  
6 see if that addresses what you're asking." And so, we  
7 have provided that analysis, and if it pleases the  
8 panel I'll file that as an exhibit, which will assist  
9 you in directing any questions to this panel.

10 THE CHAIRPERSON: By the way, I should point out that all  
11 four exhibits you entered in after lunch did not end  
12 up on this table.

13 MR. THRASHER: I apologize for that. I didn't know who  
14 was responsible for them on that side, so it was my  
15 fault.

16 THE CHAIRPERSON: Do you have copies for us?

17 MR. THRASHER: They've been provided.

18 COMMISSIONER MILBOURNE: They haven't made it.

19 MR. THRASHER: No, I've provided them to the proceeding  
20 officer at the break.

21 THE CHAIRPERSON: Okay. Now, did you and Dr. Orans and  
22 Mr. Austin resolve any issues you may have had before  
23 the break?

24 MR. THRASHER: Yes. I'm going to let the line of  
25 questioning proceed.

26 THE CHAIRPERSON: No, you're not going to object to it.

1 I'm going to let it proceed, if push comes to shove,  
2 Mr. Thrasher.

3 MR. THRASHER: I'd better -- very good point.

4 THE CHAIRPERSON: Thank you.

5 **CROSS-EXAMINATION BY MR. AUSTIN (CONTINUED):**

6 MR. AUSTIN: Q: Dr. Orans had -- Exhibit C17-21, before  
7 the break, you indicated you weren't entirely sure  
8 whether this was the final exhibit -- appendix to the  
9 referenced report. And I believe you said you were  
10 going to check it.

11 MR. ORANS: A: Yes, I'll accept that this -- referenced  
12 in the report.

13 MR. AUSTIN: Q: And I'd like to refer you to page 88 of  
14 Appendix C, which is Exhibit C17-21. And I'd like to  
15 refer you to Table C-4, and there's two entries at the  
16 bottom of the table, and they're entitled elasticity  
17 substitution. Do you see that?

18 MR. ORANS: A: I'm sorry, Mr. Austin, can you tell me  
19 which table are you referring to?

20 MR. AUSTIN: Q: This is in Exhibit C17-21, page 88,  
21 Table C-1.

22 MR. ORANS: A: I'm with you.

23 MR. AUSTIN: Q: And there's two entries on the bottom  
24 of the table, and in the third column, it says  
25 "Elasticity substitution".

26 MR. ORANS: A: Yes, I'm with you.

1 MR. AUSTIN: Q: Could you just explain what elasticity  
2 substitution is, please?

3 MR. ORANS: A: Yes, I believe that's defined earlier in  
4 the document. In general, the elasticity of  
5 substitution is used to describe when somebody does a  
6 study of price response between time periods on a  
7 time-of-use rate. So, it's defined in the second  
8 paragraph of page 85 of your exhibit, and I believe  
9 that is consistent with the headings that you point  
10 out in Table C-1.

11 MR. AUSTIN: Q: Thank you. I'd like to enter as an  
12 exhibit some material from some B.C. Hydro annual  
13 reports from the early 1980s. And questions from this  
14 will be with respect to price elasticity.

15 **Proceeding Time 2:42 p.m. T56**

16 And there's some pages that I'll be putting  
17 to the Conservation Panel as well, so that's why  
18 there's some additional pages in here.

19 If you could please turn to what will be --  
20 I'm advised that this will be marked Exhibit C-17-22.  
21 (EXCERPTS FROM B.C. HYDRO ANNUAL REPORTS, MARKED  
22 EXHIBIT C17-22)

23 MR. AUSTIN: Q: And if you could just turn to physical  
24 page, which is the third page in the package, it says,  
25 "Annual Report 1981-1982". And then if you flip over  
26 the page it says, second paragraph:

1 "In its March 30<sup>th</sup>, 1982 Order, the  
2 Commission gave interim approval of an 11.5  
3 percent increase in electric rates other  
4 than the transmission rates which were in  
5 effect on April the 1<sup>st</sup>, 1981."

6 And then over on the other column there was another  
7 rate increase that was referred and in the order of 10  
8 percent. And if we go what will be physical page 5,  
9 and that's B.C. Hydro Annual Report 1982-1983. And if  
10 we go to page physical number 6 and we flip that page  
11 over, that would be page 5 of the Annual Report from  
12 1982-83. In the left-hand column it refers to  
13 additional rate increases:

14 "In light of the present circumstances,  
15 including the *Rate Increase Restraint Act*,  
16 which limits Hydro to a 6 percent rate  
17 increase in the year ending 1983, the  
18 objective appears not now to be achievable."

19 And without going through the rest of the report, the  
20 question I have for the panel is, has B.C. Hydro ever  
21 looked at its own rate increases with respect to  
22 calculating elasticity of demand?

23 MR. INCE: A: Yes, it has.

24 MR. AUSTIN: Q: Have you looked at the period in the  
25 1980s?

26 MR. INCE: A: Yes.

1 MR. AUSTIN: Q: Where we seem to have substantial rate  
2 increases?

3 MR. INCE: A: Yes.

4 MR. AUSTIN: Q: And what were the results of that  
5 review?

6 MR. INCE: A: I can't speak exactly for the  
7 quantitative results of that. I certainly know there  
8 was a study done, but I don't know the specific end  
9 results of that.

10 MR. AUSTIN: Q: Are those studies readily obtainable,  
11 or are they something that's just been stored away  
12 someplace, or --

13 MR. INCE: A: A number of those studies were filed with  
14 Commission IRs to this proceeding, and so they were  
15 attachments in the two series BCUC IRs.

16 MR. AUSTIN: Q: Do they refer to the period in the  
17 1980s where we had these seemingly very large rate  
18 increases?

19 MR. INCE: A: I believe the internal B.C. Hydro study  
20 by Mr. Sergio Guy was included in those IR responses.  
21 Sorry, the IRs themselves.

22 MR. AUSTIN: Q: Mr. Orans, you seem to be looking for  
23 something.

24 MR. ORANS: A: Yeah, the first time I saw those studies  
25 was in response to the IRs that Mr. Ince was referring  
26 to. And Sergio Guy, I believe from memory, but I'm

1 looking for them, wrote -- he had two studies, long-  
2 term studies of price elasticities inside of B.C.  
3 Hydro.

4 **Proceeding Time 2:47 p.m. T57**

5 MR. THRASHER: I might be able to help you, those studies  
6 have actually been filed in response to an IR. So it  
7 would be BCUC IR 2.234.1, that's Attachment 1.

8 MR. INCE: A: And I don't know if this is the same  
9 study, but BCUC IR 1.18.1, Attachment 1, is a study  
10 dated July, 1990 from Mr. Sergio Guy.

11 MR. AUSTIN: Q: And could you tell me what the study  
12 indicated? Clearly I wasn't aware that it was using  
13 this period of reference. Were there long-term  
14 elasticity effects from these types of rate increases?

15 MR. INCE: A: I'm sorry, I can't summarize it right at  
16 this point.

17 MR. AUSTIN: Q: Okay. We'll just leave it for  
18 argument. Thank you.

19 MR. ORANS: A: I have some comment on that.

20 MR. AUSTIN: Q: Certainly, go ahead.

21 MR. ORANS: A: It's from my review of these. I looked  
22 at them in the IR. Mr. Guy, in this response, Mr. Guy  
23 I believe has two different papers. And both of them  
24 are interesting because they are long-term looks at  
25 what happens to sales inside of a big utility over a  
26 long period of time. One of the things you don't see

1 in here is -- he doesn't have a strong trend variable.  
2 So, and B.C. Hydro, as we've seen, hasn't changed its  
3 prices very much. So what happens naturally -- what's  
4 happened naturally over this period is, we've had a  
5 large growth, and this isn't specific to B.C. Hydro,  
6 but it's specific to the electric sector; had a large  
7 growth in what people often refer to as "plug loads",  
8 TV -- all kinds of end uses. And so what happens is,  
9 if you have general inflation, 2 to 3 percent, and in  
10 this period, actually, that he covers, there's some  
11 much more substantial inflation. Because he covers  
12 from the sixties all the way to today. What you get  
13 is, you get a declining real average price. Because  
14 you're deflating by the inflationary index. And  
15 you're getting a growth in the plug loads.

