

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.
March 2, 2009

PROCEEDINGS AT HEARING

BEFORE:

| | |
|-----------------------|---------------------|
| A. J. Pullman, | Chairperson |
| B. Milbourne, | Commissioner |
| M. Harle, | Commissioner |

VOLUME 10

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.

March 2, 2009

(PROCEEDINGS RESUMED AT 9:00 A.M.)

THE CHAIRPERSON: Please be seated.

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

ROBERT YOUNGMAN, Resumed:

RICHARD LAUCKHART, Resumed:

RANDY REIMANN, Resumed:

STEVE HOBSON, Resumed:

REN ORANS, Resumed:

DAVID INCE, Resumed:

THE CHAIRPERSON: Good morning, everybody. For those of you who are interested, today, I'm told, is -- I'm not told, I know, is St. Chad's Day. There's a piece of trivia for you. And having told you that, we will proceed with the business.

Mr. Thrasher, do you have some --

MR. THRASHER: I have one filing, Mr. Chair. It is the response to an undertaking from PVEA. So, it would be B.C. Hydro undertaking Number 3, and the transcript reference is volume 5, page 660, lines 1 to 24. And that's Exhibit B-28.

THE CHAIRPERSON: Thank you.

THE HEARING OFFICER: B-28.

(B.C. HYDRO UNDERTAKING NO. 3, VOLUME 5, PAGE 660,

1 LINES 1 TO 24, EXHIBIT B-28)

2 MR. FULTON: Mr. Chairman, before we proceed further, the
3 exhibit list that was distributed this morning for
4 B.C. Hydro has two B-26s and I believe that Mr.
5 Godsoe's transcript reference excerpt should be B-27.
6 And that puts us in the right order chronologically
7 with B-28 now. Thank you.

8 MR. THRASHER: So, I believe the panel is ready, and it's
9 Mr. Austin, I believe.

10 THE CHAIRPERSON: Thank you. Mr. Weafer is ready too.

11 MR. THRASHER: Oh, Mr. Weafer, sorry.

12 THE CHAIRPERSON: Let's proceed.

13 **Proceeding Time 9:02 a.m. T2**

14 **CROSS-EXAMINATION BY MR. WEAFER (Continued):**

15 MR. WEAFER: Q: Good morning, Mr. Chairman, members of
16 the Commission. Good morning, B.C. Hydro panel. Just
17 following up from the discussion on Friday when we
18 were talking about deliverability risks between Option
19 A and Option B. And Mr. Reimann, you gave a fairly
20 comprehensive response to a question in terms of
21 deliverability risk, and you referenced at one point
22 BCUC 1.105. And if you could turn to BCUC 1.105.3 in
23 Exhibit B-3, and just to confirm in terms in our
24 understanding of the responses to 1.105.3 and 1.105.4,
25 would you agree with me that from a risk deliveries
26 point of view, DSM Option B offers a lower probability

1 of failing to deliver the planned level of savings?
2 And you may look to the response to 1.105.4 in
3 considering the answer.

4 MR. REIMANN: A: Sorry, the question again is?

5 MR. WEAFFER: Q: From a risk of delivery point of view,
6 DSM Option B offers a lower probability of failing to
7 deliver the planned level of savings.

8 MR. REIMANN: A: And when you say "planned level of
9 savings", this is the targeted level that we have with
10 Option A?

11 MR. WEAFFER: Q: Yes.

12 MR. REIMANN: A: So a particular 10,000 gigawatt hours
13 of savings. Yeah, and that really was the point of
14 the different places in the application I was pointing
15 to, is that if you were to just take those probability
16 curves on their own and look at them, you would think
17 that DSM Option B would be a high probability of
18 getting to a high level of savings.

19 **Proceeding Time 9:04 a.m. T03**

20 And, in fact, it's when you consider the
21 other aspects of it that it's an initial cut at
22 developing these probability distribution curves. And
23 some of the assumptions made, in terms of
24 independence, the tendency to underestimate the
25 volatility, and the fact that we haven't actually
26 gotten to that level before is when you consider all

1 of those, that's what caused us as a company to say,
2 at the end of the day, it's professional judgment that
3 DSM A is all that we're prepared to, as a company,
4 rely upon at this point.

5 But another aspect of that as well was the
6 timing, that we really didn't spend a lot of time
7 looking at in the first go-through, and it's something
8 we'll probably spend more time in the future, but it
9 may well be that the DSM savings are there and
10 economic, it's a question of how quickly can you ramp
11 up and get those savings.

12 MR. WEAVER: Q: So the statistical analysis said one
13 thing, but the judgment applied by B.C. Hydro said
14 another, is that a summary of --

15 MR. REIMANN: A: That's right. Those distribution
16 curves were quite useful for us to look at this and
17 start to be able to do some analysis on, and look at
18 the different impacts, but at the end of the day we
19 didn't feel as a company that we could rely on DSM
20 Option B, given these other considerations.

21 MR. WEAVER: Q: Thank you. We'll move on from that
22 topic, then. If I could move you now to a series of
23 CEC IRs, CEC IRs 1.54, 1.55 and 1.56, the answers are
24 fairly short so we can deal with all three together.
25 And, sorry, this is in an exhibit, B-3.

26 MR. REIMANN: A: Sorry, the reference again was?

1 MR. WEAFFER: Q: It's Exhibit B-3, CEC IR responses
2 1.54, 1.55 and 1.56.

3 Yes. 1.54, 1.55 and 1.56, yeah. Have you
4 got those?

5 MR. REIMANN: A: Sorry, 1.5.4?

6 MR. WEAFFER: Q: 1.54, 1.55 and 1.56 of CEC IRs in
7 Exhibit B-3. Is it 55, or --

8 MR. THRASHER: It's 1.5.4, I think.

9 MR. HOBSON: A: I think we have the right --

10 MR. WEAFFER: Q: Yes.

11 MR. THRASHER: No, but he was hearing you as point-five,
12 point-four --

13 MR. WEAFFER: Q: The topic is DSM resource option
14 updates.

15 MR. HOBSON: A: We have that.

16 MR. WEAFFER: Q: Thank you. Now, as I understand it,
17 B.C. Hydro's not developed a list of possible DSM
18 programs which might be developed beyond those
19 proposed in Options A and Options B, is that correct?

20 **Proceeding Time 9:07 a.m. T4**

21 MR. HOBSON: A: Yeah, I think that's correct. We
22 haven't gone forward and developed program concepts
23 beyond what the response indicates.

24 MR. WEAFFER: Q: And so what we have at this point, the
25 conservation potential review, which is explicitly not
26 a DSM program but is a compendium of end use

1 opportunities assessed for energy saving potential,
2 correct?

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

4 MR. WEAVER: Q: And you have -- in Option A you
5 achieved 57 percent of the identified economic
6 potential in a CPR, and in Option B you propose 69
7 percent of the economic potential. Is that a fair
8 statement of the approach?

9 MR. HOBSON: A: It's a fair statement of the outcome,
10 I'd suggest, yes.

11 MR. WEAVER: Q: Now, you'd agree with me that this DSM
12 initiative is not the last DSM plan that B.C. Hydro is
13 going to put together. You will be going forward
14 under the legislation and government direction, you'll
15 prepare future DSM plans.

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

17 MR. WEAVER: Q: And you'll do that on a belief, I
18 assume, that you're going to find future opportunities
19 to achieve conservation.

20 MR. HOBSON: A: We'll do it on the belief that I think
21 the market changes, and we've put forward a plan, a
22 long-term plan, around demand-side management, and I
23 think we expect that things will change over time.
24 And we'll take a look at new opportunities and we'll
25 probably also look at components within our plan that
26 don't turn out the way that we thought, either good or

1 bad, that would need to reflect those changes.

2 MR. WEAFFER: Q: But you'd agree with me that we're
3 really on a path to aggressively pursue opportunities
4 and find opportunities in the economic potential for
5 DSM.

6 MR. HOBSON: A: I would agree we're on that path now,
7 yes.

8 MR. WEAFFER: Q: And this is consistent with Mr. Elton's
9 comments which we discussed on Friday in terms of
10 really being quite aggressive about these initiatives
11 and pursuing opportunities. And indeed B.C. Hydro
12 will look to invest further funds in DSM potential and
13 DSM plans, correct?

14 MR. HOBSON: A: I think we're on that path and I think
15 it's consistent with where Mr. Elton's letter and
16 vision outline. Whether or not we increase
17 expenditure levels over time, I think remains to be
18 seen.

19 MR. WEAFFER: Q: Can you give me a sense of the
20 timeline, and we've now got this DSM planned for the
21 Commission. What's the level of effort in terms of
22 coming up with the next DSM plan? Is it a significant
23 commitment of resource by B.C. Hydro? Do you have a
24 general sense of the economic commitment of B.C. Hydro
25 to develop the next DSM plan? Roughly speaking.

26 MR. HOBSON: A: I think it's hard to answer, because I

1 think part of depends on how much is changed. So if
2 we're going through and we're doing a complete
3 reassessment of where we're headed with demand-side
4 management, like we undertook this time round, it's a
5 fairly significant undertaking for our company to go
6 through. Each year we take a look at how we performed
7 with demand-side management and what our new
8 opportunities are. We have ongoing management of
9 this, so we have, I think, good insights in terms of
10 what's happening within the market, and doing more of
11 an update of the plan still takes considerable
12 resources but significantly less than doing a full-
13 blown kind of redo of the plan, if you will, like we
14 undertook this time.

15 **Proceeding Time 9:10 a.m. T05**

16 MR. WEAFFER: Q: Well, let's just look at where we'll go
17 from here. Is it fair to say that there has been a
18 limited amount of information to rely on in terms of
19 the effectiveness of B.C. Hydro's prior demand-side
20 management plans? For example, you don't have any
21 specific elasticity estimates in terms of historic DSM
22 efforts and what impact they had on customer response?

23 MR. HOBSON: A: I think we'll get a lot of additional
24 information and learnings as we go forward, and I
25 think we'll get that with programs, rates, as well as
26 codes and standards.

1 MR. WEAVER: Q: But I -- firstly, at this point, you
2 don't have that type of information now, looking at
3 what you've implemented with this plan. Is that fair?
4 MR. HOBSON: A: Specifically to elasticities and rates?
5 MR. WEAVER: Q: With respect to DSM initiatives of B.C.
6 Hydro.
7 MR. HOBSON: A: Can you repeat your question again,
8 please?
9 MR. WEAVER: Q: My understanding is that there's not --
10 in terms of elasticity of it, and I'm not getting into
11 the detailed elasticity studies, but just
12 conceptually, in terms of what B.C. Hydro's relied on
13 for these DSM initiatives, it's not had the
14 opportunity to review specific elasticity studies of
15 its historic DSM efforts. There's no study on the
16 record, or no specific review of B.C. Hydro's past DSM
17 efforts to determine --
18 MR. HOBSON: A: Specific to elasticity and rates?
19 MR. WEAVER: Q: Yes. Yes.
20 MR. HOBSON: A: Yeah, I think I would agree with that.
21 I mean, we talked a little bit yesterday about some of
22 the review that had been done, but outside of that,
23 you know, I think that's in large part why we've
24 looked to outside groups to come in and provide us
25 with advice on that area.
26 But with respect to DSM overall, I think

1 we've drawn on quite a bit of information and
2 knowledge as we put our DSM plan together, whether
3 that's through the development of the CPR, our work
4 with other jurisdictions in understanding what they've
5 done, our own experience, you know, there's a number
6 of different factors that we've drawn upon in those
7 areas.

8 MR. WEAFFER: Q: Mr. Hobson, I'm focusing just
9 specifically on DSM initiatives of B.C. Hydro
10 historically in this jurisdiction, and whether there
11 is any specific research information that B.C. Hydro
12 has undertaken, or contracted for, to assist the
13 Commission and customers in understanding the impact
14 of DSM on customer response.

15 MR. HOBSON: A: So, again, I'm not sure if you're
16 looking specifically at rates or if you're looking at
17 general, or what exactly your question is.

18 MR. WEAFFER: Q: I'm looking specifically -- my
19 understanding is, in terms of historic DSM initiatives
20 of B.C. Hydro, we have no evidence on the record in
21 this proceeding specifically to the impact on customer
22 response to those specific DSM initiatives of B.C.
23 Hydro in this jurisdiction.

24 MR. HOBSON: A: So, are we speaking now in terms of
25 evaluation of our previous initiatives or --

26 MR. WEAFFER: Q: Yes.

1 MR. HOBSON: A: I think we've had a couple of questions
2 on evaluation. We do file evaluation reports with
3 this Commission. So, I'm not sure if that's the
4 nature of the work you're looking at. But what I can
5 tell you is, we take the evaluation results that we do
6 draw from on historical initiatives, and those are
7 very much used in trying to understand how we move
8 forward with our planning.

9 MR. WEAFFER: Q: In terms of improvements, and the next
10 DSM initiative, and again reflecting on the effort
11 that's going to go into the DSM efforts of B.C. Hydro,
12 do you see investment in better research on the effect
13 of DSM investments by B.C. Hydro? Do you see
14 improving on what you have today, for the next time
15 we're before the Commission with the material DSM
16 program, such as we're looking at in this hearing?

17 MR. HOBSON: A: In terms of evaluation?

18 MR. WEAFFER: Q: Yes.

19 MR. HOBSON: A: You know, in terms of evaluation, I
20 think if you went around to different jurisdictions
21 that are involved in demand-side management, I think
22 our evaluation group is a fairly highly-respected
23 evaluation group, that's either initiated or tied in
24 with a lot of the leading work that is going on in the
25 field currently. B.C. Hydro's initiated working
26 groups on evaluation in groups with Canada, across

1 Manitoba Hydro and Hydro-Quebec, they have discussions
2 on some of the issues that are facing demand-side
3 management.

4 We're also a part of the consortium for
5 energy efficiency, and tied into various utility
6 groups across North America in discussing a number of
7 these issues as well. One of our lead evaluators was
8 just invited as a guest lecturer for the International
9 Energy Agency's evaluation workshop, coming up in the
10 next couple of months. So, you know, I think we're
11 well-positioned with our evaluation group currently

12 I think we will continue to learn, I mean
13 some of the areas around rates and codes and standards
14 and some of our supporting initiatives as we go
15 forward. But I think we're in a good position to
16 continue on the good work that we've done today.

17 **Proceeding Time 9:15 a.m. T6**

18 MR. WEAVER: Q: Dr. Orans, would you, in terms of
19 assisting the Commission and in terms of future
20 reviews of DSM plans, if you were looking to be hired
21 by B.C. Hydro for a following proceeding, is there
22 anything that you would suggest could be done more
23 effectively or better by B.C. Hydro to give a better
24 sense of the market take-up of DSM initiatives at B.C.
25 Hydro?

26 MR. ORANS: A: First of all, I'm not aware, fully aware

1 of all of B.C. Hydro's measurement and evaluation
2 plans. Although the plans that I am aware of, and
3 part of this was -- part of the record of the RIB, was
4 discussion of B.C. Hydro's time of use rate they've
5 had in place in the pilot, et cetera. And I have
6 looked at those plans and they are proceeding with
7 collection of data, and they had an early report on
8 one years of data and they're merging in the second
9 year, as I understand it now, and that is going to be
10 expanded substantially.

11 I wanted to comment more generally on the
12 characterization that -- certainly the estimates of
13 DSM savings are uncertain. And many of the scenarios
14 you've seen here have wide ranges of uncertainty and
15 they depend on delivery and they depend on behavioural
16 responses and they depend on codes and standards.

17 The codes and standards material in
18 general, and I'm not speaking about B.C. Hydro
19 specifically, you know, it's less uncertain on what
20 you get with codes and standards. When codes and
21 standards are adopted, many jurisdictions, you know,
22 share those results and they have common knowledge
23 about what happens when you change a code and standard
24 for a building or residential customer.

25 More uncertain are the shorter-term
26 behavioural responses to rate programs. And that's

1 just primarily because there is not a whole bunch of
2 data in this jurisdiction, there's not a whole bunch
3 of data in general on low-cost jurisdictions
4 implementing lots and very aggressive rate programs.
5 And so you'll see in my testimony the coverage of the
6 studies that I thought were relevant.

7 Certainly the estimates are uncertain, and
8 I believe B.C. Hydro is beginning to collect data on
9 making that more certain in the future.

10 MR. WEAVER: Q: So specifically in terms of what might
11 be done in a -- and recognizing again that DSM is,
12 you'll agree with me, becoming an increasingly
13 important initiative for energy utilities, both from a
14 conservation standpoint and also in the face of
15 challenging economic times, conservation is clearly
16 taking a lead in many jurisdictions. You'd agree with
17 that?

18 MR. ORANS: A: Yeah, I would agree with that general
19 statement. But the fact that they're uncertain and
20 the fact that jurisdictions are going to do more in
21 the future and study it more, doesn't mean that the
22 current estimates are biased low. I mean, in fact,
23 someone could make an equally good argument that they
24 are biased high because they're so -- they're driving
25 by policy usually rather than studies.

26 MR. WEAVER: Q: I'm not alleging a bias at all at this

1 point. I'm really looking to how do we do better? So
2 that's the specific question. We've got a high level
3 of uncertainty around a high level of investment.

4 MR. HOBSON: A: There's also some steps that we've
5 taken, you know.

6 MR. WEAVER: Q: If I could just finish the question,
7 Mr. Hobson.

8 So the issue isn't bias. The issue is
9 improvement in terms of customers are being asked to
10 invest significantly in the DSM initiatives. The
11 Commission is being asked to approve them. We can
12 leave for argument whether they're biased or not.
13 That's not the point. The point here is, what can we
14 -- and Mr. Hobson and B.C. Hydro looking to do further
15 DSM proposals, what can we do to raise the level of
16 confidence in terms of the information provided, to
17 reduce that level of uncertainty, either in programs,
18 codes and standards. Have you got any thoughts on
19 that?

20 MR. ORANS: A: I believe B.C. Hydro, as I spoke
21 already, has an evaluation plan for the residential
22 class. They have a pilot, a time-of-use pilot
23 already. They're studying that. They're updating the
24 data as we speak. And I believe also, and I saw also
25 as part of the long-term forecasting where there's a
26 preliminary evaluation for the commercial class. And

1 move forward. It's certainly what we've assumed
2 within the plan.

3 MR. WEAFFER: Q: And so, that -- to the point, in terms
4 of what you have before the Commission, and the
5 forecast of rate impacts, it's the stepped rate
6 approach that you've utilized in terms of anticipation
7 of impact on load in this filing, is that correct?

8 MR. HOBSON: A: Yeah, I mean, what we've outlined is a
9 stepped rate or an inclined block rate structure.
10 They'll look slightly different depending on the rate
11 class, obviously, but the concept of using a stepped
12 rate is consistent across them.

13 MR. WEAFFER: Q: And in terms of the effect of that rate
14 on general service customers, have you anticipated a
15 similar response as you anticipated from residential
16 customers on the stepped rate program?

17 MR. HOBSON: A: With respect to the elasticity
18 assumption?

19 MR. WEAFFER: Q: Yes. Yes.

20 MR. HOBSON: A: The elasticity assumptions are
21 consistent.

22 MR. WEAFFER: Q: For all -- the assumption is all rate
23 classes will respond -- and that's the .5 percent
24 elasticity for residential customers, that's been
25 applied to other classes of customers as well in your
26 forecast?

1 MR. ORANS: A: No. The same assumptions on elasticity
2 have been used for the commercial class and the
3 residential class. And minus .1 is used for a total
4 rate elasticity. Minus .05 is used for a rate level
5 elasticity, and the difference between the total
6 elasticity and the rate level elasticity is the rate
7 design effect.

8 MR. WEAVER: Q: But it's minus .05 for rate structure
9 redesign, correct?

10 MR. ORANS: A: No. It's minus .05 for rate level.

11 MR. WEAVER: Q: Okay. You've also had the experience
12 with the TSR rates, and I understand there will be an
13 evaluation done of that, that you've had almost three
14 years experience with that rate structure, and --

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

16 MR. WEAVER: Q: And how has that -- how has the impact
17 of that rate structure been quantified in this
18 forecast?

19 MR. HOBSON: A: It's dealt with slightly differently,
20 in that it's not using an elasticity, it's a little
21 bit of a unique situation relative to the other rate
22 classes, in the sense that there's a more limited set
23 of customers, they tend to be larger sites, and we
24 have better data, site by site, in looking at those
25 customers. So in estimating the rate impact that we
26 might see coming off the rate structure in that rate

1 class, it's done on a site-by-site basis by looking at
2 the specific potential or opportunities within those
3 sites.

4 MR. WEAVER: Q: So, a higher level of certainty around
5 those forecasts, would you say?

6 MR. HOBSON: A: I'd say there's still uncertainty, it's
7 just a different approach in arriving at the estimate.

8 **Proceeding Time 9:25 a.m. T8**

9 MR. WEAVER: Q: Now, is it fair to say for each of
10 those classes of customers, B.C. Hydro will continue
11 to look at other rate structure opportunities to
12 improve conservation. Is that correct?

13 MR. HOBSON: A: I would imagine that over time we would
14 continue to look at different rate structures and be
15 open to different ideas and opportunities in all
16 areas, including rate structures.

17 MR. WEAVER: Q: So if you take, for example, the
18 residential class, and not to really argue the RIB
19 application, but it's fair to state the proposal that
20 B.C. Hydro utilized targeted and had an impact on
21 approximately 25 percent of the rate class in terms of
22 a price signal encouraging conservation. Is that a
23 fair summary?

24 MR. ORANS: A: Actually, I think it was 75 percent, not
25 25 percent. I saw Tier 2 prices under the RIB
26 proposal at some point during the year, so more than

1 one month or more.

2 MR. WEAVER: Q: Correct. Sorry, 75 percent would see
3 it. And so we've got 25 percent of the customer base
4 that's not seen a rate signal, and that there may be
5 an opportunity for that 25 percent of the residential
6 class to also see a rate structure, which sends that
7 low price signal within the term of this LTAP.

8 MR. HOBSON: A: Yeah, I think there's a number of
9 tradeoffs when it comes down to rate design. And you
10 know, short of maybe getting back in and looking at
11 the RIB application, I'm not sure how far you want to
12 go in that area.

13 MR. WEAVER: Q: But it is something that B.C. -- again,
14 within the term of this LTAP, that residential rate
15 structures and other rate structures will continue to
16 be reviewed by B.C. Hydro with a view to encouraging
17 conservation.

18 MR. HOBSON: A: Can you say that again, please?

19 MR. WEAVER: Q: Within the term of this LTAP, B.C.
20 Hydro will continue to look at opportunities for
21 providing conservation opportunities through rate
22 design, for each of the rate classes.

23 MR. HOBSON: A: Yeah, and I think the level of effort
24 and how far we're looking in each respective rate
25 class will likely differ, as we're moving on a path, I
26 think, where we're trying to get rate structures in

1 place for some of the rate classes and that has a
2 timetable. But that aside, I think we will be open to
3 looking at new opportunities for rates over time.

4 MR. REIMANN: A: I think we should be careful here to
5 -- when you say "within this LTAP", I think within
6 this LTAP there's a particular DSM program that's been
7 laid out that has a certain level of savings, and
8 that's what we're putting forward. If in the future
9 other opportunities come, that would likely be
10 reflected in a future LTAP application.

11 MR. WEAFFER: Q: Yes, and they're not reflected in this
12 forecast, and -- but the expectation is you're going
13 to continue to invest and cause that to occur,
14 correct?

15 MR. HOBSON: A: Say that again? We're going to
16 continue to invest and cause what to occur?

17 MR. WEAFFER: Q: You're going to continue to invest in
18 investigating rate designs which are going to cause
19 conservation. But as you -- the forecast right now is
20 based solely on the two-tier rate structure that
21 you've implemented for residential customers. But
22 there's another -- there are other opportunities that
23 will be explored.

24 MR. HOBSON: A: I would suggest that within the
25 timeframe we're looking at, we're just putting rate
26 structures in place, we're likely to put those rate

1 structures in place and see what materializes from
2 them. I don't think we'll close our minds off to
3 taking a look at new opportunities, but you know, I
4 think for the short-term time period that we're
5 working within, I think we have some work to do in
6 understanding what materializes from what we do put in
7 place.

8 MR. WEAVER: Q: And that's where I wanted to go, in
9 terms of what do you see as a realistic timeframe to
10 have valid and useful information in terms of response
11 to determine whether what you've done is being
12 effective, and to determine what may be done as the
13 next step to find more opportunities in line with Mr.
14 Elton's objective of seeing British Columbia as a real
15 leader in terms of conservation.

16 MR. HOBSON: A: In general across the demand-side
17 management plan?

18 MR. WEAVER: Q: In general across rate design
19 initiatives.

20 MR. HOBSON: A: I think it'll differ depending on the
21 rate class that we're looking at, but you know, if
22 we're just launching a rate structure into market, I
23 think we're looking at a period of a few years before
24 we're really going to have an understanding of what's
25 materializing from it. So you know, if we just get a
26 rate structure in place, by the time customers are

1 automatically moves us into a position where we're
2 looking to suddenly change the rate structure and
3 drive more conservation through it, I think we'd be
4 subject to taking a look at those trade-offs and that
5 process, that looks at those trade-offs.

6 MR. WEAVER: Q: And when would you see that happening?
7 When would you see that -- is it two years? Is it
8 five years? Is it ten years? Have you got a general
9 sense of when you're going to be able to measure the
10 effectiveness of what you've done?

11 MR. HOBSON: A: Again, I think, you know, it's
12 reasonable to consider a couple of year period before
13 you were going to have a good understanding of what
14 you've accomplished with respect to conservation
15 impacts through these rate structures as you put them
16 in place. So, I think that would be a bandwidth or a
17 time period that would be a -- in my mind, a good
18 period of time to be considering.

19 MR. WEAVER: Q: Okay. I do have a couple of follow-ups
20 on the elasticity question, and BCUC 1.44.1, in
21 Exhibit B-3.

22 MR. THRASHER: Sorry, was that 1.44.1?

23 MR. WEAVER: Q: Yes. Yes. In Exhibit B-3.

24 And the specific issue I want to address is
25 --

26 MR. HOBSON: A: Sorry, can you repeat the reference,

1 please?

2 MR. WEAVER: Q: Oh, I'm sorry. It's BCUC IR 1.144.1,
3 in Exhibit B-3.

4 THE CHAIRPERSON: You just said another number there.

5 MR. WEAVER: I'm sorry.

6 THE CHAIRPERSON: Is it 144 or 44?

7 MR. WEAVER: 1.144.1.

8 MR. WEAVER: Q: And the issue I just -- I want to
9 address conceptually with respect to double-counting.
10 If B.C. Hydro has not, in its long-run elasticity
11 scenario, not included programs or expected
12 conservation initiatives, does the opposite effect
13 occur, that your net -- instead of double-counting,
14 you're offsetting one impact by not having identified
15 the other?

16 MR. HOBSON: A: I'm not sure if I'm following your
17 questions.

18 MR. WEAVER: Q: If -- as I understand the double-
19 counting issue, where long-term elasticity contains
20 rate structure response and response to programs and
21 other DSM strategies, my understanding is, you may
22 have a double-counting of impact because you have
23 additional -- you have a variety of impacts on
24 conservation.

25 MR. HOBSON: A: Correct.

26 MR. WEAVER: Q: Correct?

1 MR. HOBSON: A: Yeah.

2 MR. WEAFFER: Q: So, if you -- in your long-term, long-
3 run elasticity study include a program but, for
4 example, don't -- choose to not identify, choose to be
5 conservative in terms of a rate initiative, and
6 therefore do not have that in the long run study, you
7 have a potential netting off. You have a potential
8 loss of a conservation result. And so you don't have
9 double-counting, you lose the value of that
10 initiative. You don't recognize the value of the
11 initiative that you've not included in the long-run
12 study.

13 MR. HOBSON: A: Again, I'm not sure I'm completely
14 following your logic with that, but I think the fact
15 that we have addressed the double-counting is really
16 about taking a look at, if you were to use a long-term
17 elasticity value, you'd be picking up impacts that
18 would not purely be rates, they would be impacts that
19 would be caused by DSM initiatives and codes and
20 standards, and to try to isolate the impact that would
21 be caused just by the rates is, I think, more the step
22 that we've taken within this application in not using
23 the long-term impacts. I don't think it implies at
24 all that we've lost something there, or there's a gap
25 with respect to rates.

26 MR. WEAFFER: Q: Let me try it in another way. Would

1 would be isolated, you'd have a pure long-run price
2 elasticity effect and you'd have all the codes and
3 standards peeled out from it. But there is no way
4 most of these people doing these studies can pick up
5 all the individual utility programs that happen and
6 all the codes and standards.

7 So they call it long-run price elasticity
8 effect. It's got commingled in it, codes and
9 standards, DSM programs and long-term pricing.

10 MR. WEAFFER: Q: Would you agree with me, Dr. Orans,
11 with respect to looking to B.C. Hydro's plans going
12 forward, that it is very important that initiatives
13 are properly separated out and identified in order to
14 determine their impact?

