BRITISH COLUMBIA UTILITIES COMMISSION

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

And


Vancouver, B.C.
November 28, 2006

PROCEEDINGS

BEFORE:

R. Hobbs, Chairperson
N. Nicholls, Commissioner
A. J. Pullman, Commissioner

VOLUME 11
APPEARANCES

G.A. FULTON Commission Counsel
C. GODSOE British Columbia Hydro and Power Authority
J. CHRISTIAN
M. GHIKAS British Columbia Transmission Corporation
F. WEISBERG Columbia Power Corporation
D. PERTTULA Terasen Gas Inc., Terasen Gas Vancouver island Inc., Terasen Gas Whistler, Terasen Gas Squamish
R.B. WALLACE Joint Industry Electricity Steering Committee
D. NEWLANDS Elk Valley Coal Corporation
K. DUKE Alcan Primary Metal Group
D. AUSTIN Independent Power Producers of British Columbia
C. WEAFER Commercial Energy Consumers' Association of British Columbia
P. COCHRANE City of New Westminster
M. OULTON District of Kitimat
T. HALL
J. QUAIL 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
L. WORTH
W. ANDREWS Sierra Club Of Canada, B.C. Chapter; B.C. Sustainable Energy Association; and Peace Valley Environmental Association
J. THAYER Lone Prairie Community Association
L. BERTSCH Energy Solutions for Vancouver Island
THE CHAIRPERSON: Please be seated.

B.C. HYDRO LOAD/RESOURCE BALANCE PANEL 2

GRAEME SIMPSON, Affirmed:

CAM MATHESON, Affirmed:

KEN TIEDEMANN, Affirmed:

JOHN DUFFY, Affirmed:

THE CHAIRPERSON: Mr. Fulton?

MR. FULTON: Good morning, Mr. Chairman. Good morning, Commissioners. I have two matters to address, and Mr. Andrews has a matter that he would like to address, and then we can return to Mr. Bertsch.

The first matter that I have, Mr. Chairman, is a housekeeping matter. And at transcript Volume 9, pages 1285 to 1286, I referenced a BCUC IR 2.397.0 to B.C. Hydro and Power Authority in the B.C. Hydro F07/08 Revenue Requirements Application. I didn't have a copy of that document on Friday. I do now, I've provided a copy to the Hearing Officer, and I would ask if that document could be marked Exhibit A2-7.


(“BCUC INFORMATION REQUEST NO. 2.397.0 DATED AUGUST
MR. FULTON: The second matter, Mr. Chairman, appears at page 1295 of the transcript, lines 23 and 26. And at -- beginning at line 23, I say, “Okay. And in that response, the SCCBC asked why the results of the fiscal 2006 Call are appropriate to represent the value of avoided electricity production, and B.C. Hydro responded..."

Proceeding Time 9:03 a.m. T02

I misspoke in that question and at line 23, “SCCBC” should read “B.C. Hydro” and at line 26 “B.C. Hydro” should read “SCCBC”.

Those are the matters that I had, Mr. Chairman. I'll turn the mike over to Mr. Andrews.

MR. ANDREWS: One brief matter. Turning to transcript 10, Volume 10, page 1477, and the reference is to Exhibit B-1"E" for Edward, page 8 sub 9 -- or hyphen 9. Yesterday I asked with great confidence to confirm something which I was incorrect in and the answer echoed my error, I believe. The assertion should be that in this Figure 8-1 that shows the impact of new options in load resource energy balance without DSM, that that load line does not include EE2 or LD2, nor does it include, of course, EE3, EE4 and EE5.

THE CHAIRPERSON: In Figure 8-1.
MR. ANDREWS: In Figure 8-1. And if may, perhaps I could just pose the corrected question for the record and have the panel respond.

THE CHAIRPERSON: You may proceed.

MR. ANDREWS: Q: Regarding Figure 8-1, is it correct that the load line shown does not include EE2, LD2, EE3, EE4, or EE5.

MR. DUFFY: A: That's correct.

MR. ANDREWS: Thank you.

THE CHAIRPERSON: Before you proceed, Mr. Bertsch, I have two matters that I wish to speak to. First with respect to the transcript of yesterday's -- transcript 10, page 1374, line 11. The transcript currently states that I said, "You have been seeing what you would refer to as large bidders participating in the calls." And I think what I said was, "You have not been seeing." So the word "not" should be inserted before "been". And I believe the answer is consistent with the correction that I've just made to the transcript. Now, I may or may not have included the word "not" in that sentence, but as I say, I think the answer seems that it didn't, and so I'll leave it. I think as we -- in a normal practice, Mr. Fulton, we leave those types of corrections for you to confirm or not, and then you have a process for corrections to
the transcript.

MR. FULTON: Normal practice, Mr. Chairman, is that if it's just a grammar error and it doesn't change the nature of the question or the answer, then people can deal with that through the Hearing Officer. If it is a situation such as you brought forward, where a "not" has been added, that's something that needs to be addressed on the record, which you have addressed on the record.

THE CHAIRPERSON: Okay, thank you.

COMMISSIONER NICHOLLS: I've got one correction to make on the record, too, from yesterday's transcript, Mr. Fulton. On page 1314. Some of what I believe was Ms. Van Ruyven's evidence, but may have been Ms. Farrell's, was attributed to me. On line 2.

MR. FULTON: Yes, thank you.

COMMISSIONER NICHOLLS: Okay, thank you.

Proceeding Time 9:08 a.m. T4

THE CHAIRPERSON: Thank you.

I have a request with respect to references. As I mentioned on the record during the consolidation, the Panel's preference is that you identify references by referring first to the exhibit number, then the party who was asking the question, and then the IR reference. So to repeat it, it would be, for example, Exhibit 17, BCUC 2.239.0. That may
actually not be an exhibit number. I'm using it as an example.

It would, I think, also be helpful for me to make this suggestion in addition to the request that I made on the day of the consolidation, and that is you read the number as a number, that is, the number that's between the two dots, so it's two hundred and thirty-nine as opposed to two three nine.

So we do make a lot of references. I think this might just speed things up. So two hundred and thirty-nine instead of two three nine.

And the last point I would like to make with respect to our procedures is that if you're referring to a document that's only found in a CD attached to an information request, that you provide a copy of your reference when you're referring to that document. You shouldn't assume that the Panel has a copy of all of the documents that have been filed on CDs.

And the last preliminary matter is to let you know that this morning the Commission issued a letter announcing a procedural conference on the Alcan proceeding. The letter has been filed as Exhibit A-7 in that proceeding. There will be a procedural conference tomorrow morning -- tomorrow afternoon.
afternoon at 1:30 on Alcan. At the commencement of these proceedings, I requested that anyone who was not participating in the Alcan proceeding, that is participating in this proceeding, to please let Mr. Fulton know. Mr. Fulton has advised me that no one has indicated that they're participating in this proceeding and not in the Alcan proceeding. So we will move directly from the procedural conference -- are you going to correct me, Mr. Fulton?

MR. FULTON: Yes. Since we spoke, Mr. Chairman, Mr. Newlands advised that he's not on behalf of Elk Valley participating in Alcan.

THE CHAIRPERSON: Okay. I think if there's just Mr. Newlands -- Mr. Newlands, unless this is a considerable inconvenience to you, we will move directly from the Alcan procedural conference back to this proceeding without there being an interruption or a start time established for this proceeding following the procedural conference on Alcan. And unless it is going to be quite inconvenient for you, Mr. Newlands, I think we will do the same at the end of the Alcan proceeding.

Proceeding Time 9:11 a.m. T05

MR. NEWLANDS: One is always pleased to accommodate the Commission, Mr. Chairman. Thank you.

THE CHAIRPERSON: Thank you, Mr. Newlands, appreciate
that.

And then, that brings us, I think, to Mr. -- to you, Mr. Bertsch.

CROSS-EXAMINATION BY MR. BERTSCH (Continued):

MR. BERTSCH: Q: Thank you. Good morning, Commission Panel and Witness Panel. Yesterday, we were talking quite a bit about Vancouver Island. And if you could pull out Exhibit B-44. And those, I believe, are the updated load forecasts for 2006. The amended Chapter 4 supply/demand tables. Do you thank you.

Now, as mentioned earlier, those are -- as indicated here, those are based on the 2006 load forecast, is that correct?

MR. TIEDEMANN: A: That's correct.

MR. MATHESON: A: That's correct.

MR. TIEDEMANN: A: They're actually based on the February and March update to the 2005 forecast that was initially done in December.

MR. BERTSCH: Q: And do we have the -- do we have a copy of that? And if not, could you provide it?

MR. BERGNER: The February update, I believe, was filed in the Revenue Requirement Proceeding and would be --

MR. BERTSCH: Would that -- could we bring that over to IEP?

MR. BERGNER: We'd be happy to provide that.

Information Request
MR. BERTSCH: Q: Thank you.

THE CHAIRPERSON: It already forms part of the record of the IEP proceeding, because the evidence in respect of proceedings there is evidence in the other proceeding. It's really just a matter -- if you -- if it's only been filed in the Revenue Requirements Proceeding, and you wish to refer to it in your cross-examination, it's best if you make that available to the panel.

MR. BERTSCH: Okay, thank you.

Q: I'd like to just take another look at Figure 4-9. That, I understand, is the new energy load resource balance, is that correct?

MR. TIEDEMANN: A: That's correct.

MR. BERTSCH: Q: And as I understand, this compared to the reference in the IEP that some of the names have changed? Maybe if -- in 2004 I understand we had thermal -- Heritage thermal/market purchases as a new category, is that correct?

MR. MATHESON: A: I'm sorry, what reference are you referring to?

MR. BERTSCH: Q: To IEP -- the same chart in the IEP. IEP B-1A, Figure 4-9.

Proceeding Time 9:16 a.m. T6

MR. MATHESON: A: We have that.

MR. BERTSCH: Q: Okay, thank you. 4-9 in the original IEP had Heritage energy, is that correct?
MR. MATHESON: A: That's correct.

MR. BERTSCH: Q: And in the new 2006 that we see, that has now been changed into two categories, Heritage/market purchases, and Heritage hydroelectricity, is that correct?

MR. MATHESON: A: No, it's Heritage hydroelectric and Heritage thermal/market purchases.

MR. BERTSCH: Q: Oh, thank you, and could you maybe explain the reason, and do the two add up to the same number?

MR. MATHESON: A: Yes, they do.

MR. BERTSCH: Q: And why was it split?

MR. MATHESON: A: For clarity's sake.

MR. BERTSCH: Q: And clarifying what?

MR. MATHESON: A: The difference, just to show the difference between the hydroelectric system and the thermal system.

MR. BERTSCH: Q: And market purchases I notice was added. Was that implied before?

MR. MATHESON: A: Yeah, we added market purchases in to again try to differentiate what the story we're attempting to tell, which is that the thermal effectively at this point in time, thermal and market purchases are the same thing in the system we have today. So we thought -- we were trying to be clear by putting it in.
MR. BERTSCH:  Q:  And if we go now, do the same thing on E-10 -- sorry, Figure 4-10, and compare the old and the new. I notice there's a new category called downstream benefits. If you could maybe describe what that is in the 4-10 of the 2006.

MR. MATHESON:  A:  Right. Well, the downstream benefits are the Canadian entitlement that we've been referring to. So when we develop a capacity chart we've been basically trying to show the amount of downstream benefits or Canadian entitlement that we would be relying on in certain years.

MR. BERTSCH:  Q:  And was that relied on in the past as well, or -- I notice it wasn't in the 2004.

MR. MATHESON:  A:  Right, we -- so in the -- I mean the downstream benefits or the Canadian entitlement are essentially a operational issue. We've been having to reserve increasing amounts of Canadian entitlement over the last number of years. And I think if you -- it might be a little clearer for you if we turn to the numeric tables that we have.

MR. BERTSCH:  Q:  Correct, I noticed that.

MR. MATHESON:  A:  So Table 4-10, you'll see additional supply potential downstream benefits. That would be the second line from the bottom where we've shown into the planning timeframe for fiscal '09, 200 megawatts, and fiscal '10, 200 megawatts as well. And so having
done that, we updated them in both of these charts.

MR. BERTSCH: Q: So where would have that number been included in the 2004 addition? Because you had a similar chart --

MR. MATHESON: A: It wasn't included in the 2004 addition.

MR. BERTSCH: Q: But it's going back in the past? I assume that number came from somewhere. The 300 I'm referring to, I assume would have been included somewhere in the charts.

MR. MATHESON: A: Well, in the previous chart we had been showing a deficit, which we would have backed up with Canadian entitlement. So we decided in the updated version to be overt about how we would deal with that deficit.

MR. BERTSCH: Q: Okay. Thank you. That explains it. Now, if we look at the downstream benefits, we go to 2011, I notice it goes to zero, looking at the Table 4 point -- 4-10, is that correct?

MR. MATHESON: A: That's correct.

MR. BERTSCH: Q: Is that self-sufficiency?

MR. MATHESON: A: I can't speak to self-sufficiency. The Energy Police will inform us as to what the definition of self-sufficiency is, we believe, but --

MR. BERTSCH: Q: Is that perhaps not self-sufficiency in its entirety, but would that be a factor fed into
what self-sufficiency is? From what you know.

Proceeding Time 9:21 a.m. T07

THE CHAIRPERSON: Mr. Bertsch, that's a question that Mr. Elton was here to respond to, and did his best to respond to that question.

MR. BERTSCH: Okay. Thank you.

THE CHAIRPERSON: I don't think that's a question for this panel.

MR. BERTSCH: Thank you.

Q: If we now look at Exhibit 1B -- Exhibit B-1A, page 4-40. Figure 4-14, the Vancouver Island peak Island load balance. And maybe just put the two side by side, the 4-10 that we were previously referring to and the Vancouver Island one.

MR. MATHESON: A: And Mr. Bertsch, did you mean 4-10 of the updated --

MR. BERTSCH: Q: Yes. Of the B-44.

MR. MATHESON: A: All right.

MR. BERTSCH: Q: Have you got those two side by side?

MR. MATHESON: A: Yes.

MR. BERTSCH: Q: Thank you. Now, yesterday there was a lot of discussion about the formation of the load forecast line, and that there's -- I believe the word was, there's "quadruple-checked" as far as calculating that value, is that correct, Mr. Tiedemann?

MR. TIEDEMANN: A: Yes, I indicated we have a number of
checks.