16 So if you put in -- if you don't have a  
17 strong trend variable that picks up the plug loads,  
18 and you put in a price variable, it looks like it's  
19 decreasing. You get a big elasticity. And that's  
20 nowhere more clear than in his second study.

21 In his second study -- because I took some  
22 notes after taking a look at his study, what happens  
23 in the first ten years of his study, and he shows a  
24 table in there, I'll pick it up. Where the table  
25 shows marked consistent growth in sales, and it shows  
26 -- this was before the big rate -- big inflationary

1 period in the 70s, so it's kind of late 60s, early  
2 70s; declining average rates, and so consistent  
3 positive material elasticity from those two  
4 relationships.

5 Then in 1980, there is this big change, as  
6 you point out in your other thing. He puts in a dummy  
7 variable so it gets rid of that change, surprisingly.  
8 And then the interesting thing is, though, and you can  
9 look at his left-hand variable, the consistent growth  
10 does not change over that period where the price  
11 change happens. So he attributes it to something  
12 else, and then picks up the long-term growth in the  
13 price elasticity.

14 So, my conclusion, you know, from spending  
15 about half an hour looking, no more than that, at his  
16 study is, there's omitted variables that are also  
17 correlated with usage, and there's -- so what happens  
18 is, the growth is attributed to price.

19 If we had -- like other utilities, if we  
20 had significant price changes during the period, both  
21 up and down due to gas, for example, then you could  
22 actually pick up a material impact of price on usage.  
23 I mean, I don't think he had another variable to use,  
24 other than the data he had. So he put in the data he  
25 had, and he ran it, and that's what comes out of a  
26 study like this.

1 **Proceeding Time 2:51 p.m. T58**

2 MR. AUSTIN: Q: Okay, thank you very much for those  
3 moments.

4 I'd like to refer the panel to Exhibit B-1,  
5 Appendix F-3, so that's Exhibit B-1, Appendix F-3,  
6 Wind Integration Cost Assessment.

7 MR. ORANS: A: Mr. Austin, just to complete that.

8 MR. AUSTIN: Q: Go right ahead.

9 MR. ORANS: A: So the table I was referring to, if you  
10 want to look closely at a model like this, it's Table  
11 2 in his second paper, and it's in that same IR that  
12 was responded and it's page 19 of 117. That's why  
13 it's a large response and large exhibit. And you look  
14 at the -- you can look at that table, it shows you  
15 exactly the pattern we just described.

16 MR. AUSTIN: Q: So essentially what you're telling me,  
17 even though I've got a large bump-up in rates in the  
18 early 1980s, since I've got declining real electricity  
19 prices both before and after that period, without  
20 doing -- having the right information, then I can't  
21 really come to any particular conclusions.

22 MR. ORANS: A: There's too much noise in there of other  
23 things that are happening.

24 MR. AUSTIN: Q: Okay. Back to Exhibit B-1, Appendix F-  
25 3, the Wind Integration Cost Assessment, Mr. Reimann,  
26 I believe that you should have the book.

1 MR. REIMANN: A: I have that, yes.

2 MR. AUSTIN: Q: Okay. And I'd like to refer you to  
3 page 3 of 17, and I'd like to refer you to the  
4 paragraph above the heading 1.2, "Wind Integration  
5 Cost Analysis" and it says:

6 "This appendix describes the analysis  
7 undertaken in Phase 1 and concludes that a  
8 wind integration cost estimate of \$10 per  
9 megawatt hour is appropriate."

10 And then I'd like to refer you to page 9 of 17, and as  
11 I understand this \$10 a megawatt charge, it  
12 essentially includes an amount for generating reserve  
13 that would be required should the wind suddenly stop  
14 blowing, and the electricity from those generators  
15 drop down to zero. Is that correct?

16 MR. REIMANN: A: I'm not sure I'd exactly call it a  
17 reserve. I think a reserve has a particular system  
18 operation context to it. But I would accept that  
19 having the wind in the system would require you to not  
20 commit as much of your capacity forward, and that was  
21 the electricity trade opportunity cost impact that we  
22 talked about earlier.

23 MR. AUSTIN: Q: And I'm glad you mentioned the concept  
24 of the reserve, because Panel 2 went through spinning  
25 reserve in some detail yesterday and planning reserve.  
26 And so the question that I have is, if I have spinning

1       reserve, and its purpose is to be available in case,  
2       say for example, I have a 450 megawatt unit at  
3       Revelstoke that suddenly quits, why do I treat wind  
4       differently than the failure of a 450 megawatt  
5       generating unit at Revelstoke?

6       MR. REIMANN:    A:    Right.  So actually to be clear, there  
7       was three cost components that were considered in the  
8       wind integration matter.  There was the regulation  
9       that happens in a 10-minute timeframe.  There is the  
10      wind regulation that happens in an hourly timeframe.  
11      And then there is the forecastability that you may or  
12      may not have the next day.  And again, to be clear,  
13      the first two do modify the regulation that you have.  
14      So I think Mr. O'Riley was talking about the 5 and 7  
15      percent reserve requirements that you have for hydro  
16      and thermal in the system.  I think as well there's  
17      like normally about a 2 percent load following reserve  
18      that typically the BCTC would require us to carry, or  
19      Hydro would have.

20                      So in order to estimate those first two  
21      components, what we did, and it's a consistent  
22      approach in the industry, is to take the ten-minute  
23      variable and the hour variable, variability, and you  
24      take the load forecast and look at the variability  
25      that it has over those periods, ten minutes and  
26      hourly.  And then you take the wind plus the load

1 forecast and you take that differential. And so  
2 you're saying that the wind, because of the inherent  
3 volatility of the wind, will actually make the net  
4 load that you track a more volatile, more variable  
5 parameter. And it's as a result of that that we then  
6 increase the amount of reserves that you would hold  
7 for it.

8 **Proceeding Time 2:57 p.m. T59**

9 MR. AUSTIN: Q: But let's go back to the basics. I've  
10 already got reserves for a failure of a generating  
11 unit the size of 450 megawatts. Why can't I use those  
12 reserves for a sudden shut-down of wind generation,  
13 bearing in mind that typically the wind doesn't stop  
14 blowing all of a sudden. Why do I need more reserves  
15 on top of already -- what I already have, in addition  
16 to the reserves I have, I've also got the ability to  
17 call on neighbouring utilities for up to an hour with  
18 respect to their reserves.

19 MR. REIMANN: A: I guess the short answer is that  
20 you're adding variability into the system, and my  
21 understanding, and this is -- probably was a better  
22 question for Mr. O'Riley in terms of operating  
23 parameters, but my understanding is the reserve  
24 sharing between utilities is to cover for forced  
25 outage rates, not necessarily to take into account the  
26 ability to moderate wind. So, it's the fact that

1       you're adding in an additional level of volatility,  
2       additional uncertainty into the system, that takes you  
3       to the point where you bump up your reserves.

4 MR. AUSTIN:    Q:    And how did you price that volatility?

5 MR. REIMANN:   A:    So, we took the load plus wind  
6       variability, subtracted from the load variability and  
7       had a net increase of variability. Then we took, I  
8       think it was three standard deviations above that, and  
9       put that in as a regulation, and we priced that at the  
10      regulation reserves that we would sell -- or Powerex  
11      sells into the California ISO market.

12 MR. AUSTIN:    Q:    We'll get to that in a minute, but in  
13      terms of wind variability, what did you assume? That  
14      it would just automatically stop?