15 MR. ORANS: A: Yeah. I think that's primarily the goal
16 that we had in developing this. And when Mr. Ince and
17 Mr. Hobson and I all met on this, and almost a year
18 ago, I think, and we looked at the detailed programs
19 Mr. Hobson had, and the forecasting Mr. Ince was
20 doing, it looked most clear, the most clear way to do
21 this rather than try to peel apart those commingled
22 things, was to -- and we don't have what we call a
23 pure short-run price elasticity either. The
24 elasticities that I'm using sort of represent
25 behavioural changes that would be plausible within one
26 year. And you ask yourself, well, within one year you

1 could implement and go buy compact fluorescent lights,
2 for example. You're probably unlikely to do your
3 window changes and your big codes and standard
4 changes. Those are probably picked up more on the
5 program side.

6 So I'm picking up and using studies that
7 are looking at kind of year-by-year, what I would call
8 short run, that they're really not day to day or hour
9 to hour, within a year's change effect and implied
10 behavioural response to a rate like a RIB design.

11 MR. WEAVER: Q: On Friday we discussed various
12 initiatives that are occurring as we move towards this
13 conservation culture, codes and standards, the Western
14 Climate Initiative, the province's Climate Action
15 Committee. If those initiatives which are not yet
16 easy to identify in terms of their conservation
17 result, nonetheless do have a conservation result
18 within the forecast period, how is B.C. Hydro going to
19 assess how successful it's been as a result of its
20 programs, as opposed to all of these other initiatives
21 that are going to impact conservation, or specifically
22 target it in impacting conservation?

23 MR. HOBSON: A: And I mean, I think that's part of what
24 our evaluation process has to deal with, and it has to
25 deal with it now and it's always had to deal with
26 that. I mean, part of what we need to understand is

1 MR. ANDREWS: Q: And it wasn't revisited during the
2 December, 2008 evidentiary update process.

3 MR. REIMANN: A: When we did the evidentiary update,
4 when we looked at the -- we did consider A and B
5 again, and where we were in it, and what we landed on
6 was that we felt, as principled approaches, to stay
7 with the same relative degree of uncertainty for
8 deliverability risk, to try to keep that consistent in
9 the new world, to what we'd originally proposed, so.

10 MR. ANDREWS: Q: Well, if I could refer you to
11 transcript volume 5 at page 588. In my discussion
12 with Ms. Van Ruyven, and my -- actually, my copy
13 doesn't have the line numbers, so I can't help you
14 with that, but the -- she says,

15 "So, we didn't do that thinking, because
16 we'd done that thinking prior to making the
17 decision of Option A versus B..."

18 Do you see that?

19 MR. REIMANN: A: I see that, yes.

20 MR. ANDREWS: Q: In that passage. And she says:

21 "...and so we'd already made a professional
22 judgment that that was the right level to
23 rely on DSM at Option A. So, in the
24 evidentiary update, we didn't re-hash that
25 thinking..."

26 Is that an accurate statement of what happened from

1 your perspective?

2 MR. REIMANN: A: So, I think I'm not going to be able
3 to provide you a reference on the spot, but I do
4 recall Mr. Elton also saying that he went through the
5 evidentiary update and looked at what was changing, we
6 considered whether it could all be done by adjusting
7 Calls, or all by adjusting DSM, or landing somewhere
8 in between. In the end, we had considered those outer
9 bounds, but in the end we came back that we'd relied
10 on DSM for a particular level of deliverability risk,
11 and we wanted to stay consistent with that.

12 MR. ANDREWS: Q: Now, Hydro acknowledges an obligation
13 to include in the plan all cost-effective DSM before
14 including supply-side additions, correct?

15 MR. REIMANN: A: Correct. Sorry, including --

16 MR. ANDREWS: Q: Before including in the plan supply-
17 side additions.

18 MR. REIMANN: A: Before -- yes, that's correct.

19 MR. ANDREWS: Q: And in determining the cost-
20 effectiveness of a DSM package, Hydro looks at three
21 criteria; low cost, compared to IPP supply,
22 deliverability risk, and diversity. Correct?

23 MR. REIMANN: A: Correct.

24 MR. ANDREWS: Q: And at the time that the LTAP was
25 filed, Hydro determined that DSM Option A was cost-
26 effective based on -- first regarding low cost, that

1 than those distributions. It was a first cut at
2 those. There was a number of shortcomings. And at
3 the end of the day it was about whether or not we
4 thought we could get to that level. So it came down
5 to professional judgment. It wasn't strictly based on
6 the probability of those distributions.

7 MR. ANDREWS: Q: Fair enough, but having looked at the
8 probability outcomes -- the outcomes of the
9 probability analysis for DSM A, you did not change the
10 expected savings for DSM A, correct?

11 MR. HOBSON: A: Say that again, please?

12 MR. ANDREWS: Q: Having -- the outcome of the
13 probability analysis was a certain level of expected
14 savings from DSM Option A, correct? There is a number
15 which corresponds to a 60 percent likelihood of
16 occurrence.

17 MR. HOBSON: A: A range of -- a probability
18 distribution or a range that was the outcome, I'd
19 suggest.

20 MR. ANDREWS: Q: And there is a number in the centre, a
21 mean, for example at the time, 10,900 gigawatt hours
22 per year.

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

24 MR. ANDREWS: Q: And having looked at the
25 deliverability risk that was indicated by the
26 probability analysis, the 20 percent chance of being

1 1800 gigawatt hours lower than the mean, and having
2 applied your professional judgment, you concluded that
3 that amount of deliverability risk was acceptable,
4 correct?

5 MR. REIMANN: A: Do you have the reference for the
6 1800?

7 MR. ANDREWS: Q: Yes, it's in B-1, page 5-55.

8 MR. REIMANN: A: Sorry, the reference was?

9 MR. ANDREWS: Q: Exhibit B-1, page 5-55, Table 5-17.

10 MR. REIMANN: A: Okay, yeah, I have that.

11 MR. ANDREWS: Q: So these numbers presented here are
12 the outcome of the probability analysis, correct?

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

14 MR. ANDREWS: Q: And what this is showing is that for
15 the -- in the mid-range of expectation occupying 60
16 percent of the likely outcomes, the average GWh per
17 year savings by 2020 for DSM Option A would be 10,900
18 gigawatt hours per year, correct?

19 MR. HOBSON: A: I think it's probably more correct, if
20 I'm not mistaken, to characterize it as a 60 percent
21 chance we'd be within that range as opposed to right
22 on the 10,900, because I wouldn't want to give the
23 impression that there's a -- you know, we've got it
24 that precise that it's a 60 percent chance we're going
25 to be on 10,900. It's within the balance.

26 MR. ANDREWS: Q: Fair enough, and the mean of the range

1 MR. REIMANN: A: Yeah, and it was developed from a
2 continuous distribution, and we booked -- we picked
3 three points so that we could put it into our
4 analysis, so we came up with those discrete scenarios,
5 the basic nine scenarios.

6 MR. ANDREWS: Q: Fine. So, just while we're on this
7 graph, there is uncertainty on both sides of the mean.
8 That is, the expected savings could be higher than the
9 middle 60 percent. They also could be lower.
10 Correct?

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

12 MR. HOBSON: A: Correct.

13 MR. ANDREWS: Q: And when we're talking about
14 deliverability risk, we are not taking into account
15 any high-end good possibilities, we're only looking at
16 the possibility of falling short, correct?

17 MR. REIMANN: A: Again, I think I've described a couple
18 different times in line 7 to 16 on that same page,
19 start to -- and that's on page 5-55, start to describe
20 some of the short-comings that we felt for an initial
21 assessment of these probability distributions, and why
22 we would not just pick a DSM level based on the
23 probability distribution.

24 MR. ANDREWS: Q: No, excuse me, that wasn't my
25 question, and you have indeed answered that question.
26 What I'm getting at here is just to identify, that

1 when we talk about deliverability risk, we're only
2 looking at the down-side possibilities. We're not
3 deliberately -- and I'm not assigning any fault to
4 this, we're not balancing the downside possibilities
5 with the upside.

6 MR. REIMANN: A: Yeah, I think -- yeah, we did, in our
7 portfolio analysis look at low, medium and high gaps,
8 and what the impacts would be. And I think there's a
9 greater impact if you are short of supply than if
10 you're long on supply. So, we do tend to look for
11 ensuring that we can get to a particular level. But I
12 guess what my answer is really intended to say is that
13 I don't think you want to put too much weight on these
14 probability distributions and say you're making all
15 your decisions based on it, because they were a first
16 cut and we have some reservations about them.

17 MR. ANDREWS: Q: All right. I think, in a sense,
18 you've answered a number of different questions there,
19 but let me just confirm that we're totally clear that
20 this 1800 gigawatt hour result of the probability
21 analysis was not the only factor that you considered.
22 You also applied professional judgment. And in doing
23 so, you concluded that the deliverability risk of DSM
24 Option A at the time was acceptable, correct?

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

26 MR. ANDREWS: Q: And at the time you also looked at the

1 diversity aspect of DSM Option A, correct?

2 MR. REIMANN: A: Correct.

3 MR. ANDREWS: Q: And the measure that you used was the
4 degree to which the package, the resource, would meet
5 the pre-DSM gap between load and supply, correct?

6 MR. REIMANN: A: Correct.

7 MR. ANDREWS: Q: And the figure for DSM A at the time
8 was that it would meet 78 percent of the gap.

9 Correct?

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

11 MR. ANDREWS: Q: And you considered that for DSM A
12 meeting 78 percent of the gap was acceptable in terms
13 of the diversity criteria, correct?

14 **Proceeding Time 9:54 a.m. T14**

15 MR. REIMANN: A: Correct.

16 MR. ANDREWS: Q: So, we now have covered the three
17 criteria for cost-effectiveness, and it was on those
18 three criteria that you concluded that DSM Option A
19 was indeed cost-effective, correct?

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

21 MR. ANDREWS: Q: So, at -- in the same decision-making
22 process, B.C. Hydro looked at DSM Option B. And the
23 conclusion, of course, was that DSM Option B is not
24 cost-effective, and in doing so, Hydro looked at the
25 same three criteria. The first one, in terms of low
26 cost, you concluded that DSM B was indeed low-cost

1 compared to IPP supply, correct?

2 MR. REIMANN: A: That's right.

3 MR. ANDREWS: Q: And you looked at, in terms of
4 deliverability risk, you looked at the figures in
5 Table 5-17, or the figures that are summarized in
6 Table 5-17, and you added your professional judgment
7 to the amount of reliance that should be placed on
8 those figures, and you concluded that there was a
9 deliverability risk for DSM B. Is that correct?

10 MR. REIMANN: A: And I would add to that -- I think
11 that's correct, and I would add to that that some of
12 that professional judgment, again, was based on the
13 extent to which we felt that those probability
14 distributions in fact captured all of the uncertainty
15 and the timing of delivering these DSM options. We
16 didn't feel it captured all of those.

17 MR. ANDREWS: Q: And when you looked at the diversity
18 factor for DSM B, you observed that DSM B would meet
19 almost all or even more than all of the gap in 2020,
20 and concluded that DSM B was negative regarding the
21 diversity factor, correct?

22 MR. REIMANN: A: Right.

23 MR. ANDREWS: Q: So, on balance, looking at the three
24 criteria, DSM B was favourable on the cost, but
25 unfavourable on risk -- on deliverability risk and on
26 diversity factor. Bringing all three together, you

1 concluded that DSM B was not cost-effective, correct?

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

3 MR. ANDREWS: Q: Now, in the December 2008 evidentiary

4 update, the -- you revised the load forecast, of

5 course. Correct?

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

7 MR. ANDREWS: Q: And the pre-DSM gap in 2020 became

8 somewhat smaller.

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

10 MR. ANDREWS: Q: And in conjunction -- and our point

11 here is that you also revised downward the expected

12 volume of electricity savings from DSM A. Correct?

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

14 MR. ANDREWS: Q: And the basic methodology was, you

15 took the percentage that DSM A would achieve of the

16 economic conservation potential, which was 54 percent,

17 in the original characterization of DSM A, and you

18 looked at the revised economic potential, after the

19 evidentiary update, and adjusted DSM A downward so

20 that it would remain at 54 percent of the economic

21 potential, correct?

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

23 MR. ANDREWS: Q: And as a result, the DSM A revised has

24 an expected savings of 9600 gigawatt hours per year in

25 2020. Correct?

26 MR. HOBSON: A: Yes.

1 MR. ANDREWS: Q: And that figure meets 75 percent of
2 the revised pre-DSM gap, correct?

3 MR. HOBSON: A: I think it's approximately three-
4 quarters. I'm not sure if it's right on 75 percent.

5 MR. ANDREWS: Q: But the conclusion was that that is an
6 acceptable conclusion -- that is an acceptable outcome
7 in terms of diversity, correct?

8 MR. HOBSON: A: Well, again, I think back to Mr.
9 Reimann's point, when we took a look at this, we're
10 looking at a number of factors. We're looking at the
11 low-cost nature of it, we're looking at the metric
12 that we used around the percentage of economic
13 potential, we're looking at the level of reliance,
14 we're also looking at the situation has changed, and
15 the uncertainty with respect to our ability to hit the
16 same levels, even adjusted levels, from what we had
17 before. So there's a number of factors that are being
18 considered in making the judgment of what to adjust.

19 **Proceeding Time 9:59 a.m. T15**

20 MR. ANDREWS: Q: Well, you have the three criteria that
21 you're making this decision within, and forming the
22 framework of this decision. One of them is cost.
23 Let's go there. Now, with the revised DSM A, you
24 concluded that the DSM A had a higher unit cost than
25 the original DSM A, but that it was still much lower
26 than IPP supply at \$120, correct?

1 MR. HOBSON: A: Right, it did have a slightly higher
2 unit cost than previously.

3 MR. ANDREWS: Q: Yeah. And then in terms of
4 deliverability risk, you felt comfortable with the
5 deliverability risk of the revised DSM A, because
6 although there are various other uncertainties, the
7 size of the expected savings in revised DSM A has been
8 reduced.

9 MR. HOBSON: A: Considering the adjustment on the cost
10 side as well, then I'd say yes, in the end we were
11 comfortable with it.

12 MR. ANDREWS: Q: What do you mean by the adjustment on
13 the cost side?

14 MR. HOBSON: A: Yeah, I should be careful there or
15 clear there. It's not to say that we've adjusted the
16 costs themselves, but the fact that we adjusted the
17 energy savings and did not adjust the costs suggests
18 that there's some additional uncertainty at play. And
19 we have had to take that into account as well.

20 MR. ANDREWS: Q: Yes, and so having taken it into
21 account, you concluded that the deliverability risk of
22 DSM Option A revised remains acceptable, correct?

23 MR. HOBSON: A: In the context of the cost and the
24 reliance, yes.

25 MR. ANDREWS: Q: And then regarding the diversity
26 factor, DSM A revised meets, call it three-quarters of

1 the pre-DSM gap, almost the same as the previous
2 figure of 78 percent of the pre-DSM gap, and you
3 concluded that for diversity the revised DSM factor
4 also was acceptable. Correct?

5 MR. HOBSON: A: Again, in conjunction with the other
6 facts, yeah, that was our conclusion.

7 MR. ANDREWS: Q: All right. This is all for DSM A.

8 Now, what I would like you first, I guess,
9 to tell me is whether it's feasible and whether it
10 would be unduly time-consuming to provide the unit
11 cost of electricity savings from DSM B, and I'll call
12 it DSM B prime, where the three-year expenditures
13 remain at \$533 million, but the expected electricity
14 savings are equal to 9,600 gigawatt hours per year in
15 fiscal 2020, that number being the same as the
16 expected electricity savings in revised DSM A,
17 according to the December 2008 evidentiary update.

18 MR. HOBSON: A: Can you just walk me through that one
19 more time, please?

20 MR. ANDREWS: Q: Yes. DSM B prime would have the
21 three-year expenditures of \$533 million being the same
22 amount as the original DSM B, but instead of the
23 previous expected savings it would now have expected
24 savings of 9,600 gigawatt hours per year in fiscal
25 2020, that number being the same as the expected
26 savings in DSM A as revised in December 2008.

1 MR. HOBSON: A: So just so I understand that, we'd be
2 looking at only three years' worth of expenditures and
3 we would drive energy savings out to 2020?

4 MR. ANDREWS: Q: Well, I'd like you to use whatever
5 methodology you used when you did the low-cost aspect
6 of the cost-effectiveness consideration, and when you,
7 for example, came up with numbers that were originally
8 \$41 as unit cost for DSM A and 42 to B, the numbers
9 that you were using to compare to the cost of IPP
10 supply, I'd like you to use the same methodology.

11 MR. HOBSON: A: So to be clear, not a three-year
12 window?

13 MR. ANDREWS: Q: That's correct. I want a number that
14 expresses the price of this DSM B prime in a way that
15 is properly comparable to IPP supply. The cost of DSM
16 B prime. And on a unit basis.

17 **Proceeding Time 10:04 a.m. T16**

18 MR. HOBSON: A: I guess I'm a little bit confused as to
19 whether or not you're looking for a shorter-term value
20 or a longer-term value, because you've referenced the
21 533 million, which is only a three-year expenditure
22 amount. And then when we're referencing energy, we're
23 referencing a much longer view in terms of initiatives
24 that would have to be implemented to achieve that kind
25 of energy. So it's kind of apples to oranges, what
26 you're asking for.

1 MR. ANDREWS: Q: Well, let me go back here. When you
2 calculated the unit cost of the electricity savings
3 from DSM A, and concluded that it was \$41 per megawatt
4 hour, how did you answer that question that you just
5 asked me?

6 MR. HOBSON: A: We took a long stream of expenditures
7 over a long-term horizon, and took a long-term set of
8 energy savings over a similar horizon.

9 MR. ANDREWS: Q: Then I'm asking you to use the same
10 approach to DSM B prime.

11 MR. HOBSON: A: So, not the 533 million then.

12 MR. ANDREWS: Q: Well, let me go back. When you did
13 the unit cost of DSM A, and you result -- you got the
14 result of \$41, were you not looking at the three-year
15 expenditure for whatever it was, 400 and some-odd
16 million dollars?

17 MR. HOBSON: A: These are going to be over the full
18 planning period, so --

19 MR. ANDREWS: Q: Well, you tell me. What cost of DSM A
20 did you use when you ended up concluding a \$41 unit
21 cost?

22 MR. HOBSON: A: The full planning period. I'm not
23 trying to be difficult with it. It's your question to
24 me. I'm just trying to clarify what it is you're
25 asking for.

26 MR. ANDREWS: Q: When you concluded that DSM A had a

1 \$41 per megawatt hour unit cost, what cost were you
2 using to --

3 MR. HOBSON: A: The cost over the full planning period.

4 MR. ANDREWS: Q: All right, then use the same cost over
5 the full planning period and -- just so that we're
6 clear here, what was the number that you put on DSM A
7 when you concluded the \$41 per megawatt hour?

8 MR. HOBSON: A: The PV value of the cost stream?

9 MR. ANDREWS: Q: No, the cost of the DSM A package on a
10 three-year basis.

11 MR. HOBSON: A: On a three-year basis, I think it's 400
12 and some-odd million. I can't recall off the top of
13 my head.

14 MR. ANDREWS: Q: All right. So, what you will be doing
15 now, for DSM B, and this is the question, is instead
16 of using the figure that's attached to DSM A, we'll
17 use 533 million as the original figure for DSM B.

18 MR. HOBSON: A: And then --

19 MR. ANDREWS: Q: That is for the first three years, and
20 then you will use the same method of expanding that
21 over the lifetime as you did when you calculated the
22 unit costs of DSM A and DSM B in the first go-round.

23 MR. HOBSON: A: So, a longer-term planning horizon is
24 what you're looking for. I think that's all I need to
25 know.

26 MR. ANDREWS: Q: What I want is the number which is

1 going to be properly comparable to IPP supply in the
2 same way that you compared the values for DSM A to IPP
3 supply and DSM B to IPP supply.

4 MR. HOBSON: A: With the \$41. Okay, thank you.

5 MR. ANDREWS: Q: Okay. So the question is -- first of
6 all, is that feasible, and then secondly, is it unduly
7 time-consuming?

8 MR. REIMANN: A: Well, it strikes me that -- I don't
9 recall the number. It strikes me we had an IR like
10 this, and I think we would fully recognize that the
11 DSM Option B prime would still be a significantly
12 lower cost than the IPP supply. But we wouldn't still
13 find that to be cost-effective for the deliverability
14 risk, primarily. So I'm not sure it's --

15 MR. ANDREWS: Q: Well, that may or may not be, but
16 first I'm asking you whether you can do that
17 calculation, and whether it would be unduly time-
18 consuming to do so.

19 MR. HOBSON: A: It would take a little bit of time, but
20 I would have to check to see what would be involved.

21 MR. ANDREWS: Q: Well, can you do that? Perhaps at the
22 break you could confirm whether that calculation could
23 be done?

24 MR. THRASHER: Mr. Chair, could we have a chance to
25 conference on this at break and then get back to Mr.
26 Andrews?

1 THE CHAIRPERSON: Certainly. I think that's what Mr.
2 Andrews was hoping you'd do anyway, so --

3 MR. ANDREWS: Is this a good --

4 THE CHAIRPERSON: No. We'll go for another ten minutes.

5 MR. ANDREWS: Q: Yeah, all right. Then, let's proceed
6 on the hypothetical assumption that it turns out that
7 the unit cost of DSM B prime is less, in fact, than
8 the corresponding unit cost of IPP supply.

9 I think, Mr. Reimann, you were just
10 referring to that.

11 **Proceeding Time 10:09 a.m. T17**

12 MR. REIMANN: A: Yes.

13 MR. ANDREWS: Q: Now, in terms of DSM deliverability
14 risk, in comparing DSM A to DSM B prime, you would
15 agree that by definition the expected value of the
16 electricity savings is exactly the same in each
17 scenario, correct? By definition, DSM A has an
18 expected value of savings of 9600 gigawatt hours per
19 year in 2020. By definition, DSM B prime has an
20 expected value of savings of 9600 gigawatt hours per
21 year in 2020. They are exactly the same, correct?

22 MR. REIMANN: A: The gigawatt hours of savings?

23 MR. ANDREWS: Q: Correct. They are the same?

24 MR. REIMANN: A: Those are the same numbers, yes.

25 MR. ANDREWS: Q: Yes. And so the deliverability risk
26 of DSM B prime has to be either exactly the same as

1 the deliverability risk of DSM A, or, if anything,
2 superior, correct?

3 MR. REIMANN: A: I don't follow your logic on that.

4 MR. ANDREWS: Q: Well, you're spending more money to
5 achieve the same quantitative amount of savings, so
6 you can't do any worse. You could only do better,
7 correct?

8 MR. REIMANN: A: Given the different whirls that have
9 occurred from the original DSM Option A to the
10 evidentiary update?

11 MR. ANDREWS: Q: We're comparing DSM Option A revised
12 to DSM B prime. They each have exactly the same
13 expected savings. One of them costs more than the
14 other. I'm saying to you that the deliverability risk
15 at worst is equal between the two, and if you're able
16 to spend that additional money with any degree of
17 expectation of additional savings, the deliverability
18 risk for DSM B prime will be superior, correct?

19 MR. HOBSON: A: I think the real question is, you know,
20 with the way you originally set that up, if you end up
21 back at the same place with the amount of energy that
22 you can rely on or plan around, and you spend the
23 additional funds, have you just spent additional funds
24 or are you spending additional funds to get additional
25 energy? And I think our reservation --

26 MR. ANDREWS: Q: Well, that may be a real question.

1 MR. HOBSON: A: Well, let me finish. I think our
2 reservation here is when we take a look at the issue,
3 if we simply throw more dollars at the problem, are we
4 putting more money on the table and generating
5 additional energy savings in a reasonable fashion?
6 We're already taking a big step from where we've been
7 to where we're currently proposing to be at, with our
8 adjusted Option A. And putting more dollars on the
9 table, I think, we have some concerns about whether or
10 not that relationship holds, given the circumstances
11 that have unfolded with the evidentiary update, and
12 whether or not we'll realize those additional savings.

13 MR. ANDREWS: Q: You seem to be resisting answering the
14 question, which is to do with the deliverability risk
15 comparison of DSM A revised and DSM B prime. And I'm
16 asking you to confirm, if this is correct, that the
17 deliverability risk of DSM B prime is either equal to
18 or superior to the deliverability risk of DSM A
19 revised?

20 MR. HOBSON: A: I would agree that it would be equal
21 to, I suppose, in that you've gone forward with the
22 same initiatives plus you've spent a bunch of
23 additional dollars, and you're assuming the same
24 amount of energy.

25 MR. ANDREWS: Q: So it could be equal, but it also
26 could be superior in that the chance of actually

1 falling short of 9600 gigawatt hours could well be
2 less if you've spent that additional money to any
3 useful effect, correct?

4 MR. HOBSON: A: I mean, I guess we're dealing with a
5 hypothetical, and based on the hypothetical you could
6 argue a number of different things. Again, I think
7 our concern with this is we're already taking a big
8 step from where we've been, and whether or not it
9 would translate into a difference in deliverability
10 risk, I think, is part of the issue we look at.

11 We also need to -- you know, we can't
12 separate these and isolate them as individual
13 decisions without putting them back in the context of
14 low cost and reliance and deliverability risk and not
15 just the probability distribution, but a broader view
16 in terms of how we looked at deliverability risk. So
17 --

18 MR. ANDREWS: Q: So you've chosen not to answer the
19 question, and I'm going to come back to it again
20 because I want your answer. I want you to confirm or
21 deny that in comparing DSM A Option A -- excuse me,
22 DSM B revised and DSM B prime, regarding
23 deliverability risk, where they each have exactly the
24 same expected value of savings, DSM B prime will be
25 either equal to or superior to DSM A revised, correct?

26

Proceeding Time 10:14 a.m. T18

1 MR. REIMANN: A: So the deliverability risk, when we
2 considered that concept, it had probability
3 distributions, it had costs in there, it had the
4 ability that we thought that we could actually get to
5 that level. And it may well be that if you start to
6 target a DSM option B, that you put more dollars on
7 the table and you don't get any further down the path.
8 And we're not sure that that actually makes sense, and
9 those are dollars wisely spent.

10 We're feeling that this is the level of DSM
11 and the rate of advancing programs, codes and
12 standards and rates, in an orderly fashion, that we
13 have a belief that we can achieve. To go beyond that
14 -- the deliverability risk isn't just the one
15 probability measure, or just the cost-effectiveness,
16 it's the whole thing. And the way we've defined it,
17 we don't think that we could get -- or that it would
18 be prudent to put any further weight on that, or any
19 further savings or efforts on this, or that the
20 dollars necessarily would add to the success of the
21 programs.

22 MR. ANDREWS: Q: I'm trying to be patient with the fact
23 that you are not answering the question and instead
24 defending your decision to reject DSM B. But the
25 question itself has not yet been answered. And so
26 I'll have to ask it again.

1 MR. REIMANN: A: Please. One more time.

2 MR. ANDREWS: Q: Looking at the deliverability risk
3 being one of the three criteria by which B.C. Hydro
4 determines cost-effectiveness of a DSM package,
5 comparing DSM A revised with expected electricity
6 savings of 9600 gigawatt hours per year in 2020, to
7 DSM B prime with expected electricity savings of 9600
8 gigawatt hours per year in 2020, the deliverability
9 risk of DSM B prime is either equal to or superior to
10 that of DSM B -- excuse me, DSM A revised. Correct?

11 MR. REIMANN: A: And I would say no. For the reasons I
12 just gave you.

13 MR. ANDREWS: Q: Well, I'm -- the deliverability risk
14 is the risk of achieving savings that fall short of
15 9600 gigawatt hours per year, correct?

16 MR. REIMANN: A: The deliverability risk, the way we
17 defined it, was whether or not B.C. Hydro felt that it
18 could get to that level of savings and that the amount
19 of dollars that we committed to that program within
20 the time-frame given was appropriate.

21 MR. ANDREWS: Q: Well, just let me --

22 MR. REIMANN: A: And just by definition, we've landed
23 on DSM Option A amended, not on DSM Option B prime, so
24 within our Hydro's belief on that is, that is the most
25 cost-effective solution, that is all cost-effective
26 DSM by definition.

1 MR. ANDREWS: Q: Well, are you suggesting that these
2 three criteria in the end don't really mean anything?
3 Just, you've said, Hydro has said that DSM A is the
4 one and only cost-effective program and there's no
5 point in trying to look more closely at how Hydro
6 reached that conclusion?

7 MR. REIMANN: A: I think I've explained there's a whole
8 range of considerations, and I've given them to you.

9 MR. ANDREWS: Q: Okay. Well, let me go back to ask the
10 question that you have so far declined to answer. The
11 deliverability risk is the risk of the money being
12 spent on the package and the savings falling short of
13 the expected electricity savings, correct?

14 MR. HOBSON: A: Yes.

15 MR. ANDREWS: Q: Thank you.

16 MR. REIMANN: A: Well, not that narrowly. Not that
17 narrowly.

18 MR. ANDREWS: Q: Well --

19 THE CHAIRPERSON: Sorry, I didn't hear your answer, Mr.
20 Reimann.

21 MR. REIMANN: A: I say, it's not that narrow.

22 MR. ANDREWS: Q: All right. And are you saying that
23 you have adopted a broader definition of
24 deliverability risk in the analysis of any other DSM
25 packages?