MR. BERTSCH: Q: Are those same level of checks done on Figure 4-14?

MR. TIEDEMANN: A: The checks I referred to dealt primarily with the energy forecast. There are additional checks used to examine the peak forecast.

MR. BERTSCH: Q: So 4-14, how confident are you behind the information that's provided there?

MR. TIEDEMANN: A: There tends to be more variability in the peak from year to year because it's driven by weather conditions and strike activity and things of that sort. So, we in general are able to more accurately forecast energy than peak.

MR. BERTSCH: Q: I'm comparing 4-10, which is the capacity.

MR. TIEDEMANN: A: We have similar levels of confidence for both Vancouver Island and for the system.

MR. BERTSCH: Q: Thank you. I wonder if you could quantify, after 2011, on 4-10, for B.C., what is comprised of the resources? Is it primarily generation and -- or is it entirely generation and ResourceSmart? After 2011.

I'm talking about the column.

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

MR. BERTSCH: Q: Thank you. What is the reason behind formulating of this 4-point -- 4-10 figure? What is
the overall reason that this is generated, in your own words? Why is this important, this particular chart?

Proceeding Time 9:26 a.m. T8

MR. MATHESON: A: Well, it's a simple schematic that we try to use to demonstrate in a fairly rough manner so that it's not filled with numerics like a lot of tables we use, to basically show the resources we have in the system, the load that we forecast, and where there is a gap that needs to be filled.

MR. BERTSCH: Q: And the same question for Figure 4-14, why was that incorporated? Is this one of -- what was the reason behind it?

MR. MATHESON: A: It's the same reason.

MR. BERTSCH: Q: But particularly for Vancouver Island?

MR. MATHESON: A: 4-14 is a Vancouver Island figure, yes.

MR. BERTSCH: Q: Right. And maybe if you could quantify the resources that are made up of the Vancouver Island column, and maybe a rough percentage. In summary, is the majority of it transmission line --

MR. MATHESON: A: Yes, that's correct.

MR. BERTSCH: Q: -- versus generation?

MR. MATHESON: A: That's correct.

MR. BERTSCH: Q: So would you say that if the fundamentals about the resources for Vancouver Island are fundamentally different than B.C.?
MR. MATHESON: A: I would.

MR. BERTSCH: Q: Thank you. Okay, if we could go to Exhibit B-1C, Appendix K2.

MR. MATHESON: A: Yes, we have it.

MR. BERTSCH: Q: Thank you. I'd like to just get a little bit more understanding because as I understand that line, resource load forecast line from what I understand is made up of a lot of information, some of it that you were going through yesterday. And as I understand on page 4, that that gives us some background to what's fed as inputs into what I imagine is a big software program, is that correct?

MR. TIEDEMANN: A: That provides key information which we use in our modelling for the forecast.

MR. BERTSCH: Q: And just -- I don't want to go through it all but just a few key points of it. The residential forecast is primarily driven by the number of accounts and your residential and research survey that we talked about yesterday?

MR. TIEDEMANN: A: Conceptually the residential forecast is based on the number of accounts multiplied by the use rate, and this information is used to generate those two. Changes in the accounts, accounts over time, produces the account forecast, and this other information is used to produce the use rate.

MR. BERTSCH: Q: And if you look at page 5, I notice
that there's a chart comparing GDP that we're hearing yesterday and residential accounts. I'm assuming by the lack of one of those for the commercial and industrial, that residential has a closer correlation to GDP than commercial and industrial, is that right?

MR. TIEDEMANN: A: Residential accounts is included there because it's the key driver of residential sales, whereas real GDP is the key driver of both commercial and industrial sales.

MR. BERTSCH: Q: Thank you. Now, so the number, I assume somewhere in your information -- I haven't come across it yet, you're referring to the number of residential accounts on Vancouver Island, industrial, commercial, I'm sure that's somewhere buried in the 25,000 pages of information, but that is all fed into creating your full -- your load forecast, is that correct?

MR. TIEDEMANN: A: This information is used to produce separate forecasts for residential, commercial and industrial energy.

MR. BERTSCH: Q: And in there, is there a significance difference that you would see as far as commercial accounts, residential accounts on Vancouver Island, industrial accounts? For instance, are there fewer commercial accounts on Vancouver Island on a percentage basis than B.C.? Or you might not have
that information. That's fine.

MR. TIEDEMANN: A: I don't know that off the top of my head. The commercial forecast is really driven by GDP rather than number of accounts.

MR. BERTSCH: Q: If you would look to page xiii, and there's a note at the very bottom:

"Weather has the greatest impact on residential...sales and peak demand."

Is that a fair assessment?

MR. TIEDEMANN: A: Yes, that's correct.

MR. BERTSCH: Q: And xviii, which is 18, I'll just read at the very bottom under "Peak Demand":

"For B.C. Hydro's load, this

Proceeding Time 9:31 a.m. T09

MR. BERTSCH: Q:

For B.C. Hydro's load, this peak demand occurs in winter, with the peak driven particularly by space heating load."

So I assume by that, if you look across the province, that the primary driver for that peak has to do with the space heating load?

MR. TIEDEMANN: A: That's correct, with the residential space heating load.

MR. BERTSCH: Q: Now, we heard yesterday that there is quite a difference on Vancouver Island, that we have a lot more space -- electric heating percentage. I'm
assuming by that, that the peak is even more prominent on Vancouver Island.

MR. TIEDEMANN: A: The load on Vancouver Island is quite peaky. I'd have to check and see over the course of time whether or not it's more peaky than the system as a whole.

MR. BERTSCH: Q: And does it have a different characteristic? Is there morning, day -- or is it similar to the system, overall system?

MR. TIEDEMANN: A: On average it's similar, but both the peak for the system and for Vancouver Island can move somewhat from year to year.

MR. BERTSCH: Q: Is there two peaks on Vancouver Island, morning and evening?

MR. TIEDEMANN: A: I'd have to examine the load shape for Vancouver Island before answering that question.

MR. BERTSCH: Q: Is it possible to get that as an undertaking?

MR. BERGNER: We can have Mr. Tiedemann take that examination and take that undertaking.

Information Request

MR. BERTSCH: Q: And upon -- will I be able to receive that shortly, or -- and I would like to comment on it, if possible.

THE CHAIRPERSON: You'll have an opportunity --

MR. BERTSCH: Q: Upon --
THE CHAIRPERSON: -- to comment on it in an argument, but
you won't have an opportunity to return and ask
questions of this panel on that.

MR. BERTSCH: Okay. Thank you.

MR. DUFFY: A: Mr. Bertsch.

MR. BERTSCH: Q: Yes.

MR. DUFFY: A: To be helpful, the Vancouver Island load
shape does have a morning peak, it dips during the
middle of the day and then it typically rises to a
higher peak in the afternoon, evening. So if that's--

MR. BERTSCH: Q: Yes, that's what I'm looking for. I
have seen reference -- so that is true.

MR. DUFFY: A: And relative to the mainland, that
morning peak is not as pronounced on the mainland than
on Vancouver Island.

MR. BERTSCH: Q: And why is that? Because of the
predominance of baseboard heating, or electric
heating? What produces that?

MR. TIEDEMANN: A: That would be the principal reason,
yes.

MR. BERTSCH: Q: Okay, thank you.

MR. BERGNER: Just before we move on, does the
undertaking stand, or does that satisfy --

MR. BERTSCH: Q: I still would like to gather that
information, if that's possible.

THE CHAIRPERSON: Yes. I think the undertaking stands --
MR. BERTSCH: Q: Stands.

THE CHAIRPERSON: -- Mr. Bergner, unless you come back

and you say that that's not readily available to B.C. Hydro, and then we can talk about scope.

MR. BERGNER: Yes, that's fine, I just wanted to satisfy

--

MR. BERTSCH: Thank you.

Q: We heard earlier, just -- now, I understand, Mr. Tiedemann, you're also very much involved in

PowerSmart?

MR. TIEDEMANN: A: I'm the manager of the -- evaluation function in PowerSmart.

MR. BERTSCH: Q: And when you look at programs, do you

look at them from a B.C.-wide point of view? What can

be done within B.C. or what is your -- how do you look

at programs, at this point?

MR. TIEDEMANN: A: So, in the evaluation work we

examine programs to understand whether or not they're meeting their objectives, to look at opportunities for

improving the effectiveness and efficiency of programs and to understand the impact of the programs on energy

and peak.

MR. BERTSCH: Q: I'd like to just -- if we look at --

earlier we looked at Vancouver Island, and the high

predominance of electric heat. Do you know -- I

assume you also are familiar with other jurisdictions.
Are you -- is Vancouver Island a fairly unique situation in North America?

MR. TIEDEMANN: A: It's an unusual situation because of the predominance of electric space heating.

MR. BERTSCH: Q: So could you point to any other jurisdiction that is even close, in North America?

MR. TIEDEMANN: A: Quebec has a high proportion of electric space heating, too.

MR. BERTSCH: Q: Okay. And other than that? It's -- but of course, it doesn't have the same characteristics as being on an island, I assume.

MR. TIEDEMANN: A: That's correct.

MR. BERTSCH: Q: Now, I understand this may be redirected, but I'd like to try it anyways. Given that the resource on Vancouver Island is shown on 4 dash -- the Vancouver Island diagram, I'd like to ask a little bit, very high level, 30,000 foot level, of the feeder into Vancouver Island if I may dwell -- at a very high level, would that be appropriate?

Proceeding Time 9:36 a.m. T10

MR. BERGNER: Sorry, when you're referring to feeder in the Vancouver Island it's regarding the --

MR. BERTSCH: Q: The transmission link, the transmission link. I'll go ahead with it and then we'll see.

THE CHAIRPERSON: Mr. Bertsch, I can tell you that you're
not going to be very long on this topic before I
interrupt you.

MR. BERTSCH: No, sure. A very simple question.

Q: B-1A, page 3-5, Figure 3-2. There shows a
transmission line from Dunsmuir to Cheeky?

VOICE: Cheekye.

MR. BERTSCH: Q: Cheekye? Is that the same one that's
shown on Figure 4-14, as to 500 kV line?

MR. SIMPSON: A: That is correct, yes.

MR. BERTSCH: Q: How in a very general sense would you
say the cost of transmission for that line versus
other transmission lines, is it significantly more?

MR. BERGNER: I'm not clear on the relevance of that
question to the planning exercise at hand.

MR. BERTSCH: Well, it's -- all the other items for the
resources are within scope. On Vancouver Island that
transmission line is shown on Figure 4-14 within what
I would assume to be within this category, because it
is shown within that column. And I assume that at
least on a 30,000-foot level I would be able to get
some clarification of that extremely large bar that's
shown on 4-14. And again, a 30,000 level, very rough.
Not pinning down for numbers.

MR. BERGNER: If the point of the questions are to simply
correlate what's shown in 4-14 with the map that's
shown at Figure 3-2, I have no objection to that. If
the questions are going beyond into what additional capacity is required, what is the cost of that --

MR. BERTSCH: It's not additional capacity, it's an existing system.

MR. BERGNER: Let's perhaps take it question by question.

MR. BERTSCH: Sure.

MR. BERTSCH: Q: Again, looking at the 500 kV AC transmission line that's shown on that bar, all I'm trying to do is just have a very 30,000-foot level characteristic of that particular resource that is shown. Would you say the cost of that is significantly more than other transmission lines? Just at a very 30,000-foot level.

MR. SIMPSON: A: I think all we can say is the Cheekeye/Dunsmuir 500 kV circuit to Vancouver Island, a portion of that comprises submarine cables --

MR. BERTSCH: Q: Yes.

MR. SIMPSON: A: -- which at 500 kilovolts, which at the time were fairly new technology. And I think as a general statement you can say that 500 kV submarine cables per unit of transmission distance are more expensive than overhead. There's no question of that.


MR. MATHESON: A: Yes, we have that.
MR. BERTSCH: Q: Thank you. I just read a little bit, because I'm not sure if you heard the evidence. Starting at line 11, and I'll --

"Okay, thank you. On a very top level, do you see any regional aspects to 3, 4 and 5?"

That means EE3, 4 and 5. And then, Ms. Van Ruyven responds:

"There could be regional aspects, where we see capacity constraint areas in the province, demand-side management can play a role."

And there was a question about potential constrained areas.

The question is, if -- and this is putting an assumption, that there are regional DSM programs, I'm not saying there are, but assume that there are. Would you find, if you directed DSM programs to Vancouver Island, not taking into account averaging over the whole province, do you feel that you could have more effective DSM programs directed specifically at Vancouver Island if that was the scope?

MR. DUFFY: A: I suggest you refer that question to Panel 7.

MR. BERTSCH: Q: Thank you. I'd like to draw your attention to -- I'll just get the reference. B-10, B.C. Old Age Pensioners' Organization 1.20.1.
MR. MATHESON: A: We have that, Mr. Bertsch.

MR. BERTSCH: Q: B-10, B.C. Old Age Pensioners' 1.20.1.
   It's in reference to Appendix K, too. Just let me
   know when you have it.

MR. MATHESON: A: Yes we do.

MR. BERTSCH: Q: Thank you. This question was put,
   "Why is there a significant DSM on industrial?" And I
   will read off B.C. Hydro's --
   "B.C. Hydro's DSM plans in turn place
   greater emphasis on the industrial sector."
   Again, is that because the DSM programs are being
   looked at provincial-wide versus on a regional aspect?

MR. DUFFY: A: The principal reason for that is that
   the 2002 CPR found more potential savings in the
   industrial sector than in the residential or
   commercial sectors, and our DSM plan in turn focuses
   on the industrial sector, more so than the residential
   and commercial sectors.

MR. BERTSCH: Q: Was there enough information in the
   CPR to be able to do it on a regional basis, from the
   2002 CPR? Is part of it also a lack of information to
   create regional DSM programs? In other words, if
   there was more information from a regional basis in
   the CPR, would that help you in identifying, first of
   all, whether or not it is appropriate to have regional
   DSM, and second of all, of course, if that's true, to
develop them?

MR. DUFFY: A: A question around future implementation of DSM is better answered by Panel 7. In terms of the plan that we -- that informed this load forecast, it was based on the 2002 CPR, informed by the 2002 CPR and whatever regional information was available in that study.

MR. BERTSCH: Q: And did you have enough regional information on Vancouver Island? From the CPR? If you don't know, that's fine too.

MR. DUFFY: A: I would say that the CPR was an adequate basis to develop that plan.