15 MR. REIMANN:   A:    We actually took wind data that we had  
16      for the four different regions, and we went through --  
17      if you look at page 5 of 17 of Appendix F-3, we took  
18      three different cases, and so case 1 had a Peace  
19      region at 46 percent, then -- let me just focus on the  
20      Peace region. The second one, and Peace went up to  
21      63, tends to be where a lot of the cost-effective wind  
22      is. And then in case 3 we took an even percentage.  
23      So we actually took wind data from those three regions  
24      and we combined them, took it against the load, and  
25      measured the increased variability.

26 MR. AUSTIN:    Q:    And I'd like to refer to you to page 16

1 of 17 of Appendix F-3.

2 MR. REIMANN: A: Sorry, page --

3 MR. AUSTIN: Q: 16 of 17. And the top paragraph says,

4 "For HQ", which I assume means Hydro-Quebec:

5 "... a wind integration study conducted in  
6 March 2004 suggested a wind integration cost  
7 estimate (based on transmission integration  
8 and wind balancing integration fee) of \$9  
9 per megawatt hour.... This fee was reduced by  
10 HQ to \$5 per megawatt-hour after it received  
11 considerable negative feedback from the wind  
12 industry concerning the high cost of wind  
13 integration."

14 Do you see that?

15 MR. REIMANN: A: I do indeed.

16 MR. AUSTIN: Q: Do you have anything to support the  
17 conclusion that that fee was reduced to \$5 solely  
18 because of negative feedback from the wind industry?

19 MR. REIMANN: A: I don't.

20 MR. AUSTIN: Q: So it's possible that, when it went  
21 through its analysis, it may have looked at things  
22 like the variability factor and come to different  
23 conclusions?

24 MR. REIMANN: A: Right. If you look at Figure F3-4 on  
25 page 14 of 17, we looked at quite a number of  
26 different jurisdictions and as we started into our

1 wind integration study, I think it was probably  
2 September of 2007, Hydro coordinated and hosted a wind  
3 integration study group amongst utilities, and we  
4 invited both utilities from the U.S. and across  
5 Canada, including some of the people that were doing  
6 the Hydro-Quebec work. And what you can see in that  
7 figure, F3-4, is that there tends to be a lot of  
8 different values out there. And what we found as we  
9 were going through and looking at prior studies is  
10 that there was in fact a lot of inconsistency between  
11 the studies, and that people were really learning and  
12 getting up to speed.

13 But at the end of the day, once we sat down  
14 with those people and looked at the components, we  
15 came up with the study we did, and I'm trying to  
16 remember which intervenor it was, but one of the  
17 earlier questions I answered was that these costs that  
18 we have at the \$10 is not inconsistent with what  
19 Powerex is seeing in the market, in terms of managing  
20 other people's wind volatility.

21 **Proceeding Time 3:02 p.m. T60**

22 MR. AUSTIN: Q: But when I look at that graph I see  
23 that -- or table or chart, I see that most of them are  
24 below \$10 a megawatt hour. And I'm assuming that  
25 we're looking at Figure F3-4, is that correct?

26 MR. REIMANN: A: Yeah, so there was quite a bit of a

1 dog's breakfast there and we found that they weren't  
2 always addressing all components. But as people are  
3 progressing and we see more and more wind studies  
4 happening, and I guess in some regards it appears that  
5 North America might be somewhat behind Europe in this  
6 regard, but that people are now starting to consider  
7 all three components that I talked about earlier, and  
8 there's becoming, I think, a little more quality to  
9 those studies.

10 MR. AUSTIN: Q: But having said that, can you point to  
11 anything specific where somebody, as a result of  
12 becoming, for lack of a better word -- or a utility  
13 become, for lack of a better word, more sophisticated,  
14 that they'd push their wind integration charges up?

15 MR. REIMANN: A: Offhand, not from that graph, no.

16 MR. AUSTIN: Q: Thank you.

17 I'd like to refer you to page 9 of 17, and  
18 this is the energy shift cost, and there's a large  
19 paragraph on that page, but probably two-thirds of the  
20 way down the paragraph it says, "Wind was charged with  
21 an export lost opportunity cost." Do you see that?

22 MR. REIMANN: A: Yes, I see that.

23 MR. AUSTIN: Q: And could you please tell me over the  
24 last, say for example, five years, how much of the  
25 capacity reserve that you're now in a sense earmarking  
26 for wind, which presumably was available to Powerex,

1           that Powerex actually marketed during that period?

2 MR. REIMANN:    A:    I don't think I could give that as in  
3           terms of a number, but what I can tell you is in terms  
4           of the process, what we did is we looked at the import  
5           and export opportunity costs that had occurred in the  
6           period from 2002 to 2006 as it says earlier in that  
7           paragraph. And then we took a look at the assumed  
8           penetration of wind and taking an 85 percent band of  
9           uncertainty about that. We then said, "When would  
10          that have restricted us from undertaking trade with  
11          that, as against trade that we had undertaken?" Then  
12          that's where this energy shift cost has come from.

13 MR. AUSTIN:    Q:    But before claiming an opportunity  
14          cost, would it be fair to say that I would have to  
15          prove that (a) the reserve was available, and (2)  
16          somebody was willing to purchase it?

17 MR. REIMANN:    A:    Sorry, I maybe wasn't clear on my  
18          answer. We have taken a look at the period of 2002 to  
19          2006 and had looked at when we actually undertook  
20          trade, and then said in the times that the winds would  
21          have restricted us from selling that, that's where the  
22          opportunity costs came from.

23 MR. AUSTIN:    Q:    But I'm a little confused in terms of  
24          the product. It says you undertook trade. There's  
25          all sorts of kinds of products that Powerex trades.  
26          And in relation to wind, it's specifically reserves

1 and then you've priced it off the California ISO, as I  
2 understand it.

3 But the question I have is did Powerex say,  
4 these are the number of times in that period of time  
5 that we actually were selling this type of product  
6 into the California ISO?

7 MR. REIMANN: A: So there's three components to the  
8 analysis. There's the ten minute reserve, the hour  
9 reserve, and then next the opportunity costs. The ten  
10 minute and the hourly reserves were calculated and  
11 valued at the California ISO reserve market. The  
12 opportunity costs for the next day was based on the  
13 trades undertaken. At least that's my understanding.

14 MR. AUSTIN: Q: But the question that I have is can you  
15 point to any actual trading data figures that support  
16 that?

17 MR. REIMANN: A: We haven't provided that, those --  
18 that analysis in this, so -- in this appendix.

19 **Proceeding Time 3:07 p.m. T61**

20 MR. AUSTIN: Q: Would it be a large undertaking to do  
21 something like that, so that there's some sort of  
22 confirmation that a market existed for this product,  
23 and that you actually would have foregone revenues had  
24 wind generating resources been available, and you  
25 would have had to apply, or provide some sort of  
26 reserve from the B.C. Hydro system to cover their

1 loss?

2 MR. REIMANN: A: I'm presuming that it wouldn't be too  
3 difficult for people to assume that we trade in the  
4 markets, that we buy and sell, and that if there then  
5 is a wind product that has variability to it, if that  
6 reduces the amount of capability of the system to buy  
7 and sell in the market, that there would then be costs  
8 related to that.

9 MR. AUSTIN: Q: But my problem, Mr. Reimann, is I know  
10 that Powerex does a lot of buying and selling of all  
11 kinds of products. The question that I have in my  
12 mind is, with respect to this specific product, can  
13 you point to some data that shows that Powerex  
14 actively markets it through the period, and had that  
15 reserve that supports that product been assigned to  
16 wind generation in British Columbia, there would be  
17 lost revenue.

18 MR. REIMANN: A: I'm sorry, I'm not clear about  
19 "actively markets it throughout the period". Like,  
20 what period are you referring to?