26 MR. REIMANN: A: No, within that -- I mean, as we've

1 described it, within that is the expectation that we
2 could actually deliver on that program. And it's more
3 than dollars and a probability distribution. There is
4 other considerations.

5 MR. ANDREWS: Q: More than dollars and a -- I'm not
6 suggesting that your consideration is exclusively a
7 probability one. When you use a criteria of
8 deliverability risk, the risk is that the actual
9 savings will fall short of the expected savings,
10 correct? I mean, that's the point of dividing the
11 consideration of cost-effectiveness into three
12 criteria. The advantage is that we separate out
13 issues of cost, and we separate out issues of
14 diversity, and we look at risk diversity in and of
15 itself. And risk diversity -- the deliverability risk
16 is that criterion which involves whether, having spent
17 the amount that the package involves, the actual
18 savings will fall short of the expected savings.
19 Correct?

20 **Proceeding Time 10:19 a.m. T19**

21 MR. REIMANN: A: So when -- and again, when we looked
22 at deliverability risk, I think what we're doing is
23 we're comparing a DSM Option A to a DSM Option B, and
24 we're saying --

25 MR. ANDREWS: Q: Well, excuse me, I'm not asking you
26 to compare here. We're talking about the definition

1 of --

2 MR. REIMANN: A: I thought you were asking me about
3 deliverability risk, and I'm trying to describe that
4 to you.

5 MR. ANDREWS: Q: I am asking you about the criteria
6 deliverability risk when you apply it to a single DSM
7 package. And I'm suggesting to you that throughout
8 all of your materials and all of the previous
9 questioning, you have characterized deliverability
10 risk as being the possibility that the actual DSM
11 savings would fall short of the expected value. Is
12 that correct?

13 MR. REIMANN: A: I'm sorry, could you repeat that one
14 more time?

15 MR. ANDREWS: Q: In determining the cost-effectiveness
16 of a DSM program, you consider three criteria and that
17 one of those three criteria is deliverability risk.
18 The meaning of deliverability risk is the possibility
19 that the money would be spent, but the actual amount
20 of electricity savings would fall short of the
21 expected quantity of savings. Correct?

22 MR. REIMANN: A: I guess I'd accept that.

23 MR. ANDREWS: Q: Thank you.

24 THE CHAIRPERSON: Do you want a break now, Mr. Andrews?

25 MR. ANDREWS: Yeah, that's probably a good time.

26 THE CHAIRPERSON: We'll break for 15 minutes.

1 down the energy, and --

2 COMMISSIONER MILBOURNE: Well, you've identified in your
3 evidentiary update the pre-DSM gap, right? As so many
4 gigawatt hours per year, right? I don't have the
5 number right at the top of my head, but I'm sure you
6 do.

7 MR. HOBSON: A: Yes.

8 COMMISSIONER MILBOURNE: What is that number?

9 MR. HOBSON: A: The, sorry, pre-DSM gap?

10 COMMISSIONER MILBOURNE: Yeah.

11 MR. HOBSON: A: Drops down to 13 I want to say, in
12 around 13, I think.

13 COMMISSIONER MILBOURNE: Okay, I'm just asking you to
14 plug 13 in as pre- -- as B double prime, that's all.
15 If that gives you a problem, let us know.

16 MR. THRASHER: So we'll take that undertaking and then
17 we'll respond to this.

18 COMMISSIONER MILBOURNE: Thank you.

19 **Information Request**

20 MR. ANDREWS: Q: I'd like to now ask you for what
21 amounts to a third undertaking, my second, which is a
22 variation. And I'd just like to explain it and refer
23 you to Exhibit B-10, the evidentiary update, page 25.

24 MR. THRASHER: Sorry, Mr. Andrews, I think I would like
25 to hear from Mr. Hobson in terms of his response, just
26 what he is undertaking for you so we have a meeting of

1 the minds, just to make sure that we have clarity on
2 the record.

3 MR. ANDREWS: Q: So we'll go back to the first
4 undertaking, and Mr. Hobson, perhaps you could explain
5 for the record what it is that you are undertaking.

6 MR. HOBSON: A: My understanding of what you're looking
7 for is over our full planning horizon, similar to the
8 methodology we used to calculate the original \$41 for
9 Option A, we would take a look at the adjusted value
10 over that same time for energy savings for Option A,
11 and we would take the unadjusted dollars for Option B,
12 and from that, derive what the levelized value would
13 be.

14 MR. ANDREWS: Q: And compare it to the IPP supply.

15 MR. HOBSON: A: Correct.

16 MR. ANDREWS: Q: The unit cost of IPP supply.

17 MR. HOBSON: A: Correct.

18 MR. ANDREWS: Q: Thank you.

19 MR. THRASHER: So that's the undertaking.

20 THE CHAIRPERSON: When you say "compare it to the IPP
21 supply", I mean, we have a number of 120 doz. Do you
22 want them to put the two numbers together and take one
23 away from the other, or -- I think --

24 MR. ANDREWS: In some of the analyses the value of IPP
25 supply changes depending on the quantity of supply
26 coming from DSM. And so I just wanted to makes sure

1 MR. ANDREWS: Q: No. No. All I'm trying to do is
2 ensure that we have what Hydro considers to be an
3 apples-to-apples comparison between the unit cost
4 that's coming from B prime and the unit cost to do
5 with IPP savings. And if that number happens to be
6 120, then that will make my life extremely simple.
7 Otherwise, I'll have to do a lot more head scratching.

8 MR. HOBSON: A: Okay.

9 MR. ANDREWS: Q: Now, in -- on page 25 of Exhibit B-10,
10 Hydro is discussing the revised DSM A, and examining
11 the cost-effectiveness of DSM A revised, and under the
12 heading "Relative cost" Hydro distinguishes DSM
13 program savings from DSM rates and standard savings,
14 and -- excuse me, codes and standards savings, and
15 savings due to rates. Correct?

16 MR. HOBSON: A: Correct.

17 MR. ANDREWS: Q: And so there's a reference there, just
18 so we're on the same place, the unit cost of original
19 DSM program savings was \$56 per megawatt hour,
20 correct?

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

22 MR. ANDREWS: Q: Yeah. And then it -- Hydro says:
23 "Under a worst-case scenario that assumes
24 all of the decrease in DSM savings ..."
25 -- that is, because of the evidentiary update --
26 '... comes through programs, the unit cost of

1 DSM program savings, assuming all of the
2 planned expenditures are spent but only 78
3 percent of the original savings are
4 achieved, would be \$72 per megawatt hour..."

5 Do you -- are we on the same place?

6 MR. HOBSON: A: That's what it says, yes.

7 MR. ANDREWS: Q: Yes. What I'd like you to do is
8 create the same unit cost under that -- what's
9 described there as a "worst-case scenario" for DSM B-
10 prime.

11 MR. HOBSON: A: Yeah, we could undertake to do that.

12 **Information Request**

13 MR. ANDREWS: Q: Thank you. Now, let's come back to
14 the cost-effectiveness analysis of DSM B prime. And
15 we looked at two categories, the low cost, where we're
16 going to await the number, but hypothetically we're
17 proceeding on the assumption that that is less than
18 the long-run marginal cost of IPP supply, and we
19 looked at deliverability risk, which I will not go
20 back to, but now I want to look at diversity. And I
21 suggest to you that the -- in terms of diversity
22 defined as the percentage of the gap met by the
23 resource in question, the diversity risk of DSM B
24 prime is exactly the same as the diversity risk of DSM
25 A revised, because each provides the same expected
26 value of savings in relation to the same size of gap.

1 Correct?

2 MR. HOBSON: A: I'm not following how you arrived at
3 that.

4 MR. ANDREWS: Q: Well, Hydro uses as its measure of
5 diversity the proportion of the gap that is met by the
6 resource. And in the case of DSM A revised, the
7 figure was 75 percent.

8 MR. HOBSON: A: Sorry, I might be able to stop you
9 there. If you said B prime, I might have missed that
10 in your lead-in.

11 MR. ANDREWS: Q: Well, let me start again, then. Can
12 we confirm, then, that Hydro measures diversity as the
13 percentage of the gap that is to be met by the
14 resource in question, correct?

15 MR. REIMANN: A: That's the measure we used in this
16 application, that's right.

17 MR. ANDREWS: Q: Yeah. And in DSM A revised, that
18 figure was 75 percent, correct? You described it as
19 three-quarters.

20 MR. HOBSON: A: I think it's in around that, yeah.

21 MR. ANDREWS: Q: And that is a number that means that
22 the 9600 gigawatt hours a year in 2020 is 75 percent
23 of the gap at that point in time, correct?

24 **Proceeding Time 10:46 a.m. T22**

25 MR. HOBSON: A: Right.

26 MR. ANDREWS: Q: And by definition, B prime has the

1 same expected savings of 9600 gigawatt hours per year
2 in 2020, and since the size of the gap is the same, it
3 follows arithmetically that the diversity risk is
4 exactly the same in B prime as it is in A revised.

5 Correct?

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

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

8 MR. ANDREWS: Q: Thank you. I'd like to turn to
9 Exhibit B-3, BCSEA IR 2.32.3.

10 THE CHAIRPERSON: B?

11 MR. ANDREWS: Q: B-3, BCSEA IR 2.32.3.

12 THE CHAIRPERSON: That would be B-4, then.

13 MR. ANDREWS: Q: It should be -- you're right, of
14 course. It's B-4. I apologize.

15 So just to reiterate, Exhibit B-4, BCSEA IR
16 2.32.3. This IR canvasses non-quantifiable
17 characteristics by which in B.C. Hydro's view DSM
18 Option A outperforms DSM Option B. And I'm going to
19 focus here on the jurisdictional comparison. In the
20 third paragraph of the response, Hydro refers to Table
21 5-19 in Exhibit B-1, and says that this comparison
22 shows that DSM Option B is more of an outlier in terms
23 of overall effort than DSM A -- DSM Option A.

24 Do you have the spot that I'm at?

25 MR. REIMANN: A: We do.

26 MR. ANDREWS: Q: Now, let's take a look, then, at

1 Exhibit B-1, and page 5-57, begins the discussion of
2 the jurisdictional comparison, and then page 5-58,
3 where we have Table 5-19.

4 Focusing now on the table itself in 5-19,
5 first let's get clear what these numbers are. So, am
6 I correct in understanding that, let's say, under the
7 column "Programs", this is the average annual DSM
8 energy savings expressed as a percentage of sales. Is
9 that right?

10 MR. HOBSON: A: Yeah, I believe that's correct, and it
11 may vary with respect to time periods, depending on
12 the source data.

13 MR. ANDREWS: Q: And the intention here was to be able
14 to use this metric to compare the degree of intensity
15 with which different jurisdictions are pursuing DSM
16 opportunities, correct?

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

18 MR. ANDREWS: Q: And so, for example, with New York at
19 the top of the list, the figure of 1.5 indicates
20 relatively intense pursuit of DSM opportunities
21 compared to the Manitoba Hydro at the bottom of the
22 list at 0.4, correct?

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

24 MR. ANDREWS: Q: And so, in the IR response, Hydro
25 characterizes Option B as more of an outlier, and I --
26 looking at the table, I would ask you to confirm that

1 B.C. Hydro Option B is at 1.1 and is therefore less
2 than both New Jersey proposed and New York, correct?

3 MR. HOBSON: A: In the "Programs" column, that's
4 correct.

5 MR. ANDREWS: Q: Yeah, okay. And so, it's not actually
6 correct, is it, to say that DSM Option B is an outlier
7 at all.

8 MR. HOBSON: A: Well, I think if you take it in the
9 context of utilities in general, and what's happening
10 within North America, I mean I think we're still
11 looking at Option B as being an outlier. It's not to
12 say that it's the furthest out. But it's an outlier
13 with respect to what others are doing in general, if
14 we're looking across the board. I think that was our
15 intent in characterizing it that way.

16 **Proceeding Time 10:51 a.m. T23**

17 MR. ANDREWS: Q: Well, looking at Table -- there may be
18 other information, but when one looks at Table 5-19,
19 Option B is not in fact an outlier, correct?

20 MR. HOBSON: A: Again, I think even within Option B
21 it's not to say that it's the furthest out. But we
22 were looking at it more across the board even of those
23 that are characterized within the table as being at
24 the upper end.

25 MR. ANDREWS: Q: So you said that it's not the furthest
26 out. DSM Option B is not the furthest out, looking at

1 programs in Table 5-19?

2 MR. HOBSON: A: With respect to the table, it would
3 appear to me that it's not the furthest out, as the
4 table indicates by the numbers that are on the table,
5 yeah.

6 MR. ANDREWS: Q: Yes, thank you. And not being the
7 furthest out is the definition of not being an
8 outlier, correct?

9 MR. HOBSON: A: Well, again, I don't think we intended
10 it to be the single furthest group that was standing
11 out on its own. I think we were looking at it within
12 a group that was out there. So I don't think we meant
13 anything more in the use of the word than what I'm
14 trying to characterize for you now.

15 MR. ANDREWS: Q: By "outlier" do you mean something
16 related to deviation from the mean?

17 MR. HOBSON: A: No, I purely mean that it's within a
18 group of utilities that are sort of lying away from
19 the rest. But again, I don't think we were looking at
20 it as being the single utility that was out there,
21 apart from everyone else.

22 MR. ANDREWS: Q: So on the previous page in the
23 application, there's a reference to Table 5-19 at line
24 13. It says:

25 "As seen in Table 5-19 only New York and New
26 Jersey, both high-cost jurisdictions, are

1 more aggressive than B.C. Hydro's Option B."

2 Do you see that reference?

3 MR. HOBSON: A: I do.

4 MR. ANDREWS: Q: Can you explain to me what the
5 thinking is behind the reference to high-cost
6 jurisdictions in relation to New York and New Jersey?

7 MR. HOBSON: A: Yeah. You know, and I think in
8 general, I think this probably leads into one of the
9 issues you have to look at when you're looking at this
10 kind of data, that there's a number of different
11 metrics you can use. Percentage of sales would be one
12 of them. But there's a number of factors that would
13 influence, I think, how aggressive a utility's DSM
14 efforts are within a given jurisdiction. And the
15 relative costs within that jurisdiction, I would think
16 would speak to the opportunities that would be
17 available within the jurisdiction. Higher-cost
18 jurisdictions, it could be the case that there is more
19 conservation that's occurring within there. The types
20 of programs that need to be put in place may look
21 quite differently.

22 Different utilities account for these
23 things differently as well, in terms of what's
24 included or not included within their plans. So some
25 utilities are including codes and standards as an
26 example. Some are only including programs. Some are

1 utilizing rate structures like we are within B.C.
2 Hydro, and others are not.

3 MR. ANDREWS: Q: So back to high-cost jurisdictions.
4 First, let me suggest that probably a more pertinent
5 wording would be a high price. That is, what
6 distinguishes New York and New Jersey compared to B.C.
7 is that the price of electricity to customers is
8 substantially higher than the price to customers in
9 B.C.

10 MR. HOBSON: A: Yeah, I think price would be one of
11 those things. I guess other things that could
12 motivate customer or utilities to act would also be
13 the relative cost of the electricity that they're
14 facing, or the curve that they're facing. But I think
15 the intent here is also looking at price to the
16 customer.

17 MR. ANDREWS: Q: Well, I suggest to you that there's no
18 particular reason to believe that the cost, the long-
19 run cost of new electricity supply in New York or New
20 Jersey is substantially different than the long-run
21 cost in British Columbia.

22 MR. HOBSON: A: It may or may not be. I guess what I
23 was suggesting is that to the degree that you do have
24 a difference in that, you could have a different
25 motivation for utilities, is all I was saying.

26 MR. ANDREWS: Q: And, but you don't have a reason to

1 expect that, for example, the cost of CCGT generation
2 in New York is substantially different than it would
3 be in the western interconnect --

4 MR. HOBSON: A: No, that's not what I'm suggesting.

5 MR. LAUCKHART: A: I would pitch in. It's very hard to
6 cite generation in New York. It's hard to cite
7 generation in B.C. to --

8 MR. ANDREWS: Q: Now, the fact that New York and New
9 Jersey have higher electricity prices than does B.C.,
10 and that they still do substantial DSM programs, that
11 highlights the fact that prices alone don't capture
12 all of the cost-effective electricity savings,
13 correct?

14 MR. HOBSON: A: I would agree and I think that's
15 supported through our portfolio as well, in terms of
16 how it's constructed.

17 MR. ANDREWS: Q: And it also highlights that there
18 actually should be even more savings available in B.C.
19 than in New York and New Jersey, because B.C. has had
20 years of very low electricity prices, correct?

21 **Proceeding Time 10:56 a.m. T24**

22 MR. HOBSON: A: Potentially, I think each jurisdiction
23 is quite different. You know, I think when you're
24 taking a look at demand-side management and what you
25 pursue, there's a number of different factors that
26 influence the available opportunities. You know, a

1 metric that's taking a look at the amount of DSM with
2 respect to the economic potential would be another way
3 of looking at how aggressive a utility is being with
4 respect to what they're moving forward with.
5 Different jurisdictions are also going to differ
6 significantly with respect to how much has been done
7 in the past. But also, the type of opportunity that's
8 available. So, the type of end use and type of load
9 that's within a given jurisdiction, I would argue,
10 would look quite different if you went from
11 jurisdiction A to jurisdiction B with respect to
12 cooling load as an example, with residential
13 customers.

14 You would also, I would think, would face
15 very different barriers from one jurisdiction to
16 another, in terms of what needs to be done or what can
17 be done by a utility with respect to a program to try
18 to overcome barriers within a market, and deliver upon
19 cost-effective DSM. So I think there's a whole range
20 of different things that could differ between
21 jurisdictions.

22 MR. ANDREWS: Q: I want to turn to a somewhat different
23 topic. This is IPP deliverability risk. So we've
24 been talking about deliverability risk regarding a DSM
25 package. The -- just as a starting point, Hydro has
26 had substantial attrition in previous Calls for IPP

1 power, correct?

2 MR. REIMANN: A: Attrition questions on Calls should go
3 to Mr. Scouras on Panel 4.

4 MR. ANDREWS: Q: All right. I'm not looking for any
5 numbers, I'm just setting the background. So, if
6 there is attrition in a Call, that would be considered
7 a deliverability risk in a cost-effectiveness
8 analysis, correct?

9 MR. REIMANN: A: Agreed.

10 MR. ANDREWS: Q: But the actual amount of the risk is
11 less, in a sense, because Hydro doesn't have to pay
12 for the power if it's not delivered. Correct?

13 MR. REIMANN: A: Sorry, less than --

14 MR. ANDREWS: Q: Well, when we try to compare the
15 deliverability risk of DSM with the deliverability of
16 IPPs, one of the factors that obviously needs to be
17 taken into account is that, although there is a risk
18 of the IPP package not delivering, the financial
19 consequences of that are not necessarily severe,
20 because Hydro doesn't have to pay for power that isn't
21 delivered. Correct?

22 MR. REIMANN: A: That, of course, would presume whether
23 or not we have the ability to meet our load.

24 MR. ANDREWS: Q: Well, first --

25 MR. REIMANN: A: But we certainly don't pay for the IPP
26 energy that is not delivered.

- 1 MR. ANDREWS: Q: So the risk is that you'd have a
2 problem meeting load. And that the financial
3 consequence is not exactly the same as in a DSM
4 resource, because for IPPs if you don't get the power,
5 you don't have to pay for them, correct?
- 6 MR. HOBSON: A: I mean, the one thing you'd have to
7 consider is with DSM, you're still carrying some risk
8 with respect to the expenditures that you're putting
9 forward.
- 10 MR. ANDREWS: Q: I'm trying to focus on -- you're
11 comparing deliverability risk of two different
12 resources here, one being DSM and the other being an
13 IPP supply. And what I'm just -- what I'm exploring
14 is that the nature of the risks involved are different
15 in certain respects. They're the same in that the
16 actual harm is the possibility of not delivering an
17 expected amount of electricity savings, correct?
- 18 MR. REIMANN: A: Correct.
- 19 MR. ANDREWS: Q: The financial consequences will be
20 quite different in a DSM context, where you've already
21 spent all the money and then you discover that you
22 didn't achieve the savings, than it is in an IPP
23 context, where you don't in fact spend the money
24 before you discover that you don't have the quantity
25 of electricity that you expected. Correct?
- 26 MR. REIMANN: A: Well, there's some similarities on the

1 DSM side in the programs, that if there's not a take-
2 up on the program you won't be having that
3 expenditure.

4 **Proceeding Time 11:01 a.m. T25**

5 MR. ANDREWS: Q: Fair enough, thank you. I want to
6 talk about diversity as one of your categories in
7 cost-effectiveness, and I'd refer you to Exhibit B-3,
8 BCUC IR 1.46.1.

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

10 MR. ANDREWS: Q: In the first paragraph of the
11 response, there's what appears to be a definition of
12 "diversity" where it says in the second last sentence:

13 "...diversity, meaning the degree to which
14 B.C. Hydro is relying on a particular
15 resource for its energy and/or capacity
16 needs."

17 Do you see that?

18 MR. REIMANN: A: We do.

19 MR. ANDREWS: Q: And can you confirm that, technically
20 speaking, that's actually the opposite of diversity?
21 That is, diversity is the degree to which Hydro is
22 relying on a variety of different resources for its
23 energy and/or capacity needs?

24 MR. REIMANN: A: Yeah, I would agree that the diversity
25 intent was that if we started to rely on one resource
26 for too much of our supply, that that was then a

1 negative impact.

2 MR. ANDREWS: Q: Yes. And you would agree that all
3 resources, whether they're supply side or demand-side,
4 have deliverability risk.

5 MR. REIMANN: A: Yes.

6 MR. ANDREWS: Q: And on the supply side the
7 deliverability risks can be lumpy. That is, an entire
8 project may not come through.

9 MR. REIMANN: A: The lumpiness of that would depend on
10 the size of projects that you're awarding to, but yes.

11 MR. ANDREWS: Q: By comparison, on the DSM side,
12 there's a relatively low variability in the
13 uncertainty risk that the -- the changes are going to
14 be less -- changes from the expected, deviations from
15 the expected are likely to be less lumpy. You're not
16 likely to just suddenly lose have your expected
17 results from DSM in the way that you might if the
18 government suddenly decided that coal-fired power
19 plants are not eligible to be operated in British
20 Columbia.

21 MR. HOBSON: A: Well, I think it could depend. I mean,
22 we've got, you know, certain assumptions in our DSM
23 plan around elasticity assumptions. And to the degree
24 that we've got a new elasticity assumption that
25 materializes that's significantly different than what
26 we had assumed, then you could have an impact across a

1 number of rates, and fairly significant impacts on
2 rate DSM savings.

3 Similarly with codes and standards, you
4 could get some lumpiness, if you will, in terms of
5 fairly significant code or regulation changes, that if
6 they did not materialize would have significant
7 impacts. But you do have flexibility within DSM to
8 spread some of your uncertainty across various
9 programs, and to the degree that the uncertainties you
10 face don't hit equally or aren't common to those
11 various programs, then you should have some of that
12 mitigated.

13 MR. ANDREWS: Q: Thank you. And another factor for DSM
14 packages is that something like low new construction
15 starts can reduce savings for a period of time. But
16 when the construction starts up again, when it
17 rebounds, there would be a rebound in DSM savings.
18 Correct?

19 MR. HOBSON: A: Right, to the degree that your DSM is
20 dependent upon the load materializing, and that
21 becomes cyclical, then your DSM should follow.

22 MR. ANDREWS: Q: And another aspect of this is that
23 when economic activity is low, DSM savings may be
24 lower than expected, but also load is lower. So the
25 consequences of not achieving the expected savings are
26 potentially less of a problem, correct?

1 MR. REIMANN: A: I would agree.

2 MR. ANDREWS: Q: Now, Hydro uses this as a measure of
3 lack of diversity. The percentage of the gap that
4 would be filled by the resource in question -- that
5 is, the higher the percentage of the gap that the
6 resource fills, the lower the diversity. That's
7 correct, right?

8 **Proceeding Time 11:06 a.m. T26**

9 MR. REIMANN: A: Correct.

10 MR. ANDREWS: Q: I have a witness aid that I provided
11 to your counsel, and I'd like to -- do you have a copy
12 of a one-page document --

13 MR. HOBSON: A: I don't think we all do, no, so --

14 MR. ANDREWS: Q: Sorry, you do?

15 MR. HOBSON: A: I've seen it, but I don't think we all
16 have it, so it would be good to distribute it.

17 MR. ANDREWS: I believe this should be C21-9.

18 THE HEARING OFFICER: C21-9.

19 (ONE-PAGE DOCUMENT ENTITLED "BCSEA-SCBC WITNESS AID,
20 RESOURCE SIZE, GAP SIZE AND DIVERSITY VALUE", MARKED
21 EXHIBIT C21-9)

22 MR. ANDREWS: Q: So, the purpose of this witness aid is
23 to explore one of the aspects of using this particular
24 measure of diversity that Hydro uses. And I'll
25 explain what the -- how the scenario looks, and ask
26 for your comments as we go.

1 Let's consider a resource called DSM A with
2 expected electricity savings of 10,900 gigawatt hours
3 per year in 2020. And the cost of the DSM A and the
4 deliverability risk of DSM A stay constant in this
5 exercise.

6 Now, in scenario 1, the gap is 14,000
7 gigawatt hours per year in 2020. And so, DSM A meets,
8 arithmetically, 78 percent of the gap. Can you
9 confirm that that arithmetic is correct?

10 MR. HOBSON: A: Yes.

11 MR. ANDREWS: Q: In scenario 2, let's say that the gap
12 is reduced by 1,000 gigawatt hours for some
13 hypothetical reason, totally unrelated to the
14 deliverability risk of DSM A. Say, 1,000 gigawatt
15 hour per year supply-side resource is hypothetically
16 added into the stack, or you could say the government
17 changes the size of the insurance requirement for
18 self-sufficiency by 1,000 gigawatt hours per year.
19 So, the scenario 2 gap is 13,000 gigawatt hours per
20 year in 2020. Correct?

21 MR. REIMANN: A: Correct.

22 MR. ANDREWS: Q: So, in scenario 2, DSM A meets 84
23 percent of the gap, arithmetically. Is that correct?

24 MR. REIMANN: A: Correct.

25 MR. ANDREWS: Q: So, DSM A has a lower diversity value
26 in scenario 2, where it meets 84 percent of the gap,

1 the capacity table, and you look that by fiscal 2021 a
2 reliance on DSM for capacity in this case is about
3 1800 megawatts. That's more than the next three units
4 of the Mica Revelstoke. It starts to become a pretty
5 --

6 MR. ANDREWS: Q: Can I just -- you said Table 2-10?

7 MR. REIMANN: A: Yeah. Or 2-11, sorry.

8 MR. ANDREWS: Q: On page 30.

9 MR. REIMANN: A: Page 30, right. Sorry.

10 MR. ANDREWS: Q: So you're --

11 MR. REIMANN: A: So you're at 1750 megawatts. I mean
12 that's more capacity than the next three Mica
13 Revelstoke units. So it's a very substantial amount,
14 and when we started looking then, DSM Option A versus
15 DSM Option B, and you started to take up more of that
16 gap yet, it was clear that the amount that you're
17 relying on, DSM in that context was pretty
18 significant. So the measure we used in this case is
19 the percentage of the gap. That's both load growth
20 and stopping off supply options.

21 MR. ANDREWS: Q: So you would agree -- would you agree
22 that that measure of diversity of resources also means
23 that no matter how big or how small the size of the
24 pre-DSM gap, the cost-effective outcome will always
25 have -- it'll always have to have some amount of
26 supply-side resource because you're valuing this

1 diversity notion according to the percentage of the
2 gap.

3 MR. REIMANN: A: You know, the diversity measure was
4 one that we considered. I wouldn't say it was
5 necessarily the one that we placed the greatest weight
6 on. I think the degree of reliance from the economic
7 savings and the conservation potential review was one
8 that we placed more weight on.

9 MR. ANDREWS: Q: So in terms of the comparison of DSM A
10 and DSM B, you're saying you place more reliance on
11 the deliverability risk factor than on the diversity
12 risk factor, is that correct?

13 MR. REIMANN: A: Correct.

14 MR. ANDREWS: Q: How would Hydro know when an
15 economically cost-effective DSM resource that would
16 meet the entire pre-DSM gap would be cost-effective,
17 using the measure of diversity being a percentage of
18 the gap?

19 MR. REIMANN: A: I think you'd have to look at that
20 example-by-example and case-by-case situation, by
21 situation. If we had 1,000 gigawatt hour load growth
22 over the next 20 years, and we are to target 1,000 of
23 the whatever we're at, 17,000 gigawatt hours of
24 economic potential, I think one could see a world in
25 which the DSM might be the target for the whole gap.
26 But it would be situation dependent, I would say.