Proceeding Time 9:46 a.m. T12

MR. BERTSCH: Q: Okay, thank you. I'd like to draw your attention to B-10, Terasen Gas 1.14.2. Do you have that? 1.14.2, Terasen Gas.

MR. MATHESON: A: Yes, we have that.

MR. BERTSCH: Q: If you could just take a look at page 2. Now, we see there a whole stream of long numbers, and those numbers are on energy versus capacity, is that correct?

MR. TIEDEMANN: A: What the table was designed to provide was information on end-use rates for space heating and water heating by dwelling type and by region.

MR. BERTSCH: Q: From an energy point of view, is that
correct?

MR. TIEDEMANN:  A:  That's correct.

MR. BERTSCH:  Q:  If you note at the top of page 2 it says, "There is no peak..." Sorry.

MR. BERGNER:  I'm sorry, I'm not rising to object. Just if I can assist. Page 2, this IR was revised as Attachment A to the direct evidence of Mr. Tiedemann, which is Exhibit B-25. B-25 contained the direct evidence of Ken Tiedemann, and Exhibit A to that was a revised version --

MR. BERTSCH:  Thank you.

MR. BERGNER:  -- of the two tables that are attached.

MR. BERTSCH:  Thank you.

MR. BERTSCH:  Q:  The revision for this one does not include capacity, is that correct? Energy only?

MR. TIEDEMANN:  A:  That is correct.

MR. BERTSCH:  Q:  And just I'd like to read the first line:

"The average increase in peak demand for these two applications is not available from the model, as the model is used to develop the energy forecast."

Is it possible to create the model for the peak as well?

MR. TIEDEMANN:  A:  We don't have models which would allow us to estimate the contribution of spacing and
water heating to peak at the level of dwellings.

MR. BERTSCH: Q: Thank you. Would that be difficult to create if you don't have it now?

MR. TIEDEMANN: A: Peak information for the residential sector is done at the level of the dwelling by region, so it's the total peak contribution of that account to the overall peak but it's not done at the end use level, and we don't have information to undertake that analysis at the level of end uses.

MR. BERTSCH: Q: Would you be able to create that as an undertaking? Given that Vancouver Island does have a particular aspect dealing with peak, that's the reason behind it.

MR. TIEDEMANN: A: We don't have the appropriate information which would require us to have load shapes by end use. We just don't have that information.

MR. BERTSCH: Q: Thank you. I'd like to draw your attention to B-10, BC Utilities Commission 2.419.2. Do you have that, Mr. Tiedemann?

MR. TIEDEMANN: A: Yes, we have that exhibit.

MR. BERTSCH: Q: Thank you. I notice that this chart shows the effect of stepped rates and time of use in regards to the industrial DSM, is that correct?

MR. TIEDEMANN: A: Yes, that's correct.

MR. BERTSCH: Q: I also notice that of the two columns, stepped rates have some positive numbers in it and
time of use have zero all the way down?

MR. TIEDEMANN: A: That's correct.

Proceeding Time 9:51 a.m. T13

MR. BERTSCH: Q: Could you explain why?

MR. DUFFY: A: When we developed the forecast of rate-induced demand-side management in the industrial sector, the expectation was that customers would not elect the TOU option, and that's why there was no savings forecast under that option.

MR. BERTSCH: Q: If this was a peak or capacity, would it then appear?

MR. DUFFY: A: Are you asking if positive numbers would appear in the TOU column?

MR. BERTSCH: Q: Correct.

MR. DUFFY: A: Then the answer is "No."

MR. BERTSCH: Q: And why is that?

MR. DUFFY: A: Because no customers -- the assumption for this forecast was that no customers would elect the TOU option.

MR. BERTSCH: Q: How are your numbers driven, as far as quantities? How does that number -- where does that number come from? That no time-of-use customers would be using industrial? Who gives you that number?

MR. DUFFY: A: The numbers here came from an in-house analysis of opportunities among industrial customers, and that was informed by discussions with those
customers in the lead-up to the implementation of stepped rates.

MR. BERTSCH: Q: Thank you. If you could please refer to B-10, B.C. Utilities Commission 2.419.1.

MR. MATHESON: A: We have that.

MR. BERTSCH: Q: Thank you. I'd like to read the line:
"Rate-induced savings are currently embedded in the 2005 DSM forecast."

Why are they embedded and not shown separately? And could they be added in the future?

MR. DUFFY: A: When we forecast demand-side management for the purpose of the load forecast, we basically provide one number, which is bottom-line savings from whatever drivers, including stepped rates.

MR. BERTSCH: Q: If I look back to B-44, Figure 4-10, we'll note there that there's a column considered "ResourceSmart". Is that correct?

MR. MATHESON: A: That's correct.

MR. BERTSCH: Q: Would this not fit into that same type of category? And like I say, that's --

MR. MATHESON: A: Well, I think you're -- you might be mixing them up. ResourceSmart is a supply-side product, DSM is obviously a demand-side product. So they wouldn't naturally fit together on a chart such as this.

MR. BERTSCH: Q: Okay. Thank you. If you could refer
to B-10, B.C. Utilities Commission 2.420.1. If I may read the final line.

"B.C. Hydro will review its forecast method and procedures to see if additional changes are required to capture the impact of specific demand response programs."

Do you know if that's being done, or can be done, or can be taken on as an undertaking?

Proceding Time 9:56 a.m. T14

MR. TIEDEMANN: A: At the present time we deal with rate changes primarily through the Monte Carlo studies, which look at six different factors which affect the load over time. So the Monte Carlo study can be programmed to look at the impact of a change in rate on a year-to-year basis, and so we can look within that model for changes in overall rates structures but it's not disaggregated into different types of rate changes that might be due to stepped rates or optional time of use rates or things of that sort.

MR. BERTSCH: Q: Could that be taken as an undertaking?

MR. BERGNER: Sorry, I'm a little clear [sic] on what exactly is being requested. The modelling has been described. And so what exactly is it you're asking?

MR. BERTSCH: Just look at that last line. Just responding to that.
"B.C. will review its forecast method and procedures to see if additional changes are required to capture the impact of specific demand response programs."

We're simply asking that to be taken as an undertaking.

MR. BERGNER: Sorry, I'm not sure what we'd bring back from -- the IR seems to speak to an indication that it will review its forecast methodologies as appropriate from time to time as --

MR. BERTSCH: Q: So my question is, will that review occur before final arguments? I'm simply asking the timing, if that can be a --

MR. TIEDEMANN: A: That will be a large amount of work and won't be completed before the end of this hearing.

MR. BERTSCH: Q: Do you have any idea of when?

MR. TIEDEMANN: A: No I don't.

MR. BERTSCH: Q: Thank you.

B-6, B.C. Utilities Commission 1.59.1. Do you have that?

MR. MATHESON: A: We do.

MR. BERTSCH: Q: Here I see your report on price elasticities?

MR. MATHESON: A: That's correct.

MR. BERTSCH: Q: Can you just over -- an overview of the relationship of that to the numbers that you have
used in your models, and how that was used.

MR. TIEDEMANN:  A: The Monte Carlo studies have
estimates for long- and short-term price elasticities.
Those elasticities are informed by work which we've
undertaken in the past, and also by estimates that
come from the literature. And the document before us
is the most recent summary of that literature of which
we're aware.

MR. BERTSCH:  Q: Thank you. My final topic, I'd like
to draw your attention to the issues list 3.3A. Just
in general terms, when you're using weather, is
weather one of your inputs to your model, Mr.
Tiedemann?

MR. TIEDEMANN:  A: The residential load is forecast on
a weather normalized basis, so that means that in
effect we look at the history and adjust it for
variances from normal weather, and that's used to
forecast the future residential load. Weather
considerations are not used at the present time in
either the commercial or the industrial energy
forecast.

Proceeding Time 10:01 a.m. T15

MR. BERTSCH:  Q: And what is the source of your
predictions of the weather, and do you take into
consideration the potential changes due to climate
change?
MR. TIEDEMANN: A: We use average normal heating degree days provided by Environment Canada, and assume that the future will look like the past. So we haven't considered in our analysis potential effects from global warming.

MR. BERTSCH: Q: Is that a difficult thing to do?

MR. TIEDEMANN: A: I don't believe there's a consensus on the potential impact of global warming on future weather within British Columbia, so I'm not aware of studies that we could use to do that.

MR. BERTSCH: Q: In GHG we had ranges that we've used. Is it possible to do it if you had ranges? I know maybe not one number, but, say, low and high predictions taking into account global warming? Instead of one number, do two?

MR. MATHESON: A: I mean, you're asking a fairly speculative question. We've assumed that the past was the best indicator of forecast prediction, and we haven't really seen anything to date that would allow us logically to move from that. So, I think you're asking us to do two forecasts, and I'm not sure that there's much value in it.

MR. BERTSCH: Q: If there's a range -- I realize it's very hard to have the precise number on where global warming will have an effect.

MR. MATHESON: A: Well, our forecast -- but our
forecasts do show a range, which you can see in our charts and tables, and they should accommodate any fluctuations due to long-term climate change issues.

MR. BERTSCH: Q: But I just heard that it doesn't take into account the effects of global warming.

MR. MATHESON: A: Well, we show our forecasts as a range, though. So, while we -- while our mid-load forecast might be -- might not move off of our preference for using the past as a key indicator, we still show the P-10 and P-90 range of the load forecast, and that should accommodate any fluctuations that we see short-term, anyway, in weather sequencing.

MR. BERTSCH: Q: But not taking into account global warming, unless Mr. Tiedemann has something else to say.

MR. MATHESON: A: The variability and heating degree days is one of the six factors that we use in terms of the development of the 90 percent/10 percent bands for the forecast, so it includes a range of variability of heating degree days within historical experience.

MR. BERTSCH: Q: Correct. And so, my comment is, can it be made as an undertaking, to take a prediction, take into account global warming from a low and high? Because as I understand, you're looking to the past and not the future, as part of the potential effect on global warming.
MR. MATHESON:  A:  I think you're asking us to change the methodology in our load forecasting, and we don't -- we have no evidence to suggest that we should be doing that. And I still maintain that the variance that we show in our load forecasts should be able to accommodate any structural changes in the weather, if I can put it that way, due to global warming. But we have no reason to change the fundamental methodology with which we do our forecasts.

MR. BERTSCH:  Q:  Perhaps -- would it be possible to provide us with the weather predictions in the future that you're basing your information on? At least be able to gather that. And have that provided.

MR. BERGNER:  I think that question's been asked and answered, in the sense that the answer was the historic heating degree days are -- is the variable that's used, going forward.

MR. BERTSCH:  Q:  Do you have further comments on that?

MR. TIEDEMANN:  A:  The load forecast documents indicate the nature of the assumptions made with respect to heating degree days.

MR. BERTSCH:  Q:  Thank you. Those are all my questions. Thank you very much.

Proceeding Time 10:06 a.m. T16

COMMISSIONER PULLMAN:  And because I'm having a senior moment here, it is 30 years annualized weather from
Environment Canada you use, normalizing it over 30 years?

MR. TIEDEMANN: A: Thirty years' worth of information is used to inform the weather normalization for the peak. For the residential sector we use ten years' worth of data. The reason for that difference is the fact that peak is an extreme event, so we only have one peak for each year, so that gives us 30 observations; whereas 10 years' worth of monthly data for the residential sector gives us 120 observations with just 10 years.

COMMISSIONER PULLMAN: Thank you.

CROSS-EXAMINATION BY MR. FULTON:

MR. FULTON: Q: Good morning, panel. Mr. Tiedemann, I'd like to begin with you, and I have some questions that arise out of an exchange that you had with Mr. Austin yesterday. So if you could have before you the Transcript Volume 10, and also Exhibit B1-C, tab K-2. Mr. Bertsch had taken you to tab K-2 earlier this morning, but my questions are in a different area on that tab. And in terms of the exchange with Mr. Austin, if you could turn to page 1417 of the transcript and beginning at line 4, you were responding to a question if you had any knowledge of why there might be such a broad variation. And you said:
"As Ms. Van Ruyven indicated, we're anticipating in the future meeting approximately one-third of our anticipated load growth through DSM. So that would take a number of 2.4 down to the 1.6 range that we're talking about."

And then Mr. Austin asked you a follow-up question, and at lines 15 and 16 you said:

"It's existing DSM programs which are anticipated to reduce load growth by one-third."

Now, returning first of all to your first answer, and where you reference Ms. Van Ruyven and speak of in the future, I'm just trying to get some context of what you understood her to mean by "in the future". Did you mean a period of one year, five years, or twenty years, for example?

MR. DUFFY: A: Mr. Fulton--

MR. FULTON: Q: Well, Mr. Duffy, I'd prefer Mr. Tiedemann to answer this question because he was referring to Ms. Van Ruyven's evidence, and so I want to get some understanding of what Mr. Tiedemann was talking about when he was referencing in the future. And then you can pick things up if you want, but I want to pin down what you were intending the period to cover by the words "in the future".
MR. TIEDEMANN: A: The load forecast examines -- on the with incremental DSM side, the impact of DSM 2 through the year fiscal 2012. So that's what I meant by that period.

MR. FULTON: Q: Thank you. All right, Mr. Duffy, did you want to say anything further?

MR. DUFFY: A: No.

MR. FULTON: Q: Okay.

Now, if you could turn to Exhibit B1-C, tab K-2, and specifically page 81, and 82. And Table A7.9 is the reference load forecast before DSM, and A7.10 the reference load forecast with DSM, correct?

Proceeding Time 10:11 a.m. T17

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And if you look down towards the bottom of the page, there's a line that says "Growth rates" and, if we look at the five-year period from 04/05 to 09/10, we get a growth rate of 2.4 percent and -- before DSM, and 1.7 percent with DSM.

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: Okay. And because those numbers were pretty close to the numbers that you were talking about yesterday, I was wondering whether or not those were the tables you had in mind when you provided the numbers.

MR. TIEDEMANN: A: These were indeed the tables that I
had at the back of my mind, yes.

MR. FULTON: Q: Okay. And if we drop down to the 21-year time frame, we could agree that there isn't really much change in load growth, is there, between the two scenarios? It's 1.7 percent before DSM and 1.6 percent --

MR. TIEDEMANN: A: Those -- I'm sorry. Yes, those growth rates are quite close.

MR. FULTON: Q: And the 2.4 percent, is that a ten-year forecast?