21 MR. AUSTIN: Q: Well, there is the period that you just  
22 referred me to.

23 MR. REIMANN: A: So the analysis --

24 MR. AUSTIN: Q: Yes.

25 MR. REIMANN: A: -- of 2002 to 2006?

26 MR. AUSTIN: Q: Yes.

1 MR. REIMANN: A: And you're questioning whether or not  
2 there was trade in that period?

3 MR. AUSTIN: Q: I'm not questioning whether there was  
4 trade. I was -- I'm questioning whether there's trade  
5 in this type of product, as opposed to just straight  
6 trade. So --

7 MR. REIMANN: A: So trade using the capacity of the  
8 system?

9 MR. AUSTIN: Q: That's correct.

10 MR. REIMANN: A: So we can't buy and sell with those.

11 MR. AUSTIN: Q: Well, we can certainly -- when we talk  
12 about --

13 MR. REIMANN: A: Mr. Ince was just saying that to  
14 actually go back and create the data is a pretty  
15 significant undertaking, but --

16 MR. AUSTIN: Q: Thank you. For the purpose of these  
17 proceedings, I don't think I'll -- if it's a difficult  
18 undertaking, I won't ask you to do it.

19 MR. INCE: A: And it involves significant  
20 confidentiality issues with respect to trading.

21 MR. AUSTIN: Q: Just a few tidy-up questions, for the  
22 panel. When I look at prices of U.S. renewable energy  
23 and, in particular, wind energy, perhaps somebody on  
24 the panel could tell me what the tax status currently  
25 is in the United States with respect to incentives for  
26 wind projects and, in particular, what that would

1 translate into dollars per megawatt hour?

2 MR. LAUCKHART: A: Well, at Black & Veatch we've  
3 actually been looking at that. I don't have the  
4 numbers here at my fingertips, because I wasn't  
5 prepared to talk about that. The new tax incentives  
6 extend the wind production tax longer, which was  
7 attractive to the wind industry. I believe there's a  
8 few other things that also got thrown in there to help  
9 them. I think they may qualify also for maybe grants  
10 rather than just tax credits, because they're having a  
11 hard time finding people who had taxable incomes that  
12 could take the tax credits. But so, there's been some  
13 adjustments that I've seen, and it brings the cost  
14 down a little bit from what they were before. It's  
15 helpful, I don't think it's huge, but I don't have the  
16 numbers here in front of me.

17 MR. ORANS: A: Mr. Austin, so, I also have been working  
18 on a similar set of numbers, and so the U.S. has an  
19 investment tax credit and accelerated depreciation.  
20 And as I understand it, you had an eco-tax credit that  
21 was not renewed, and so if you take away the eco-tax  
22 credit and you assume the accelerated depreciation  
23 continues to exist, for wind, and obviously it depends  
24 on what type of wind, but if you took sort of typical  
25 Peace River wind, that might be in a bundle, and  
26 David, in one of your bundles on the Peace River that



1 MR. REIMANN: A: I don't follow you.

2 MR. AUSTIN: Q: Well, let's put it this way. If I've  
3 got -- instead of a net import situation I've got a  
4 surplus situation. I now have more latitude in with  
5 respect to taking risks. I've got more product that I  
6 can draw on. Does that make any sense?

7 MR. REIMANN: A: Yeah, I guess I would expect that  
8 there's probably a spot in the middle where, if you're  
9 quite short of energy you'd always be importing, if  
10 you're long of energy you'd be exporting. And any of  
11 the extremes, I would think, would reduce your ability  
12 to undertake trade.

13 MR. AUSTIN: Q: Perhaps you're not the right person to  
14 put it to, and Ms. Kurschner is not here today, so  
15 I'll have to save that question.

16 MR. REIMANN: A: I guess just to be clear on that, as I  
17 think about it, I think it has a lot more to do with  
18 the water inflows that you'd have on the hydro system  
19 necessarily than your position in the market. To the  
20 extent that you have minimum flows, then you're often  
21 needing to buy energy just to meet the load or meet  
22 your basic purposes. You're always, if you have -- if  
23 you're low on water in the reservoirs, then you're in  
24 a position where you're needing to sell more  
25 frequently and you don't buy. I think that might be  
26 more the case than necessarily what your net portfolio

1 position within the province would be.

2 MR. AUSTIN: Q: Okay, I'd like to move on to the final  
3 area, and Mr. Hobson, we had a bit of discussion on  
4 the break with respect to an undertaking that you gave  
5 to Mr. Wallace. And we'll just do the first part of  
6 it in relation to this panel, and Panel 4 will -- we  
7 may ask you do a bit of an expansion on that.

8 But along with the chart that you've agreed  
9 to provide to Mr. Wallace, would it be possible to  
10 provide a table similar to that provided in IPPBC IR  
11 3.14.2 in Exhibit B-12, which shows the adjustment for  
12 the savings being reduced to 78 percent subsequent to  
13 the evidentiary update, or as part of the evidentiary  
14 update?

15 MR. HOBSON: A: So just to be clear, you're asking for  
16 a graph, a supply curve type graph similar to what Mr.  
17 Wallace had requested, but with the specific  
18 instructions consistent with the IR response?

19 MR. AUSTIN: Q: We're looking for a -- not so much a  
20 graph but the chart, similar to what's found in the  
21 response to IPPBC IR 3.14.2. It's a table.

22 MR. HOBSON: A: I'm a little bit confused then, because  
23 the IR response itself does provide a chart. And  
24 maybe I'm not understanding specifically what you're  
25 after.

26 MR. AUSTIN: Q: Okay. Perhaps we could just have a

1 side discussion on this, and then come back sometime  
2 during the proceedings if we've finally sorted all  
3 this out, because it's a bit of a technical area and I  
4 don't want to get the wrong request in here.

5 I don't have any further questions.

6 **Proceeding Time 3:16 p.m. T63**

7 THE CHAIRPERSON: Thank you, Mr. Austin.

8 THE CHAIRPERSON: So you will talk to B.C. Hydro's  
9 counsel about that sort of dangling question you left  
10 there?

11 MR. AUSTIN: Yes, I will.

12 THE CHAIRPERSON: Okay.

13 MR. AUSTIN: And at some point in time, we'll come back  
14 and advise you whether we've got a deal or not.

15 THE CHAIRPERSON: On Monday, I guess.

16 MR. AUSTIN: Certainly.

17 MR. THRASHER: Now, Mr. Chair, I have an exhibit number  
18 for that Milbourne -- Commissioner Milbourne's  
19 request.

20 THE CHAIRPERSON: Thank you.

21 MR. THRASHER: So that would be -- should be filed as  
22 Exhibit B-27.

23 (TWO-PAGE DOCUMENT, FIRST LINE "AT PAGE 807...", MARKED  
24 EXHIBIT B-27)

25 THE CHAIRPERSON: Mr. Weafer, good afternoon.

26 MR. WEAFER: Good afternoon, Mr. Chairman, good

1           afternoon, Commission Panel.

2   THE CHAIRPERSON:    In all likelihood, Mr. Weafer, if  
3           you're going to be longer than 45 minutes, you're  
4           going to have to break at some time.

5   MR. WEAFER:        Understood, and I probably will be.

6   THE CHAIRPERSON:    Then give it -- at a time that's  
7           convenient.

8   MR. WEAFER:        Thank you. And four o'clock is your Friday  
9           break time?

10   THE CHAIRPERSON:   It is indeed, yes.

11   MR. WEAFER:        All right.

12   THE CHAIRPERSON:   And Commissioner Harle and I all have  
13           to head for the airport, I'm afraid.

14   **CROSS-EXAMINATION BY MR. WEAFER:**

15   MR. WEAFER:        Q:   Thank you. Good afternoon, gentlemen.  
16           My name is Chris Weafer. I act for a customer group,  
17           the Commercial Energy Consumers. There's been  
18           discussion today about the natural gas price  
19           forecasts, and I won't tread new ground. There's an  
20           IR -- or, sorry, old ground. There's an IR which I  
21           don't think you need to refer to, but it references  
22           that the U.S. Energy Information Service annual energy  
23           outlook release is due February, 2009. Is any of the  
24           panel aware whether that has been released?