1 MR. HOBSON: A: I think the other thing we'd have to
2 look at is, you know, where we've been in the past
3 and, you know, if we had a track record of delivering
4 on DSM at the kind of levels that we're putting
5 forward in Option A, cross-rate structures in codes
6 and standards and programs, to give you more certainty
7 around the deliverability of those results. I think
8 that would also be a factor that would come into play,
9 and I think we're feeling right now that we're taking
10 a big step from where we've been in the past to where
11 we're proposing to go already. And how big of a step
12 do you take I guess is really the question that we're
13 wrestling with.

14 MR. ANDREWS: Q: I hear from your answer that
15 deliverability risk is the key concern there.

16 MR. HOBSON: A: Well, I think it's where you start, but
17 they do go hand in hand. You know, I think when you
18 take a look at risk you're also looking at the level
19 of reliance, and you're looking at those and balancing
20 off the two factors.

21 MR. ANDREWS: Q: So the diversity risk is intended to
22 capture the potential problem that if there's a
23 shortfall for a DSM package, a decision would have
24 been made not to increase the supply side because of
25 the reliance on the expected DSM savings, and that in
26 retrospect the utility would regret that it had chosen

1 not to proceed on the supply side because of a
2 shortfall on the DSM side. Correct?

3 MR. REIMANN: A: I think that's correct.

4 **Proceeding Time 11:16 a.m. T28**

5 MR. ANDREWS: Q: Now, Hydro has acknowledged that it
6 has to prove that it has pursued all cost-effective
7 DSM measures before -- including supply-side measures,
8 in its plan stack. In rejecting DSM B -- well, I
9 think actually -- I think I'll leave that question as
10 it is there, as I think we've covered that particular
11 line.

12 I just want to now move to a different
13 topic, which is the component of DSM B that is not in
14 DSM A, which I'll refer to as "DSM delta B", and I'll
15 refer you to the Plunkett evidence at Exhibit C21-6,
16 and page 9.

17 I have it wrong. It should be C21-4,
18 excuse me, at page 9. Are you familiar with the table
19 at the top of the page?

20 MR. HOBSON: A: Sorry, I just want to make sure I have
21 the right reference. So you're on page 9?

22 MR. ANDREWS: Q: Yes, and there's a table showing
23 planned energy savings for Options A and B by fiscal
24 2020.

25 MR. HOBSON: A: Yes.

26 MR. ANDREWS: Q: In the text below in line 6, the

1 conclusion is stated, that 70 percent of the
2 incremental program savings originate from industrial
3 energy efficiency programs. Do you see that?
4 MR. HOBSON: A: I see that statement, yes.
5 MR. ANDREWS: Q: And is that correct?
6 MR. HOBSON: A: I haven't calculated it with respect to
7 a percentage, but I would suggest that a significant
8 portion of those incremental savings would be coming
9 from industrial programs, yes.
10 MR. ANDREWS: Q: Thank you. So, by passing up DSM B,
11 Hydro is passing up those industrial DSM savings
12 opportunities, correct?
13 MR. HOBSON: A: If what you're saying is by taking
14 Option A instead, are we not doing the various
15 activities that would generate the additional savings
16 between Option A and Option B, and the portion being
17 industrial, then, yes.
18 MR. ANDREWS: Q: Thank you. I'm going to turn to fuel
19 switching. And I'm going to begin with some
20 background here to set the stage. I'm talking about
21 fuel switching from electricity to gas, and to a
22 certain extent from gas to electricity. And I'm also
23 talking about fuel switching programs as distinct from
24 other types of fuel switching for other reasons, that
25 is, programs by -- undertaken by the utility.
26 From B.C. Hydro's perspective as an

1 electricity utility, electricity-to-gas fuel switching
2 is a category of demand-side measure, correct?

3 MR. REIMANN: A: Correct.

4 MR. ANDREWS: Q: From the perspective of a gas utility
5 like Terasen, electricity-to-gas switching, fuel
6 switching, is a category of load building. Correct?

7 MR. HOBSON: A: It would be load building, yes, and
8 some would still consider that a demand-side measure,
9 I suppose.

10 MR. ANDREWS: Q: If you reverse it to gas-to-
11 electricity fuel switching from Hydro's perspective,
12 that would be a load-building measure, and from
13 Terasen's perspective that would be a DSM measure.

14 **Proceeding Time 11:21 a.m. T29**

15 MR. HOBSON: A: I would characterize it --

16 MR. ANDREWS: Q: I'm just trying to get the terminology
17 on the table.

18 MR. HOBSON: A: Yes. So one would be load building and
19 one would be more of a conservation or efficiency.

20 MR. ANDREWS: Q: Thank you. Now, in terms of Hydro's
21 approach to DSM in this LTAP, it started with an
22 update of the conservation potential review, correct?

23 MR. HOBSON: A: Yes.

24 MR. ANDREWS: Q: So I'll refer to that as the "CPR".
25 And the history of the CPR goes back at least in B.C.
26 to a 1994 CPR, correct?

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

2 MR. ANDREWS: Q: And then there was an update of the
3 CPR in 2002 or 2003?

4 MR. HOBSON: A: That sounds about the right time
5 period, yes.

6 MR. ANDREWS: Q: Yeah. And during the Commission's
7 proceeding regarding B.C. Hydro's 2005 resource
8 expenditure and acquisition plan, REAP, there was a
9 negotiated settlement process, and one of the elements
10 in the negotiated settlement agreement was a
11 commitment by Hydro to conduct an update of the CPR.
12 Correct?

13 MR. HOBSON: A: That's right.

14 MR. ANDREWS: Q: And then pursuant to that, Hydro did
15 do an update of the CPR, and that was a fairly major
16 undertaking.

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

18 MR. ANDREWS: Q: It was done by consulting firms with
19 extensive participation of B.C. Hydro personnel as
20 well?

21 MR. HOBSON: A: That's right.

22 MR. ANDREWS: Q: And there was considerable ongoing
23 consultation with stakeholder groups?

24 MR. HOBSON: A: As part of the process we formed an
25 external review panel that was a part of the process
26 as we moved through the entire CPR.

1 MR. ANDREWS: Q: Now, the outcome of that CPR update is
2 a multi-volume set of documents referred to as the CPR
3 2007. Correct?

4 MR. HOBSON: A: That's right.

5 MR. ANDREWS: Q: And some of them have been filed in
6 this proceeding, but not all of them.

7 MR. HOBSON: A: That's correct, I believe. We -- I
8 know we filed summary reports, and then I believe
9 different chapters were requested as part of different
10 Information Requests.

11 MR. ANDREWS: Q: Thank you. Now, the CPR methodology
12 has three basic steps. The first is that the authors
13 identify all the technically feasible potential DSM
14 opportunities. Is that correct?

15 MR. HOBSON: A: I think that's a fair starting point,
16 yeah.

17 MR. ANDREWS: Q: And then the second step is, the
18 authors winnow down that list using an economic screen
19 to determine methods that would be economically
20 achievable. Correct?

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

22 MR. ANDREWS: Q: And then a third stage is to do a
23 further round of winnowing, and identifying those DSM
24 measures that are within economically achievable and
25 are considered to be achievable potential.

26 MR. HOBSON: A: Correct. There's workshops conducted

1 using the -- some B.C. Hydro staff, consultant staff,
2 from the project, external review panel and others to
3 try to provide some guidance to be useful for DSM
4 planning, to give an understanding of where some
5 ranges are or, maybe more importantly, what some
6 issues that you'll face in trying to achieve some of
7 that economic potential.

8 MR. ANDREWS: Q: I'd refer you to the CPR 2007 fuel
9 switching residential sector, at Exhibit B-4, BCSEA
10 2.28.1. It's a 138-page document. And I'm looking at
11 page 95 of 138.

12 MR. HOBSON: A: It was page 95?

13 MR. ANDREWS: Q: Yes.

14 MR. HOBSON: A: Okay, I'm there.

15 MR. ANDREWS: Q: Exhibit C -- oh, excuse me. Exhibit
16 6.4, that is the term used in this document, not an
17 exhibit in the proceeding, gives examples or lists,
18 actually, fuel switching measures in the residential
19 sector. Do you see that?

20 MR. HOBSON: A: I do.

21 MR. ANDREWS: Q: So, just to get a sense of what we're
22 talking about here, under the heading "Single family
23 and row houses, new and existing," one example is an
24 electric water heater being switched to a natural gas
25 water heater.

26 MR. REIMANN: A: Correct.

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

2 **Proceeding Time 11:26 a.m. T30**

3 MR. ANDREWS: Q: Okay. Now, on page 104 there's a
4 table titled "Exhibit 6.5, Measure Screening for Non-
5 Apartment Measures - Current Cost Forecast". Do you
6 have the --

7 MR. HOBSON: A: I have that table, yes.

8 MR. ANDREWS: Q: So by current cost, that's referring
9 to the gas -- one of the gas supplies -- the gas price
10 scenarios, correct, as distinct from the high gas cost
11 forecast. And I'm not going to be looking at the
12 numbers. I just want to identify what we're -- there
13 are other tables that show what the measure screenings
14 are in a high gas forecast. Is that correct?

15 MR. HOBSON: A: And your question is whether there's
16 other tables that have high gas forecasts?

17 MR. ANDREWS: Q: Yes, okay.

18 MR. HOBSON: A: I think I would agree with that subject
19 to check. I haven't gone through all the --

20 MR. ANDREWS: Q: Right, I just wanted to get an
21 explanation of what it means when it says "Current
22 Cost Forecast".

23 MR. HOBSON: A: I would assume that it's taking a look
24 at a specific forecast level of electricity and gas
25 prices.

26 MR. ANDREWS: Q: Okay. So in the left column under

1 "Fuel Switch Measures", for example, the first one is
2 furnace fuel switching, and I'll just take you
3 through. The first sub-sector is existing single
4 dwelling or duplex in the Lower Mainland, do you see
5 that?

6 MR. HOBSON: A: I see that.

7 MR. ANDREWS: Q: And then cost basis, "incr" refers to
8 incremental? Is that --

9 MR. HOBSON: A: I'm not certain, but --

10 MR. ANDREWS: Q: Well, subject to check.

11 MR. HOBSON: A: Subject to check, sure.

12 MR. ANDREWS: Q: And then measure TRC, 3,000 and some-
13 odd dollars, that's an indication of the value of this
14 particular measure over and above its costs, correct?

15 MR. HOBSON: A: Yeah. Now, in that case I think the
16 distinction here, and I think we might have spoken to
17 this a little bit yesterday, is really designed a
18 little bit differently than other chapters in that
19 it's just trying to pick up both the capital costs --
20 both the capital costs as well as the operating costs
21 from both an electricity and gas perspective, to come
22 out with an overall resource view.

23 MR. ANDREWS: Q: And then under the column heading
24 "Measure Benefit/Cost Ratio" there's a figure of 1.9?

25 MR. HOBSON: A: I see that, yes.

26 MR. ANDREWS: Q: So that's indicating that from the

1 perspective of both the customers and the utilities,
2 benefit/cost ratio obviously in this particular case
3 is 1.9.

4 MR. HOBSON: A: Right. From the perspective of the
5 resources, looking across both electricity and gas, if
6 you went forward with that measure, those are the
7 economics.

8 MR. ANDREWS: Q: Now, in the final column titled
9 "Measure Payback Period in Years", the value is blank,
10 and there's a footnote at the bottom that says:

11 "...the measure payback period column is
12 blank; this indicates that the payback
13 period either exceeds the life of the
14 measure, or the measure never pays back the
15 original investment..."

16 Correct?

17 MR. HOBSON: A: I see that, yes.

18 MR. ANDREWS: Q: And so from this table, all of the
19 primary sub-sector fuel switching measures have a
20 blank under "Measure Payback Period" reflecting that
21 either the payback period exceeds the life of the
22 measure, or it never -- the measure never pays back
23 the original investment.

24 MR. HOBSON: A: Yes, that's correct.

25 MR. ANDREWS: Q: So this one table is just one of many,
26 but that phenomenon of the payback period being either

1 and if you look at the right-hand column, supply cost,
2 that would -- that's the long-run marginal supply cost
3 for each of the two commodities, electricity first and
4 then gas, correct?

5 MR. HOBSON: A: Yes, and those would have been the
6 values that would have been used in that economic
7 analysis, or TRC analysis.

8 MR. ANDREWS: Q: Right. And just to orient ourselves,
9 for electricity it's 8.8 cents per kilowatt hour.

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

11 MR. ANDREWS: Q: And then that's the reference price
12 that came out of the responses to the 2006 Call. And
13 the figure for natural gas is expressed as a dollars
14 per kilowatt hour figure, in this case it's 2.2 cents.
15 Correct?

16 MR. HOBSON: A: That's right.

17 MR. ANDREWS: Q: So, that can't be -- that's not a
18 dollars-per-cubic-metre figure, it's a conversion to
19 an electricity price.

20 MR. HOBSON: A: I think you're right. In reading by
21 the table and how it's labeled, I think that column is
22 expressed in dollars per kilowatt hours.

23 MR. ANDREWS: Q: Yeah. And then under retail price,
24 for electricity it's 6.43 cents per kilowatt hour.
25 That would be the price of electricity in the
26 residential sector at the time that this study was

1 done. Correct?

2 MR. HOBSON: A: Correct.

3 MR. ANDREWS: Q: And then, of course, for natural gas,
4 the price is four and a half cents, expressed in terms
5 of dollars per kilowatt hour.

6 MR. HOBSON: A: Right. And I believe those would be
7 the values they would have used in taking a look at
8 the payback periods.

9 MR. ANDREWS: Q: So, in terms of the implications for
10 achievable potential from fuel-switching, the key
11 factor there is that electricity customers pay
12 substantially less than the long-run marginal cost of
13 supply. Is that fair to say?

14 MR. HOBSON: A: Yeah. I mean, I think the whole -- we
15 went over this a fair bit yesterday, but I mean, I
16 think the whole conclusion out of the CPR, as I looked
17 at it, and keep in mind that as we put our DSM plan
18 together we didn't go back and investigate specific
19 initiatives out of this study; but my understanding of
20 the outcome from the study was in looking at the
21 economic potential, which looked at the resource
22 perspective or the wholesale cost perspective, it
23 indicated some potential, which I think is consistent
24 with what you've shown as you've walked me through
25 this. The disconnect is when they took a look at it
26 from a consumer perspective, based on the prices that

1 the consumers were paying, and in considering the
2 capital costs of the different options consumers had
3 when they looked at that in total. Then there were
4 concerns with respect to payback and whether or not
5 this was putting in place something that was in the
6 consumers' best interest.

7 MR. ANDREWS: Q: So, in a sense what Exhibit 6.9 really
8 highlights is that the price signals to residential
9 customers for electricity and for natural gas are out
10 of whack with the supply costs to the utilities,
11 correct?

12 MR. HOBSON: A: Well, I'm not sure I'm going to comment
13 in terms of how we end up in a situation with how --
14 you know, the different industries' markets have
15 developed and are regulated with respect to those
16 differences. But the fact of the matter is, they are
17 different and, as a result of those differences, I
18 think that certainly factored into the conclusions of
19 the CPR. You know, the one thing for me to point out
20 is, if we had chosen a different policy path with
21 respect to fuel switching when putting our DSM plan
22 together, we still would have gone back and looked at
23 the CPR and looked at the economic potential, and we
24 would have looked at the specific initiatives that we
25 may have been able to put in place to overcome some of
26 the issues. But as I said yesterday, I think we would

1 MR. ANDREWS: Q: Thank you. So from a B.C. economic
2 optimization perspective, the optimal new choices
3 between fuels would be made where the decision maker
4 faces retail prices for the two fuels that correspond
5 to the marginal supply costs for the two fuels, all
6 else equal. Correct?

7 MR. HOBSON: A: Can you repeat that, please?

8 MR. ANDREWS: Q: From a B.C. economic optimization
9 perspective, the optimal new choices between fuels,
10 electricity and gas, would be made where the decision
11 maker, the customer, faces retail prices for the two
12 fuels that correspond to the respective marginal
13 supply costs for the two fuels, all else equal.

14 MR. HOBSON: A: All else equal. So all of their, you
15 know, issues or considerations aside, if you're
16 providing a price signal that's consistent with the
17 cost on the margin, you're going to have a more
18 efficient signal.

19 MR. ANDREWS: Q: Thank you. So what we're seeing here
20 is that the price signal problem has to do with
21 customers making a choice between two fuels, one of
22 which is priced on a partially embedded cost basis,
23 and the other is priced on a supply cost basis.

24 MR. HOBSON: A: Right. I think we arrived at different
25 structures for the different markets for presumably a
26 number of different reasons.

1 MR. ANDREWS: Q: Now, stepping back for a moment to
2 consider all DSM programs, if all markets were perfect
3 and all customers had perfect information, then to
4 perhaps exaggerate a bit, there would be no need for
5 DSM programs, correct?

6 MR. HOBSON: A: Correct.

7 MR. ANDREWS: Q: That's what DSM programs are for, is
8 to push or pull things in a direction that they would
9 be in response to markets and decision making that
10 would correspond to prices, if markets were efficient
11 and information were distributed. Correct?

12 MR. HOBSON: A: Yeah, I would agree, there's a number
13 of barriers in the market. The barriers are
14 preventing what should be happening based on the
15 economics, and as a result of that, DSM initiatives
16 are put forward in different forms to overcome those
17 barriers.

18 MR. ANDREWS: Q: One example is, in B.C., the
19 residential inclining block rate structure for
20 electricity, which has bumped up the trailing block
21 marginal price for residential electricity, correct?

22 MR. HOBSON: A: I'm not sure what your question was
23 within that. Could you repeat it?

24 MR. ANDREWS: Q: One example of a DSM program coming
25 back now from the general DSM programs trying to
26 influence behaviour in the direction of allocative

1 efficiency, I'm coming back to the residential
2 inclining block rate as an example, where it has
3 pushed upward the marginal price signal to the
4 customer for electricity.

5 MR. HOBSON: A: I'm still not sure what the question is
6 in the -- are you just asking whether or not --

7 MR. ANDREWS: Q: I'm just asking you to confirm that
8 the RIB rate is an example of a DSM program that is
9 trying to push in the direction of consumers seeing a
10 price signal that corresponds to allocative
11 efficiency.

12 MR. HOBSON: A: Yes. I would assume that it's --
13 that's part of the driver behind it, and trying to
14 provide a more -- a price signal that's going to drive
15 conservation in general.

16 MR. ANDREWS: Q: And just looking at the Table 6.9
17 again, for reference, the 6.43 cents per kilowatt
18 hour, against that one would now see the Tier 2 price
19 for residential power is 7.21 cents, correct?

20 I'm not asking you to confirm the number,
21 but it's --

22 **Proceeding Time 11:41 a.m. T33**

23 MR. HOBSON: A: Right, it would reflect the Tier 2. I
24 guess the only consideration would be how much load
25 would be subject to that price signal, versus the Tier
26 1, and that would need to be considered in this type

1 of analysis.

2 MR. ANDREWS: Q: Yes. But from a price signal point of
3 view, those who see Tier 2 are seeing a higher price
4 signal than --

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

6 MR. ANDREWS: Q: -- the other one would. And then the
7 corresponding 8.8 cents for the supply cost, what
8 we're at now is a 12 cent cost for IPP new supply,
9 though that's not a reference number yet, correct?

10 MR. HOBSON: A: That's correct. I mean, one thing that
11 wasn't done through the fuel switching chapter that
12 was done in other parts of the CPR is the economic
13 screen used within the CPR in general was set at 13
14 cents. One of the issues I think the study team faced
15 in taking a look at the fuel switching chapter was,
16 what relative screen or increase would you apply to
17 electricity versus gas? And so I think the standard
18 assumption was that they were both going to increase
19 over time. Increasing one without increasing the
20 other really didn't get you anywhere. Increasing both
21 really got you back to the same point as if you hadn't
22 done the exercise in the first place, so they were
23 left for that reason.

24 MR. ANDREWS: Q: So, the fact that the avoided cost of
25 new electricity supply has gone up from 8.8 cents to
26 about 12 cents between the 2006 Call and the upcoming

1 Clean Call, and the gas price forecasts haven't
2 changed by nearly as much, means that the amount of
3 electricity savings from electricity to gas fuel
4 switching measures that would meet the economic screen
5 is going to be larger.

6 MR. HOBSON: A: If that held true, you'd have to take a
7 look at the balance of the analysis, but I would
8 suggest directionally you're right, that you would get
9 a larger economic potential.

10 MR. ANDREWS: Q: And from an economic perspective, and
11 I'm not talking here about the carbon consequences,
12 but the problem is basically that the ratepayers of
13 both the electricity and the gas utilities would
14 benefit from some of these electricity to gas fuel
15 switching measures, but the individual customer who
16 adopts the measure would not, correct?

17 MR. HOBSON: A: Can you say that one more time, please?

18 MR. ANDREWS: Q: That from an economic perspective, the
19 problem is basically that the ratepayers of both the
20 electric and the gas utilities would benefit from some
21 of the electric to gas fuel switching opportunities,
22 because they meet the economic potential, but the
23 individual customer who adopts the measure would not
24 benefit. That's just going back to the fact that the
25 return period is -- exceeds the life of the appliance.

26 MR. HOBSON: A: Yeah. You know, I think if we look at

1 it from -- you know, our study perspective is looking
2 at it from the perspective of electricity users, and
3 it would suggest that from a resource perspective,
4 you're going to be better off. Participants, not the
5 case, which I think you're right --

6 MR. ANDREWS: Q: Yes.

7 MR. HOBSON: A: -- that's the conclusion that's drawn
8 out of the CPR study team with respect to the
9 achievable.

10 MR. ANDREWS: Q: Thank you. So the challenge is to
11 find a way for the individual customer to be better
12 off by adopting the measure, so long as it doesn't --
13 the cost of doing that doesn't exceed the benefit to
14 the ratepayers of both utilities.

15 MR. HOBSON: A: Right.

16 MR. ANDREWS: Q: Okay. Now, using a DSM program to
17 shorten the customer payback period of some particular
18 measure is routine. but where the efficiency measure
19 involves fuel switching between two regulated sources
20 of energy, electricity and gas, there's an additional
21 complication of figuring out a rational and fair way
22 of dividing the costs and benefits between the
23 ratepayers of the gas utility and the ratepayers of
24 the electricity utility. Is that correct?

25 MR. HOBSON: A: Oh, you'll have to say that again.
26 Sorry.

1 MR. ANDREWS: Q: The -- in a DSM program applicable
2 only to one commodity, it's common to have the program
3 that will, one way or the other, shorten the customer
4 payback period. That's routine.

5 MR. HOBSON: A: It can be. I mean, there's a number of
6 different things DSM initiatives will try to overcome
7 with respect to barriers. Affordability would be just
8 one of those things.

9 MR. ANDREWS: Q: All right. But where -- so where the
10 problem, the impediment to the economically rational
11 solution is a lengthy customer payback period, it's
12 fairly straightforward to do things that will shorten
13 that payback period, if it's otherwise cost-effective.

14 MR. HOBSON: A: Right.

15 MR. ANDREWS: Q: And then my question is, where the
16 efficiency measure involves switching between two
17 regulated sources of energy, that is from electricity
18 to gas or vice-versa, there's an additional
19 complication in figuring out what is a rational and
20 fair way of dividing the costs and benefits between
21 the ratepayers of the gas utility and the electricity
22 utility.

23 **Proceeding Time 11:46 a.m. T34**

24 MR. HOBSON: A: Yeah, although I think one of the large
25 issues that was faced here was more of an issue with
26 respect to how you were looking at participants. I

1 mean, most conservation or efficiency that we
2 undertake, at the point that you've undertaken the
3 measure or the step, the participant is better off at
4 that point forward. You know, they have lower
5 operating costs. You know, their bills are lower.
6 There's other benefits that may be in play around
7 maintenance savings and things like that.

8 This is a unique situation, I think, with
9 fuel switching, where you could end up in a situation
10 where that participant, once they have undertaken the
11 measure, is actually worse off. And I think that was,
12 from what I took from the study, one of the large
13 complications that the study team faced in taking a
14 look at how do you move from the economic potential to
15 the achievable?

16 MR. ANDREWS: Q: Well, and we've talked about the ways
17 in which DSM programs address the challenge where the
18 payback periods are too long, and we talked about the
19 RIB rate, you know, as an example I was moving in that
20 direction. But what I'm talking about now is the
21 additional complexity because of the fact that you've
22 got gas -- that for Hydro this is a DSM program, and
23 the costs and benefits can be added up from Hydro's
24 perspective as an electric utility. But there are
25 also costs and benefits of that same measure to
26 Terasen and its ratepayers.

1 MR. HOBSON: A: I would agree, yeah, there are going to
2 be costs and benefits on both sides.

3 MR. ANDREWS: Q: So for example, specifically, an
4 electricity to gas fuel switching program that induces
5 heavier utilization of an existing gas distribution
6 infrastructure can reduce the cost of service for gas
7 ratepayers.

8 MR. HOBSON: A: In terms of spreading the costs?

9 MR. ANDREWS: Q: In terms of spreading the costs.

10 MR. HOBSON: A: I would assume that's a fair
11 assumption, yes.

12 MR. REIMANN: A: The presumption there, Mr. Andrews, is
13 that the gas utility has necessarily spare capacity,
14 and that by doing the fuel switching you don't incur a
15 need to increase the capacity of the system.

16 MR. ANDREWS: Q: That's right, and you would have to
17 know the answer to that question in order to quantify
18 the benefits and costs.

19 MR. REIMANN: A: Right.

20 MR. ANDREWS: Q: Right. And so in a circumstance where
21 there are benefits and costs to both utilities, is it
22 fair for the program -- or maybe I should put it this
23 way. It would not be fair for the program to be paid
24 for exclusively by the ratepayers of the electricity
25 utility, where there are benefits to the gas utility
26 as well.

1 MR. HOBSON: A: I think you'd have to look at each
2 situation individually and determine how to apportion
3 the costs and the benefits, I suppose. I guess from
4 my standpoint, we're a long ways away from getting to
5 that discussion, given the number of things that I've
6 spoken a little bit about today and probably more so
7 yesterday with respect to the decision up front, with
8 our DSM plan not to move into this territory. And
9 some of the more significant issues I think with
10 respect to the type of initiative we'd put forward, I
11 think we'd have to overcome both of those before we
12 got to the point of trying to understand how we
13 divided up the costs, given the benefits that each
14 organization might see coming their way.

15 MR. ANDREWS: Q: Okay. Now, the CPR update did not --
16 I just want to confirm this, if it's correct. It did
17 not analyze the electricity to gas fuel switching
18 opportunities in a manner that incorporated the costs
19 and benefits to the gas utility ratepayers. Is that
20 correct?

21 MR. HOBSON: A: Well, it looked at it more from a
22 resource perspective. So, you know, I think that's
23 more the view that's taken when we take a look at
24 demand-side measures with respect to a conservation
25 potential review in general, whether it's the fuel
26 switching portion or not. It's looking at the

1 relative wholesale tradeoffs. And in that sense it is
2 getting a collective view of both groups of customers,
3 both non-participants and participants.

4 MR. ANDREWS: Q: Is it Hydro's understanding that
5 Terasen agrees with the economic analysis that Hydro
6 used to make its decisions about the fuel switching
7 opportunities?

8 MR. HOBSON: A: Which decisions are those? Our
9 decision in our DSM plan?

10 MR. ANDREWS: Q: Yes, the decision -- well, that
11 Terasen agrees with the economic analysis by which the
12 CPR update concluded that there were zero achievable
13 electricity to gas fuel switching opportunities.

14 MR. HOBSON: A: I think Terasen had concerns with it.
15 I mean, we talked about this a little bit yesterday as
16 well. I think there was some concerns around the data
17 and the effective efficiencies between energy usage
18 within the given homes. And we continue to explore
19 that with Terasen.

20 **Proceeding Time 11:51 a.m. T35**

21 I think they were disappointed with the
22 result. I think they understood it. And I think they
23 understood the methodology that was taken forward.
24 But I wouldn't expect that they were pleased with the
25 fact that we've concluded that their -- or the study
26 team concluded that there was zero achievable

1 potential.

2 MR. ANDREWS: Q: Are you -- my question -- not so much
3 whether they were pleased with the result, but focuses
4 on whether Hydro and Terasen are agreed on the
5 analytical framework that ought to be used to come to
6 those decisions. And I suggest that you are not.
7 This is where I'm heading with it. But you can
8 correct me if I'm wrong.

9 MR. HOBSON: A: Meaning --

10 MR. THRASHER: I think Mr. Hobson can comment on what
11 B.C. Hydro's perspective is, but he certainly can't
12 hazard a guess what Terasen's perspective is.

13 MR. ANDREWS: Q: Well, that's exactly what I'm asking
14 him.

15 MR. THRASHER: Well you're --

16 MR. ANDREWS: Q: Does Hydro understand that Terasen
17 agrees to the economic framework that Hydro has used?
18 Or is Hydro's understanding different?

19 MR. HOBSON: A: I can speak just from what I've seen,
20 and that in looking at this with respect to the CPR
21 and the study team, I think the study team looked at
22 this issue and the study team concluded the results
23 that were in the CPR, and Terasen was an advisor on
24 that external review panel. I'm not sure it's as much
25 the case that they took exception with the approach
26 that we've taken to it. I think they're -- what

1 they'd like to see happen is more, I think, some of
2 the conversation we've had yesterday, and that's --
3 we've got issues with respect to how you look at this
4 from a resource perspective, and issues with respect
5 to how ongoing customers might be affected if they
6 participate in an initiative like this.