MR. TIEDEMANN: A: Are you referring to the 2.4 percent for total gross requirements over the five-year period, from fiscal '05 to fiscal '10?

MR. FULTON: Q: Well, maybe I can take you to page --

MR. TIEDEMANN: A: Because that's a five-year forecast.

MR. FULTON: Q: Right. But if you look to page -- back to page 1416 of your transcript, so, the page prior to what we were talking about, Mr. Austin was referencing a ten-year forecast for the 2.4 percent.

MR. TIEDEMANN: A: That's right.

MR. FULTON: Q: So can you help us out there?

MR. TIEDEMANN: A: So, Mr. Austin was referencing a ten-year forecast for the whole WECC region for a ten-year period.

MR. FULTON: Q: All right, so we're talking about two different things, then.
MR. TIEDEMANN: A: We're talking about two different

time periods.

MR. FULTON: Q: Okay. Now, returning to the time

periods, though, if you turn back in Exhibit B-1C, tab
K2, to pages 31 and 32, those tables relate to -- the
Table 8.1 is residential sales before DSM and Table
8.2 with DSM.

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And if we look at the five-year growth

rates on both those tables, the number is the same.

Proceeding Time 10:16 a.m. T18

MR. TIEDEMANN: A: The first five years refers to a

historical period.

MR. FULTON: Q: Okay.

MR. TIEDEMANN: A: Fiscal '00 through fiscal '05. So

since the same history is used in both of these

tables, the numbers are the same.

MR. FULTON: Q: Okay. If we drop down to the 21-year

period though, there doesn't appear to be much in the

way of change, does there?

MR. TIEDEMANN: A: That is correct.

MR. FULTON: Q: Thank you.

THE CHAIRPERSON: Can you explain why you would -- can

you explain why there might not be more change?

MR. TIEDEMANN: A: The difference between residential

sales before DSM and residential sales with
incremental DSM reflects energy efficiency too, but
not the possibility that there may be additional
energy efficiency initiatives in the future. So if we
had information on possible additional future DSM
activities, then those numbers would be more
different.

THE CHAIRPERSON: So the difference is solely
attributable to EE2.

MR. TIEDEMANN: A: For the residential sector that's
correct.

MR. FULTON: Thank you, Mr. Chairman.

MR. FULTON: Q: Mr. Simpson, my next area involves flow
regimes. Is that an area that you would be handling?

MR. SIMPSON: A: I could try.

MR. FULTON: Q: Okay. It's a subset of issue 3.3, Mr.
Chairman, and if I could ask you to have before you
Exhibit B-1A, page 2-24, and also B-6-1, BCUC 1.23.1
and 1.24.2.1.

MR. SIMPSON: A: Sorry, what was the second one, Mr.
Fulton?

MR. FULTON: Q: They're both in Exhibit B-6-1, and it's
BCUC IR 1.23.1 and 1.24.2.1.

MR. SIMPSON: A: Yes, I have those.

MR. FULTON: Q: Okay. And first of all, and anyone on
the panel can answer this question, within the
application itself, is there any statistical
justification for the use of the October 1940 to
September 2000 period for the historical flow record
that is used to define the Heritage hydroelectric firm
resource?

MR. SIMPSON: A: I'm not sure what you mean by
"statistical justification".

MR. FULTON: Q: Well, in looking at the application, we
weren't able to find any statistical justification.
So I'm asking you, is there such a justification in
the application for using that period of time for the
historical flow record?

MR. SIMPSON: A: Not that I'm aware of, no.

MR. FULTON: Q: If you turn next then to the response
to BCUC IR 1.23.1, the table there, would you agree
with me subject to check, provides the energy
equivalent for two annual flows, namely 1945 and 1946,
which are lower than the next lowest flow which
occurred in 1944, by at least 5 percent?

MR. SIMPSON: A: Sorry, I'm not sure which column
you're referring to.

Proceeding Time 10:21 a.m. T19

MR. FULTON: Q: Okay, if we look at 1945 and '46 in
this simulated energy calculation,

MR. SIMPSON: A: Yes.

MR. FULTON: Q: Okay. And would you agree with me that
the two flows that appear for 1945 and '46 are lower
than the next-lowest flow, which occurred in 1944, and they're lower by at least five percent, subject to check, from the 1944 flow?

MR. SIMPSON: A: And I assume, Mr. Fulton, that you're referring to the right-hand column that says "simulated inflow energy equivalent"?

MR. FULTON: Q: Yes I am.

MR. SIMPSON: A: Okay. So what -- the numbers -- two numbers I see for 1945, I see 37-018, and for 1946 I see 38-262.

MR. FULTON: Q: Yes.

MR. SIMPSON: A: So those are the numbers.

MR. FULTON: Q: Right.

MR. SIMPSON: A: And you're saying those are 5 percent less than the 40170 that's shown for 1944.

MR. FULTON: Q: That's correct.

MR. SIMPSON: A: Okay. Well, I could do the calculation if you like, but I'm assuming you've done the math correctly.

MR. FULTON: Q: Thank you. And would you also agree with me that in looking at the chart, in the last 50 years, there have been only two flow years, namely 1971 and 1980, which are within one percent of the 1944 flow year?

MR. SIMPSON: A: Yes. So what I'm seeing is, in 1971, again in the simulated inflow energy equivalent, 1971
is 40295, and 1980 is 40425. So again, I assume those
are within one percent of the number you referenced.

MR. FULTON: Q: Thank you. And in a normal
distribution, could the, what I will classify as the
extreme data points of 1945 and 1946 be considered as
statistical outliers, and removed from the data-set
for the purposes of defining "firm energy"?

MR. SIMPSON: A: I have not done that analysis, so I
couldn't comment.

MR. FULTON: Q: Is there anyone on the panel that could
comment on that?

MR. MATHESON: A: Well, I -- one comment I guess I
would make is that when we calculate the -- what
becomes the critical stream flow period, you'll notice
that '45 and '46 fall at the end of that five-year
sequence. So it's very instructive to us that we
would have the two lowest years on record at the very
end of what was a very dry sequence of years, which
could be devastating to a hydroelectric system if you
under-represented it or if you discounted those years.

MR. FULTON: Q: All right, so --

MR. MATHESON: A: From an operating standpoint.

MR. FULTON: Q: So, Mr. Matheson, you're saying, I take
it, that B.C. Hydro would not therefore consider those
two numbers outliers from a statistical analysis
standpoint.
MR. MATHESON: A: Well, if the result of doing so was that we removed them from the record and didn't calculate them into our critical stream flow period, then I would say that's right.

MR. FULTON: Q: If you could turn forward to the response to BCUC IR 1.23 -- or 1.24.2.1. If a 50-year flow set was chosen, would the firm heritage hydroelectric energy rise to the 44,600 gigawatt hours?

And I'm here looking at the 44,600 which is in cell -- on the fourth line of the table.

Proceeding Time 10:26 a.m. T20

MR. SIMPSON: A: Well, what I'm seeing there is a 30-year calculation.

MR. FULTON: Q: Right, but on a 50-year calculation, if you chose that, would it still -- would it become forty-four six hundred?

MR. SIMPSON: A: So which 50 years are you referring to, 1950 to 2000?

MR. FULTON: Q: Yes.

MR. SIMPSON: A: I'm not sure when the critical -- there would be a critical period within that 30 years from 1970 to 2000, and I'm not sure if by including an additional 20 years there would be another critical period within those additional 20 years. So we'd have to do the analysis.
MR. FULTON: Q: And in terms of the timeframe involved in performing that analysis, what would we be looking at, Mr. Simpson?

MR. SIMPSON: A: Well, I think it's probably a matter of a day or two, to get a rough idea.

MR. FULTON: Q: Right. Then could I ask you to undertake to do that so that we would have that for the record?

MR. SIMPSON: A: Yes, we can do that.

Information Request

MR. FULTON: Q: Thank you.

Can you tell me whether or not the 1945 and 1946 flow sets have been examined for possible data collection errors that may have occurred, given the era that the data was collected?

MR. SIMPSON: A: I can't tell you that, no. There may be a -- I think we have an operations person on Panel 3 that may be able to comment further on that.

MR. FULTON: Q: Okay, thank you.

THE CHAIRPERSON: Mr. Bergner, can you check that at the break?

MR. BERGNER: Ms. Kurschner is on Panel 3, and that's --

THE CHAIRPERSON: And she will be able to respond to the question?

MR. BERGNER: I will endeavour to find out.

THE CHAIRPERSON: Thank you.
MR. FULTON: Q: We can agree though, subject to check, that no single flow year has been within 5 percent of 1946, or 8 percent of 1945, in the last 50 years.

MR. SIMPSON: A: Again subject to check, I'll accept that.

MR. FULTON: Q: And doesn't that suggest that the flows in 1945 and 1946 then are anomalous in terms of the historical record?

MR. SIMPSON: A: Well, again, I don't think I can say that with certainty. You know, if you were to take 100 years of record, you may find that you have some additional low-flow periods. And I'm not sure we've done the detailed statistical analysis. All we can say, this is what happened over this 60-year period of record, and that's what we use for the purpose of calculating the energy capability of the system.

MR. FULTON: Q: If I am right, though, that those two numbers are anomalous, does it not also follow then that an unrepresentatively low value would result for the Heritage hydroelectric firm energy?

MR. SIMPSON: A: If you were just to remove those two values and recalculate the energy, it would go up but I can't say by how much.

MR. FULTON: Q: And in terms of that removal and recalculation, what would that involve from a time standpoint?
MR. SIMPSON:  A: Again I think it's probably something that could be done in a couple of days, but we'd have to be clear on what assumptions we were making. So if we were just going to remove '45 and '46 and substitute '47 and '48, I think that's a fairly straightforward calculation.

MR. FULTON:  Q: And I think that would be satisfactory.

MR. SIMPSON:  A: Okay.

Proceeding Time 10:31 a.m. T21

MR. MATHESON:  A: I might add, Mr. Fulton, that we might think carefully about a 60-year statistical period which, in the realm of statistics, is not very great. So, we go based on the information that we have, but when we assume anomalies out of that period, I think we're taking a bit of a risk in the sense that 60 years is a very short period of time from the statistical standpoint. And we should carefully consider whether it makes sense to start removing years based on an anomaly of a 60-year period.

MR. FULTON:  Q: Okay, thank you, Mr. Matheson.

Mr. Chairman, this would be an appropriate time to have a break.

THE CHAIRPERSON: We'll take 15 minutes.

(PROCEEDINGS ADJOURNED AT 10:31 A.M.)

(PROCEEDINGS RESUMED AT 10:47 A.M.) T22

THE CHAIRPERSON: Please be seated.
MR. BERGNER: I rise simply to note that we will take two undertakings calling for calculations. But I do note that this issue was first raised in the May series of information requests, which was Round 1, and there's been three rounds since, and these were calculations not called for in follow-up IRs, and this seems rather late in the day to be asking for calculations in cross-examination. And following as it does on 1700 IRs in four rounds, comes as a surprise in cross-examination.

THE CHAIRPERSON: So you're expressing your views but accepting the undertakings.

MR. BERGNER: We will accept these two undertakings, but if there are more to come, our position on accepting undertakings may change.

THE CHAIRPERSON: Mr. Fulton, please proceed.

MR. FULTON: Thank you, Mr. Chairman.

MR. FULTON: Q: The next issue that I'd like to deal with is issue 3.1(d) on the issues list, and panel, if you could have before you Exhibit B1-A and Exhibit B1-E.

Proceeding Time 10:49 a.m. T23

And we can agree that the electric load forecasts are based on the best available information and updated on a regular basis, correct?

MR. TIEDEMANN: A: That's correct.
MR. FULTON: Q: And can you tell me whether or not the evidentiary update in the Revenue Requirement Application would be considered a regular update?

MR. TIEDEMANN: A: Yes, it would be considered as a regular update.

MR. FULTON: Q: And that evidentiary update is an input into the amended LTAP, correct?

MR. MATHESON: A: That's correct.

MR. FULTON: Q: And would you agree with me that the effects of the February 2006 load forecast update serve to increase energy requirements by approximately 200 gigawatt-hours a year? And my reference for that is Exhibit B-1E, page 8-6, lines 5 to 7. So, B-1E, page 8-6, lines 5 to 7.

Proceeding Time 10:51 a.m. T24

MR. TIEDEMANN: A: Yes, that's correct.

MR. FULTON: Q: Okay. Is the 200 gigawatt hours considered by B.C. Hydro to be a short-term adjustment or is it a long-term change to the load resource balances?

MR. TIEDEMANN: A: It's considered as a long-term uplift to the forecast, but it's a relatively small one.

MR. FULTON: Q: And would a short-term adjustment such as GDP growth, global market demand for industrial sector output, be considered to be suitable for long-
term forecasting?

MR. TIEDEMANN: A: The industrial and commercial models are primarily based upon GDP, which means that in the early years of the forecast period, if there's an increase in the GDP growth rate, that will have an impact on the load forecast for the whole period of the forecast.

THE CHAIRPERSON: Mr. Fulton, can you ask your question again, please?

MR. FULTON: Q: Yes. Is a short-term adjustment such as GDP growth or a global market demand for the industrial sector output suitable for long-term forecasting?

MR. TIEDEMANN: A: So changes to GDP growth rates in the early part of the period will have a longer-term impact. With respect to industrial output, that's used to understand the validity of the industrial forecast, but primarily in the shorter period of time, because we have more information on market conditions, safe for a five-year period than for a longer period.

MR. FULTON: Q: All right. So, are they suitable or not?

Proceeding Time 10:54 a.m. T25

MR. TIEDEMANN: A: They are used.

MR. FULTON: Q: Okay. Are they suitable, though, to be used?
MR. TIEDEMANN: A: We view them as appropriate.

MR. FULTON: Q: All right, thank you.

Next issue 3.5, need for new resources, if
I could ask you to turn to Exhibit B-17-3, BCUC IR
4.430.5.4, and specifically to page 13 and the table,
which shows the 2006 IEP system energy load resource
balance. Will you agree with me that the table does
not include any Heritage thermal resources or market
components?

MR. MATHESON: A: No I wouldn't. The table under
Heritage energy includes Heritage thermal. And you're
correct in the second part of the question, which is
that it does not --

MR. FULTON: Q: Okay, so can you show me where -- I'm
sorry, I'm missing it where it shows Heritage thermal.