25   MR. LAUCKHART:     A:   Yes, it has.

26   MR. WEAFER:        Q:   And has that been placed on the record

1 in this proceeding?

2 MR. LAUCKHART: A: I don't know.

3 MR. WEAVER: Q: Could you undertake to put that on the  
4 record in this proceeding? I believe you relied on an  
5 earlier version.

6 MR. THRASHER: Sorry, could you ask that again?

7 MR. WEAVER: Certainly. The reference, for the record,  
8 is BCUC IR 2.177.2. And it just refers to the fact  
9 that the latest AEO release was in June, 2008, and the  
10 next release is in February, 2009. So, I just asked  
11 that the most recent version be filed.

12 MR. THRASHER: Yes, we can -- we'll take that  
13 undertaking.

14 **Information Request**

15 MR. WEAVER: Q: Thanks. Thank you. And just following  
16 up, again, much discussion ahead of me on renewable  
17 energy credits, there is still a great deal of  
18 uncertainty with respect to the treatment of renewable  
19 energy credits. Would you agree with that?

20 MR. LAUCKHART: A: I would.

21 MR. WEAVER: Q: And do you have a sense of when this --  
22 there will be a higher level of certainty with respect  
23 to the dealing-in and renewable energy credits across  
24 jurisdictions that would impact B.C. Hydro?

25 MR. LAUCKHART: A: Possibly before I'm dead.

26 MR. WEAVER: Q: So, possibly not within the term of

1           this LTAP.

2                           I'm sorry.

3 MR. LAUCKHART:    A:   California, of course, in the west  
4           is the big animal here, and they've had, as we've  
5           talked about before, their proposed decision on the  
6           street for some time. I'm led to believe there might  
7           a final Order out of the Commission here within a  
8           month. I don't know for sure that's going to happen.  
9           And, more importantly, I don't know what it's going to  
10          say. So, you know, they could clear it all up for  
11          California, and then we'd just have to deal with the  
12          other states, or they could, you know, punt it to  
13          another proceeding. So, I can't really tell.

14 MR. WEAFFER:    Q:   Fair enough. And so, in terms of  
15          absent those orders, the Commission should be  
16          exercising some caution in terms of making decisions  
17          that make conclusive determinations on renewable  
18          energy credits.

19 MR. LAUCKHART:    A:   In this business, there's  
20          uncertainties we're dealing with all the time. This  
21          is another one.

22 MR. WEAFFER:    Q:   Thank you. I'll move along, and it's  
23          late in the afternoon, so an aspirational document is  
24          appropriate, and this is Exhibit C10-5, which was a  
25          document tendered to Mr. Elton in Panel 1. And this  
26          would be in the area of DSM questions, Mr. Hobson, so

1 could you have that exhibit put in front of you?

2 And this was discussed down at around page  
3 508 of the transcript, although I don't think you need  
4 to go there.

5 **Proceeding Time 3:21 p.m. T64**

6 MR. HOBSON: A: Okay.

7 MR. WEAVER: Q: And the document, Ms. Van Ruyven  
8 confirmed, Mr. Elton, this would have been produced in  
9 and around late 2007, although it's an undated  
10 document, it's a B.C. Hydro document.

11 Are you familiar with this speech given by  
12 Mr. Elton in terms of the release of the Conservation  
13 Potential Review 2007?

14 MR. HOBSON: A: I am familiar with the letter, yes.

15 MR. WEAVER: Q: Now, we had a discussion with Mr. Elton  
16 on the policy aspect of this document, and in fairness  
17 he did call it an aspirational document. And so just  
18 to now track the policy approach to now get the job  
19 done, which goes over to you and those preparing the  
20 DSM filing, we are governed by this aspirational  
21 initiative as defined by Mr. Elton in this document.

22 MR. HOBSON: A: I'm not sure what you mean by  
23 "governed". Maybe you could be more specific.

24 MR. WEAVER: Q: Certainly. Did it influence you  
25 heavily?

26 MR. HOBSON: A: The direction of it influenced us, in

1 terms of the direction of moving towards a much more  
2 aggressive view from where we'd been in the past with  
3 respect to demand-side management.

4 MR. WEAFFER: Q: And if you'd turn to page 2 of the  
5 document, and this was a widely publicized objective  
6 stated by B.C. Hydro at the time, and the graph quoted  
7 underneath, "Develop and foster conservation and  
8 culture in B.C. that leads to customers choosing to  
9 make a dramatic and permanent reduction in electricity  
10 intensity." And the objective being by 2027 to be  
11 back at a level of consumption that we're in 2007.  
12 Did that objective influence you and help create your  
13 goals in terms of the DSM policy filed?

14 MR. HOBSON: A: Again, directionally it did. And you  
15 know, in the discussion that we've had within B.C.  
16 Hydro and certainly with Mr. Elton, I mean, I think  
17 this is seen as a way to try to express a direction  
18 for which B.C. Hydro is trying to move forward over a  
19 lengthy period of time. And you know, I think in  
20 those discussions, you know, in paraphrasing them,  
21 whether we come up short of that goal or ahead of that  
22 goal is still to be seen, but it's more of a  
23 directional signal in terms of we're trying to go in a  
24 much more aggressive path than where we've been in the  
25 past with demand-side management.

26 MR. WEAFFER: Q: This was a fairly fundamental, strong

1 statement by B.C. Hydro as to what its objectives are  
2 with respect to conservation. You'd agree with that?

3 MR. HOBSON: A: Yeah, I would agree with that.

4 MR. WEAVER: Q: Would you -- we've heard terms in this  
5 hearing in relation to Burrard about a social  
6 contract. Would this be the type of thing you would  
7 look to as a social contract at B.C. Hydro?

8 MR. HOBSON: A: I'm not sure in terms of what the  
9 definition of a social contract is that you mean. But  
10 if where you're trying to take is is it a  
11 communication or -- a communication with the public  
12 with respect to where B.C. Hydro would like to go, and  
13 that we're not going to get there on our own and we  
14 require the participation and the support of the  
15 province in getting there, in terms of their support  
16 of the various that we might move forward with, then  
17 yes.

18 MR. WEAVER: Q: Thank you. What I'd like to do is just  
19 move forward and go through the DSM portfolio and try  
20 to get a better understanding of what's captured,  
21 what's not, and so that we in an argument can put  
22 forward our views on it.

23 If I could start with turning you to  
24 Exhibit B-4 --

25 MR. HOBSON: A: Are we finished with the --

26 MR. WEAVER: Q: Yes, we are, thank you. Before BCUC IR



1 savings would be, was too uncertain for us to include.

2 MR. WEAVER: Q: When do you think you would have more  
3 certainty around that?

4 MR. HOBSON: A: It's hard to say and, you know,  
5 especially as we get into areas where we're going to  
6 have a lot of variability from one municipality to  
7 another, with respect to the context that they're  
8 operating within, and what they may choose to do, you  
9 know, I think we'll have a lot of variation with  
10 respect to what we could plan around, with any  
11 certainty, for some time to come. I think what's  
12 really required is, we need to see some evidence  
13 moving forward over the next number of years where we  
14 see actions resulting from some of these things that  
15 we can then get a better sense of what the results  
16 might be.

17 MR. WEAVER: Q: Do you see B.C. Hydro playing a strong  
18 role in trying to assist municipalities in  
19 establishing recommended programs or recommended  
20 initiatives? Do you not see B.C. Hydro in a  
21 leadership role there, in terms of assisting in that  
22 front?

23 MR. HOBSON: A: I do. You know, I think within the  
24 codes and standards support that we've put forward,  
25 and we might be treading, I'm not sure, a little bit  
26 into Panel 4 material at this point, but the codes and

1 standards support as well as some of the community  
2 engagement activities we put forward, a lot of that is  
3 designed in terms of how we can work with  
4 municipalities and get actions moving at that level.