7 MR. ANDREWS: Q: Looking at it from the perspective of
8 the Utilities Commission, being the regulator of both
9 Terasen and Hydro, do you agree that it would be
10 helpful for the economic analysis of fuel switching
11 opportunities, and I'm not talking about the carbon
12 analysis question, that there would be an accepted
13 protocol for doing the economic analysis of
14 electricity to gas, and gas to electricity fuel
15 switching programs?

16 MR. HOBSON: A: I think that's more something for the
17 Utilities Commission to decide, but I guess I could
18 say this. If we did pursue within our DSM plan an
19 opportunity around fuel switching, and you know, I
20 think we've got a pretty good track record of working
21 with Terasen in the past, I think we would have sat
22 down with Terasen and we would have worked with
23 Terasen on how we would approach something like that.

24 MR. ANDREWS: Q: In Terasen's EEC application, Hydro
25 opposed Terasen's fuel switching component, and I
26 understand -- am I correct that Hydro disagreed with

1 elements of Terasen's analysis of the economic impact
2 of that proposal?

3 MR. HOBSON: A: That may have been. I'd have to --

4 THE CHAIRPERSON: Why don't you ask Mr. Reimann? I think
5 he put some evidence in.

6 MR. REIMANN: A: Yeah, I mean, my evidence in that
7 proceeding was that the claim that Terasen had, that
8 if they were to produce incremental electricity
9 savings in the province, that that would result in
10 exports to the U.S., and we took exception with that
11 to say, "No, we wouldn't change our net long position
12 as a result of incremental DSM, we'd change our plan
13 and come to the same net basis."

14 The other part of that evidence that I
15 recall was Patrice Rother, was that -- to do with the
16 GHG emissions, and that we have GHG caps -- or
17 reduction targets, rather, and that it would be
18 inconsistent to pursue those at this time.

19 MR. ANDREWS: Q: Thank you. And I will be getting to
20 that and I am about to get that --

21 THE CHAIRPERSON: Time to break, do you think?

22 MR. ANDREWS: Q: I'm just looking at whether there's
23 something -- yes, I have a question on -- still on
24 this topic. Which is acknowledging that Hydro has
25 arguments against electricity to gas fuel switching
26 based on carbon consequences and GHG factors. Does

1 Hydro agree directionally that the logic of Hydro's
2 resistance to electricity to gas fuel switching
3 programs tends to favour gas to electricity fuel
4 switching programs?

5 **Proceeding Time 11:56 a.m. T36**

6 MR. HOBSON: A: Can you say that again?

7 MR. ANDREWS: Q: Hydro is saying -- is opposing the
8 electricity to gas fuel switching programs. I'm
9 asking whether directionally that favours a gas to
10 electricity fuel switching programs. And the reason
11 that I'm asking that is to ask you whether you would
12 agree that it's desirable to have a mutually agreed-
13 upon protocol for analyzing the economic aspects of
14 electricity to gas fuel switching, and gas to
15 electricity fuel switching.

16 MR. REIMANN: A: I think Hydro's position on this is
17 that we've been fuel neutral on this thing, and that
18 we felt it was premature at this time to have
19 customers switching to gas until it was clear what was
20 coming on with the carbon reduction plan.

21 MR. ANDREWS: Q: Thank you, I'll take that up after
22 lunch, then.

23 THE CHAIRPERSON: So we'll adjourn until 1:30.

24 **(PROCEEDINGS ADJOURNED 11:57 A.M.)**

25 **(PROCEEDINGS RESUMED AT 1:31 P.M.)**

T37

26 THE CHAIRPERSON: Please be seated.

1 MR. AUSTIN: Good afternoon, Commissioners. I'm
2 loitering at the mike, as --

3 THE CHAIRPERSON: "Palely loitering." You're obviously
4 not a Rumpole fan.

5 MR. AUSTIN: There's two preliminary matters that I need
6 to deal with. The first is in relation to an
7 undertaking that was left over from my cross-
8 examination on Friday of the panel, and it was with
9 respect to a chart and supply curve that the IPPBC was
10 requesting B.C. Hydro to provide. And there's been
11 discussion between members of the panel and the IPPBC,
12 and I now have what I think is the resolution of this.
13 And what I'd like to is put this question to Mr.
14 Hobson, and he'll decide whether he wants to undertake
15 to provide the information.

16 Mr. Hobson, please produce a chart of the
17 supply curve similar to Figure 3-10 in Exhibit B-1 for
18 the DSM programs, using the table of unit energy
19 values provided in the response to IPPBC IR 3.14.2,
20 which is Exhibit B-12. This chart can show two supply
21 curves, one based on the original TRCs and one based
22 on the TRCs after the evidentiary update, adjustment
23 for energy savings reduced to 78 percent. Please
24 include the table of unit energy cost values along
25 with the chart, in the same manner as in the response
26 to IPPBC IR 3.14.2.

1 MR. ANDREWS: Q: Mr. Chairman, members of the witness
2 panel. We were talking about fuel, gas -- gas to
3 electric, electric to gas fuel switching, and before I
4 get to the carbon aspects of it I'd like to refer you
5 to Transcript Volume 9, page 1524. Transcript Volume
6 9, page 1524 and I'm looking at line 17. Mr. Ghikas
7 had provided the witness panel with a witness aid that
8 involved a calculation of conversation rates between
9 gas and electricity heating.

10 And, Mr. Reimann, you responded to it at
11 line 17, and just to make sure we're in the same
12 place, you are characterizing that witness aid as
13 involving a somewhat simplistic analysis.

14 **Proceeding Time 1:35 p.m. T39**

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

16 MR. ANDREWS: Q: At the right place? Yes. Now, you
17 then give as an example of what makes it simplistic,
18 that it didn't address the empirical observations,
19 that's my word, to do with the amount of heating in
20 existing natural gas heated homes, that seems to be
21 higher than the amount of heating in electrically
22 heated homes. Is that an accurate way to describe
23 what you're referring to there?

24 MR. REIMANN: A: Well, I -- yeah, I think that may be
25 right. Different home designs, depending on initial
26 fuel chosen.

1 MR. ANDREWS: Q: And then you say,
2 "...I think it almost gets to the heart of has
3 anybody done a comprehensive analysis of
4 fuel heating changes? ..."
5 By that, you mean changes between electricity and gas
6 for heating, correct?
7 MR. REIMANN: A: That's correct.
8 MR. ANDREWS: Q: And by comprehensive, you mean
9 including both financial and actual energy usage?
10 MR. REIMANN: A: Yes.
11 MR. ANDREWS: Q: And when you say --
12 MR. REIMANN: A: I guess maybe to go further, I would
13 think right from the source of the electricity to the
14 end consumption and how efficient the homes are. And
15 whether you heat an entire home or you heat particular
16 zones. So, I think there's some behavioural aspects
17 to it as well.
18 MR. ANDREWS: Q: Okay. And when you use the phrase,
19 "Has anybody done a comprehensive analysis of fuel
20 heating changes", you're going beyond the Terasen
21 witness aid. And you're not suggesting that
22 comprehensive analysis has been done but it's not in
23 evidence, you're saying that this comprehensive
24 analysis has not been done. Is that correct?
25 MR. REIMANN: A: Correct.
26 MR. ANDREWS: Q: And then --

1 MR. REIMANN: A: At least not that I'm aware of.

2 MR. ANDREWS: Q: Okay. And had it -- if it had been
3 done, would you likely have been aware of it by this
4 point?

5 THE CHAIRPERSON: Not even I would suspect that Mr.
6 Reimann has sort of omniscience when it comes to every
7 -- you can put that question to Dr. Orans, if you
8 like.

9 MR. ANDREWS: Well, if the word "study" involving --

10 THE CHAIRPERSON: You might get an answer.

11 MR. REIMANN: A: Yeah, no, I'm definitely not
12 omniscient.

13 MR. ANDREWS: Q: Well, if there were a study involving
14 B.C., would -- I suggest you would be aware of it, if
15 there had been a comprehensive analysis of fuel
16 switching between electricity and gas.

17 **Proceeding Time 1:38 p.m. T40**

18 MR. HOBSON: A: I think one of the issues we were
19 trying to draw out here is when we take a look at the
20 CPR study and the results coming from the CPR, one of
21 the things that emerged out of that study and there's
22 been some work that's continued now is taking a look
23 at some of the differences with respect to what
24 appears to be different energy uses within homes,
25 whether they're heated with electricity versus whether
26 they're heated with gas, based on what you would

1 expect you would see if looking at just the
2 efficiencies of the equipment.

3 MR. ANDREWS: Q: And Mr. Reimann, you continue then in
4 the passage that I'm referring to, to say,
5 "...I think Hydro's position is that we
6 haven't looked at it in any particular
7 detail. ..."

8 You mean by that that Hydro has not looked in
9 particular detail at a comprehensive analysis of
10 changes between electricity and natural gas for
11 heating, and an analysis that includes financial --
12 actual energy uses and the behavioural changes that
13 you referred to a minute ago.

14 MR. THRASHER: I'm not sure where you're going with this,
15 Mr. Andrews, but it seems to me we're talking about --
16 I think we've had an answer from this panel. We
17 certainly have had an answer on Panel 1 with regard to
18 what B.C. Hydro considers to be government policy, and
19 also B.C. Hydro's reaction to that policy.

20 So if you're confining it to the analysis,
21 I understand you can -- Mr. Reimann is fully prepared
22 to answer those questions. But if you're talking
23 about policy issues, or if you're just setting a
24 preface to a policy question, which from our
25 perspective -- I'd be in the Panel's hands on this
26 matter, but that policy issue has already been asked

1 and answered several times on Panel 1.

2 So with that caveat, I think you can --
3 that's where our position is. That's where B.C.
4 Hydro's position is.

5 MR. ANDREWS: You will be happy to know that I'm not
6 angling toward a policy question. My focus is on the
7 lack of a comprehensive analysis of the fuel heating,
8 fuel switching situation.

9 THE CHAIRPERSON: What page are you -- I've lost my place
10 in this Volume 9.

11 MR. ANDREWS: Page 1524, and over the page to 1525.

12 THE CHAIRPERSON: Thank you.

13 MR. ANDREWS: Q: And my final, actually, point on this
14 topic is that you provide for why Hydro has not looked
15 at this comprehensive analysis, or done this
16 comprehensive analysis in any particular detail, is
17 the reference in your words here,

18 "...again, our concern is that at this point
19 we'd be encouraging people to move to gas a
20 time when the province has got legislated
21 carbon emission reduction targets."

22 **Proceeding Time 1:41 p.m. T41**

23 And I'm not going into that reason, and why
24 you had that reason, but that that is Hydro's
25 explanation for not having done, or looked at, a
26 comprehensive analysis of fuel switching.

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

2 MR. ANDREWS: Q: Thank you. Now, I'm --

3 MR. REIMANN: A: I guess I would reiterate what we
4 heard on Panel 1, that we believe that the government
5 has spoken on this, when we got the issue to them, and
6 Ms. Van Ruyven spoke to that, saying that it was the
7 government's instruction that they didn't want us to
8 pursue that at this time.

9 MR. ANDREWS: Q: Yes. Thank you. Now, I'll -- as a
10 starting point for this next discussion, I'll refer
11 you to Exhibit B-4, BCSEA 2.29.2. We're moving now
12 into the carbon consequences of fuel switching.

13 So, in the second paragraph, Hydro says:
14 "There is no medium- to long-term linkage
15 between fuel switching and increased
16 exports."

17 That would be of electricity. That's -- are we on the
18 same spot there?

19 MR. REIMANN: A: We have that.

20 MR. ANDREWS: Q: Okay. What I want to do at this point
21 is to take you through the analysis of the steps and
22 the analysis of determining the carbon consequences of
23 electricity to gas fuel switching. And I'm going to
24 begin by identifying some of the things that I think
25 are the starting points for the analysis, and if you
26 agree with them, fine. If you don't, then you can

1 tell me why.

2 So, first of all, when I'm talking here
3 about physical greenhouse gas emissions, that is,
4 distinct from deemed greenhouse gas emissions, that
5 is, where there had been some physical emission but it
6 was offset by some other piece of paper, and so on.
7 The whole discussion here is unconstrained by the
8 *Greenhouse Gas Targets Act* and climate initiatives,
9 and so on.

10 And by -- I'll use the term "carbon" and by
11 that I mean greenhouse gas emissions more broadly.
12 And I'll use the term "carbon intensity" to refer to
13 CO₂ equivalents. And I'll also be assuming for this
14 discussion SD 10. That is, we have self-sufficiency
15 is required. And I would like to assume, and I'll ask
16 for your confirmation, that B.C. is a net importer of
17 electric energy in average water years at the present
18 time. Is that a fair statement?

19 MR. REIMANN: A: I would expect that's true, given an
20 expected Burrard dispatch that would be pretty
21 minimal.

22 MR. ANDREWS: Q: And the expectation is that this will
23 be reversed as B.C. Hydro moves towards self-
24 sufficiency. So that at some time between now and
25 when self-sufficiency is required, B.C. Hydro will
26 become a net exporter in average water years.

1 Correct?

2 MR. REIMANN: A: Given the -- what we put forward in
3 the LTAP, I think that's true, yes.

4 MR. ANDREWS: Q: Okay. And Burrard provides energy in
5 the plan for planning purposes. We just -- if you can
6 confirm that.

7 **Proceeding Time 1:46 p.m. T42**

8 MR. REIMANN: A: That we rely upon Burrard?

9 MR. ANDREWS: Q: Yes.

10 MR. REIMANN: A: In the planning period? Yes.

11 MR. ANDREWS: Q: But more pertinent to the carbon
12 analysis, operationally Burrard provides energy it
13 operates. And it's either operated or it's replaced
14 by electrical imports on an economic basis, correct?

15 MR. REIMANN: A: Burrard's energy could be offset
16 either by Heritage hydro non-firm energy, IPP non-firm
17 energy, or market imports.

18 MR. ANDREWS: Q: Okay. The energy from Burrard is
19 relatively carbon intensive, correct?

20 MR. REIMANN: A: Burrard has a heat rate that's in the
21 10-5, 11,000 range, yes.

22 MR. ANDREWS: Q: And the -- I want to talk now about
23 the carbon intensity of electricity imports. So I'd
24 refer you to Exhibit B-3, Terasen 1.2.3.

25 MR. REIMANN: A: We have that.

26 MR. ANDREWS: Q: So in the answer to 1.2.3, Hydro says

1 that the estimated percentage breakdown of energy
2 production for the WECC of 2008 is -- and then there
3 are some numbers by source, natural gas being 20
4 percent, coal being 30 percent. Do you see that?

5 MR. INCE: A: Natural gas 28 percent, coal being 30
6 percent.

7 MR. ANDREWS: Q: I'm sorry, yes, my mistake.

8 And that would be -- these are average
9 figures, correct, as distinct from on the margin?
10 Just as they're presented there.

11 MR. LAUCKHART: A: This is an energy breakdown of where
12 the energy came from to serve the load in 2008.

13 MR. ANDREWS: Q: And then in the answer to 1.2.6
14 Terasen IR, Hydro presents a short description of the
15 displacement concept, stating that

16 "...adding any resource in the WECC RIB, be it
17 renewable or non-renewable, will displace
18 the marginal unit if the resource that is
19 being added has a lower variable operating
20 cost than the marginal unit. The marginal
21 unit being displaced may be any one of
22 natural gas-fired generation, coal
23 generation, or some other resource."

24 Do you see that?

25 MR. LAUCKHART: A: I see that, and I want to point out,
26 this response was promulgated by a question about how

1 hourly dispatch works. And so this is a response
2 about sort of hourly short-term what's on the margin,
3 as opposed to what might be on the margin in the long
4 term in the west.

5 MR. ANDREWS: Q: All right, so, and that's appropriate
6 because at this point I'm not going to go what's on
7 the margin in the short term.

8 And turning now to Exhibit B-4, Terasen IR
9 2.4.2, Hydro has asked for a confirmation that natural
10 gas was the marginal resource in the Western
11 interconnection 80 to 90 percent of the time in a
12 study done -- or an article from the U.S. Department
13 of Energy, and the answer is this is generally a true
14 statement under high water conditions. There may be
15 periods of the year when this is not true.

16 **Proceeding Time 1:51 p.m. T43**

17 MR. ANDREWS: Q: Is that --

18 MR. LAUCKHART: A: And once again we're talking about
19 day-ahead type of markets.

20 MR. ANDREWS: Q: All right. So, for the purpose of the
21 unconstrained carbon analysis, in the short term the
22 carbon intensity of electricity imports will be
23 determined by the carbon intensity of natural gas
24 generation, correct?

25 MR. LAUCKHART: A: In day-ahead markets, yes.

26 MR. ANDREWS: Q: Thank you. Now, going one step

1 further with that, during the winter heating season,
2 the carbon intensity of electric imports is likely to
3 be higher than at other times of the year in this part
4 of the world, because there is a lot of hydroelectric
5 generation in both B.C. and the Pacific Northwest.

6 Correct?

7 MR. LAUCKHART: A: I'm not sure I understand. Could
8 you --

9 MR. ANDREWS: Q: Well, the carbon -- the amount of the
10 natural gas on the margin is likely to be higher
11 during the winter than it is during the times of year
12 when there's more hydroelectric generation in the
13 system. Correct?

14 MR. LAUCKHART: A: Well, it depends on a number of
15 things. It depends on what is the load, and if you're
16 talking about a very extreme cold day, it's different
17 in the winter than a warm day in the winter. It sort
18 of depends a little bit on what's going on in the
19 south, whether their loads are spiking, and this is a
20 complete interconnection-wide market that's going on
21 here. So a lot of things can come into play including
22 was it a wet year, a dry year, whether the snow pack
23 melts early, snow pack melts late. So there are a lot
24 of things that come into play that might suggest
25 different times of the year, you know, what's on the
26 margin is a little -- less efficient gas as opposed to

1 more efficient gas. Sometimes we get into, you know,
2 even hydro spill conditions where we might even have
3 hydro on the margin. But that doesn't happen very
4 often.

5 MR. ANDREWS: Q: And it would happen, I suggest, even
6 less likely during a winter peak time.

7 MR. LAUCKHART: A: During the winter --

8 MR. ANDREWS: Q: Not impossible that it would happen at
9 that time, but it's less likely to happen during the
10 winter.

11 MR. LAUCKHART: A: Well, if you're talking about winter
12 peak being a very cold winter day, it's not very
13 likely. If we have a warm winter day which in fact
14 causes early snow melt, we can have freshets that
15 cause us to spill in the middle of the winter.

16 MR. ANDREWS: Q: Okay. Now, I'm going to be referring
17 here to electricity to gas fuel switching programs,
18 and let's assume that the program is successful, in
19 that it causes an increase in the amount of gas used
20 for space and water heating. Is that a reasonable
21 assumption for this discussion?

22 MR. REIMANN: A: So you're presuming that you have a
23 scenario where you have --

24 MR. ANDREWS: Q: Where there is an electricity to gas
25 fuel switching program and it works, in the sense that
26 there is an increase in the amount of gas used for

1 space and water heating in B.C.

2 MR. REIMANN: A: Okay. And for what sort of time frame
3 are you thinking?

4 MR. ANDREWS: Q: At this point, we're just talking
5 about the short -- we're doing the short-term
6 analysis, but it will -- those changes are going to
7 last for the duration of the appliance. So, in
8 addition, this program causes a decrease in the amount
9 of electricity used for space and water heating. Is
10 that a reasonable supposition?

11 MR. REIMANN: A: So are you saying you're doing fuel
12 switching, that reduces electricity? And it would
13 reduce electricity?

14 MR. ANDREWS: Q: Used for space and water.

15 MR. REIMANN: A: Yes.

16 MR. ANDREWS: Q: Okay. So, to do the carbon analysis,
17 we have to use -- we have to look at the end use on
18 the gas side, and they have to look at end uses on the
19 electricity side. And looking first at the gas side,
20 there are carbon emissions from the combustion of gas
21 directly for the heating. Correct?

22 MR. REIMANN: A: Correct.

23 MR. ANDREWS: Q: Okay. The amount of induced carbon
24 emissions will depend on the efficiency of the induced
25 gas appliances, correct?

26 MR. REIMANN: A: I'm sorry, can you --

1 MR. ANDREWS: Q: The program induces the uptake of gas
2 appliances. If those gas appliances are more
3 efficient rather than less efficient, there will be a
4 corresponding change in the amount of carbon emission
5 as a result of the program, correct?

6 MR. REIMANN: A: Correct.

7 MR. INCE: A: With one addition, in that you should be
8 looking at the overall building shell. So if you're
9 looking at a natural gas furnace and you're dealing
10 with, let's say, a modern furnace at 80 percent
11 efficiency, you've obviously got combustion products.
12 You've got CO₂ coming out of this furnace, and it has
13 to go somewhere, so you've got holes in the house that
14 could very well cause extra heat loss in the house.
15 So, as Mr. Reimann indicated earlier, you just can't
16 look at the furnace in isolation. You have to look at
17 the entire building shell.

18 **Proceeding Time 1:56 p.m. T44**

19 MR. ANDREWS: Q: Good, you saved me asking the next
20 question. And this is also related to the observation
21 that the amount of heating required in houses with gas
22 heating is apparently different in some respects than
23 the amount in houses that have been electrically
24 heated.

25 MR. REIMANN: A: It may be.

26 MR. ANDREWS: Q: Similar concept. It may be.

1 So to determine the carbon consequences of
2 this fuel changing program on the gas side, you would
3 need to have quantitative answers or assumptions to do
4 with those various factors that we just went through.
5 Correct?

6 MR. REIMANN: A: So we're saying electric to gas
7 conversion would increase the carbon emissions, but
8 you'd need to know efficiency data to determine how
9 much?

10 MR. ANDREWS: Q: Efficiency data, and as Mr. Ince
11 pointed out, either effects or circumstances that may
12 be unique to the homes that might be induced to
13 acquire these fuels, these gas appliances.

14 MR. REIMANN: A: Correct.

15 MR. INCE: A: And I should add perhaps even behavioural
16 effects. So not only the efficiency, the appliance
17 itself, but also the build-in shell and also
18 differences in behaviour between those people who use
19 electricity and gas.

20 MR. ANDREWS: Q: Okay. So then turning to the
21 electricity side of this whole equation, we're trying
22 to determine -- first of all we have to determine the
23 amount of electricity saved as a result of this fuel
24 switching program. And the first question would be,
25 what is the base case? What is the type of electric
26 heating that is not being used because gas heating is

1 being used, correct?

2 MR. REIMANN: A: Correct.

3 MR. ANDREWS: Q: So for example, it could be baseboard,
4 electric baseboard heating, or it may be an electric
5 heat pump, for example.

6 MR. REIMANN: A: Correct.

7 MR. ANDREWS: Q: And the amount of electricity saved
8 would vary quite considerably, depending on which of
9 those two was the base case from which the fuel
10 switching is compared.

11 MR. REIMANN: A: Correct.

12 MR. ANDREWS: Q: Now, so again that would be something
13 that would require quantification. You'd have to know
14 what percentage of the reduced electricity savings
15 were coming from uses that would have been met by
16 baseboard heating compared to electric heat pumps, for
17 example.

18 MR. REIMANN: A: Correct.

19 MR. ANDREWS: Q: Now, this reduction in electricity
20 load would be a reduction on the margin. That is,
21 we're just talking about a small change in relation to
22 the size of the overall electricity load.

23 MR. REIMANN: A: We're still at a one-hour analysis?

24 MR. ANDREWS: Q: You can -- I didn't specify one hour,
25 but when we're talking about the change that the whole
26 program makes on the amount of electricity, which is

1 going to be a reduction, it's a change on the margin.
2 It's not a change in any average.

3 MR. LAUCKHART: A: I'm a little confused what you mean
4 by the margin here, because there is the margin that's
5 changed that will cause somebody to make a different
6 resource decision, a long-term resource decision.
7 Then there's a margin that somebody can say, "We think
8 this is only here for a day, so I'm not going to make
9 a long-term resource decision." So margin can be both
10 sort of like the daily decisions or a resource
11 decision that would be more permanent.

12 MR. ANDREWS: Q: All right, well we're using here the
13 realistic and fuel switching sense. These would be
14 decisions that would last at least for the lifetime of
15 the appliance.

16 MR. REIMANN: A: So how long are we to assume that is?

17 MR. ANDREWS: Q: Well, let's assume that it's 20 years
18 for this type of analysis.

19 So first of all, an important point in the
20 analysis of the carbon consequences is that what
21 matters here is the marginal carbon intensity of
22 electricity supply in British Columbia, and not the
23 average carbon intensity. Is that correct or would
24 you like me to explain that further?

25 MR. REIMANN: A: No, please explain it further.

26 MR. ANDREWS: Q: B.C. on average has a low carbon

1 intensity in its electric generation, correct? B.C.
2 is something like 93 percent clean or renewable
3 electricity.

4 MR. REIMANN: A: Correct.

5 MR. ANDREWS: Q: Right? That's on average.

6 MR. REIMANN: A: Correct.

7 **Proceeding Time 2:01 p.m. T45**

8 MR. ANDREWS: Q: If we change the amount of the
9 electrical load, we're not changing the average carbon
10 intensity. We are -- what we're talking about is the
11 marginal carbon intensity. What happens to the carbon
12 intensity of electricity at the margin in B.C.,
13 correct?

14 MR. REIMANN: A: I'm finding this a pretty hypothetical
15 example, and I'm having a hard time understanding it.
16 So, if you have surplus electricity available, there's
17 a question of --

18 MR. ANDREWS: Q: We're not -- we'll get to surplus.
19 I'm talking about a reduction in the amount of
20 electricity that is extremely small in relation to the
21 size of the entire B.C. load. The carbon consequences
22 have to be examined according to the marginal carbon
23 intensity. That is, the carbon intensity of
24 additional, either increments or decrements, from the
25 provision of electric energy in British Columbia.
26 It's exactly the same analysis as the difference

1 between average and marginal costs, except that we're
2 now -- instead of dollars, we're talking about carbon
3 emissions.

4 MR. REIMANN: A: So, again, it's a bit of a
5 hypothetical example. It's --

6 MR. ANDREWS: Q: Well, I don't -- it's not a
7 hypothetical. We're talking about a few -- we've gone
8 through setting up all these factors that make it
9 hopefully a realistic scenario in which we are going
10 through how to analyze the carbon consequences.

11 MR. REIMANN: A: See, that's the problem I have with
12 this.

13 MR. ANDREWS: Q: And we're doing this because Hydro
14 assets that there is a carbon consequence reason for
15 an important aspect of its LTAP. So I'm trying to go
16 through exactly how one does the carbon consequences
17 analysis.

18 MR. REIMANN: A: So the problem I'm having is the
19 realistic part.

20 MR. ANDREWS: Q: All right.

21 MR. REIMANN: A: So if there is a change in the
22 consumption of electricity, and you have it, the
23 question is how do you change your operating
24 behaviour, or how do you change your long-term
25 planning behaviour? And it's in that context that we
26 might have some idea of what happens, and what the

1 carbon intensity is. So if we --

2 MR. ANDREWS: Q: And are you with me that there is a
3 distinction between the average carbon intensity of a
4 jurisdiction's electrical generation and the marginal
5 carbon intensity?

6 MR. REIMANN: A: There may well be.

7 MR. ANDREWS: Q: So, in the case of B.C., for example,
8 if there is a reduction in the load, other things
9 being equal, we would be much less likely to see
10 Burrard used, or imports in lieu of Burrard, than in
11 the absence of that decrement in the amount of
12 electric load. Correct?

13 MR. REIMANN: A: I think that's entirely dependent on
14 what time of the year you would be operating at.

15 MR. ANDREWS: Q: All right, and in terms of time of
16 year, it's even more likely to be the case in the
17 winter when heating is at higher levels, correct?

18 MR. REIMANN: A: In the winter time you would be more
19 likely to be either running Burrard or if you were in
20 a current today situation be a net importer.

21 MR. ANDREWS: Q: Thank you.

22 MR. REIMANN: A: That may be true.

23 MR. ANDREWS: Q: And so --

24 MR. REIMANN: A: And actually, I -- let me think about
25 that for a second.

26 So, where Hydro's generally at today is, we

1 try to have enough capacity resources available so
2 that we can meet our winter peak. And if we are short
3 of energy in the system we will try to find opportune
4 times when we will go out and acquire that energy.
5 And an obvious time is to the extent that you can
6 absorb it, you might do it in the freshet. You'll
7 typically try to go into the shoulder seasons and buy
8 electricity when it's cheap. It isn't necessarily the
9 case that you would have to be importing over a winter
10 period, only to the extent that you may have problems
11 with your capacity or you're running into contingency.
12 So, I'm not sure that's necessarily true, as I think
13 about it.

14 MR. ANDREWS: Q: Well, let's go back to -- well, let's
15 go back to the starting point element, being that B.C.
16 is a net importer in average water years at the
17 current time.