MR. MATHESON: A: Okay, so if you look under Existing
and Committed Supply, and right below that is Heritage
energy.

MR. FULTON: Q: Okay.

MR. MATHESON: A: And that includes Heritage thermal.

MR. FULTON: Q: Okay, but doesn't include any market --
the table does not include any market components.

MR. MATHESON: A: No, it shows non-firm energy at the
bottom under Additional Non-Firm Energy Supply, but it
does not show any actual spot market amounts.

Proceeding Time 10:57 a.m. T26
MR. FULTON: Q: Next issue 3.4, it's a DSM question. If I could ask you to have before you Exhibit B-1A, and B-1E, first of all, and we'll begin with those. So, on B-1A, if you could turn to page 7-18. And we can agree that the 2006 IEP analysis describes the uncertainties with respect to DSM, for example whether the program costs can be delivered as planned, and whether the expected energy savings will materialize as planned.

MR. DUFFY: A: Do you have a specific reference for that?

MR. FULTON: Q: Yes, if you look at page 7-18, lines 21 to 24.

MR. DUFFY: A: I have that.

MR. FULTON: Q: Okay. So do you want me to repeat my question, then? Or can you agree with that --

MR. DUFFY: A: If you're asking for confirmation, I agree that that's written there, yes.

MR. FULTON: Q: Okay. Now, I've provided to your counsel earlier in the proceedings a part of Volume 2, Appendix H, of the B.C. Hydro conservation potential review, 2002 summary report. Do you have that?

And I would ask that the extract from the 2004/2005 revenue requirements application of B.C. Hydro, volume 2, Appendix H, be marked the next exhibit, so that would be A2-8.

(EXTRACT FROM “REVENUE REQUIREMENT APPLICATION 2004/05 AND 2005/06...VOLUME 2...”, MARKED AS EXHIBIT A2-8)

MR. FULTON: Q: And if we look at the portion of Exhibit 2-8 under the heading "Introduction," would you agree with me that one of the objectives of the 2002 CPR was to provide program planners with an assessment of the hardwired electricity efficiency potential, that is savings potential that is not dependent upon repeated customer behaviour, so that the savings are reliable and consistent?

Proceeding Time 11:01 a.m. T27

MR. DUFFY: A: Yes.

MR. FULTON: Q: If the new CPR -- can we agree that to better plan EE3, 4 and 5, B.C. Hydro is looking at new technologies, savings from new regulations, and savings from behavioural changes? And my point of reference for that, gentlemen, is Exhibit B-6, BCUC IR 1.56.1.

MR. BERGNER: I rise to note that that is an IR assigned to Panel 7, EE3, 4 and 5 is a matter -- there is a witness on Panel 7, Mr. Hobson, directly to speak to, and this appears to fit under issue 30.4, sub-issue (a), which is also assigned to Panel 7.

MR. FULTON: Q: Well, let me approach it this way. If we turn to Exhibit B-1E, page 8-21, there is a
discussion of the definition phase and it speaks of
the new CPR and it says that that CPR will consider
technologies that may become available further into
the future and identify potential electricity savings
that could be achieved through operational and
behavioural changes.

Is that something that this panel is not
able to speak to?

MR. DUFFY: A: The scope and content of the 2004 CPR
would be better -- questions on that would be better
addressed to Mr. Hobson on Panel 7.

MR. FULTON: Q: Okay. The next issue that I want to
deal with continues in the issue 3.4 area, and it's
more general. And again if this is something, Mr.
Duffy, that you believe should be put forward to Panel
7, you can tell me. I have produced to your counsel
previously a copy of a compliance report filed August
the 21st, 2006, an executive summary of the final
report of the direct and market effects of B.C.
Hydro's 2006 residential CFL program. Do you have
those? And it's the direct and market effects of B.C.
Hydro's 2005-06 residential CFL program, the Sampson
report.

Proceeding Time 11:06 a.m. T28

So you should have extracts from both the
2004 market effects of B.C. Hydro's CFL program
report, by Samson Research, and the direct and market
effects of B.C. Hydro's 2005-06 residential CFL
report, the final report.

Mr. Chairman, if we could mark the May 12th,


(EXTRACT FROM "SAMPSON RESEARCH...2004 MARKET EFFECTS OF
BC HYDRO’S COMPACT FLUORESCENT LIGHT PROGRAM, FINAL
REPORT...MAY 12, 2005...", MARKED AS EXHIBIT A2-9)


THE HEARING OFFICER: A2-10.

(EXTRACT FROM "SAMPSON RESEARCH...DIRECT AND MARKET
EFFECTS OF BC HYDRO’S 2005-06 RESIDENTIAL CFL PROGRAM,
FINAL REPORT...JUNE 15, 2006...", MARKED AS EXHIBIT A2-10)

MR. FULTON: And just so the record's clear, they are
extracts from both reports, they are not the complete
reports.

Q: Now, if we begin with A2-10, which is the June
15th, 2006 report, is anyone on the panel familiar with
this report?

MR. TIEDEMANN: A: Yes I am.

MR. FULTON: Q: Okay. And just before we get to my
question on the report, would you agree with me that
the residential CFL program is considered by B.C.
Hydro to be one of the more successful programs in
EE2?
MR. TIEDE曼NN: A: We consider it to be a successful program. I'm not sure whether it's more successful than certain other programs. It's particularly successful in the sense that it has exhibited high rates of energy savings over and beyond those initially forecast for the program.

MR. FULTON: Q: Okay. If I could ask you to turn to Exhibit B-6, BCUC IR 1.69.1. And I'll let you read the answer, and then I'll ask you a question. Okay.

MR. DUFFY: A: Go ahead, please.

MR. FULTON: Q: Thank you, Mr. Duffy. As I read the response, I took the response to say that out of the programs in EE-2, the residential CFL program was considered by B.C. Hydro to be one of the more successful programs. Was I incorrect in reading the response that way?

Proceeding Time 11:11 a.m. T29

MR. DUFFY: A: Well, the first sentence of the response refers to cost-effective.

MR. FULTON: Q: Yes.

MR. DUFFY: A: If you want to interpret that as successful, you can. But specifically it's referring to cost-effectiveness.

MR. FULTON: Q: Okay. So that in terms then of being more cost-effective, the residential CFL program was one of the more cost-effective of the EE2 program.
MR. DUFFY: A: No, I would say it was more cost-effective than planned. There may be other programs that are more cost-effective.

MR. FULTON: Q: Okay. If we then return to Exhibit A2-10, Mr. Tiedemann, do I take it that B.C. Hydro endorses that report?

MR. TIEDEMANN: A: The report has been reviewed by the evaluation oversight team, and they have signed off. So in that sense the report is endorsed by B.C. Hydro.

MR. FULTON: Q: Right, thank you.

Page E-3 of the report, which is on the reverse side of the front page, just below the third bullet, says that

“A survey of 400 households from North Dakota and South Dakota (comparison group survey) was used to evaluate the current baseline use and the calculations of direct to market effects for B.C. Hydro's 2005-06 CFL initiative.”

And goes on to say that they

“...were used as a comparison group because of their limited exposure to CFL programming by either utilities or government entities, and their relative similarity to B.C. Hydro residential customers in terms of key demographic and housing characteristics.”
Can you tell us, Mr. Tiedemann, how the claim of demographic similarities between B.C. Hydro and the states of South Dakota and North Dakota was verified?

MR. TIEDEMANN: A: Part of the information was collected through surveys administered to customers within North and South Dakota, as well as within B.C. Hydro's service territory. When we looked at demographic and related information, we found that the two groups were quite similar.

MR. FULTON: Q: Okay, and can you provide us with some examples of the similarities from the two states?

MR. TIEDEMANN: A: Yes. So educational levels were quite similar between the Dakotas and British Columbia, and GDP per capital also was quite similar between the two areas. In addition, at a more structural level, both economies are quite resource-based.

MR. FULTON: Q: Okay. What about residential electricity rates? Were there any similarities in those?

MR. TIEDEMANN: A: Subject to check, North and South Dakota have electricity rates at the residential level which are higher than in British Columbia.

MR. FULTON: Q: Thank you. Are you also familiar with the May 12th, 2005 Sampson report, Mr. Tiedemann?
MR. TIEDEMANN:   A:   Yes I am.

MR. FULTON:   Q:   Okay. And for the purposes of that report, households in Saskatchewan were surveyed?

MR. TIEDEMANN:   A:   That’s correct.

MR. FULTON:   Q:   And are you able to say whether or not North and South Dakota have lower CFL penetration rates than Saskatchewan?

MR. TIEDEMANN:   A:   So we have before us the extracts from the 2004 and 2006 reports, but I'm still looking for the 2005 report.

MR. FULTON:   Q:   Oh, well, I'm sorry. I may have confused it. When I spoke of 2005 I was talking about the date on the report, which is -- yes, in Exhibit A2-9. So the report is dated May the 12th, 2005 but it's the 2004 market effects.

Proceeding Time 11:16 a.m. T30

MR. BERGNER:   If I may assist, it's in the same packet of material that was distributed by Mr. Fulton.

MR. TIEDEMANN:   A:   Thank you.

So the penetration of CFLs in Saskatchewan and the Dakotas appears to be similar, at 43 percent for Saskatchewan and --

MR. FULTON:   Q:   Well, let me direct you to the third bullet on page E-4 of the exhibit.

MR. TIEDEMANN:   A:   Okay.

MR. FULTON:   Q:   And as I take that bullet, there is a
higher penetration of CFLs in Saskatchewan?

MR. TIEDEMANN: A: So there are two related issues.
The first issue is the share of households which have
any CFLs, and the second is the number of CFLs per
dwelling for those households which have them. And
so, one issue that emerged was that, on average,
households in Saskatchewan had a relatively large
number of CFLs per dwelling, if they had any.

So, that was a reason for our considering
the use of another jurisdiction as a comparison group.

MR. FULTON: Q: All right. And would the result, then,
of using the other jurisdiction for the comparison
group be that there would be a lower current baseline
than in Saskatchewan?

MR. TIEDEMANN: A: That is correct.

MR. FULTON: Q: Would a lower current baseline improve
the benefits of ratepayers using CFLs?

MR. TIEDEMANN: A: It would increase our estimate of
the impact of the CFL program.

MR. FULTON: Q: Thank you. If you used -- or B.C.
Hydro used the Saskatchewan baseline for the
calculation of the market effects and in doing so
unduly penalized B.C. Hydro, would the use of North
Dakota and South Dakota as a baseline add undue
benefits to the CFL program?
MR. TIEDEMANN: A: Perhaps I could just back up a little bit. Initially, we were using residential customers within British Columbia who were not aware of our CFL programs as a comparison group. Over time that became more problematic because of spill-over from our advertising and related activities to those who hadn't necessarily participated, for example, in a rebate program. So it was decided that we needed to find another jurisdiction to serve as a comparison group because of our view that the program had really affected the majority of residential customers within British Columbia.

So our initial thoughts were to use Saskatchewan because it appeared to have demographic characteristics close to those of British Columbia, and so we undertook the survey work that is described in one of Mr. Samson's reports.

When we examined the information it appeared that those households which had CFLs in Saskatchewan had quite a few CFLs, and so some of our marketing people undertook informal discussions with the trade and our conclusion was that large establishments, big-box stores and so forth, were changing their practices with respect to the supply side of the CFL industry. In other words, the change in the market within British Columbia was also
affecting changes in the market in other jurisdictions in Western Canada. And for that reason, we attempted to find a jurisdiction which was as similar as possible to British Columbia but which had not had major programs of its own and which would not logically have been affected by changes in the distribution of CFLs within the west.

MR. FULTON: Q: Okay. Let me approach my question this way. If I take you to Exhibit A2-9 again, and if you look within the paragraph headed "Decision", beginning approximately five lines from the bottom, the statement appears:

"...the evidence is sufficient enough to conclude that using Saskatchewan as a baseline for the calculation of market effects would unduly penalize B.C. Hydro."

Okay.

MR. TIEDEMANN: A: Yes, I see that sentence.

MR. FULTON: Q: All right. Now, does the other side of the coin, then, apply if you used North Dakota and South Dakota? Does the use of the North Dakota and South Dakota as a baseline unduly benefit B.C. Hydro?

MR. TIEDEMANN: A: The choice of the Dakotas as a jurisdiction was based on the fact that we felt that they were the most appropriate jurisdiction that we could find. At the same time, all jurisdictions
within the United States have been affected by the U.S. green lights program, so that there's already some market transformation occurring even in the Dakotas, which we thought was our best possible comparison. So, I believe that if anything, even the use of the Dakotas is probably underestimating rather than overestimating the impact of the program.

MR. FULTON: Q: But didn't I understand you to say earlier -- and we can check the record ultimately; but I had thought you had said that using a lower current baseline would increase the benefits of using CFLs? Now, I may have misheard you, but did I understand you to say that?

MR. TIEDEMANN: A: If the baseline is lower, then the statistically-measured impact of the program is increased, that's correct, yes.

MR. FULTON: Q: So, even with that increase, though, are you saying that it is your -- it is B.C. Hydro's view that the use of the North and South Dakota as a baseline would not unduly benefit B.C. Hydro?

MR. TIEDEMANN: A: No, I believe it does not unduly benefit B.C. Hydro.

Proceeding Time 11:25 a.m. T32

MR. FULTON: Q: Now, I provided your counsel earlier with some further documents, and the first was a report on demand-side management activities for the
year ending March 31, 2006. You have that document
within the bundle of documents that you've been
referring to?

MR. DUFFY: A: I have that.

MR. FULTON: Mr. Chairman, if we could mark the report on
demand-side management activities for the year ending
March 31, 2006 the next exhibit, A2-11.

THE HEARING OFFICER: Marked Exhibit A2-11.

(EXTRACT FROM “BC HYDRO POWERSMART REPORT ON DEMAND-
SIDE MANAGEMENT ACTIVITIES FOR THE YEAR ENDING MARCH
31, 2006, JULY 2006”, MARKED AS EXHIBIT A2-11)

MR. FULTON: And in addition, Mr. Chairman, I circulated
a bundle of documents to all the parties yesterday,
which includes attachments to CDs, taking my cue from
Mr. Quail before hearing your request this morning.
So if we could mark that collection of documents the
next exhibit, that would be A2-12.

THE HEARING OFFICER: Marked A2-12.

(EXTRACTS FROM BCUC IR 2.328.2, 1.164.1 AND 2.367.2,
MARKED AS EXHIBIT A2-12)

MR. FULTON: Q: And again, both these documents are
extracts from documents rather than the complete
document.