5 MR. WEAVER: Q: And I don't want to cross into Panel 4,  
6 but I'm back to the timing issue. Do you see this  
7 having an impact within the terms of this LTAP, in the  
8 first five years, second five years? When do you see  
9 this having an impact?

10 MR. HOBSON: A: I think it's too uncertain at this  
11 stage and, similar to some other responses that we've  
12 provided in this area, even if we were to get  
13 additional energy savings and you could foresee that  
14 additional energy savings could materialize as a  
15 result of some of these types of actions, part of what  
16 we have to balance out is, we put forward a plan  
17 currently based on a number of actions with respect to  
18 codes and standards. Some of those, and we hope all  
19 of those, will come true. But the expectation that  
20 they'll all come true according to our plan is  
21 somewhat balanced out by the fact that some things  
22 that we haven't considered will also materialize over  
23 that time frame and balance out some of the things  
24 that potentially are under-achieved within what we've  
25 laid out to date.

26 So in terms of whether or not we can rely

1           upon additional energy savings resulting from some of  
2           these activities, again, I think there's too much  
3           uncertainty at this stage.

4 MR. WEAVER:   Q:   Do you have any confidence that there  
5           will be some energy savings arising from that  
6           initiative?  That type of initiative?

7 MR. HOBSON:   A:   I do have confidence that there will be  
8           energy savings resulting from it.  Whether or not it  
9           will result in an increased net amount of energy with  
10          respect to codes and standards, I couldn't say at this  
11          point.

12 MR. WEAVER:   Q:   B.C. Hydro, in terms of local  
13          authorities, and you mentioned that you do track  
14          municipal -- or, you monitor local authorities.  Do  
15          you include the local authorities, First Nations,  
16          School Districts, Regional Districts and Regional  
17          Health Authorities?  Is B.C. Hydro taking a broad  
18          perspective in terms of what local authorities are?

19 MR. HOBSON:   A:   If you could list those off again, that  
20          would help.

21 MR. WEAVER:   Q:   Certainly.  First Nations, School  
22          Districts, Regional Districts, Regional Health  
23          Authorities.  Are you taking an expansive view of  
24          local authorities in that area?

25 MR. HOBSON:   A:   Yeah.  I think this is a growing area  
26          for us, so I would characterize it as, we're probably

1 more involved at the municipal level right now, and  
2 we're -- we've got more work to do in some of the  
3 other areas that you've listed out.

4 MR. WEAFFER: Q: Moving on from another area, and trying  
5 to understand the relationship between the DSM plans  
6 and what's in them, and other governmental action, and  
7 there was some discussion this morning about the  
8 climate action initiative, has B.C. Hydro done any  
9 assessment of what energy savings may arise out of  
10 what is articulated in the climate action initiative?

11 MR. HOBSON: A: With respect to this DSM plan?

12 MR. WEAFFER: Q: Yes.

13 MR. HOBSON: A: Yeah, I guess it depends on how you  
14 characterize that initiative. I mean, there's  
15 certainly components of our plan that touch upon  
16 interactions with the Ministry of Energy, with the  
17 provincial government. And you know, I think their  
18 actions tie back to that same initiative. So to that  
19 extent, you know, I think we've got connections back  
20 into our plan that way. But if we're starting to head  
21 into territory of, you know, electrification as an  
22 example, which I believe is some of the policy  
23 statements that have been included in some of those  
24 materials, then that is certainly not something that  
25 we've included within our DSM plan, and Mr. Ince might  
26 be able to comment, but I think that's more consistent

1 with the stage where we've started to take a look at  
2 that within certain scenarios with respect to load  
3 forecast.

4 **Proceeding Time 3:31 p.m. T66**

5 MR. WEAFFER: Q: So no specific energy targets  
6 compacting B.C. Hydro load forecast. Nothing from the  
7 Climate Action Initiative at this point that's  
8 captured in the DSM portfolios?

9 MR. HOBSON: A: No, and I don't think we have any  
10 information coming from those materials to suggest  
11 that it would influence our plan at this stage.

12 THE CHAIRPERSON: Excuse me, Mr. Weafer? Can I ask if  
13 everyone at the back can hear? Mr. Bertsch, can you  
14 hear clearly?

15 MR. BERTSCH: So-so.

16 THE CHAIRPERSON: I think you're going to have to get  
17 closer to the microphone, Mr. Hobson.

18 MR. HOBSON: A: Closer to the mike? Thank you.

19 MR. WEAFFER: Q: When would B.C. Hydro see being in a  
20 position to start to translate initiatives in the  
21 Climate Action Initiative to actual energy savings  
22 captured in B.C. Hydro's DSM planning?

23 MR. HOBSON: A: I think they would themselves have to  
24 formulate into initiatives that we would have some  
25 confidence would be delivering electricity savings.

26 MR. WEAFFER: Q: And again on a time perspective, do you

1 see that in the first five years of this LTAP?

2 MR. HOBSON: A: Very uncertain for us, and whether or  
3 not they'll actually transpire into the types of  
4 initiatives that'll drive electricity savings, or  
5 whether it'll be more generally energy savings  
6 directed at gas, I think is a question mark. Whether  
7 or not we'll see some of these types of initiatives  
8 move forward that actually have an opposite effect  
9 with respect to electricity, I think is still to be  
10 seen.

11 MR. WEAFFER: Q: Is B.C. Hydro working to try and  
12 identify what may turn into energy savings to B.C.  
13 Hydro? And is it attempting to influence that at all  
14 in terms of the climate initiative?

15 MR. HOBSON: A: I can only speak for the role and the  
16 involvement we have, but we have ongoing linkages and  
17 discussions with government at the staff level, where  
18 we're in a position to understand how they're moving  
19 forward with things that would influence our plan and  
20 market. And at a higher level I would have to assume  
21 that linkages that B.C. Hydro has, high-end of the  
22 government, would put us in a position to be aware of  
23 that situation at that level as well.

24 MR. WEAFFER: Q: The last area in terms of initiatives,  
25 the Dockside Green Project, and this is referred to in  
26 Exhibit B-3, BCUC IR 1.43.1, and in that response you

1        indicate that -- you may not need to turn to it, if  
2        you do find it, but -- you were looking for the  
3        Dockside Green Project. That portion of the  
4        electricity savings that is supported by B.C. Hydro's  
5        DSM programs is counted towards DSM savings. So in  
6        that circumstance you are finding a way to separate  
7        out and attribute energy savings to your existing  
8        plants, is that correct?

9        MR. HOBSON:    A:    I think what that's getting at is, to  
10       the degree a project like Dockside would be a  
11       participant through one of our initiatives, then the  
12       savings would be captured within that. I think that's  
13       as far as that response is going, yes.

14       MR. WEAVER:    Q:    So the intent -- they are part of the  
15       specific DSM or PowerSmart project.

16       MR. HOBSON:    A:    In that case, yes.

17       MR. WEAVER:    Q:    Okay, fine, thank you.

18                    With respect to *B.C. Building Code* changes  
19       for 2010, we understand that the savings that may  
20       result from that may be at levels equal to or higher  
21       than those and contained in DSM Option A. Does that  
22       sound right?

23       MR. HOBSON:    A:    Do you have a reference that you're  
24       looking that I should turn to?

25       MR. WEAVER:    Q:    Sure, BCUC IR 2.192.4.

26       MR. HOBSON:    A:    I'm almost there.

1 MR. WEAVER: Q: So here we have government initiatives  
2 that you are capturing within your -- at least  
3 partially within your DSM plans.

4 MR. HOBSON: A: That's correct.

5 MR. WEAVER: Q: And is it fair to say that the  
6 government will likely continue to develop stronger  
7 efficiency standards for the *B.C. Building Code*?