18 MR. REIMANN: A: Agreed.

19 MR. ANDREWS: Q: Right. So, in that situation, if
20 there is a decrement in the amount of electrical load
21 in B.C., it would come off the net imports, other
22 things being equal, correct?

23 MR. REIMANN: A: Agreed.

24 MR. ANDREWS: Q: Okay. So the carbon consequence of
25 this electricity to gas fuel switching program in the
26 short-term analysis is indicated by the carbon

1 intensity of either Burrard or the carbon intensity of
2 imports in lieu of Burrard, correct?

3 **Proceeding Time 2:06 p.m. T46**

4 MR. REIMANN: A: Yes, I would think that's fair.

5 MR. ANDREWS: Q: Now, as B.C. becomes -- and when it
6 becomes a net exporter of electricity in an average
7 water year, the carbon consequence will be a
8 displacement of whatever the electricity is, the
9 carbon intensity of the electricity that's on the
10 margin in the Western Electrical Coordinating
11 Committee Region. So what does that --

12 MR. LAUCKHART: A: And when you say "displacement", are
13 you talking about displacement in the short term or a
14 long-term margin?

15 MR. ANDREWS: Q: Here we're still talking short-term.

16 MR. LAUCKHART: A: So one day.

17 MR. ANDREWS: Q: I'm not sure if it -- I think when I
18 say "short-term" I'm talking about as opposed to the
19 period of time within which the B.C. supply stack
20 could adjust to the change in load. And so it'd be
21 longer than one day. I'm suggesting that if you have
22 a scenario where B.C. is a net exporter in an average
23 water year, if you reduce the amount of electric load,
24 you are making more electricity available for export
25 and thereby displacing whatever is otherwise the next
26 most expensive resource on the grid.

1 MR. LAUCKHART: A: Well, I don't want to belabour this
2 point because I'm struggling with what's short term
3 and what's long term. And what you're going to
4 displace, maybe on a few months' basis until somebody
5 sorts out that we actually have some excess supply out
6 here that we can contract for in the States, then
7 suddenly we can start changing the resource planning
8 in the States, if that makes sense, as opposed to just
9 doing this all on a daily basis.

10 MR. ANDREWS: Q: The upshot of that from a carbon point
11 of view is that the carbon consequences of this fuel
12 changing -- fuel switching program in the net export
13 and average water year scenario, is the carbon
14 consequence of the marginal change in the WECC, which
15 would otherwise be imports in an import scenario.

16 MR. LAUCKHART: A: Right. Well, I guess at some point
17 we'll get to maybe what those marginal resources are.
18 But I only want to point out here that there's the
19 short-term margin and then there's the planning, long-
20 term margin, much like long-term marginal costs.

21 MR. REIMANN: A: I guess I would add to what Mr.
22 Lauckhart is saying is, so if I understand the
23 scenario right, we were initially talking about an
24 unplanned and unknown load switching event that
25 happened in the current timeframe. And then we're at
26 the time self-sufficiency so we're in 2016, and again

1 some unknown and unforeseen float switching event
2 happened so that in 2016 we now have some incremental
3 resources that we hadn't planned on. So it's a 20-
4 year resource, presumably one's coming in today and
5 one's coming in in 2016. These are different
6 resources.

7 If there was a resource that came in today
8 that lasted for 20 years, by the time we got to 2016
9 we would have seen that into our load forecast and we
10 would have adjusted our plans. So there would be no
11 marginal change.

12 MR. ANDREWS: Q: All right. So now you're talking
13 about what I would refer to in the scenario as the
14 long term, that is, the period of time beyond which
15 Hydro would adjust its supply stack to correspond in
16 the reduction in the size of the load. Does that
17 explanation of "long-term" make sense? This is what
18 Hydro is referring to as the medium to long-term when
19 it says that there is no medium to long-term linkage
20 between fuel switching and increased exports.

21 Correct?

22 MR. REIMANN: A: Right, so I would think that when we
23 thought of medium to long-term, that would be the time
24 that we could make an adjustment to our LTAP and
25 change our acquisition plans or DSM programs. But
26 even within a short term, to the extent that there was

1 fuel switching and load changes that happened in the
2 short term, we wouldn't necessarily take that
3 additional clean energy and move it into the spot
4 market necessarily. Once you move beyond a day, week,
5 a month, a year, you'd start looking for
6 opportunities. I think Mr. Lauckhart has spoken to
7 that already in terms of what RPS markets may be
8 available for that sort of energy.

9 MR. ANDREWS: Q: Are you saying to this with an eye
10 toward examining the carbon consequences?

11 MR. REIMANN: A: Yes.

12 **Proceeding Time 2:11 p.m. T47**

13 MR. ANDREWS: Q: Okay, so then what is the carbon
14 consequence of that?

15 MR. LAUCKHART: A: The carbon consequence, as I see it,
16 is if B.C. Hydro has excess resource -- for whatever
17 reason, but in part because of fuel switching, and
18 they decide to have excess resource, they would -- and
19 it's clean resource, that they would try to get the
20 best price they could, including selling a green --
21 the green attribute. The purchaser on the side would
22 be looking at, "Well, should I build -- have somebody
23 build me," and they can build these wind plants fairly
24 fast, "a wind plant," you know, and pay that price,
25 "or should I just buy these RECs from B.C. Hydro and
26 maybe delay that wind plant, or make some other

1 changes?" So the -- when you get to that point, when
2 you get to that point where the REC is sold, or the
3 green attribute is included with the bundled product
4 and sold, when you get to that point it seems like the
5 carbon footprint will be neutral with respect to
6 what's going on in the United States.

7 MR. ANDREWS: Q: I'm not sure why in your discussion,
8 you would have had to separate the RECs from the
9 electricity. I think we're dealing -- I'm dealing
10 here with a fairly simple level of analysis, where you
11 have a reduction in load in British Columbia. And
12 we're now talking about this long-term situation where
13 Hydro has argued that the supply stack in B.C. would
14 be adjusted to reduce the amount of electricity
15 generated in B.C., corresponding to the reduction in
16 the load. And that that would negate there being any
17 surplus for export that would thereby displace any
18 carbon-intensive generation in WECC.

19 First of all, let me confirm -- that is
20 Hydro's argument, is it not?

21 MR. REIMANN: A: You're going to have to repeat that.

22 MR. ANDREWS: Q: That Hydro argues that in the long
23 term, by the time that Hydro is able to adjust its
24 supply stack to a reduction in the B.C. load due to an
25 electric to gas fuel switching program, there would be
26 no additional electricity available for export that

1 would have the effect of displacing a more carbon-
2 intensive electricity in the western interconnect.

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

4 MR. ANDREWS: Q: Now, I suggest to you that that
5 implies that we are in a situation of increasing
6 supply within British Columbia. That is --

7 MR. REIMANN: A: I don't think that.

8 MR. ANDREWS: Q: -- the adjustment of the supply stack
9 --

10 MR. REIMANN: A: I don't think that's true.

11 MR. ANDREWS: Q: Well, just let me explain, and then
12 you can answer. The adjustment of the supply stack is
13 easiest to see, at the very least, where you are in an
14 increasing supply situation because the reduction in
15 the amount of demand is not enough to meet the gap.
16 So you still have to have more supply and so you're
17 able to simply have a smaller additional amount of
18 supply. But I put it to you that, if you're in a
19 situation where there is no increase in supply
20 required, there is no gap to be filled, the same
21 mechanism does not operate.

22 MR. LAUCKHART: A: But that's where you get to my point
23 is, you're saying that they've got now excess supply,
24 and for whatever reason, it's already there. And they
25 can't get rid of it. So now they have it, and they
26 send it to the United States. Do I have your example

1 right here?

2 MR. ANDREWS: Q: Yes, because of the fuel switching
3 program there's additional electricity available, in
4 this case for export in an average water year.

5 MR. LAUCKHART: A: And would you agree with me that
6 they would probably sell that as a renewable resource
7 to the United States, as opposed to a brown resource?

8 MR. ANDREWS: Q: Yes. Let's assume that, on the basis
9 that B.C.'s electricity is, on average, 93 percent
10 clear.

11 MR. LAUCKHART: A: And that the purchaser of that could
12 use that to meet his RPS as opposed to building new
13 renewables in the United States.

14 MR. ANDREWS: Q: Well, I don't know whether they -- in
15 this assumption we're not going into the detail of
16 what the U.S. response would be.

17 MR. LAUCKHART: A: I see.

18 MR. ANDREWS: Q: Because I don't know what the rules --
19 whether B.C. clean power will or will not meet a
20 renewable fuel standard measure. What I'm getting at
21 is that there would be a reduction in the amount of
22 carbon intensive generation on the margin.

23 MR. LAUCKHART: A: But you're --

24 MR. ANDREWS: Q: Whether it's because they choose to
25 buy B.C. power or they choose to build a wind plant,
26 there's going to be a reduction in carbon-based

1 generation.

2 MR. THRASHER: If you have a witness to put forward, I'd
3 say that we do that on a future panel, but I think
4 we're limiting ourselves to cross-examination here,
5 are we not?

6 THE CHAIRPERSON: You're meant to ask the questions, Mr.
7 Andrews, I think, not to respond to Mr. Lauckhart's.

8 MR. ANDREWS: I understand -- well, Mr. Lauckhart asked
9 for explanation of the question. And so --

10 MR. THRASHER: The purpose of cross-examination is to get
11 at facts we have in evidence. And if you have a
12 witness that you want to put forward on a future panel
13 and we get to cross-examine him, that's fine. But you
14 know, speculation -- the reason why, you know,
15 speculation should be limited is because of that very
16 fact. It's that you're putting evidence -- you're
17 getting evidence in through cross-examination. So --

18 **Proceeding Time 2:16 p.m. T48**

19 MR. ANDREWS: That is my intention, to get evidence in
20 through cross-examination.

21 MR. THRASHER: It's highly, highly speculative.

22 MR. ANDREWS: Let me proceed.

23 MR. THRASHER: We've already provided a response to why
24 B.C. Hydro considers it imprudent or not cost-
25 effective to promote fuel switching at this time.
26 We've had an adequate response on Panel 1. Mr.

1 Reimann has provided responses on a few occasions to
2 that very question.

3 So with that premise, we're going ahead with
4 a speculative scenario that you put forward, and we're
5 asking Mr. Reimann to respond to a question which he's
6 already told you that it's not B.C. Hydro's position
7 to undertake. So I don't know what the utility is in
8 continuing on this line of questioning. That's my
9 point.

10 MR. ANDREWS: Are you finished then?

11 MR. THRASHER: I am.

12 MR. ANDREWS: Thank you. B.C. Hydro asserts that one of
13 the reasons for its conclusion that there would be a
14 negative carbon consequence for fuel switching
15 programs has to do with its assertion that in the
16 medium to long term there's no linkage between fuel
17 switching and increased exports. And I'm putting to
18 the witness panel for their comment the question about
19 how that applies, if it applies, in a scenario in
20 which B.C. is not adding additional supply.

21 THE CHAIRPERSON: That's fine, Mr. Andrews. I just sent
22 -- probably I should tell Mr. Lauckhart to answer your
23 questions, not to ask you questions.

24 MR. ANDREWS: Q: And so I guess my -- let me just try
25 to repeat the question. I'm trying to make a
26 distinction here between the logic of your argument as

1 it applies in a scenario where there's additional
2 supply being added, to the scenario where there isn't
3 additional supply being added to B.C. And in that
4 scenario, a successful fuel switching program that
5 frees up some electricity or causes less electricity
6 load will be reflected in a surplus of electricity in
7 B.C., and there won't be an opportunity to adjust the
8 supply side because we're not adding any additional
9 supply. Is that correct?

10 MR. REIMANN: A: I'm having a hard time foreseeing that
11 we would have a DSM program in a world where we didn't
12 have any load growth.

13 MR. ANDREWS: Q: We're talking here about after DSM
14 load growth, because it would be in an after DSM gap
15 situation that you have IPP supply, or any supply.
16 But on the other hand, if you are in a situation where
17 you're not adding supply it's because after DSM you
18 don't have a gap. I'm suggesting that in that
19 scenario, the mechanism of long-term adjustment does
20 not apply.

21 MR. REIMANN: A: There was a leap of logic there that I
22 took, that if there was no gap, that that's because
23 there was no load growth. But what you're saying is
24 there is a gap, and we've got actions that we've taken
25 and that we now have incremental fuel switching, would
26 we not change those future actions in say by 2016 to

1 make adjustment for the increased fuel switching? And
2 I'd say we would.

3 MR. INCE: A: So I should add in a load forecast that
4 -- Mr. Andrews, you started out the line of cross with
5 respect to there is a -- you're starting it with a
6 program. So there would be a definite advertised
7 distinct program in order to enable this fuel
8 switching. If that's the case, then I would reflect
9 that in my load forecast very quickly.

10 Ms. Van Ruyven said on the first day of
11 this hearing that it may take a couple of years to
12 reflect these type of things in our forecasts. And
13 that's, I think, under a scenario where we have
14 perhaps some hidden creep of fuel switching, where
15 people are doing this thing just on their own. And it
16 might take them two years to figure out, through an
17 end use survey or through load tracking, that in fact
18 this creep is occurring. But if it is a definite
19 program that's perhaps sponsored by the government,
20 perhaps there's rebates or initiatives, then
21 definitely I would see that. I would have visibility
22 and I'd reflect that in the load forecast very
23 quickly, and pass that over to Mr. Reimann and he
24 would make necessary changes to our supply/demand, our
25 resource plan, in order to make the necessary
26 modifications to make sure we weren't persistently

1 exporting more than it's indicated already.

2 MR. REIMANN: A: And to do so to any significant amount
3 would amount to building for export. And Hydro has no
4 mandate above its self-sufficiency target to be
5 building for export at this point.

6 **Proceeding Time 2:21 p.m. T49**

7 MR. ANDREWS: Q: Now, coming back to the short term,
8 would you agree that the -- and this is a subject that
9 Commissioner Milbourne raised earlier, that in the
10 short term there is a continuous cycle of new
11 customers, or I guess -- should say new houses, homes,
12 coming into the B.C. Hydro system, and if there were
13 fuel switching from electricity to gas, whatever the
14 short-term effects were, they would be repeated in an
15 ongoing continuous manner.

16 MR. INCE: A: Yes, 20 to 25,000 new residential
17 accounts per year. But we're dealing with, on a
18 residential side, 1.6 million accounts. So this is a
19 very large ship to steer in terms of what type of
20 heating they've got. You can make major changes in
21 terms of what type of fuel the new customers use, and
22 not have a substantial change in terms of the overall
23 effect.

24 MR. ANDREWS: Q: Yes.

25 MR. INCE: A: And I would also suggest it's going to be
26 very difficult for existing customers to switch over.

1 The capital cost barriers could be significant. I
2 think particularly from the electricity to gas side,
3 where you're dealing with ductwork. On the --
4 installing baseboard heaters is one thing, but
5 installing ductwork is another matter altogether with
6 regards to capital cost.

7 MR. ANDREWS: Q: Thank you. So, having talked about
8 the carbon analysis in an unconstrained situation,
9 we're not in an unconstrained world. We do have the
10 B.C. *Greenhouse Gas Targets Act* and a whole variety of
11 other pieces of B.C. legislation in various stages of
12 implementation.

13 My first question here is whether it is
14 true that the *Greenhouse Gas Targets Act* doesn't
15 specify how the targets are to be met. It doesn't
16 say, "B.C. Hydro's not allowed to do anything that
17 will increase residential use of natural gas, in
18 particular," for example.

19 MR. YOUNGMAN: A: It's my understanding it doesn't say
20 that.

21 MR. ANDREWS: Q: Yeah. And indeed, B.C. Hydro is
22 proposing to use Burrard for 3,000 gigawatt hours per
23 year, at least on a planning basis, and that's gas-
24 fired, which would go contrary to the general sense
25 that the purpose of the *Targets Act* is to reduce the
26 combustion of natural gas, correct?

1 MR. REIMANN: A: Well, I would observe, Mr. Andrews,
2 that our planned reliance is to reduce it from 6,000
3 to 3,000.

4 MR. ANDREWS: Q: Yes, so --

5 MR. REIMANN: A: I don't think that reduction is
6 inconsistent.

7 MR. ANDREWS: Q: That's right. It's going in a
8 direction of reduced carbon emissions, and had it gone
9 to zero, the carbon emissions would have been --
10 emissions reductions would have been greater, correct?

11 MR. REIMANN: A: Correct.

12 MR. ANDREWS: Q: And for Burrard, B.C. Hydro is relying
13 on the concept of offsets to negative [sic] the
14 greenhouse gas consequences of combusting natural gas
15 to make electricity, correct?

16 MR. REIMANN: A: Correct.

17 MR. ANDREWS: Q: You're not sure at this point --

18 MR. REIMANN: A: Actually, do you want to --

19 MR. ANDREWS: Q: What the -- did you have something to
20 add?

21 MR. YOUNGMAN: A: Well, just to be more specific. So,
22 Burrard in the future as an existing thermal plant
23 will be required to offset to zero. And so, that
24 requirement goes into effect as soon as 2012, or even
25 earlier. It could be right now, with the passage of
26 the Act. So it will have to offset its emissions, and

1 the question is, what will be eligible for those
2 offsets? And that has not been specified. It's
3 possible that the reductions associated with the
4 offset project would have to occur within B.C.
5 Alternatively, the government could allow for the use
6 of offsets created within the WCI region. And there
7 would be a significant cost implication for that
8 decision.

9 MR. ANDREWS: Q: And the WCI is the Western Climate
10 Initiative involving a variety of jurisdictions, B.C.
11 and others.

12 MR. YOUNGMAN: A: Yes, correct.

13 MR. ANDREWS: Q: And one of the purposes of the WCI
14 initiative is to try to prevent the possibility, the
15 undesirable possibility, of each separate jurisdiction
16 making decisions that may reduce greenhouse gases
17 within their jurisdiction, but at the cost of
18 increasing greenhouse gases in the other
19 jurisdictions. Is that correct?

20 MR. YOUNGMAN: A: I guess I would say more specifically
21 that there is a question about how the electricity
22 sector will be -- emissions from the electricity
23 sector will be regulated under WCI, and so they've
24 given this a lot of thought, and have decided that at
25 the -- within WCI region, it's going to be the
26 generator that will be responsible for meeting

1 offsets -- well, that's the wrong term. That
2 displaces more emissions-intensive generation in
3 another jurisdiction.

4 MR. ANDREWS: Q: So you're saying that there is no
5 concept of an offset attributable to a specific
6 program in B.C. that deliberately causes additional
7 reduction in carbon-intensive generation outside of
8 B.C.?

9 MR. YOUNGMAN: A: The offsets, just to step back a
10 second, within a cap and trade scenario, which is
11 what's being envisioned in the WCI Region, there is
12 covered sectors and non-covered sectors. And covered
13 sectors emissions are regulated under the program.
14 Non-covered sectors emissions are eligible to generate
15 offsets, but there's very specific rules about which
16 activities can generate offsets. And for those
17 activities, it has to be very carefully established
18 that those activities are additional to what would
19 have occurred under business-as-usual conditions.

20 So that one can be very sure that any
21 offset that is granted is a real reduction that would
22 not have occurred otherwise, and that therefore can be
23 used to essentially increase the cap, because for
24 every offset that's used, you're allowing an
25 additional tonne of emissions to occur within the
26 system. So there's a premium on ensuring that that is

1 real.

2 The power sector is covered under the WCI
3 program, so all emissions are accounted for within
4 that program. In the offsets, the sets of offsets
5 that are being considered, programs such as the one
6 that you described are not included because the power
7 sector has already been covered under the system.

8 MR. ANDREWS: Q: And so in the fuel switching example
9 that we just went through, you're saying that the way
10 the WCI is headed now, B.C. would be responsible for
11 the increase in gas emissions on the gas side of the
12 equation, and would have the benefit of reductions in
13 B.C. greenhouse gases on the electricity side, but
14 would not have the benefit of reductions in greenhouse
15 gases in other jurisdictions on the electricity side.

16 **Proceeding Time 2:31 p.m. T51**

17 MR. YOUNGMAN: A: That's right. Based on where the
18 system is today, that's right.

19 MR. ANDREWS: Q: Thank you. Just -- those are my
20 questions. Thank you.

21 THE CHAIRPERSON: Thank you, Mr. Andrews.

22 MR. THRASHER: One issue that I'd like to speak to you
23 with regard to Mr. Youngman's schedule. He has a
24 family matter that needs a -- he's got a young
25 newborn, and he has to travel back to Washington,
26 D.C., and I'm not sure if the proceedings will allow

1 it, but I was wondering that, after Mr. Bertsch is
2 done, and we get on to the panels -- both Mr. Fulton's
3 and the panel's questioning, if we could ask any GHG
4 questions that might be directed to Mr. Youngman
5 first, and if possible, if we could, at the end of
6 that, possibly excuse Mr. Youngman from the --

7 THE CHAIRPERSON: Is he looking for the red-eye, or for
8 --

9 MR. THRASHER: I don't know if he has -- he hasn't got a
10 red-eye available, that's the problem. So --

11 MR. YOUNGMAN: A: It would be a red-eye, I think.

12 MR. THRASHER: Oh, is there --

13 MR. YOUNGMAN: A: It's just a 6:30 red-eye and
14 unfortunately there were no more tickets that could
15 get me on another red-eye.

16 MR. FULTON: Mr. Chairman, I have no questions that would
17 be specifically directed towards Mr. Youngman at this
18 time, and I can say that, from time to time, there
19 have been challenges that have arisen with individual
20 panel witnesses, and the way that they have been left
21 is that people -- the people who are left ask the
22 questions they have, but if they don't ask the
23 questions then the questions would be answered by way
24 of undertaking.

25 So that if you were to decide, yes, Mr.
26 Youngman can be excused at the end of this evening,

1 then that would still allow you to reserve the right,
2 if you had a question that you thought of overnight
3 that related to GHG, then that could be addressed by
4 way of undertaking.

5 THE CHAIRPERSON: We will proceed on that basis, then,
6 Mr. Fulton.

7 MR. YOUNGMAN: A: Thank you, Mr. Chairman.

8 THE CHAIRPERSON: Mr. Bertsch, we're going to break in
9 about ten minutes.

10 MR. BERTSCH: Okay.

11 THE CHAIRPERSON: I take it you're going to be longer
12 than ten minutes.

13 MR. BERTSCH: I'm not sure.

14 THE CHAIRPERSON: Okay, well, let's -- give it your best
15 shot.

16 **CROSS-EXAMINATION BY MR. BERTSCH:**

17 MR. BERTSCH: Q: There was a lot of witnesses already,
18 cross-examination, so hopefully I won't repeat what is
19 already covered.

20 First, I'd like to take a look at the
21 panel, here. I assume this is the panel for price
22 elasticity, whether that involves the load forecast or
23 demand-side management. I assume this is the right
24 panel for all that.

25 Mr. -- Dr. Orans, if you could just
26 summarize, in very simple terms, what price elasticity

1 is, just so we have a starting point for that.

2 MR. ORANS: A: Price elasticity as I'm using it in this
3 case allows me to take a long-term forecast of price
4 increases, both general price increases and rate
5 design changes, and translate them to plausible
6 estimates of conservation induced by those price
7 changes.

8 **Proceeding Time 2:35 p.m. T52**

9 MR. BERTSCH: Q: Okay. If you could take a look at
10 Exhibit B1-1, Appendix E, page 5 of 28. And I'll
11 just go through these quickly, I just want to set the
12 tone for your evidence.

13 So from what I understand in the 2006 IEP,
14 the Table 1 at the bottom was the price elasticity
15 that was in the previous plan?

16 MR. INCE: A: That's correct, yes. I should preface,
17 though, that because we were assuming zero real rate
18 increases, effectively these numbers were not used.

19 MR. BERTSCH: Q: And Dr. Orans, on page 14 of 28 of the
20 Appendix E, I assume that question is a typo and it's
21 supposed to be minus .1 at the top. Question 18.

22 MR. ORANS: A: Yes.

23 MR. BERTSCH: Q: Yes. And so your recommendation is to
24 change basically that table to a price elasticity
25 short-term of minus .1. Is that the premise of your
26 evidence?

1 MR. ORANS: A: Yes, however it's not strictly a short-
2 run elasticity. It's a one-year estimate of
3 behavioural and small investment changes that could be
4 expected over a year.

5 MR. BERTSCH: Q: Okay. And the consequences of that, I
6 take it, are within B-3, BCUC 1.144.1? So by making
7 that change, you've effectively --

8 MR. INCE: A: So, Mr. Bertsch, I can answer this.

9 MR. BERTSCH: Q: Yes.

10 MR. INCE: A: BCUC IR 1.144.1.

11 MR. BERTSCH: Q: Yes.

12 MR. INCE: A: As we saw in the earlier table, we had
13 elasticity values that were assumed to be higher than
14 what were currently used in the forecast. And the
15 results of these elasticities, if you plugged in the
16 elasticity you saw in the previous table that you
17 indicated --

18 MR. BERTSCH: Q: Exactly.

19 MR. INCE: A: -- into the 2007 load forecast, you would
20 get annual savings on a tune of 3700 gigawatt hours
21 per year. Using the elasticities that I used in the
22 2007 forecast, you'd be more in line with
23 approximately 1,000 gigawatt hours a year.

24 MR. BERTSCH: Q: Okay. But right now I'm just trying
25 to zero in on that particular number, just to find out
26 where it came from, the 3756. And I gather that if

1 this earlier, is the double-counting, or potential
2 double-counting. If, for the moment -- and I'm
3 assuming that double-counting is because you're
4 concerned about the energy savings ending up in both
5 the load forecast and the DSM savings? That's the
6 double-counting you're talking about? That you don't
7 want to put it in both places. It's there, but it's
8 that you don't want to put it in two places.

9 MR. ORANS: A: I don't want to count it twice.

10 MR. BERTSCH: Q: Twice. Right, okay. So, if for the
11 moment we don't worry about exactly where you put it,
12 it's there, and for the next bit, we don't worry about
13 that, I'd like to continue under that premise.

14 Would you agree that price elasticity
15 calculations are not exact -- are not an exact
16 science, and involve professional judgment calls on
17 what the values should be?

18 MR. ORANS: A: I would agree there's lots of different
19 ways to calculate a price elasticity, and the
20 functional form, as we pointed out in Mr. Gai's
21 example, for example, on Friday, you know, can vary
22 the results a lot. So you could take the same data,
23 same researcher, and they can take -- you change the
24 functional form of the methodology and produce a
25 different result.

26 MR. BERTSCH: Q: So if you took -- at page 17 of your

1 evidence, table 2 -- and the value, as you mentioned,
2 that you're narrowing in is the minus .1. This table
3 is what you used to justify the -- one of the
4 parameters you used to justify the minus .1, correct?
5 MR. ORANS: A: It's the four residential studies that I
6 thought were most comparable to B.C. Hydro's case,
7 yes.
8 MR. BERTSCH: Q: And would you confirm that one of the
9 studies was done in 2004, and the remainder is in the
10 1980s and 70s?
11 MR. ORANS: A: One of the studies, I think, was done in
12 2005, the Bernstein and Griffin study. Two of the
13 studies were done in the mid-90s, and one study was
14 done in the mid-1980s.
15 MR. BERTSCH: Q: But the data was from 2004 and in the
16 data sample column --
17 MR. ORANS: A: Yes.
18 MR. BERTSCH: Q: -- that I was looking at.
19 MR. ORANS: A: The Bernstein study had earlier data,
20 because it was a time-series data set, yes.
21 MR. BERTSCH: Q: And would you confirm that none of the
22 reports are from B.C.? They're from other provinces
23 or states.
24 MR. ORANS: A: Yes. In the third column over, none of
25 them are in B.C. One is in Bonneville, however, and
26 one is in the state of Washington.

1 MR. BERTSCH: Q: Now, as you mentioned, there's a lot
2 of studies. Why these four that ended up in this
3 particular table? Are there more studies that were
4 residential, or are these all the residential?

5 MR. ORANS: A: No, as I stated before, I looked to the
6 literature that I was aware of -- the literature that
7 we had in our library, and we actually have a large
8 portion of the literature that was published by the
9 Electric Power Research Institute, which has gathered
10 many of these studies over the years. And there were
11 plus -- I think I had in my list, and it was in a data
12 request response, over 130 total studies that we
13 looked at.

14 I mean, there are a number of different
15 problems with those studies and comparability. The
16 first one is, the majority of the studies are done in
17 relatively high-cost areas, and the focus of the
18 *Public Utility Regulatory Policy Act* was to bring
19 efficiency into rate-making and pricing and costing
20 and qualifying facilities, wholesale markets, et
21 cetera. What happened was, it got adopted much more
22 in high-cost jurisdiction -- high gas cost, high
23 electric cost jurisdictions. And along with those --
24 that policy came time of use pricing. So many of the
25 earlier studies were time of use pricing in the early
26 80s and 90s, in the higher-cost jurisdictions, a large

1 portion of those.

2 So, the higher-cost jurisdiction time of
3 use studies I did not rely on. I tended to focus on
4 as close an area as I could to B.C., and areas where
5 there were winter peaking and relatively low cost.