If we could begin with Exhibit A2-11, and
we turn to Table 1 on page 4, and Mr. Tiedemann, are
you the person on the panel that I should direct
MR. DUFFY: A: I'll take questions on that, Mr. Fulton.

MR. FULTON: Q: And again, if there are questions that you think are more appropriate for Panel 7, you can direct me that way.

Can we agree, Mr. Duffy, that variances can occur because of timing differences, cancellation or additions of some activities, or because of the over or underestimation of true costs?

MR. DUFFY: A: I would agree that variances can occur due to those reasons as well as others.

MR. FULTON: Q: Okay, and can you provide us with some examples of the other reasons?

MR. DUFFY: A: Well, some examples would be a program seeing less activity than was forecast, a program seeing fewer costs per unit of activity than was forecast.

MR. FULTON: Q: Has B.C. Hydro made any attempt to apportion the variances to the factors that caused the variance?

MR. DUFFY: A: No, we haven't.

MR. FULTON: Q: Looking in the bottom right-hand corner for total DSM, there's a total variance of minus 28 percent of the fiscal 2006 budget. Is that an acceptable variance for a program that is midway into the ten-year plan?
MR. DUFFY: A: The variances for one year, so it's not a cumulative variance, and the main driver behind that figure is the industrial PowerSmart Partners program, which is at the top of that table. You'll see that the variance is $18 million negative out of a total of 35 million. So just over half. And that was related to the impact of stepped rates on participation in the industrial PowerSmart Partners program.

MR. FULTON: Q: If we move up that column, though, isn't the residential variance minus 30 percent?

MR. DUFFY: A: That's correct.

MR. FULTON: Q: Okay. Is that number an acceptable variance for a program that is midway through a ten-year plan?

MR. DUFFY: A: I think it would be our position that it is acceptable, and probably more appropriately it's understandable, in that the bulk of that variance just came out of the compact fluorescent lighting program, and that variance was largely tied to a forecast of bulb costs, of CFL bulb costs that was used for planning purposes, and in actuality that cost was lower. And there are -- there may have been other reasons for that program specifically that I can't speak to right now.

MR. FULTON: Q: Okay. Is one able to draw the
conclusion from looking at these variances, though, that at this point in time there are still some very real challenges for B.C. Hydro in judging DSM costs?

MR. TIEDEMANN: A: The example of compact fluorescent lamps is an unusual one, in the sense that as production has increasingly moved to China, costs have fallen dramatically and, at the same time, there's been a change in the way in which they're sold. Instead of selling CFLs primarily as a single item, they're packaged now in packs of four or more CFLs, and the per-unit cost has there fallen dramatically.

MR. FULTON: Q: But as I understand this table, it's not simply talking about CFLs. CFLs appear immediately under the heading "Residential sector". There are a number of other programs that are looked at that lead to the minus 30 percent variance. Is that not correct?

MR. DUFFY: A: The minus 30 percent is the product of a number of programs, yes.

MR. FULTON: Q: Right. And we're not simply talking about CFLs. To get to that -- CFLs is one of the components that gets you to the 30 percent, but we're not simply talking about CFLs, are we?

MR. DUFFY: A: Correct.

MR. FULTON: Q: Okay. So, if we return to my question, then, does the net minus 30 percent variance in the
residential sector not suggest that B.C. Hydro is
still experiencing challenges when it is judging DSM
costs?

MR. DUFFY: A: I wouldn't use the term "judging" DSM
costs. This is a product of a forecast, and then
program activity coming through and actuals being
different. And the -- as I mentioned earlier, there's
a number of factors that can cause actuals to be
different from that forecast. Some of them are
outside B.C. Hydro's control. Some of them are
outside our control but within our influence, and then
some are within our control. There -- because these
are marketing programs where we are trying to forecast
the utility costs of certain activity and the customer
response, there are factors that can cause us to be
under our utility costs, because at the planning
stage, when we are forecasting, we're wanting to be
conservative.

Proceeding Time 11:35 a.m. T34

So if in doubt we'll include a cost. Six
or nine months later when we've gone through
negotiations with retailers, for instance, we may have
been able to bring those costs down further, and so
actuals will be lower.

By the same token, we're forecasting levels
of activity. In the end activity in terms of customer
uptake may be higher or lower, and that will drive a variance.

MR. FULTON: Q: Well, let's use your word "forecast" instead of my word "judge". Would you agree with me that the minus 30 percent variance suggests that B.C. Hydro is still experiencing challenges forecasting DSM costs?

MR. DUFFY: A: I think the 30 percent is a function of -- it reflects the difficulty of forecasting DSM costs. Whether that's a continuing -- I mean forecasting DSM costs is a challenge, I'll agree to that, and whether this is an indication of continuing challenges, that wouldn't be my term. I think it reflects the difficulty involved in the nature of the activity.

MR. FULTON: Q: You will at least accept, though, that forecasting the DSM cost is a challenge.

MR. DUFFY: A: I agree.

MR. FULTON: Q: Thank you.

MR. DUFFY: A: Yes.

MR. FULTON: Q: If we could next turn to Table A2-12, and beginning at page 19, Mr. Chairman, and I added page numbers to the top of the document. This is the -- it's in a collection of documents, Mr. Tiedemann, that I just handed out that you had seen previously and it's marked A2-12. If you go to page 19 in the
MR. TIEDEMANN: A: I apologize. I still haven't found it.

MR. FULTON: Q: Okay.

MR. TIEDEMANN: A: Are you referring to the semi-annual report on demand-side management?

MR. FULTON: Q: Yes, I am.

MR. TIEDEMANN: A: Okay, thank you.

MR. FULTON: Q: Okay. And if we turn over to page 2.

MR. TIEDEMANN: A: Yes.

MR. FULTON: Q: This report does not contain the electricity savings information that was previously provided in -- this report -- sorry.

This report contains the electricity savings information, but the 2006 Table 1 that we referred to in A2-11 does not. Correct?

MR. TIEDEMANN: A: Comparing the two tables that you've extracted, that appears to be correct.

MR. FULTON: Q: Okay, thank you. And can you tell us why the information relating to electricity savings was dropped in the 2006 report?

MR. DUFFY: A: The June 2005 report was responding to two items in the Commission's decision on the F05-F06 Revenue Requirement Application. And one of those directives asked for a comparison of plan to actual electricity savings.
That directive was specific to a request to file that information by June 30th of '05, so this report essentially killed two birds with one stone. It met both of those directives.

MR. FULTON: Q: Okay.
MR. DUFFY: A: Our understanding of the other directive, in terms of providing planned versus actual expenditures, we understood that to be the continuing directive, and that's why this second report only provided the utility cost portion.

MR. FULTON: Q: Okay. All right, and when you were referring to this report, you were referring to page 20 of Exhibit A2-12.
MR. DUFFY: A: That's correct.

MR. FULTON: Q: Okay. Can you tell us, Mr. Duffy or Mr. Tiedemann, to what extent B.C. Hydro adjusts program activity to deliver the same volume of savings as forecast in the DSM plans? And I'm thinking, as an example here, a cutback on incentives or a ramp-up on activities at higher prices.
MR. DUFFY: A: Mr. Fulton, if the question is germane to the load/resource balance --
MR. FULTON: Q: Yes.
MR. DUFFY: A: -- I can speak to that. It sounds like that question is more to the implementation of DSM,
and that's a better question put to Mr. Hobson on Panel 7.

MR. FULTON: Q: Okay. Well, if you address it from the load/resource balance, and then I'll address it to Mr. Hobson on the other point.

MR. DUFFY: A: So can you rephrase the question so I can understand the load/resource balance context for that?

MR. FULTON: Q: Okay. What I'd like to know is the extent to which B.C. Hydro adjusts its program activity to deliver the same volume of savings as forecast in the DSM plans. And by way of an example, would it cut back on incentives or ramp up the activities at higher costs?

MR. DUFFY: A: I guess the important context for the load resource balance is to have an understanding that the DSM plans that we are managing to in this time period is a ten-year plan, taking us out to 2012. So, on a year-to-year basis, we're seeing how we're tracking against our annual target for that, in that plan, but we're really keeping our sights further out to ten-year -- ten years out, in 2012. So, in some years if we're over, I don't think it's cause to turn down the throttle. We just recognize that we're getting things a bit faster than we thought, and if there is to be an adjustment, if we were to stick with
that ten-year target, it would come in those later years. If we're only targeting for 3600, then we'll aim for that and turn down the future years.

MR. FULTON: Q: All right, thank you. All right, if we could return to the July, 2006 report, Exhibit A2-11, and specifically Table 3.

MR. DUFFY: A: I have that.

Proceeding Time 11:40 a.m. T36

MR. FULTON: Q: Thank you. And that table shows the cumulative DSM electricity savings as at March 31, 2006?

MR. DUFFY: A: That's right.

MR. FULTON: Q: Okay. Are you able to tell us, Mr. Duffy or Mr. Tiedemann, whether B.C. Hydro has evidence that the savings that occurred in the early years of the plan will persist as long as it expects?

MR. DUFFY: A: Can you explain what you mean by "Do we have evidence?" Do you mean evidence on the record or basically backup material?

MR. FULTON: Q: Well, let's try evidence on the record first.

MR. DUFFY: A: The evidence on the record that I'm aware of is statements around our assumptions on the duration or persistence of savings which are contained in the energy efficiency and load displacement plans appended to the '07-08 RRA, as well as selected IRs in
both proceedings.

MR. FULTON:  Q:   Okay. And are you aware of any reports
that would support the persistence of the savings over
the length of period that B.C. Hydro expects them to
persist?

MR. DUFFY:   A:   I'm not aware of specific reports, but
my understanding is that we do have reports that we
have consulted in coming up with our assumptions
around duration of savings.

MR. FULTON:   Q:   Are those reports that B.C. Hydro could
produce?

MR. BERGNER:   I'm not aware of the specifics of the
reports, and perhaps the question might establish what
their availability might be. I don't really know.

MR. FULTON:   Q:   Certainly. Are the reports readily
available?

MR. DUFFY:   A:   I'm not sure.

MR. FULTON:   Q:   All right. Could you check and take it
as an undertaking that if they are readily available
and they can be produced, they will be produced, and
if they can't -- if they aren't readily available or
cannot be produced, then your counsel can advise us.
Do you accept that undertaking?

MR. BERGNER:   I just want to make sure I understand the
exact scope of it. The reports you're seeking are in
relation to on what basis B.C. Hydro believes the
savings that have experienced to date will persist?

MR. FULTON: Yes.

THE CHAIRPERSON: Either internal or externally created reports.

MR. BERGNER: We'll take that under advisement.

MR. FULTON: Thank you.

Information Request

Proceeding Time 11:49 a.m. T37

MR. FULTON: Q: If I could refer you next to the amended LTAP Exhibit B-1E, page 8-16. And yesterday at transcript Volume 10, beginning at page 1483, Mr. Andrews did touch on this issue somewhat, but he didn't really answer the question that I'm -- or get an answer to the question, or even ask the question that I'm going to ask, so if you could look at 8-16, and the reference point is lines 10 and 11, where the comment appears:

"Between April, 2001 and December, 2005, B.C. Hydro achieved 110 percent of its target at 72 percent planned costs."

And returning to Exhibit A2-11, the DSM report for the year ending March 31, 2006, Table 3, that table shows total EE2 savings since inception of fiscal 2002 as totaling 1,957 gigawatt-hours per year, amounting to 54 percent of the target. Correct?

MR. DUFFY: A: The 1,957 refers to total DSM, which
would include energy efficiency and load displacement.

MR. FULTON: Q: Right. Well, if we go up two rows to
the total under the residential sector, we have 1,479
gigawatt hours a year. Again, though, that represents
54 percent of the target. Correct?

MR. DUFFY: A: And that refers to -- I agree, correct,
and it refers to the total for energy efficiency, not
just the residential sector.

MR. FULTON: Q: Right, okay. And can you explain for
us what appears to be a difference between the
statement that I referred you to in Exhibit B-1E, and
the 54 percent appearing on Table 3 in Exhibit A2-11?

MR. DUFFY: A: It refers to percentages relative to two
different targets. The 54 percent is giving us an
indication of where we are with respect to our ten-
year target of 2,738 for energy efficiency in Table 3.

MR. FULTON: Q: Thank you.

MR. DUFFY: A: And the 110 percent is comparing it to a
different point in time, that being the target as of
December, 2005.

Proceeding Time 11:53 a.m. T38

MR. FULTON: Q: All right, thank you.

My next series of questions relate to issue
3.4(a), which I see is for Panel 7. But I just wanted
to make sure that some of these questions shouldn't go
to you, and in the main they relate to the definition
phase. So if I might ask the questions and then you can decide whether or not specifically they should go to Panel 7.

If you would turn to Exhibit B1-A, page 3-50.

MR. DUFFY: A: I have that.

MR. FULTON: Q: Thank you. Beginning at line 17 there is a discussion of several considerations that impact B.C. Hydro's ability to deliver targeted DSM savings, and in order to achieve saving targets for future DSM programs, one of the considerations is changes to federal and/or provincial energy efficiency legislation codes and standards.

MR. DUFFY: A: That's correct.

MR. FULTON: Q: I provided your counsel with a copy of Order in Council 503 dated July 13th, 2006. Do you have that document?

MR. DUFFY: A: I have that.

MR. FULTON: Mr. Chairman, if the order in council number 503 dated July 13th, 2006 could be marked Exhibit A2-13.


(COPY OF ORDER OF THE LIEUTENANT GOVERNOR IN COUNCIL, NO. 503, DATED JULY 13, 2006, MARKED AS EXHIBIT A2-13)

MR. FULTON: Q: And I'm not going to ask any legal opinions on this order in council, but I want to ask
some questions in the context of the requirement for changes to provincial energy efficiency legislation. And this Order in Council was made after Exhibit B-1A was filed, correct?

Proceeding Time 11:56 a.m. T39

MR. DUFFY: A: That's correct.

MR. FULTON: Q: Thank you. Does the Order in Council, Exhibit A2-13, assist towards the achievement of savings targets, because it addresses energy efficiency issues?

MR. DUFFY: A: I'll qualify the answer to say that questions around codes and legislation, codes and standards, is better put to Panel 7, if they're detailed. But I will say that the short answer is "Yes."

MR. FULTON: Q: Okay.