8 MR. HOBSON: A: I think we'd like to think that that  
9 would happen. I think time will tell. There's a  
10 number of tradeoffs that I think government has to  
11 look at, and different interests that they have to  
12 satisfy when they look to make these changes. And I  
13 think they're taking some fairly aggressive steps  
14 currently, and whether or not the political climate  
15 with hold over time such that they take further steps,  
16 we'll have to wait to see.

17 **Proceeding Time 3:36 p.m. T67**

18 MR. WEAVER: Q: So what you've captured in your DSM  
19 plans to date, or what is in effect today, but you  
20 haven't considered what may happen or added in or  
21 factored into your DSM plans, that which may occur in  
22 the next two, three, four years.

23 MR. HOBSON: A: What we've included within those  
24 options consistent with how we've outlined it is  
25 what's been planned or announced. So, to the degree  
26 -- and, you know, there's a fair bit on the books, as

1       you know, within our plan with respect to codes and  
2       standards. It represents about 30 percent of the  
3       savings within the plan. But for us to speculate  
4       beyond that, in terms of what governments may or may  
5       not choose to do, was more the territory that we did  
6       explore with a few options that were listed out that  
7       bridged the gap between Option A and Option B. And  
8       certainly you could dream up a whole list of different  
9       things that governments could potentially do, beyond  
10      Option B, that weren't included within this.

11                    Because of the level of certainty  
12      associated with them, and also, as I mentioned  
13      earlier, I think we have to be mindful of the fact  
14      that not everything that we have put in to date is  
15      going to materialize over time, and some of these  
16      things that, you know, may materialize in the future  
17      that we haven't included will likely be things that  
18      are going to be needed to balance out the savings that  
19      don't materialize.

20   MR. WEAVER:    Q:    So, is it fair to say you've taken a  
21      fairly conservative approach with respect to  
22      anticipating all of these -- this range of government  
23      initiatives moving and encouraging conservation,  
24      you've elected not to speculate to include?

25   MR. HOBSON:    A:    No, I wouldn't characterize it as  
26      conservative. I'd characterize it more as a realistic

1 view. Keeping in mind that we have a responsibility  
2 with a certain level of certainty to apply as we're  
3 putting these plans together for resource planning  
4 purposes.

5 MR. WEAFFER: Q: Do you see that as consistent with the  
6 drive to the conservation culture, and the very  
7 aggressive targets that Mr. Elton set out for the  
8 company in terms of what it should achieve by 2027?

9 MR. HOBSON: A: Yeah, I think our plan is consistent  
10 with that, and I think the one thing we have to  
11 remember, and I think we've outlined that within the  
12 application, as we've described that very vision, or  
13 B.C. Hydro's vision, and how that influenced our  
14 strategy. I don't have the reference in front of me  
15 handy right now, but I believe it's within Appendix K  
16 in the strategy section that we outlined that. And we  
17 still see, you know, we're taking a big step forward  
18 from where we've been in the past. The vision is  
19 that's outlined in Mr. Elton's letter, I think, is  
20 still providing a directional signal in terms of where  
21 we're headed. But I don't think anywhere it says that  
22 we're going to get there all in one step. So I think  
23 the plan we've put forward is moving in that direction  
24 and it's consistent with that. And I think we've got  
25 a lot to learn over the next few years to decide how  
26 we move forward beyond that.

1 MR. WEAVER: Q: The criteria that you've utilized, as I  
2 understand it in this proceeding, is focusing on the  
3 cost-effectiveness in terms of DSM measures. Is that  
4 correct?

5 MR. REIMANN: A: Yeah, that's correct.

6 MR. WEAVER: Q: Does B.C. Hydro believe it's done -- at  
7 this point in time, that it's definitively determined  
8 where cost-effective is?

9 MR. HOBSON: A: So, I mean, one of the things I think  
10 we have to understand when we take a look at cost-  
11 effectiveness and the way cost-effectiveness is used  
12 within this application, is it is balancing off or  
13 looking at a number of different factors. So when you  
14 say "definitive", I think it's a hard thing to nail  
15 down in black and white terms that way. I think a lot  
16 of what we look at with respect to cost-effectiveness  
17 is a mix of quantitative values coupled with judgment  
18 around things that are a little harder to measure, put  
19 your finger on what the value is.

20 MR. WEAVER: Q: So when you applied that judgment, and  
21 looking at Option A DSM versus Option B DSM, you took  
22 on this qualitative assessment, you looked at resource  
23 flexibility. But as I understand it, Option B is  
24 really just an extension of Option A, is that correct?

25 MR. HOBSON: A: That would be one way to characterize  
26 it. I mean, Option A, or the gap or difference, I



1 underperformance?

2 MR. HOBSON: A: Option A is a portfolio, and I think we  
3 might have responded to this with respect to Option B  
4 in an IR to CCBC, I think it's 1.6.4, that talks about  
5 the reduced flexibility when you get to Option B.

6 MR. WEAFFER: Q: But Option A was the question here.

7 MR. HOBSON: A: Well, yeah, and I think the opposite  
8 holds true that for Option A and that you would get  
9 some additional flexibility. And the reason for that  
10 is, you know, you're not trying to capture quite as  
11 much of the potential that is available. So at the  
12 point that you have underperformance with a given  
13 program, and you're counting on overperformance with  
14 another initiative to keep your portfolio overall on  
15 track, your amount of room to overperform is reduced  
16 as you have a more aggressive portfolio or more  
17 aggressive targets with respect to programs against  
18 the available potential.

19 MR. WEAFFER: Q: Can I turn you to Exhibit B-4, and this  
20 is BCSEA 2.32.4.

21 MR. HOBSON: A: That was 2.32.4?

22 MR. WEAFFER: Q: Yeah, that's correct, discussing  
23 deliverability risk and degree of reliance on DSM.

24 MR. HOBSON: A: Got that.

25 MR. WEAFFER: Q: Would you agree with me that B.C. Hydro  
26 views the degree of reliance measured by how much of

1 the energy gap is served by a single resource?

2 MR. HOBSON: A: Yes.

3 MR. WEAFFER: Q: And why does B.C. Hydro consider DSM as  
4 a single resource?

5 MR. HOBSON: A: I think it's probably more a function  
6 of how we've modelled DSM within the context of the  
7 LTAP analysis, and we discussed a little bit of that  
8 earlier this morning.

9 MR. WEAFFER: Q: In terms of the variety of tools that  
10 DSM has, why would you not take a more flexible view  
11 with respect to utilization of the aspects of DSM as  
12 opposed to calling it a single resource?

13 MR. HOBSON: A: Well, again, I think, as a function of  
14 how we look at the LTAP analysis itself and how we  
15 built up the DSM plan, we did talk about a little bit  
16 of that this morning and the interplay between some of  
17 the different components within a DSM plan.

18 MR. WEAFFER: Q: Okay. With respect to deliverability  
19 of DSM savings, would you agree with me that B.C.  
20 Hydro has a fairly strong and positive experience with  
21 respect to deliverability of DSM savings?

22 MR. HOBSON: A: Based on our past performance, we've  
23 had, I think, a pretty strong record with achieving  
24 the levels of savings that we've targeted with the  
25 plans that we've put forward. But I should note that  
26 the plans we put forward were at a different level of



1 MR. WEAVER: Q: Relative to the lesser plan.

2 MR. HOBSON: A: Are you specifically talking about  
3 Option B versus Option A? Or are we talking about the  
4 historical DSM plan?

5 MR. WEAVER: Q: Well, we can. I'm using the general  
6 concept, but Option B or A is --

7 MR. HOBSON: A: Well, I don't think it's quite as  
8 simple as that. I think there's a lot of things that  
9 you need to consider with respect to that. So as we  
10 go further, you know, if you've got a hundred units of  
11 potential in the marketplace, as you go and you try to  
12 accomplish more of that potential, you know, I think  
13 your bandwidth to be wrong is reduced. And the  
14 difficulty in trying to get more of that potential  
15 goes up as you go further up that curve. So, you  
16 know, if we go forward with a DSM plan in the past,  
17 that was targeting a certain level of energy savings,  
18 and it's a relatively smaller amount of the total  
19 potential, you know, I think we take that into account  
20 as a measure of deliverability risk. I think the fact  
21 that you have a broad portfolio and different tools  
22 does help. But you also have to take a look at the  
23 uncertainty associated with each of those tools and  
24 the fact that you're going a lot more further along  
25 that curve, that penetration curve, if you will, with  
26 respect to the amount of DSM you're having to realize

1 from what's available, from what the potential is.