6 **Proceeding Time 2:45 p.m. T54**

7 MR. BERTSCH: I note the time. This may be a good time
8 to break.

9 THE CHAIRPERSON: Break for 15 minutes. Thank you, Mr.
10 Bertsch. Oh, excuse me. Mr. Thrasher.

11 MR. THRASHER: Yes.

12 THE CHAIRPERSON: The panel is quite happy to accede to
13 your request that Mr. Youngman be excused at close of
14 business this evening.

15 MR. THRASHER: Very kind, thank you.

16 **(PROCEEDINGS ADJOURNED AT 2:45 P.M.)**

17 **(PROCEEDINGS RESUMED AT 3:00 P.M.)**

18 THE CHAIRPERSON: Please be seated.

19 MR. THRASHER: So I guess, Mr. Chair, if there's no
20 further questions for Mr. Youngman, we would propose
21 that he leave here at -- what time, Mr. Youngman?

22 MR. YOUNGMAN: A: 3:30 or quarter to four, as
23 necessary.

24 MR. THRASHER: If that is possible.

25 MR. FULTON: Well, Mr. Chairman, given that there are
26 apparently no questions for Mr. Youngman --

1 MR. BERTSCH: I have one.

2 MR. FULTON: Well, Mr. Bertsch has one question. Perhaps
3 rather than us stand down again, Mr. Bertsch can ask
4 him question, then Mr. Youngman can leave.

5 THE CHAIRPERSON: That will be fine.

6 MR. BERTSCH: Q: Mr. Youngman, earlier you gave some
7 very interesting feedback description of U.S. cap and
8 trade situation, and obviously you have some good
9 input on the U.S./Canadian situation. I wonder if you
10 could do the same in giving us some background and
11 your feelings of the Harper/Obama clean energy
12 dialogue and the Obama infrastructure stimulus, and
13 how that would affect this particular market and
14 industry.

15 MR. YOUNGMAN: A: Well, let's see. So could you be
16 more specific about what impact that would have on
17 which industry and --

18 MR. BERTSCH: Q: Basically on the Smart Grid
19 initiative, and also on the transmission between
20 Canada and the States in regards to the clean energy
21 dialogue that they just announced, and what the
22 ramifications might be. If you are familiar with
23 those.

24 MR. YOUNGMAN: A: To be frank, I haven't focused on
25 that. I can speak to implications of recent
26 discussions on potential in the future for a U.S. cap

1 and trade system to link with a Canadian cap and trade
2 system, so I'd be happy to answer those questions.
3 I'm less familiar with some of those other details you
4 mentioned.

5 MR. BERTSCH: Those were all my questions for Mr.
6 Youngman.

7 THE CHAIRPERSON: Mr. Youngman, you are excused. You may
8 leave us if you wish.

9 MR. YOUNGMAN: A: Thank you, Mr. Chairman. Thank you,
10 Commissioners.

11 MR. THRASHER: Thank you.

12 (ROBERT YOUNGMAN ASIDE)

13 MR. THRASHER: Mr. Bertsch, before you continue, I was
14 just wondering if I could enter these undertakings.

15 THE CHAIRPERSON: Yes, please do while Mr. Youngman is
16 finding his way out of here.

17 MR. THRASHER: So I'll start with B.C. Undertaking No.
18 27, Mr. Chair, and it's Exhibit B-29. The transcript
19 reference is Volume 9, page 1553, line 24 to page
20 1554, line 5, and it's a response to Mr. Wallace.

21 (B.C. HYDRO UNDERTAKING NO. 27, VOLUME 9, PAGE 1553,
22 LINE 24 TO PAGE 1554, LINE 5, MARKED EXHIBIT B-29)

23 MR. THRASHER: The next is B.C. Hydro Undertaking No. 28
24 and it's Exhibit B-30, and the transcript reference is
25 Volume 9, page 1555, line 6 to page 1556, line 13.
26 It's also requested from Mr. Wallace.

1 THE HEARING OFFICER: Marked Exhibit B-30.

2 (B.C. HYDRO UNDERTAKING NO. 28, VOLUME 9, PAGE 1555,
3 LINE 26 TO PAGE 1556, LINE 13, MARKED EXHIBIT B-30)

4 MR. THRASHER: The next undertaking is B.C. Hydro
5 Undertaking No. 29, Exhibit B-31. Transcript
6 reference is Volume 9, page 1612, lines 1 to 21. It's
7 a response to Mr. Austin, IPPBC.

8 THE HEARING OFFICER: Marked Exhibit B-31.

9 (B.C. HYDRO UNDERTAKING NO. 29, VOLUME 9, PAGE 1612,
10 LINES 1 TO 21, MARKED EXHIBIT B-30)

11 MR. THRASHER: Finally we have B.C. Hydro Undertaking No.
12 32 and it's Exhibit B-32, and the transcript reference
13 is Volume 9, pages 1650, lines 3 to 13, and it's a
14 response to CECBC and it's Mr. Weafer.

15 THE HEARING OFFICER: Marked Exhibit B-32.

16 (B.C. HYDRO UNDERTAKING NO. 32, VOLUME 9, PAGE 1650,
17 LINES 3 TO 13, MARKED EXHIBIT B-32)

18 **Proceeding Time 3:05 p.m. T55**

19 MR. THRASHER: That's all I have, Mr. Chair.

20 THE CHAIRPERSON: Thank you, Mr. Thrasher.

21 MR. THRASHER: Thank you, Mr. Bertsch.

22 **CROSS-EXAMINATION BY MR. BERTSCH (CONTINUED):**

23 MR. BERTSCH: Q: Dr. Orans, I understand you're -- I'm
24 sure you're constantly looking at new reports, and
25 documents, and gathering in your field, and using that
26 for your analysis.

1 MR. ORANS: A: That's correct.

2 MR. BERTSCH: Q: Now, the Appendix E in which you
3 produced your evidence was submitted with the original
4 LTAP application on June 12th, 2008. Is that correct?

5 MR. ORANS: A: Yeah, roughly in that time frame. I
6 don't know specifically which date it was submitted
7 on.

8 MR. BERTSCH: Q: Subject to check. What was the
9 approximate date in which you considered all of your
10 reports and then used that to produce your evidence?

11 MR. ORANS: A: The initial part of this study was
12 conducted for the RIB design, and so these same
13 studies, these same four studies, Mr. Bertsch, I think
14 you might have remembered, were used in my testimony,
15 oral and written, in the RIB application.

16 MR. BERTSCH: Q: Have you got an approximate date?

17 MR. ORANS: A: I'd have to check, but approximately a
18 year ago. March/April time frame. So before the
19 summer.

20 MR. BERTSCH: Q: March/April, 2008.

21 MR. ORANS: A: Yes. And then there was a subsequent
22 update in the summer to add -- to maintain -- keep the
23 four residential studies that I had already set forth
24 in the RIB, and then look at a broad range of
25 commercial studies, of which there were less. And
26 develop --

1 MR. BERTSCH: Q: But that was done after.
2 MR. ORANS: A: Yes, it was.
3 MR. BERTSCH: Q: Okay. Right now, I'm just
4 concentrating on this submission and your evidence,
5 which is Appendix E.
6 MR. ORANS: A: Yeah. But both of them are part of my
7 submission for the LTAP.
8 MR. BERTSCH: Q: Oh, okay.
9 MR. ORANS: A: So the commercial rate design -- the
10 commercial elasticity studies and the residential
11 elasticity studies.
12 MR. BERTSCH: Q: Oh, I see. Thank you. If you could
13 now refer to -- and that evidence is -- the
14 information you had of March/April is the time in
15 which you determined the minus .1 as your target value
16 for price elasticity. Is that correct?
17 MR. ORANS: A: For the residential class, yes.
18 MR. BERTSCH: Q: Yes, yes. And again, I'm referring to
19 the question that we brought up earlier on the first
20 statement in your evidence.
21 MR. ORANS: A: Yes, that's correct.
22 MR. BERTSCH: Q: Thank you. If we just take a look at
23 Exhibit B1-1, Appendix E, page -- oh, sorry, I had the
24 wrong one. Exhibit B-3, BCUC IR 1.18.1. BCUC 1.18.1,
25 Exhibit B-3. And this was a question from BCUC to
26 provide a list of studies, and there was a list of

1 five references. Do you see that?

2 MR. ORANS: A: I think Mr. Ince could answer this.

3 MR. BERTSCH: Q: Okay. First thing, before we get into
4 that particular reference, Dr. Orans, if you could
5 take a look at transcript 9, page 1628. 1628, Volume
6 9.

7 MR. ORANS: A: Okay.

8 MR. REIMANN: A: We have that.

9 MR. BERTSCH: Q: You have that?

10 MR. ORANS: A: Yes.

11 MR. BERTSCH: Q: And Dr. Orans, in response to looking
12 at this particular document, your response was,
13 " Yeah, the first time I saw those studies
14 was in response to the IRs that Mr. Ince was
15 referring to. ..."

16 Is that referring to these particular -- this
17 particular IR?

18 MR. ORANS: A: No, I had seen the UtiliPoint work
19 initially in the meeting that Mr. Hobson and I were
20 in, along with Mr. Ince, prior to the April formation
21 of these. I had seen the UtiliPoint work, which has a
22 summary in it. I hadn't seen Mr. Gai's work, and I
23 hadn't seen the work by Tabors Caramanis & Associates.

24 **Proceeding Time 3:09 p.m. T56**

25 MR. BERTSCH: Q: Okay, so the bottom four were not
26 taken into consideration because you hadn't seen them

1 when you wrote your evidence, but the top one you
2 have.

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

4 MR. BERTSCH: Q: Now that you have seen these
5 documents, do you feel those documents are relevant to
6 the discussion?

7 MR. ORANS: A: I commented earlier on my review of Mr.
8 Gai's work, and I don't think they are very relevant
9 to the discussion we're having now. They don't change
10 my mind at all about these forecasts, that Tabors
11 Caramanis & Associates' work is a broad summary of the
12 literature with broad ranges that are consistent with
13 my own review, doesn't -- it's not inconsistent at all
14 and highlights the same kind of range I found.

15 MR. BERTSCH: Q: Could you just pull out one of those
16 documents, the Attachment 5?

17 MR. HOBSON: A: Do you have a page reference?

18 MR. BERTSCH: Q: Well, first the first page of -- this
19 BCUC IR 2.234.1, Attachment 5.

20 MR. ORANS: A: Yes, I'm with you.

21 MR. BERTSCH: Q: And this study was done for B.C.
22 Hydro, was that correct, in August 1989?

23 MR. ORANS: A: In July -- the first one was done in --
24 it says July 1990.

25 MR. BERTSCH: Q: I'm looking at Attachment 5 that has
26 August 1989 on the cover. It's 2.234.1 BCUC.

1 MR. ORANS: A: Yes, I'm with you. Attachment 5?
2 MR. BERTSCH: Q: Yes. And this was done on August --
3 it's dated 1989, done for B.C. Hydro?
4 MR. ORANS: A: Yes.
5 MR. BERTSCH: Q: Is that the same approximately
6 timeframe as three of your four studies that you
7 included in your table before?
8 MR. ORANS: A: I have two studies that are in the --
9 one study in the '80s and the other study maybe mid-
10 90s. But for the sake of this discussion it's the
11 same general timeframe.
12 MR. BERTSCH: Q: Right, that's what I'm getting at.
13 MR. ORANS: A: It uses a much longer -- earlier time
14 series, from a longer period.
15 MR. BERTSCH: Q: And the value, if you look at page 19
16 of 62, first of all if you look at -- it says 16 of --
17 19 of 62, do you see that?
18 MR. ORANS: A: Yes, I do.
19 MR. BERTSCH: Q: And the line above Table 1, there's a
20 reference of including a previous internal B.C. Hydro
21 study? Do you see that? One line above Table 1 says,
22 "Includes a previous internal B.C. Hydro study by
23 Chang 1983".
24 MR. ORANS: A: Yes, I see that.
25 MR. BERTSCH: Q: Is that on the record anywhere?
26 MR. ORANS: A: I haven't seen if it is, so I haven't

1 seen any IR with it.

2 MR. INCE: A: And I have not ever seen that study
3 either.

4 MR. BERTSCH: Q: And is it true that on Table 1 there's
5 a short run value of minus .31?

6 MR. INCE: A: Yes, that's correct.

7 MR. BERTSCH: Q: And that is significantly different
8 than your minus .1? If you could just explain.

9 MR. INCE: A: Yes. So I covered that on Friday, I
10 believe. And if you go back, this is quite an
11 extensive study Mr. Gai has. That's why I was
12 confused about your dates. He has a Phase 2 -- he has
13 a number of phases in his analysis. And in the one
14 year referring to, he doesn't show his data stream.

15 So the most telling table in Mr. Gai's
16 analysis is Table 2 on page 13, Attachment 4, page 19
17 of page 117.

18 **Proceeding Time 3:14 p.m. T57**

19 If you look at that table, on the first
20 column is the years, so he starts from 1961 to 1989.
21 And then he has B.C. electric consumption all
22 together, as this entire class. And then he has the
23 residential electric price, and he has commercial
24 prices. But let's just look for the residential price
25 for a moment. So if you look at the period from 1961
26 to 1969, there's a huge increase in quantity, almost

1 100 percent. And this is typical of what was
2 happening in the industry from the 1920s, the 1930s,
3 the 1940s, the 1950s and the 1960s. Quantity
4 increased, doubled every ten years and price decreased
5 by half. This is economy, scope, scale and diversity,
6 high-voltage transmission, lower costs of gas,
7 diversity, turbines, et cetera. You know, a wonderful
8 engineering story that's been called the golden years
9 of expansion.

10 But if you look at what's happening to the
11 residential electric price, really nothing -- very
12 little is happening there. So the first eight years,
13 the residential electric price decreases by 10
14 percent, and I assume this is just coming from his --
15 if you look at the GDP deflation factor on the right,
16 so he's picking up this 10 percent reduction in price
17 and he has 100 percent growth in consumption.

18 Now this, in my mind, is an unrealistic
19 view of the effect of pricing on growth. He's got
20 everything into the growth. Now, if you don't have
21 all the other variables -- you know, to be fair to Mr.
22 Gai, he didn't have all the other details. He had a
23 long-run price elasticity, he had a deflator, and he
24 was looking at what this might look like. And other
25 studies that had been run from big macro-economic
26 models, you know, had done this before. So, this

1 isn't out of the ordinary in particular. It's just,
2 when you attribute it for my purpose, this would give
3 you a much too big elasticity estimate.

4 If you look at the next two years, after
5 that, Mr. Bertsch, which -- another telling point.
6 The next two years, the price increase is actually 15
7 or 20 percent, but the quantity -- nothing happens to
8 the quantity. Quantity just keeps on going, up
9 another ten percent.

10 So, it looks like what he's got is what I
11 call "mid-ed [sic] variables". A whole bunch of what
12 we used to call "plug loads", because they couldn't be
13 specified. A whole number of plug loads that was --
14 amounted to electrification or additional uses during
15 this whole period, and he picks it up in his GDP
16 deflator as a price variable, and he gets an
17 attributed price elasticity of minus .3, as you just
18 showed me in that kind of study. And then even longer
19 -- in the longer run, even a larger number.

20 MR. BERTSCH: Q: Yeah, and page -- on page 17, two
21 pages before that.

22 MR. ORANS: A: Yes.

23 MR. BERTSCH: Q: He's using there a short range of
24 minus .45.

25 MR. ORANS: A: Yes.

26 MR. BERTSCH: Q: And then two pages past that, we see

1 MR. ORANS: A: Yes, the Bernstein and Griffin study has
2 a long-run elasticity number.

3 MR. BERTSCH: Q: So if you could just clarify the
4 answer because that was done in this specific case,
5 are you saying that no matter from a long-run price
6 elasticity estimate, are you suggesting from an
7 overall point of view that no matter whether it goes
8 into load forecast or DSM, you don't have the
9 certainty? Or is it because of dividing the two? In
10 not having the sufficient evidence.

11 MR. ORANS: A: Yeah, I was interpreting your question
12 directly from the studies cited.

13 MR. BERTSCH: Q: Right.

14 MR. ORANS: A: So this isn't a general statement that
15 the long-run elasticities are not larger than short
16 run. I didn't have the evidence from the studies that
17 I thought were most comparable to B.C., but a long-run
18 estimate it would include all the programs, codes and
19 standards et cetera, that were properly done, wouldn't
20 be larger or twice as large, so I'm not --

21 MR. BERTSCH: Q: Exactly, so what is your answer in
22 that case? Not looking at the studies but independent
23 of the knowledge you know, is long-run price
24 elasticity larger than short-term, start with -- or
25 short-run?

26 MR. ORANS: A: It should be at least as large and

1 should include additional investments. And so to the
2 extent your codes and standards and your programs and
3 your education and everything else is effective, the
4 long-run elasticity, if I'm not already capturing that
5 in something else, should be larger than the short-
6 run.

7 MR. BERTSCH: Q: And if we take the scenario that I
8 explained earlier about not worrying about whether
9 it's in DSM savings or in the load forecast, what
10 would you say would be the long-run price elasticity
11 in the B.C. Hydro case? Because I know you're -- I'm
12 not trying to divide it up --

13 MR. ORANS: A: I never -- yeah, I never calculated it.
14 I never -- perhaps Mr. Hobson can calculate it. But I
15 mean, if he added all of the -- in the numerator, the
16 codes and standards plus all the program stuff, plus
17 the shorter-term price elasticity estimates, divided
18 and assumed they were all attributable just to our
19 small inclining block designs, combined with Mr.
20 Ince's rate forecast increases, I don't know
21 calculations --

22 MR. HOBSON: A: And I'm not sure if that's the purpose
23 of what you're after.

24 MR. BERTSCH: Q: What I'm looking at is, what is the
25 long-run price elasticity that you see from the LTAP?
26 And I know the reason why there isn't answer that we

1 see is because of not trying to double-count. But if
2 at this point we don't worry whether it's in DSM or in
3 the load forecast, what would the number approximately
4 be?

5 MR. ORANS: A: I can't give you an estimate of what the
6 long-run piece would be. I mean, you could do a
7 calculation of the end result and try to attempt to
8 say which is rate-induced and which is really program-
9 induced. But there really -- in the way we're
10 estimating total amounts of conservation, we don't
11 really need to calculate the long-run piece because
12 it's captured already in the program data and the
13 codes and standard data.

14 **Proceeding Time 3:24 p.m. T59**

15 MR. BERTSCH: Q: So you wouldn't be able to give an
16 answer?

17 MR. ORANS: A: I don't have one. I didn't calculate
18 one.

19 MR. BERTSCH: Q: Just going back to your evidence at
20 Appendix E, page 18, at the bottom, on the footnote,
21 footnote number 9, it says:

22 "Long run price elasticity resulting in an
23 average of minus 0.56."

24 Is there a reason why that didn't end up in the table?
25 Because you had this insufficient evidence of long-run
26 elasticity, and I see a number there, but I didn't see

1 it appear in the table.

2 MR. ORANS: A: No. I could look and see what that was
3 with respect to, but no, I didn't exclude it on
4 purpose or --

5 MR. BERTSCH: Q: And would you -- sorry.

6 MR. ORANS: A: Yeah, it's not -- that Dahl study is not
7 part of this set, but --

8 MR. BERTSCH: Q: Was there a reason why it wasn't?

9 MR. ORANS: A: No, this was just a -- the Dahl study is
10 a broad survey, and so I was providing ranges in these
11 footnotes of what you see in the industry, from the
12 ranges of short-run and the ranges of long-run. So it
13 was not as a comparable jurisdictional comparison.
14 But just as --

15 MR. BERTSCH: Q: Because you were looking for
16 particular regions?

17 MR. ORANS: A: I was looking at what do people find in
18 the whole set for short-run and long-run elasticity,
19 and plausible ranges.

20 MR. BERTSCH: Q: Go back to IR 2.243.1, attachment 5.
21 We were just there.

22 MR. ORANS: A: Okay, I'm there.

23 MR. BERTSCH: Q: On page 19 of 62, and this is one of
24 the B.C. Hydro reports, and the LR mean minus .7, I
25 assume that means long-run price elasticity.

26 MR. ORANS: A: Yes.

1 MR. BERTSCH: Q: The value they're giving is minus .7?
2 MR. ORANS: A: Yes, that's correct.
3 MR. BERTSCH: Q: And if you look at the Attachment 4,
4 page 2 of 117, there's a table, "Total B.C. Hydro,"
5 and then "B.C. Hydro residential".
6 MR. ORANS: A: Yes, I see it.
7 MR. BERTSCH: Q: Yeah, and the long -- and that's also
8 long-run elasticity of minus .5.
9 MR. ORANS: A: Yes, that appears what the table says.
10 MR. BERTSCH: Q: And one more reference. If you could
11 look at Attachment 2, pages -- page 4 of 13. And
12 there is, in the middle of the page, a selected range,
13 long, minus .45 to minus .8.
14 MR. ORANS: A: Yes, I see it.
15 MR. BERTSCH: Q: If looking at all of those, do you
16 have any idea, as far as -- I know you couldn't get a
17 real number as far as the LTAP. Those values that you
18 see, would you see that the B.C. Hydro LTAP is more,
19 the same, or equal than those values?
20 MR. ORANS: A: I said I didn't do the calculation, and
21 so I don't know when you would add it all up what that
22 comparable number might look like, and it -- we have
23 to add it all up and then you have to attribute it all
24 to price.
25 MR. BERTSCH: Q: Okay. Thank you. Okay, I'd like to
26 go to a new topic. You can take a rest, Dr. Orans.

1 mentioned on Friday as well about having an external
2 group come in and take a look at how we put the DSM
3 plan together, and we had hired Summit Blue to come in
4 and do that review, and take a look at our planning
5 process, and how we developed our DSM plan.

6 MR. BERTSCH: Q: Now, on the load forecast, there's, I
7 assume, some big huge calculating program that
8 calculates the answer. How do you physically
9 calculate for the DSM for this type of information?
10 What kind of --

11 MR. HOBSON: A: We also have software for demand-side
12 management that we take a look at, and we model our
13 various initiatives, and take a look at the variety of
14 assumptions that we have to look at, whether those are
15 the persistence of the savings, the cross-effects that
16 may be occurring, free ridership, free drivers,
17 participant levels, things like that.

18 MR. BERTSCH: Q: And what checks and balances do you
19 have on this particular table?

20 MR. HOBSON: A: I'm not sure what you mean by this
21 particular table.

22 MR. BERTSCH: Q: To ensure that this table is correct.
23 You have a team, you mentioned, that reviews it.

24 MR. HOBSON: A: We do have a group that would go
25 through and look, and I guess there's been several
26 sets of eyes that have looked at the specific numbers

1 that you would see within the table, as it would
2 correspond to the results that were produced through
3 our modeling efforts.

4 MR. BERTSCH: Q: Could you confirm that the energy
5 savings for DSM Option B is the same or greater than
6 DSM Option A, not only overall but for each and every
7 program?

8 MR. HOBSON: A: Can you say that again, please?

9 MR. BERTSCH: Q: Would you confirm that the energy
10 savings for DSM Option B is the same or greater than
11 DSM Option A, for not only the overall but for each
12 and every program? Generally -- without looking at
13 the numbers, just philosophically, is that what --

14 MR. HOBSON: A: Philosophically, the idea behind Option
15 B is a more aggressive version, yes.

16 MR. BERTSCH: Q: For each program.

17 MR. HOBSON: A: Yeah. The idea is to build upon each
18 program where we could, and so you'll find some that
19 will be of equal size, and some that will be larger.

20 MR. BERTSCH: Q: So, that's what I thought, and when I
21 looked at it deeper down, then this is where I kind of
22 ran into a roadblock. If you could look at the first
23 behaviour line --

24 MR. HOBSON: A: Right.

25 MR. BERTSCH: Q: --- I see behaviour at 232 for B, but
26 309 for A.

1 MR. HOBSON: A: Yeah, I --

2 MR. BERTSCH: Q: And I see the same costs, and I'm
3 puzzled what that means.

4 MR. HOBSON: A: Yeah. I think what's occurring there
5 is, it's the interplay between the different
6 components of our DSM plans. So as we start to build
7 our plan and we build individual initiatives, when you
8 put those initiatives together, there's interplay
9 between them and we have to make adjustments. And in
10 this case, I think what's happening is, you're getting
11 more savings coming through from residential rate
12 structures, and that's cannibalizing some of the
13 savings that you otherwise would have occurred through
14 your behaviour program. So one way to think of it is
15 almost an increase in free ridership that you're going
16 to be drawing through that behaviour program.

17 MR. BERTSCH: Q: So those numbers are then correct?

18 MR. HOBSON: A: They are correct.

19 MR. BERTSCH: Q: Just take a look at the next line, and
20 that is renovation rebate.

21 MR. HOBSON: A: I have that.

22 MR. BERTSCH: Q: If you could just explain to me how
23 those values are 221 and 271, yet the ratepayers'
24 costs almost triple or more, even though the savings
25 are a little bit more, and energy savings in B? Costs
26 go with them?

Proceeding Time 3:34 p.m. T61

1
2 MR. HOBSON: A: I'm not sure of the specifics, but my
3 -- I believe what you would have going on there is an
4 increased level of effort, and we're reflecting an
5 increased level of savings that are materializing from
6 that. You will have different things happening within
7 your all-ratepayers costs of reflecting the various
8 customer costs, as well as the utility costs that are
9 in play. It could be that they're targeting more
10 expensive measures as they're moving up the curve as
11 well, getting more savings but getting more expensive
12 measures within that mix. I'm not sure of the
13 specifics.

14 MR. BERTSCH: Q: And if we look at -- it's a small
15 thing, but when I look at the ratepayer costs, the
16 numbers don't seem to add up in the columns. I get
17 1058 versus 1080.

18 MR. HOBSON: A: It could be rounding. We also have a
19 footnote at the bottom of that page that I think
20 indicates one of the areas where it won't round -- or
21 won't add.

22 MR. BERTSCH: Q: And when I look at this table, the
23 other thing that I noted, which was rather
24 questionable, is that on column A, all the numbers
25 tend to decrease except for renovation rebate. And
26 why that one is on Column A, why that one is all of a

1 sudden out of place. I wonder if you could just
2 verify that those are the right --

3 MR. HOBSON: A: I'm not sure what you're referring to.

4 MR. BERTSCH: Q: If you look at page 8 of 9, Column A,
5 all of the numbers are decreasing until you hit
6 renovation rebate, which is also the one that has the
7 funny numbers.

8 MR. HOBSON: A: Oh, are you talking about the Planned
9 Energy Savings column?

10 MR. BERTSCH: Q: Yes, Planned Energy Savings, column A,
11 you go all the way down, the numbers are decreasing
12 except for renovation rebate, when all of a sudden it
13 jumps off to 221.

14 MR. HOBSON: A: Yeah, I'm not sure that they were
15 ordered that way in particular, so it may just be a
16 coincidence. But I don't know of any reason why it
17 would be different.

18 MR. BERTSCH: Q: So those values then, as far as you
19 know, are correct.

20 MR. HOBSON: A: As far as I know, those values are
21 correct.

22 MR. BERTSCH: Q: Could you just take a look at Appendix
23 K, page 101 of 213. Now when I look at 2020 on that
24 column, I see renovation rebate at 23 and not 221.
25 And that's a discrepancy of a factor of 10, and I'm
26 trying to correlate the two, and to me there's

1 something wrong there.

2 MR. HOBSON: A: It could be -- no, honestly I don't
3 know the detailing behind it, but it could be a
4 difference as we move from Option A to Appendix K,
5 there were some adjustments made to various programs,
6 and this could have something to do with the interplay
7 between codes and standards or regulation. But I
8 don't know that information off the top of my head.

9 MR. BERTSCH: Q: Given it is off by a factor of 10,
10 could that be an undertaking to explain the
11 discrepancy between page 8 of Appendix F-17, and
12 Appendix K, page 101, for renovation rebate with two
13 values of 23 and two 21?

14 MR. THRASHER: Could you tell me what you're interested
15 in finding out?

16 MR. BERTSCH: To explain the difference between the two
17 values.

18 MR. THRASHER: Yes, we can take that undertaking.

19 **Information Request**

20 MR. BERTSCH: Q: And going back to the table. Sorry,
21 page 8 of 9 on F17. That whatever those values are,
22 that they move themselves up through the document to
23 the very end of the DSM value of 10,820. That it has
24 a ripple effect. Whatever happens at this level has
25 an effect on DSM throughout the document. Is that --

26 MR. HOBSON: A: In terms of the analysis conducted

1 MR. BERTSCH: Q: Right. No, I'm just zeroing in on the
2 difference.

3 MR. REIMANN: A: One program.

4 MR. HOBSON: A: Yeah, of a change --

5 MR. BERTSCH: Q: From 23 -- that's right.

6 MR. HOBSON: A: -- with respect to renovation rebate --

7 MR. BERTSCH: Q: Exactly.

8 MR. HOBSON: A: -- my understanding of your undertaking
9 is, it would be specific to that information.

10 MR. BERTSCH: Q: Yes, that's correct.

11 MR. HOBSON: A: Yes.

12 MR. BERTSCH: Q: Okay. Thank you. Take a look at
13 Exhibit B, page 5-53. B-1, page 5-53. And I don't
14 know who to direct this to. Mr. Hobson?