MR. DUFFY: A: The changes to the regulations for windows and thermostats could contribute to the achievement of the savings targeted under EE2.

MR. FULTON: Q: All right, thank you. In terms of whether or not they apply to EE3, 4 and 5, is that a question that I should put to Panel 7? Or are you able to answer that question? I took from your answer that it didn't apply to EE3, 4 and 5.

Proceeding Time 11:58 a.m. T40

MR. DUFFY: A: That is a better question for Panel 7.
MR. FULTON: Q: Okay. And what about for LD2? Do these regulations apply to LD2, to your knowledge? Or should I put that to Panel 7 as well?

MR. DUFFY: A: No, I don't think you need to. To my knowledge, they would not apply to LD2.

MR. FULTON: Q: Okay. If I look forward to -- again, Exhibit B-1A, but page 3-51, and on the first line, it states:

"To date, B.C. Hydro has consistently delivered targeted DSM savings within the planned costs."

Can I not take it from that statement that you were able to achieve the savings without the legislation? And when I'm speaking of the legislation, I'm speaking of A2-13.

MR. DUFFY: A: That's correct.

MR. FULTON: Q: So then, in B.C. Hydro's view, is the impact of the Order in Council that it would allow B.C. Hydro to achieve greater savings?

MR. DUFFY: A: Are you asking if the Order in Council would allow B.C. Hydro to achieve greater savings?

MR. FULTON: Q: Well, as I understood the reason for B.C. Hydro wanting legislative change was to achieve the saving targets for future DSM. And I understood your evidence to be that Order in Council 503 assisted in terms of EE2. Did I understand your evidence
MR. DUFFY: A: That's correct.

MR. FULTON: Q: Okay. So, and we know from the application that B.C. Hydro was delivering targeted DSM savings without the legislation, namely OIC 503. Right?

MR. DUFFY: A: That's correct.

Proceeding Time 12:01 p.m. T41

MR. FULTON: Q: So my question to you is, does it follow from that that with Order in Council 503, B.C. Hydro expects to achieve increased savings from future DSM programs?

MR. DUFFY: A: That's a question better put to Panel 7 regarding the future implementation of DSM.

MR. FULTON: Q: Okay, thank you. To the extent that OIC 503 will affect EE2, can you tell us how the savings will be reflected in the load forecast?

MR. TIEDEMANN: A: The residential forecast, as I mentioned, is essentially the product of the number of accounts and the use rate. So this initiative will have an effect on the use rate, and something that we can examine in the context of our models.

MR. DUFFY: A: Mr. Fulton, can I add to that that when you speak to the load forecast, we usually think about two load forecasts. One is before DSM and one with DSM. And in order to properly forecast the load with
or without, it's really a question of where would we put savings from this Order in Council? And it could be before or it could be after DSM.

MR. FULTON: Q: And so when would that decision be made as to where to place those savings?

MR. DUFFY: A: I think it would be made in the context of our load forecasting activity as it goes on.

MR. FULTON: Q: Okay. In terms of EE2 then, will that be -- will EE2 be claiming a credit for the savings that it derives from the new legislation? Do you anticipate that that will happen?

MR. DUFFY: A: That's a better question for Panel 7.

MR. FULTON: Q: Okay.

Mr. Chairman, this would be an appropriate time to stop.

THE CHAIRPERSON: We'll break until 1:30.

(PROCEEDINGS ADJOURNED AT 12:03 P.M.)

(PROCEEDINGS RESUMED AT 1:30 P.M.)

THE CHAIRPERSON: Please be seated.

Are there any preliminary matters?

MR. GODSOE: You'll be relieved to know I'm just here for a brief cameo, Mr. Chairman. Good afternoon, Commissioners.

I do have five preliminary matters. The first concerns a subject to check put forward by Mr. Fulton, and that's found at Volume 10, page 1300, line
8 of the transcript, and it was with respect to whether the reference price set out in Exhibit B-17-10, supplemental response to BCUC IR 4.451.1, includes an allowance for transmission losses. B.C. Hydro confirms the reference price is used for one megawatt hour of firm energy delivered to the Lower Mainland. Thus, the reference price has been calculated by using plant gate prices for the F2006 call, and adjusting for interconnection and transmission costs including energy losses. And I can also confirm that questions concerning the application of the reference price, as well as the approval process for that reference price, should be directed to Panel 6.

I have three undertaking filings, and the first is an undertaking with respect to providing a copy of the Greater Vancouver Regional District air quality management plan, and that arose out of my re-direct of Ms. Farrell at Volume 10 of the transcript, page 1397, line 2. And I would ask that the copy of the GVRD's new air quality management plan be entered and marked as Exhibit B-45.

THE HEARING OFFICER: Exhibit B-45.

(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME...
1. THE CHAIRPERSON: And Mr. Eckert will be able to speak to that?

2. MR. GODSOE: And Mr. Eckert on Panel 7 will be able to speak to that.

The second undertaking is with respect to providing a copy of the air emission permit issued by the GVRD with respect to the Burrard Thermal Generating Station, and that again arose out of my redirect of Ms. Farrell at Volume 10 of the transcript, page 1396, line 1. And I would ask that the copy of the air emission permit be entered and marked Exhibit B-46.

3. THE HEARING OFFICER: Exhibit B-46.

(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME 10, PAGE 1396, MARKED AS EXHIBIT B-46)

4. MR. GODSOE: The third undertaking -- it's a pair of undertakings, actually, was requested by Ms. Worth at Volume 9 of the transcript, pages 1137 and 1139, concerning a net present value comparison of the F2006 Call to market price forecasts and to a theoretical combined cycle generating -- sorry, a CCGP in service by 2009. And I would ask that those pair of undertakings, which we've combined into one response, be entered and marked Exhibit B-47.

Proceeding Time 1:34 p.m. T44
THE HEARING OFFICER: Marked Exhibit B-47.

(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME 9, PAGES 1137 AND 1139, MARKED AS EXHIBIT B-47)

MR. GODSOE: And then, Mr. Chairman, just by way of a status report on the remaining undertakings flowing out of the cross-examination of Panel 1B, there are four. And the first concerns the business case for the recommissioning of Burrard Unit 1, and as that might be pertinent to Panel 3, I propose that I enter that at the end of the day.

THE CHAIRPERSON: Thank you.

MR. GODSOE: The second concerns the Revelstoke Unit 5 business case, and I have spoken with my friend Mr. Weafer, and we are going to provide that. I do want to emphasize that in fact that business case does not include all of the trade benefits that Mr. Weafer was interested in. What it does provide is backup for the evidence contained in Exhibit B-17-2, which is B.C. Hydro's response to BCOAPO IR 3.16.2. However, I can confirm that Mr. Eckert on Panel 7 should be able to address the additional trade benefits that are not captured in that business case, in that business -- in that business case.

The third undertaking arises out of Mr. Fulton's cross at Volume 10 of the transcript, page 1298, and that concerns a comparison involving a 250
megawatt CCGT. That's closely related to Ms. Worth's undertaking, and I believe I can enter that as an exhibit at the end of the day as well.

That leaves an undertaking, Mr. Chairman, that arose out of your discussion with Ms. Farrell, and it concerns whether in fact B.C. Hydro could transfer the existing Burrard thermal permits for a re-powering of Burrard. Now, when I heard that I heard "subject to check". The transcript has captured it as an information request, and I think it's appropriately dealt with as an undertaking because I do think it will assist the Commission Panel to understand which of these permits, if any, are transferable. And in fact it's going to be largely a legal analysis because we're going to have to look at the underlying statutes and bylaws that authorize the issuance of these permits. So I would propose that we enter that as an undertaking and it will be done so well in advance of Panel 7, where any follow-up questions will find their home.

THE CHAIRPERSON: Thank you, Mr. Godsoe.

Proceeding Time 1:37 p.m. T45

MR. BERGNER: I have two brief undertakings to respond to, just to continue with the fun. The first is one that arose yesterday. It's at Volume 10 of the transcript, page 1419, lines 2 through 10. The
requester was IPPBC, and it related to the B.C. Hydro’s load growth in 2005.

And I would ask that the response to that undertaking be filed as Exhibit B-48.


(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME 10, PAGE 1419, MARKED AS EXHIBIT B-48)

MR. BERGNER: The second undertaking is one that arose this morning in the cross-examination of Panel 2 by ESVI. It’s at Volume 11 of the transcript, page 1520, lines 13 through 20, and related to confirmation that there are two peaks on Vancouver Island. I ask that that response be entered as Exhibit B-49.


(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME 11, PAGE 1520, MARKED EXHIBIT B-49)

MR. BERGNER: Pardon me?

COMMISSIONER PULLMAN: Sorry, that is what my B-48 says. "There are two peaks on Vancouver Island, one in the morning and one in the evening."

MR. BERGNER: One of the photocopies may have been inadvertently switched.

THE CHAIRPERSON: You may proceed, Mr. Fulton.

MR. FULTON: Thank you, Mr. Chairman.

MR. FULTON: And just by way of a heads-up, the exhibit that was marked A2-12 I will be returning to later in
my cross-examination, so if people don't put it away
that would be helpful.

Proceeding Time 1:40 p.m. T46

CROSS-EXAMINATION BY MR. FULTON (Continued):

MR. FULTON:  Q:  During the lunch hour I provided your
counsel, panel, with some extracts from the MEMPR
energy savings plan and the City of Vancouver energy
savings plan. Have you had an opportunity to review
those extracts?

MR. DUFFY:  A:  I have.

MR. FULTON:  Okay. Mr. Chairman, may we mark the
extracts the next exhibit, which will be A2-14.

(EXTRACTS FROM MEMPR ENERGY SAVINGS PLAN AND CITY OF
VANCOUVER ENERGY SAVINGS PLAN, MARKED AS EXHIBIT A2-
14)

MR. FULTON:  Q:  And was any member of the panel aware
of these two plans prior to today?

MR. DUFFY:  A:  I was aware of the energy savings plan.
I was not aware of the City of Vancouver's plan.

MR. FULTON:  Q:  Okay, and the energy savings plan does
include financial incentives, not only for the
residential sector but also for the industrial sector
as well, in terms of new construction and existing
construction? And where I'm referring to, Mr. Duffy,
is the last two cells on the first page of A2-14.

MR. DUFFY:  A:  The last two rows of that table refers
to two of six targets established by the Ministry in their B.C. energy efficiency plan for buildings. But my understanding is that the energy savings plan is focused at homes and commercial buildings as outlined in the first sentence on that page.

MR. FULTON: Q: Okay.
MR. DUFFY: A: To my understanding it does not cover industrial facilities.

MR. FULTON: Q: Okay. Can you tell me the extent to which B.C. Hydro's analysis of DSM programs and incentives captures in the DSM costs the incentives that customers may receive from other levels of government, such as those provided by the energy savings plan and the city of Vancouver plan?

MR. DUFFY: A: I think that's a better question put to Panel 6 on project evaluation, and Mr. Hobson.

MR. FULTON: Q: All right, thank you. Mr. Hobson is on 7?
MR. FULTON: Q: Okay. My next issue on the hearing issues list is 7.1(e), and that has been allocated to Panel 7. I would like to try some of these questions with you because some of them may be more appropriate for your panel and you can pass them on if you need to.

Would you turn to Exhibit B-6, BCUC IR
1.71.1.

Proceeding Time 1:45 p.m. T47

MR. DUFFY:  A:  I have that.

MR. FULTON:  Q:  Okay. And the question that was asked
of B.C. Hydro was why there wasn't an expansion of EE2
at this time, and the response was that it would take
savings away from EE3, 4 and 5. Agreed?

MR. DUFFY:  A:  Correct.

MR. FULTON:  Q:  And would you agree with me that EE2
has a lower unit cost for DSM savings than EE3, 4 and
5?

MR. DUFFY:  A:  Yes, as presented in the IEP, that's
correct.

MR. FULTON:  Q:  Right. And you're thinking, I suspect,
of Exhibit B-1A, Table 5.5.

MR. DUFFY:  A:  Yes. If you're referring to the unit
energy cost?

MR. FULTON:  Q:  Yes.

MR. DUFFY:  A:  Then I agree, yes.

MR. FULTON:  Q:  Okay. And notwithstanding that EE2 has
a lower unit cost for DSM, B.C. Hydro is of the view
that pursuing EE3, 4 and 5 is more desirable?

MR. DUFFY:  A:  More desirable than what?

MR. FULTON:  Q:  Than EE2, given the difference in the
unit cost basis.

MR. DUFFY:  A:  I'm thinking that if the question is to
a trade-off or choice between EE2, 3, 4 and 5, that's a better question put to Panel 7.

MR. FULTON: Q: Okay. If you could turn to Section 8.5.2 of the LTAP, which is in Exhibit B-1E, page 8-51. And specifically, I'd refer you to lines 5 through 7, to begin with.

Proceeding Time 1:48 p.m. T48

And in terms of ensuring that resource options continue to be cost-effective, B.C. Hydro has proposed a second evaluation methodology as set out in Section 8.5.2. Correct?

MR. DUFFY: A: That's correct.

MR. FULTON: Q: And the methodology is such that DSM programs will be compared to the appropriate prices established through Calls and market forecasts to ensure the continued relative cost-effectiveness, agreed? And Mr. Matheson, I take that from lines 26 to 28.

MR. MATHESON: A: That's correct.

MR. FULTON: Q: And we can agree that the reference price for the F2006 Call is $88 a megawatt hour?

MR. MATHESON: A: That's correct.

MR. FULTON: Q: And so, do I take what is said at lines 26 to 28 of page 8-51 to mean that DSM programs, as long as their levelized cost is lower than $88 a megawatt hour, will be considered cost-effective?
MR. MATHESON: A: I don't think you can be that categorical. I think that we'll -- the reference price will be one key indicator, and others -- we'll have to consider other factors as well.

MR. FULTON: Q: So, what other factors are you talking about? For example?

MR. MATHESON: A: Well, I mean -- generally speaking, I think it's a better question put to probably Panel 5. But -- project evaluation. Panel 5 or 6. But it wasn't our intention, in creating the reference price based on the '06 Call results, that that would be a simple and singular static indicator of how we would assess DSM in our other programs.

MR. FULTON: Q: Okay.

MR. BERGNER: Just so the record's clear, Panel 6 is the project evaluation panel, and Section 8.5 is the project evaluation section that we're speaking to.