2 MR. WEAVER: Q: When you measure that deliverability  
3 risk, what are you measuring it against? Do you look  
4 at that cost versus the cost of buying supply, as  
5 opposed to conservation? I mean, what's the risk  
6 again?

7 MR. HOBSON: A: Well, maybe I'll start with that and  
8 then Mr. Reimann can jump in on the second part of  
9 your question. But when we're taking a look at  
10 deliverability risk with respect to DSM itself, I  
11 mean, we're taking a look at, you know, as one metric,  
12 the percent of the economic potential that we're  
13 trying to realize. We're also taking a look at the  
14 barriers within the marketplace that are preventing  
15 that from happening naturally on its own, and what  
16 position do we think we're in with respect to the  
17 offers we've put forward to actually overcome those  
18 barriers? So, I mean, those are all kind of  
19 qualitative things that factor into our view of  
20 deliverability risk. We take a look at our historical  
21 performance, we take a look at the experience in other  
22 jurisdictions, discussions with trade allies. So  
23 there's a number of different factors that weigh into  
24 that.

25 And then maybe I'll let Mr. Reimann speak  
26 with respect to supply.

1 MR. WEAVER: Q: Just before we go to Mr. Reimann, the  
2 B.C. Hydro's performance has been fairly successful in  
3 terms -- its historic performance has been fairly  
4 successful in terms of deliverability. And here,  
5 we're looking at two options. Investing more to try  
6 and achieve more deliverability, and what you've said  
7 doesn't address the probability that you may deliver  
8 DSM as opposed to the alternative of expensive supply.

9 MR. REIMANN: A: So, maybe I can take a bit of a cut at  
10 this, and then Mr. Hobson can fill in again.

11 I'd just -- observation on the one hand,  
12 you're talking about Hydro's success rate with DSM,  
13 and I think our success rate has been good, and that's  
14 part of the reason that we're justifying as large a  
15 target as we are. There are also components, then,  
16 that are new, that Mr. Hobson's pointed out to you,  
17 and these new components, we don't have experience  
18 with or as much, and you kind of can't have it both  
19 ways, that you've either got experience and it  
20 increases or decreases your deliverability risk, or  
21 you have a variety of tools. But if they're new  
22 tools, it's a new world.

23 In terms of the probability of delivery, I  
24 think it might be helpful to talk a little bit about  
25 our risk framework. So, B.C. Hydro, when we went  
26 through the risk framework, and trying to understand



1                   The last sentence of the fourth paragraph,  
2                   that we would have required a level of complexity and  
3                   additional time and resources beyond those available,  
4                   if we were to start to remove some of those  
5                   simplifications. So this IR started to point out some  
6                   of the uncertainties that we had.

7                   If I could take you back to the application  
8                   in Chapter 3 -- sorry, Chapter 5, and section 5-5-4,  
9                   page 55, 555. So this would be Exhibit B-1, page 5-  
10                  55. So in that, and lines 7 to 16 was a paragraph  
11                  that we put in there that talked a bit about the risk  
12                  framework, and I'll maybe go to Appendix F-14 in a  
13                  second, but as addressed in F-14, subjective  
14                  assessments of uncertainty are subject to well-known  
15                  bias to underestimate uncertainty. And so there's --  
16                  we had a person in the company, a Basil Stumborg, work  
17                  through these programs with the DSM focus to try to  
18                  understand the full range of uncertainty. But there  
19                  is a bias that tends to sort of underestimate that  
20                  uncertainty.

21                  And at the last sentence of that paragraph,  
22                  lines 14, 15, 16:

23                  "As such, the risk framework may not have  
24                  identified and captured all drivers of DSM  
25                  performance risk and correlations between  
26                  drivers."

1                   There's one other piece that I'd like to  
2                   draw your attention to in Appendix F-14, and it's on  
3                   page 27 of 29. In that section, we talked a bit about  
4                   the limitations of DSM probability assessment. And in  
5                   the first paragraph there, it's given that the DSM  
6                   options involve new DSM tools, an unprecedented level  
7                   of effort of part of the B.C. Hydro, it is important  
8                   to be clear about the limitations. And then we  
9                   highlight in here a number of different limitations,  
10                  some of which I've already talked about.

11                  But the additional one that I'd like to  
12                  point out here is the timing of savings. And so we  
13                  did not spend a lot of time -- we didn't have the time  
14                  and the capability in going through it this first  
15                  time, to assess how quickly might these DSM savings  
16                  ramp up. So they may well be achievable. There's a  
17                  question of how much and how quickly.

18                  And so that is kind of a bit of a  
19                  background about the probability distributions that  
20                  we've shown in the application. And I guess at the  
21                  end of the day when Hydro looked at it, we said, well,  
22                  here are two probability distributions. If you took A  
23                  and B on the face of them, you'd say, well,  
24                  probability distribution B, and you take it down on  
25                  the curve and say you're highly likely to get that  
26                  level of savings that may be well over 10,000 gigawatt

1 hours with an expectation of maybe 13. But when we  
2 sat back and looked at the whole programs, where we're  
3 going, and that this isn't something that's been done  
4 before, it is quite an aggressive target and we think  
5 we're going to be successful, that there then became  
6 this deliverability risk.

7 And at the end of day what we're talking  
8 about is professional judgment in looking at this, at  
9 our past history, and saying, "How much do we as a  
10 company think we can really do in this timeframe?"

11 **Proceeding Time 3:56 p.m. T71**

12 And I think what you're hearing from Mr.  
13 Hobson, as a person who works in the area, is that  
14 they've gone through all the programs, codes and  
15 standards, and the tariffs, and say, "How far do we  
16 think we can push this inconsistent with ... sorry,  
17 consistent with Mr. Elton's long-term goal?" And  
18 wanting to push it and get to a new paradigm. And  
19 that's as far as we think we can go.

20 MR. WEAVER: Q: Thank you for that, Mr. Reimann. If I  
21 could turn you to Exhibit B-3, and we'll finish on  
22 this, BCUC IR 1.50.3, which is a list of programs in  
23 DSM Options A and B.

24 MR. REIMANN: A: What was the reference, sorry?

25 MR. WEAVER: Q: BCUC IR 1.50.3. Now, we just had a  
26 lengthy discussion around the risk probabilities, but

1 would you agree with me in looking at this table,  
2 summarizing programs in DSM Options A and B, that the  
3 programs are fairly similar, but there's a ramping-up  
4 in B as opposed to A.

5 MR. HOBSON: A: For the programs? The programs are the  
6 same program concepts, but they're a more aggressive  
7 version of those programs, yes.

8 MR. WEAVER: Q: It's investing more in DSM to try and  
9 get the results in programs that you are determining  
10 work under Option A. Is that correct?

11 MR. HOBSON: A: Correct. That's correct.

12 MR. WEAVER: Mr. Chairman, I'm going to leave it at that,  
13 if I can.

14 THE CHAIRPERSON: Thank you, Mr. Weaver.

15 Mr. Thrasher, do you have any last things  
16 to put in before the weekend?

17 MR. THRASHER: I do not.

18 THE CHAIRPERSON: Okay. We will adjourn until Monday  
19 morning at 9:00 o'clock, remember, this is -- that's  
20 okay, and we'll sit till 4:30 on Monday. You  
21 gentlemen, I wish you a pleasant weekend, and we'll  
22 see you on Monday.

23 **(PROCEEDINGS ADJOURNED AT 3:59 P.M.)**

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