15 MR. HOBSON: A: Perhaps just ask the question.

16 MR. BERTSCH: Q: And start? Okay. There's a
17 discussion here regarding Option B, and the last
18 bullet states, at the page -- line 17 states:
19 "However, under a low gap scenario, DSM
20 Option B would provide more energy savings
21 than required to close the gap."
22 And I'd like to just zero in on the word "however",
23 which to me seems to imply that B.C. Hydro is saying
24 that it does not want to be in the position of getting
25 too much energy savings due to DSM.
26 So, just with that context, I wonder if you

1 could clarify your position in the following. Does
2 B.C. Hydro consider that DSM Option B, under a low gap
3 scenario, provides more energy savings than required
4 to close the gap? If that was the case, that that
5 would be a detriment to going to Option B?

6 MR. REIMANN: A: So this would exceed the gap in a case
7 of a low deliverability of DSM. And given that that
8 would -- it was shown under a low thermal market
9 scenario, the cost of DSM would actually outweigh the
10 value in the market, so it would be a net cost. So I
11 think that's why in this particular case it's -- it
12 may not be that attractive. But within the overall
13 context, we would look to acquire DSM or supply-side
14 resources that would fill out the gap and not seek to
15 exceed it.

16 MR. BERTSCH: Q: So in other words B.C. Hydro would not
17 consider it a detriment to create a situation where
18 there's too much energy savings through DSM?

19 MR. REIMANN: A: Well, I think we'd look to avoid a
20 situation where we acquired more supply than we
21 needed.

22 MR. BERTSCH: Q: I'm talking about energy savings due
23 to DSM.

24 MR. REIMANN: A: Agreed.

25 MR. BERTSCH: Q: Okay. If we take a look at page 5-54,
26 and also Table 5-16, the first line, where we have the

1 low/low situation -- low gas, low GHG, and small gap.
2 And we have a particular case when DSM cost energy
3 savings is larger than the supply savings avoided, and
4 that graph, there is only one of them, a situation
5 where the savings is greater than the supply. Is that
6 a detriment?

7 MR. REIMANN: A: Should that circumstance and portfolio
8 occur, you would have been better off to have picked
9 the supply-side resources, so I would say yes.

10 MR. BERTSCH: Q: So it wouldn't be a detriment.

11 MR. REIMANN: A: It would be a detriment for that
12 portfolio.

13 **Proceeding Time 3:44 p.m. T63**

14 MR. BERTSCH: Q: Okay, I'd like to go on to another
15 topic. If you'd take a look at Appendix F-17, page 6
16 of 9.

17 MR. HOBSON: A: Yeah, we have that.

18 MR. BERTSCH: Q: And I'm trying to understand this, of
19 this appendix, and I know people -- there has been
20 some intervenors talk about this previously. But if
21 we look at Appendix F-17 versus F-1, where there was a
22 list of some 200 resource options, I wonder if you
23 could explain why at DSM there aren't a whole bunch of
24 options to look at and we're basically given a plate
25 to deal with, and especially when you look at the
26 difference between F-17 here and F-1.

1 MR. HOBSON: A: Are you talking specifically on page 6
2 with rates?

3 MR. BERTSCH: Q: Just generally before we get into
4 this, look at -- F-17 is basically all we have on
5 demand-side management, and with F-1 there's quite a
6 gamut. In fact, to clarify the question perhaps a
7 little bit more --

8 MR. HOBSON: A: I mean, we still take a look at a
9 variety of different initiatives within DSM. I think
10 with the filing a lot of that is placed within
11 Appendix K. But in terms of how we package up those
12 individual initiatives and the variety of those
13 initiatives and put them forward as two options within
14 Chapter 3 in that analysis, I think that speaks more
15 to how the various initiatives interplay with one
16 another. And a good example is one you brought
17 forward earlier with the behaviour program and how
18 that changes from Option A to Option B as a result of
19 the interplay with the rate structure.

20 MR. BERTSCH: Q: Maybe just to clarify the question a
21 little bit more, within F-1 we have 216 pages of
22 resource options, correct?

23 MR. HOBSON: A: I would take you at your word for that,
24 but I --

25 MR. BERTSCH: Q: And if we look for instance at wind,
26 we then have a 17-page wind cost assessment. And then

1 we have a 74-page wind potential analysis. And so we
2 have a lot of backup and a lot of gamut of what to
3 look at, and I don't for the moment would think that
4 we're doing all of the wind scenarios that are
5 outlined.

6 But when we look at demand-side management
7 at the top level, because at this point we're not
8 talking about specifics within appendix K, that hasn't
9 come into bear yet. We're still at the top level
10 looking at the resource options. And what I'm
11 questioning is, why at this level do we not have the
12 capability, certainly as intervenors, to look and see
13 the options that we can look at within DSM? Are we
14 including everything? Do we have the possibility of
15 including others? We don't have any of those options
16 when we look. We basically have appendix F-17 in
17 which it's already predefined for us. And maybe if
18 you'd comment why that is for DSM.

19 MR. HOBSON: A: I do think there is a lot of detail in
20 behind our DSM plan. I think the way we've chosen to
21 organize it with this is more a function of how it
22 comes forward. So when I take a look at Option A and
23 I take a look at Option B, if you took programs as an
24 example, the same programs you would find under Option
25 A and Option B are the same programs you'll find
26 within Appendix K. And so the level of aggression

1 MR. BERTSCH: Q: So on similar light, is this, then,
2 the avenue where questions come forward as far as what
3 have you or have not considered for DSM?
4 MR. HOBSON: A: Well, I think we put forward -- I'm not
5 completely sure of your question, but I think we've
6 put forward within again -- probably within Appendix
7 K, and some sub-appendices within that, some of the
8 rejected, if you will, initiatives that were
9 considered and were not --
10 MR. BERTSCH: Q: Yes, so that's my question. If
11 there's some other DSM measures that -- and we have
12 questions about whether they should be in there or
13 not, because of the way you organized it, is it Panel
14 4 that we direct those to?
15 MR. HOBSON: A: I think it would be appropriate to take
16 those up with Panel 4 --
17 MR. BERTSCH: Q: Okay.
18 MR. HOBSON: A: -- just because of the nature of how
19 the application's organized.
20 MR. BERTSCH: Q: Okay, yeah, that's -- because I found
21 it difficult to do it within this context.
22 MR. HOBSON: A: Yeah.
23 MR. BERTSCH: Q: Okay. If we could now go back to that
24 Appendix F-17, page 6 of 9. And again, take into
25 context that this is -- understanding the background,
26 but this is more philosophical resource options rather

1 than specific DSM measures, which are in K. Would you
2 say that these rate structures listed on page 6 are
3 basically a proxy for the actual conservation rates
4 and not intended to be "Here are the rates that we're
5 going forward with?"

6 MR. HOBSON: A: I think that's accurate, yes, and I
7 think that's how we portrayed it in some similar
8 questions we received along those lines in Information
9 Requests.

10 MR. BERTSCH: Q: And would you confirm that the large
11 commercial service may have a range of rate structures
12 and not only stepped rates, which I think came up
13 earlier?

14 MR. HOBSON: A: Can you say that again, please?

15 MR. BERTSCH: Q: That the large general service that
16 you have listed here and which I believe earlier today
17 a response came back about the stepped rates, that
18 large general commercial may have a range of rate
19 structures, and not only one?

20 MR. HOBSON: A: A range -- I'm not sure what you
21 specifically mean by that, in terms of levels of
22 pricing --

23 MR. BERTSCH: Q: That it might have more than one rate
24 structure --

25 MR. HOBSON: A: Oh, for the overall class?

26 MR. BERTSCH: Q: -- because of these -- for the class.

1 MR. HOBSON: A: Yeah, I'd suggest that that's a
2 possibility, yes.

3 MR. BERTSCH: Q: Okay. If you take a look at small
4 commercial, in Option A and Option B, and the amount
5 of savings go up and the pricing goes up, and so does
6 the threshold, the Tier 2 rate goes up. Why is it
7 that, when you look at residential, that the opposite
8 seems to occur then for small commercial, large
9 commercial and small industrial? For each of those,
10 the consumption threshold increases and the savings
11 therefore increase, but in residential the threshold
12 is actually decreasing from A to B, and maybe if you
13 could give the philosophical approach of why that
14 residential is different.

15 MR. HOBSON: A: My -- yeah. My understanding is, I
16 think it's an outcome of the modeling, in that you
17 have a trade-off between setting price points at
18 certain levels and what thresholds end up being as a
19 result of that. And one of the trade-offs is the
20 amount of load that's exposed to the various price
21 levels changes as a result of your assumptions. It so
22 happens that, as you model that out within the various
23 rate classes, under those different assumptions, these
24 are the outcomes from that modeling work. And so it
25 is a different outcome on the residential side. More
26 as a function of the amount of load that's being

1 exposed to those prices under different scenarios.

2 MR. BERTSCH: Q: And so it's to do with the modeling of

3 --

4 MR. HOBSON: A: It's to do with the structure that was
5 assumed, and the outcome from the modeling produces a
6 phenomenon dependent upon the load that's exposed to
7 price signals. And that will change, depending on the
8 thresholds chosen and the price points.

9 MR. ORANS: A: Mr. Bertsch, as I understand it, these
10 are all revenue-neutral cases.

11 MR. BERTSCH: Q: That was my next question.

12 MR. ORANS: A: Yeah.

13 MR. BERTSCH: Q: To confirm that they're all revenue-
14 neutral.

15 MR. ORANS: A: Yes.

16 MR. BERTSCH: Q: And I know this was touched on
17 earlier, but if you take a look at industrial, is
18 there a -- and we see there two numbers exactly the
19 same for A and B. Why is that? Why does industrial
20 not get any more savings in Option B than in A?

21 **Proceeding Time 3:54 p.m. T65**

22 MR. HOBSON: A: Yeah, I would have to assume that it's
23 tied to the threshold and the Tier 2 price being the
24 same across the two, and the site-by-site analysis
25 that was done, and concluded that the savings wouldn't
26 differ.

1 MR. BERTSCH: Q: So you're not planning to have any
2 more savings in industrial for Option B then? Is that
3 what that's saying?

4 MR. HOBSON: A: With respect to this analysis I think
5 it's saying between Option A and Option B. The
6 assumption here was that you were carrying forward the
7 same price points for --

8 MR. BERTSCH: Q: And so no more savings.

9 MR. HOBSON: A: And no more savings, no.

10 MR. BERTSCH: Q: I have a couple more items.

11 THE CHAIRPERSON: We're going on until 4:30 today.

12 MR. BERTSCH: Is it 4:30?

13 THE CHAIRPERSON: Yes.

14 MR. BERTSCH: Oh, that's right, but I'll try to finish by
15 4:00 in any case.

16 MR. BERTSCH: Q: Take a look at Exhibit B-1, page 5-58,
17 and under the section 5.5.5, and the line says
18 underneath there, "The DSM options avoid a number of
19 supply risks such as First Nations." And I don't know
20 if this is the right panel but it's within this
21 chapter. Does B.C. Hydro agree that the latest court
22 cases further enhances DSM options because it avoids
23 First Nation risks, and those risks become greater
24 because of the court cases?

25 MR. THRASHER: I think you're asking for essentially a
26 legal opinion. That would be dealt with in argument.

1 THE CHAIRPERSON: Whoever wrote "555" has invoked First
2 Nations as a risk. You can, I think --

3 MR. THRASHER: I agree with you, Mr. Chairman, but I
4 think that we would probably need an additional time
5 to first of all review the Court of Appeal cases to
6 come up with any conclusions on how that would affect
7 any programs that we have in place. So once again, I
8 don't think we've had the time to do that analysis.
9 Certainly Mr. Reimann would probably be able to answer
10 that question.

11 THE CHAIRPERSON: We might put it to the next panel.

12 MR. THRASHER: Put it Panel 4? That would be fair. Be
13 better than this panel. And then if they can't handle
14 it --

15 MR. REIMANN: A: Mr. Scouras will.

16 MR. THRASHER: Mr. Scouras might be able to answer that
17 question.

18 THE CHAIRPERSON: We'll give him a stab at it anyway.

19 MR. BERTSCH: Q: Take a look at Exhibit B-1, page 3-2,
20 and this is just a very high-level -- and I know that
21 we've touched upon this but I'd like to really zero in
22 on the answer. The first line says, "Both options
23 included the same components for Option A and Option
24 B."

25 MR. HOBSON: A: Sorry, what page you on? 3-2?

26 MR. BERTSCH: Q: 3-2, Exhibit B-1 at the very top.

1 MR. HOBSON: A: Yes.

2 MR. BERTSCH: Q: Do you see it? And I would like
3 clarity on exactly why Option B does not include any
4 more components in it, and the reason behind that.

5 MR. HOBSON: A: I think all that's referring to as
6 components is meaning -- think of it as the diagram
7 that's shown there. Codes and standards, rate
8 structures, and programs. So I'm not sure what
9 component beyond that we'd be looking at.

10 MR. BERTSCH: Q: Oh, I see.

11 MR. HOBSON: A: It's not meant to be the list within
12 those bubbles, but the bubbles themselves or the
13 circles themselves.

14 MR. BERTSCH: I will leave it at that. Thank you.

15 THE CHAIRPERSON: Thank you, Mr. Bertsch.

16 **Proceeding Time 3:58 p.m. T66**

17 MR. FULTON: In the past I've been left glasses of water,
18 which I do have, but today I've also been left a
19 partially-eaten cookie, so I think I'll decline that.

20 COMMISSIONER MILBOURNE: Lucky you.

21 MR. FULTON: And I will not be finished by 4:30, so that
22 those who had an interest in celebrating St. Chad's
23 Day today, their evenings will not be compromised.

24 THE CHAIRPERSON: Good, I'm delighted to hear that. I'm
25 wondering who St. Chad was. Aren't you? Or did you
26 go out to the Internet and Google him?

1 MR. FULTON: Well, Ms. Cheng did, but she didn't share
2 with me who he was, so --

3 THE CHAIRPERSON: He was the first bishop of Mercia. He
4 was the patron saint of Litchfield Cathedral.

5 MR. FULTON: Ah, okay. Thank you.

6 THE CHAIRPERSON: That's -- just thought I'd -- in case
7 you were wondering.

8 **CROSS-EXAMINATION BY MR. FULTON:**

9 MR. FULTON: Q: I'd like to begin with some shorter
10 issues that are bring-forwards from earlier panels,
11 and the first one relates to renewable energy credits,
12 and an exchange that I had with Ms. Van Ruyven at
13 transcript Volume 5, page 770. So, Volume 5, page
14 770.

15 And you'll see at approximately line 18 and
16 following, I was discussing with her the response to
17 BCUC IR 1.98.1, and I asked a question of how the
18 policy -- the policy of the 90 percent clean renewable
19 target, which is referenced in the last paragraph of
20 1.98.1, might affect B.C. Hydro's efforts to market
21 RECs in the neighbouring jurisdictions. And Ms. Van
22 Ruyven provided a partial answer, but she said there
23 was an expert on Panel 3 to respond to that. And so,
24 I'm looking for who it is that can provide me with
25 that answer. And just to repeat the question, it's
26 can B.C. Hydro describe in more detail how the policy

1 MR. FULTON: Q: Thank you.

2 If I could ask you, continuing on with this
3 theme, to turn to Exhibit B-4, the response to BCUC IR
4 2.227.1, and that was again an IR that was referred to
5 this panel by Ms. Van Ruyven. All right, and if you
6 turn to page 2 of 2, and the third bullet:

7 "Surplus energy, annual net imports from
8 portfolio scenario combinations that met the
9 90 percent clean generation target was
10 assumed to be clean energy, and the
11 associated RECs were sold."

12 Can you tell us why B.C. Hydro considers
13 the marketing of RECs associated with surplus energy
14 is consistent with the policy of 90 percent clean,
15 while the sale of RECs associated with domestic energy
16 is inconsistent with that policy?

17 MR. REIMANN: A: So within the LTAP analysis, we tried
18 to stay to where the conclusions were independent of
19 what you assumed from RECs. We took a look at RECs
20 and wanted to start to understand what future markets
21 might look like, and the impact it would do. And so I
22 think there's two places we did sensitivities, RECs of
23 the Burrard calculation and the Clean Energy Call.

24 And so assuming it was just next exports
25 was a conservative assumption, which presumably
26 wouldn't overstate the case but provide some

1 directional indication of the impact.

2 MR. FULTON: Q: And then turning back to the first page
3 of that response, the first paragraph, where you speak
4 of providing an REC sensitivity analysis in the 2008
5 LTAP to analyze the possible value to ratepayers that
6 might exist from the sale of RECs associated with
7 energy that is surplus to B.C. Hydro's needs in a non-
8 critical water year. What about the surplus in
9 average water years? What would you do in that
10 scenario?

11 MR. REIMANN: A: So the analysis we did didn't vary the
12 hydrology. We assumed in the analysis that we were
13 working in an average water year, and that's where the
14 value of RECs would be calculated from. And so
15 average water is one non-critical year, one type of
16 non-critical year.

17 MR. FULTON: Q: And do you have any specific
18 references, Mr. Reimann, that might assist the
19 Commission in interpreting the policy relative to the
20 90 percent clean?

21 MR. REIMANN: A: I think just going back to the Energy
22 Plan documents themselves.

23 MR. FULTON: Q: All right, thank you.

24 I'd now like to move to the issue of
25 natural gas price forecasts, and the two references I
26 have are both in Exhibit B-4, and the first one is the

1 response to IPPBC IR 2.1.5. So Exhibit B-4, response
2 to IPPBC 2.1.5.

3 **Proceeding Time 4:08 p.m. T68**

4 And approximately the middle of that
5 response, the statement appears:

6 "For the oil price forecast, global energy
7 and the CEC agree that a more recent oil
8 price forecast available from the EIA would
9 be used as an assumption in the forecast of
10 gas prices."

11 Can you tell us what oil price forecast was used for
12 2010, for example?

13 MR. LAUCKHART: A: 2010, in the base case, crude oil
14 was \$59.

15 MR. FULTON: Q: U.S.?

16 MR. LAUCKHART: A: Yes.

17 MR. FULTON: Q: And the --

18 MR. LAUCKHART: A: That's in 2006 dollars, by the way.

19 MR. FULTON: Q: Okay. And the current price is about
20 \$34 U.S. a barrel?

21 MR. LAUCKHART: A: Something south of 40. It might be
22 that neighbourhood.

23 MR. FULTON: Q: And can you tell us whether the drop in
24 the price of crude oil has been sufficient from your
25 perspective, Mr. Lauckhart, to substantially undermine
26 the gas price forecasts that Global Energy developed?

1 MR. LAUCKHART: A: No. One of the things we need to be
2 sure we understand here is that our forecasts -- the
3 high, the medium, and the low that we did in this
4 proceeding, that we did for the California Energy
5 Commission, was based on sort of central tendency
6 long-term sustainable prices. We know that things
7 happen in the world that can make severe shocks to
8 those central tendency prices. For example, the
9 hurricanes, Rita and Katrina, had a significant price
10 up. And so, we're not trying to forecast those
11 shocks. We're saying they're going to happen, they're
12 going to -- but we think they're going to happen
13 around some general trend line.

14 We're really more focused -- what we
15 focused here on what those general trend lines might
16 be, and what might be sustainable in the long term.
17 So, we've seen, you know, extremely high prices as you
18 know, somewhere above our highest price, and then
19 rapidly it's moved to, now, prices below our lowest
20 price. So, but don't confuse the short-term
21 volatility with what we're trying to do as a long-term
22 sustainable price forecast.

23 MR. FULTON: Q: And, Mr. Reimann, has B.C. Hydro
24 revisited its gas price forecasts in light of the drop
25 in the oil prices?

26 MR. INCE: A: Sorry, Mr. Fulton.

1 MR. FULTON: Q: Oh, I should have asked you, Mr. Ince,
2 then.

3 MR. INCE: A: So, one comment I made -- I wanted to
4 make about oil prices is that I happened to look at
5 the forward curve on oil prices last week on Friday,
6 and looking at the bank publications that trade oil,
7 and as Mr. Lauckhart indicated, we're looking at oil
8 prices right now in the 30s, high 30s. But the
9 forward curves are sharply sloping upwards. So you're
10 looking at eventual \$60, \$70 oil prices if you want to
11 trade two years out.

12 MR. FULTON: Q: Okay, thank you for that clarification.
13 So, then, to my question, has B.C. Hydro changed its
14 gas price forecasts, then, in light of where we are
15 right now in terms of the price of a barrel of oil?

16 MR. LAUCKHART: A: B.C. Hydro did ask my firm if the
17 current conditions would cause us to have a material
18 change in our forecast, and our answer is, no, they
19 would not, that we believe for the same reason we
20 didn't think they were sustainable this summer at
21 \$140, we don't think they're sustainable now at, you
22 know, in the \$30 range. And that they will get back
23 towards a central tendency, very close to what we have
24 in these forecasts.

25 MR. FULTON: Q: Did you come up with some numbers,
26 then, for the high, low and mid-ranges for gas

1 forecasts when you revisited the numbers?
2 MR. LAUCKHART: A: We did not do a complete re-
3 forecast, and I just might remind you that these three
4 forecasts were created a few years ago for the
5 California Energy Commission. When we used them in
6 this proceeding, we applied probabilities to them,
7 which probabilities were a little bit different than
8 they would have been at the very time we forecast
9 them.

10 And one of the things we did is we've taken
11 a forecast that was already done, it was fundamentally
12 done, it was a huge effort. And so we said, "Well,
13 take those and we can just put some probabilities on
14 some things because some of the underlying things
15 might have changed." And if we were to do that again
16 today, the probabilities we'd put on the same
17 forecasts would be very similar.

18 **Proceeding Time 4:13 p.m. T69**

19 THE CHAIRPERSON: Thank you.

20 MR. INCE: A: So Mr. Fulton, the dependent scenarios we
21 did, we're looking at a range of gas prices that are
22 \$4 to \$10. That's a very wide range. And then the
23 art becomes if you're looking at the long term, how to
24 weight those. So I think we've got such a large range
25 that I think that covers the range of possible future
26 outcomes. But then the task comes, looking into the

1 LTAP evidentiary update, did we want to assign
2 different weightings to those three different
3 scenarios? As Mr. Lauckhart indicated, they were
4 still valid in terms of what we put forward in the
5 application.

6 MR. FULTON: Q: Right, so you did not assign different
7 weightings.

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

9 MR. FULTON: Q: If we could next turn to the response
10 to BCUC IR 2.177.2, which is also in Exhibit B-4. So
11 2.177.2 and I'll just let you refresh your memory on
12 that in response, and then I'll ask my questions.

13 MR. LAUCKHART: A: We have it.

14 MR. FULTON: Q: Thank you. And there B.C. Hydro
15 provides comparison of the LTAP and the energy
16 information administration gas price forecast, and the
17 EIA forecast that was used was the annual energy
18 outlook 2008 which was released in June of 2008.
19 Correct?

20 MR. LAUCKHART: A: I'm not exactly sure the date it was
21 released, but it was sometime in the first part of
22 2008.

23 MR. FULTON: Q: Well, the response says, as I took it
24 at least, that it was released in June of 2008.

25 MR. LAUCKHART: A: Yeah, they put -- they have
26 preliminary releases out, and then a few things but --

1 MR. FULTON: Q: Okay. And the answer goes on to say
2 that B.C. -- that the EIA releases a preliminary
3 forecast in a January timeframe, and that the next
4 release is in February 2009. Has that
5 January/February EIA gas price forecast been released
6 at this point?

7 MR. THRASHER: Yeah, I believe we filed the updated table
8 just today.

9 MR. INCE: A: That was an undertaking for Mr. Wallace
10 and it should have been filed -- to be helpful --

11 MR. THRASHER: Do you remember which exhibit number that
12 was? I don't have it in front of me.

13 MR. FULTON: It's B-29?

14 MR. WEAVER: It's B-32.

15 THE CHAIRPERSON: B-32, thank you.

16 MR. FULTON: Q: Are there any -- can you tell us what
17 conclusions then that B.C. Hydro draws from the new
18 forecast that's reflected in B-32 with respect to the
19 forecasts in the LTAP?

20 MR. LAUCKHART: A: Well, once again, their forecast
21 falls between the LTAP high and the LTAP low. It
22 starts out a little bit higher than LTAP medium point,
23 which is kind of consistent with our weighting of the
24 high price forecast, a little bit more than the middle
25 price forecast. As you get to the outer part of it,
26 it begins to line up with the mid-price forecasts. So

1 I would say in general it's fairly consistent.

2 **Proceeding Time 4:18 p.m. T70**

3 MR. INCE: A: To be helpful, we're looking at gas
4 prices in the new EIA forecast that range near-term
5 six-fifty for MMBtu and eventually ramping up to the
6 \$8 range. So, it's well within the range of the
7 forecast that we submitted.

8 And just to be careful about this, and that
9 these are the early-bird forecasts, so in this IR
10 response, we indicated the final 2008 forecast came
11 out in June, 2008. This is a preliminary release from
12 the Energy Information Administration which typically
13 comes out in January or February of each year. It may
14 still be revised.

15 MR. FULTON: Q: All right, thank you. And do I take it
16 from your answer, then, Mr. Lauckhart, that there
17 should be no ramifications from this most recent
18 forecast to the electricity price forecast in the
19 LTAP?

20 MR. LAUCKHART: A: No, my view of it is, of course,
21 these gas prices are very difficult to forecast, but
22 most of us as a sustainable price are looking at
23 prices in the \$6 to \$8 range. And we recognize they
24 will be outside of that from some volatile situations,
25 but sustainably everybody is pretty much looking at a
26 \$6 to \$8 range. Now, if you go from one person to

1 another, EIA to my firm to CERA, you might get some
2 tweaks about what's higher and lower, depending on
3 what you think the Alaska Pipeline will come in, and
4 those kinds of things. But generally I think there's
5 quite a bit of consistency here.

6 MR. FULTON: Q: Okay. And can I take it from that as
7 well, then, that B.C. Hydro does not expect there to
8 be any ramifications on the facility additions that
9 are proposed in the LTAP by reason of the change in
10 the natural gas price forecast?

11 MR. INCE: A: Well, maybe I'll start out in that I
12 think these gas prices are still relevant in terms of
13 my electricity price forecast.

14 MR. FULTON: Q: Okay.

15 MR. INCE: A: And then Mr. Reimann.

16 MR. FULTON: Q: Okay, so that -- do you want to expand
17 on that, then, Mr. Ince?

18 MR. INCE: A: Well, gas prices are one of the key
19 influences to electricity price forecasting. As we've
20 indicated earlier, gas prices are one of the key
21 drivers for the marginal resource -- marginal
22 generation resource. So, load, gas prices, those are
23 probably the top two in terms of forecasting
24 electricity prices.

25 MR. LAUCKHART: A: Yeah, and you're talking about spot
26 market electricity prices.

1 MR. INCE: A: Oh, that's right. And so, to be clear,
2 my forecasts, which I discussed with Mr. Austin a few
3 days ago, were just spot market price forecasts. So
4 they're relevant for -- you can get delivery for 24
5 hours, you have price certainty and certainty in terms
6 of delivery for 24 hours, but after that, you're
7 subject to basically the whims of the market and
8 volatility.

9 MR. FULTON: Q: All right, thank you.

10 Now, I had another question that was
11 brought forward from an earlier panel, and it relates
12 to the effective load-carrying capability, and that
13 discussion took place at transcript Volume 8, page
14 1367 and 1368. And it was 1367, line 13 through line
15 22, and Mr. Matheson had referred the question to this
16 panel, and the question appears at lines 13 to 15 on
17 1367. "Would it be fair to say that the effective
18 load-carrying capability of a group of resources used
19 in the system studies takes into account generation
20 contingencies?"

21 MR. REIMANN: A: And the answer would be yes, that's
22 fair.

23 MR. FULTON: Q: Thank you. And then if I could refer
24 you to Exhibit B-12, the BCUC panel IR 1.29.2,
25 Attachment 1.

26 **Proceeding Time 4:23 p.m. T71**

1 MR. REIMANN: A: I have that.

2 MR. FULTON: Q: Can you explain why the in-service
3 capacity is somewhat less than the installed capacity,
4 first of all?

5 MR. REIMANN: A: The biggest difference of the in-
6 service capacity has got to do with wintertime de-
7 rates in the hydro system due to reduced reservoir
8 elevations.

9 MR. FULTON: Q: And why does the in-service capacity
10 fluctuate in the months of December, January and
11 February?

12 MR. REIMANN: A: Generally speaking it should be the
13 reservoir head coming down as we're going down the
14 reservoirs.

15 MR. FULTON: The next area, Mr. Chairman, will take me
16 more than five minutes, so this is a good time to
17 break.

18 THE CHAIRPERSON: Yes, good, an excellent time.

19 MR. FULTON: And in terms of going forward, I think
20 probably I would be about an hour and a bit tomorrow.

21 THE CHAIRPERSON: Thank you. We'll resume at 8:30
22 tomorrow morning then.

23 **(PROCEEDINGS ADJOURNED AT 4:25 P.M.)**

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26