MR. FULTON: Q: Thank you. Would you agree with me, though, that if the $88 a megawatt hour is the benchmark, then there really isn't much incentive to invest in careful DSM program design or evaluation?

MR. MATHESON: A: I wouldn't agree with that statement in general. I think Panel 7 can give you a better rendition of it, but my -- I think in general terms, this goes to ratepayer value, and I think we take that very seriously. So if you're inferring that we create...
a reference price and that we have absolutely no
intention, or incentive, to cost-manage any of our
programs below that rate, I disagree.

Proceeding Time 1:53 p.m. T49

MR. FULTON: Q: I didn't say anything about intention.
I was talking more of -- I used the word "incentive"
and that there wouldn't be an incentive.

MR. MATHESON: A: Well, I think we're incented to
provide value to our ratepayers, so I disagree.

MR. FULTON: Q: Okay. If I could next ask you to turn
to Exhibit B-10, BCUC IR 2.336.1.

MR. DUFFY: A: I have that.

MR. FULTON: Q: Thank you. The response refers to two
journal articles. Could B.C. Hydro produce those
journal articles please?

MR. DUFFY: A: Yes, we can.

Information Request

MR. FULTON: Q: Thank you. And the response also
states that "the evidence that exists suggests that
there is little empirical evidence of broader rebound,
and that which exists suggests that it is small in the
range of .5 to 3 percent."

Has B.C. Hydro included any estimates of
broader rebound in its DSM or load forecasts?

MR. TIEDEMANN: A: No it has not.

MR. FULTON: Q: Okay. Why has it not done so?
MR. TIEDEMANN: A: The magnitudes are such that it'll be very difficult to determine the impacts empirically without spending a considerable amount of money on research.

MR. DUFFY: A: Mr. Fulton, I would add to that and just refer to the last paragraph of that response, that to the extent it exists, that the broader rebound effect would affect the load forecast as opposed to the DSM forecast.

MR. FULTON: Q: Okay. Yes, all right, well then in terms of the load forecast, is the reason why B.C. Hydro didn't use .5 to 3 percent discount is because of the fact that the magnitudes are just so small?

MR. TIEDEMANN: A: They're relatively small and there's a wide margin of error.

MR. FULTON: Q: Okay, and that's equally the case with the DSM programs?

MR. DUFFY: A: Can you --

MR. FULTON: Q: Right, I'm just -- I'm looking at this, the broader rebound, and my question relates to why wouldn't you use the .5 to 3 percent as an appropriate discount from expected DSM savings? Is it for the same reason that it wouldn't be used for the load forecast, that the magnitudes are such that it's just too small?

MR. DUFFY: A: No, I go back to my previous response,
which is that to the extent it exists, it affects the
load forecast but not your DSM savings.

MR. FULTON: Q: All right, thank you.

All right, if we could move along in
Exhibit B-10 to the response to BCUC IR 2.388.1, and
I'm specifically referencing paragraph 2 of the
response. So I'll let you read that and then I'll ask
my question.

And that paragraph of the responses refers
to a B.C. Hydro assumption that 22 percent of the
refrigerator buy-back program participants were free
riders. Can you tell us what assumption what 22
percent was based on, or what information the
assumption of the 22 percent was based on?

PROCEEDING TIME 1:58 P.M. T50

MR. DUFFY: A: The assumption was based on the
information that was available to us at the time that
this DSM plan was developed, and it would have been
based on previous experience with this program. This
is a program that we've operated since the nineties,
or in the nineties, and again in this decade. So we
have a considerable amount of experience, having
evaluated different vintages of this program, and I'm
not sure whether we have done an evaluation of the
program at that point in time. We have done one
since, and that new estimate of free ridership is
incorporated in our forecast and cost-effectiveness analysis going forward.

MR. TIEDEMANN: A: So just to be a little more specific, in terms of our estimates of free rider rates for the refrigerator buy-back program, we have relied heavily upon survey data, asking participants what they would have done in the absence of the program and asking non-participants questions pertaining to their maintenance or future disposal of a second refrigerator.

MR. FULTON: Q: Thank you. If you could turn to -- in the same exhibit, B-10, BCOAPO 1.22.2.

MR. DUFFY: A: I have that.

MR. FULTON: Q: And in that response, B.C. Hydro states that for cost-effective analysis, for the cost-effective analysis of EE2 savings, they're assumed to last until the savings would otherwise have occurred due to natural conservation, and that range from 5 to 20 years, depending on the sector, program and technology. Right?

MR. DUFFY: A: That's right.

MR. FULTON: Q: And if you turn back to the response to BCUC IR 2.388.1 --

COMMISSIONER PULLMAN: Sorry, what was the number again?

MR. FULTON: 2.388.1, it was the one that we were at just a few moments ago, Commissioner Pullman.
Q: And specifically, the third paragraph, which talks about energy-efficient LED traffic lights, and there the assumption was that the program advanced the adoption of LED technology by 13 years relative to a natural conservation scenario, so that the program's initial electricity savings were assumed to last 13 years.

Can you tell us what information and analysis informed the assumptions of savings life for the various sectors, programs and technologies such as the assumption of the 13 years in the case of the LED traffic lights?

Proceeding Time 2:03 p.m. T51

MR. DUFFY: A: I can't give you a specific explanation of that assumption. In general what I can say is there was an assessment of where traffic light technology was at in B.C. in terms of how much LED technology had penetrated. I would expect that interviews with our municipal customers informed around their plans for change-outs of their traffic lights. And the 13 years refers to basically two life cycles of traffic lights. So we essentially assumed that we advanced the change-out by two life cycles.

MR. FULTON: Q: Okay. Next I have a series of questions on issue 2.1, reliability criteria and reserve margin. I would like you to have before you
MR. DUFFY: A: Thank you. If we begin to the response to BCUC IR 1.9.2, and essentially if you would read the last paragraph on page 1 of that response. And B.C. Hydro's position is that relying on the 2500 gigawatt hours annually of non-firm energy market allowance is a high cost risk under a high market price scenario, correct?

MR. MATHESON: A: The spot market component of that, that's correct.

MR. FULTON: Q: Yes. And then if you turn to Exhibit B17-3, the response to BCUC IR 4.430.5.2, in addition to the potential 1400 gigawatt hours annually of non-firm from the F2006 Call and the 500 to 550 gigawatt hours annually of non-firm deliveries from Alcan which are delivered -- which are identified in that information response, can you tell me what other sources of domestic, and by that I mean B.C. non-firm energy, B.C. Hydro has access to?

MR. MATHESON: A: Well, in the planning timeframe we are assuming we'll be going forward with the '07 Call. There'll be a non-firm energy component in the '07 Call and then we have the non-firm component in the Heritage hydroelectric system.
MR. FULTON: Q: Okay. Could one consider the F2006 Call and Alcan non-firm resources captive resources, where either B.C. Hydro has an exclusive right to access, or alternatively, that the cost of transmission reservations necessary to convert the non-firm energy to a useful product, makes it uneconomical for anyone else but a network customer?

MR. SIMPSON: A: I'm not sure we understand the question.

Proceeding Time 2:08 p.m. T52

MR. FULTON: Q: Okay. What I'd like to try and identify, if I could, is whether the results really of the F2006 Call as it relates -- and the Alcan non-firm resources, are such that they would be considered captive customers to B.C. Hydro in the sense that those sources, or those resources make it uneconomical for anyone else to use them.

MR. SIMPSON: A: Well, I'm not sure it's an issue of economics. I think in both cases the parties -- the IPPs and Alcan have contracted with Hydro to sell all of their non-firm generation. So it's not a fact of it being uneconomic for anyone else to purchase, they have created an obligation to sell it to Hydro.

MR. FULTON: Q: All right, if it's not economics, then what about access? Is it a question of access, then?

MR. SIMPSON: A: I don't think there's a question of
access, no, because it's only purchased if it's available.

MR. FULTON: Q: Are you able to tell me generally, given those answers, Mr. Simpson, what the cost of transmission would be for one of the F2006 Call non-firm energy providers to get electricity to the B.C. border?

MR. SIMPSON: A: I don't think there is any fixed cost associated with transmission. The only thing there would be would be transmission losses. So I don't think there's any firm transmission that's reserved to deliver that non-firm energy.

MR. FULTON: Q: So you're not able to provide me a cost, then?

MR. SIMPSON: A: Other than the cost of the transmission losses, no.

MR. FULTON: Q: Okay. For any domestic non-firm resources outside the F2006 Call and the Alcan resource, are there any of those category of non-firm resources that might be considered captive from the terms of access or economics? Or from the standpoint of access or economics?

MR. SIMPSON: A: We're not aware of any.

MR. FULTON: Q: Okay. Are you able to tell me generally speaking from a fuel and location diversity standpoint the size of the pool of domestic non-firm
resources that B.C. Hydro has access to under aggregate minimum average and maximum conditions? And if not, is that something that you can deal with in terms of an undertaking?

MR. SIMPSON: A: I'm not sure I understand the question. We have -- we've specified quantities here, in terms of the 1400 prior to attrition, and the 500 or so from Alcan. And we're assuming that those would be available in the event that the B.C. -- or the Heritage hydroelectric system was in a low stream-flow condition.

MR. FULTON: Q: Right. What would be the level of probability that the 2500 gigawatt hours annually of non-firm energy market allowance that is discussed in the information response as high-risk, can be supplied from low-risk domestic sources?

Proceeding Time 2:13 p.m. T53

MR. SIMPSON: A: I don't believe we've actually done a probability assessment. I think I can tell you qualitatively that whereas most of those non-firm resources are likely to be, particularly in the case of wind, they are likely to be diverse relative to stream flow conditions on the B.C. Hydro system. So we would have a fairly high degree of confidence that that energy from resources that aren't correlated to the B.C. Hydro hydroelectric system are going to be
available to supplement the output, in the event that we get a low stream flow condition on the Heritage system.

MR. MATHESON: A: And Mr. Fulton, the high risk component related to the spot market, so just wanted to make that clear.

MR. FULTON: Q: Yes, thank you, Mr. Matheson.

Does the freshet energy from Teck Cominco's Waneta generating station that is surplus to Teck Cominco's industrial requirements represent, in B.C. Hydro's view, a domestic source of market energy?

MR. MATHESON: A: It would be if Waneta expansion project was developed. Before that I don't believe so.

MR. FULTON: Q: Okay. And can you tell me, Mr. Matheson, what the potential size of that resource is?

MR. MATHESON: A: I've heard a range of potential sizes for that resource, but I think Columbia Power Corporation would be in a better position to speak to that.

MR. FULTON: Q: Okay. Do you know whether the resource is firm or non-firm?

MR. MATHESON: A: No, I'd be assuming certain things if I answered that question, Mr. Fulton. I haven't seen any detailed specifications for any proposals for Waneta expansion, so I can't say that I can speak to
MR. FULTON: Q: Okay. Can you speak to the issue from a proximity standpoint? And by that I mean that as a result of Waneta's proximity to the B.C. Hydro system, the proximity gives B.C. Hydro a natural advantage in competitively accessing that resource? Would you agree with that?

MR. MATHESON: A: Can I ask what you mean by “competitive advantage”?

MR. FULTON: Q: Well, B.C. Hydro is close to the resource, so from an access standpoint you've got a competitive advantage.

MR. MATHESON: A: Over who?

MR. FULTON: Q: Over whoever else might be out there that would want to access the resource.

MR. BERGNER: There's been a couple of questions now on Waneta, and I rise to observe that there is a witness on Panel 5, Heather Matthews, who is in part responsible for that, the Resource Options Panel.

MR. FULTON: And I'm quite content, Mr. Chairman, if the panel is of the view that this question -- the question should go further down the line, I'm quite happy to hear that and to avoid the interruptions.

Q: Can you tell me this, Mr. Matheson. Does B.C. Hydro have processes in place, aside from the call for tender process, that would allow B.C. Hydro to engage
Teck Cominco in bilateral negotiations to access the resource that Teck Cominco has?

MR. MATHESON: A: Well, I actually think it's the Columbia Power corporation that has the water rights rather than Teck Cominco.

MR. FULTON: Q: Okay, all right, so do you -- and when I say "you" I mean B.C. Hydro then, have processes in place to engage CBC in bilateral negotiations to access --

MR. MATHESON: A: Outside the '06 -- or outside the call for tender process?

MR. FULTON: Q: Yes.

MR. MATHESON: A: Yes we do.

MR. FULTON: Q: Yes. And has B.C. Hydro up to this point attempted to access that resource?

MR. MATHESON: A: I'm assuming you're referring to Waneta expansion.

MR. FULTON: Q: Yes.

MR. MATHESON: A: We began exploratory discussions with the Columbia Power Corporation, and there's been some discussion around an entitlement agreement that would be necessary before we ended up with an agreement, and that's as far as I know. I'm afraid I can't speak to more detail than that.

Proceeding Time 2:18 p.m. T54

MR. FULTON: Q: All right, that's fine, thank you.
Are you able to describe for us any other domestic sources of firm or non-firm energy that B.C. Hydro is aware of that are currently being sold outside the province?

MR. MATHESON: A: Within the province of B.C. or --

MR. FULTON: Q: No, outside of the -- yes, within the province, being sold outside the province.

MR. MATHESON: A: I don't think we know the specifics, but we believe that Powerex may be accessing some of those resources.

MR. FULTON: Q: Okay. Does B.C. Hydro anticipate requesting any latitude -- let me drop back this.

Accepting that we don't know what the new Energy Plan says, does B.C. Hydro anticipate asking for any latitude in the proposed self-sufficiency policy that may appear in the new Energy Plan?

MR. BERGNER: That was clearly spoken to by Panel 1A, self-sufficiency was clearly directed to Panel 1A, and is not a matter for this panel.

MR. FULTON: I'll move on, Mr. Chairman.

Q: I next want to deal with electricity price increases, and this is issue 3.1. And I believe I've provided to your counsel a copy of the negotiated settlement document, or excerpts from the negotiated settlement document. And I'd like also to refer at this point to Exhibit B17-10, BCUC IR 4.451.1.
Mr. Chairman, if I might ask that the extract from the negotiated settlement document be marked the next exhibit, A2-15.

(The Hearing Officer: A2-15.

(Excerpts from “Appendix A to Order No. G-143-96”, and “BCUC IR No. 4.451.1 Dated September 8, 2006…”, marked as Exhibit A2-15)

Mr. Fulton: Q: And if you could turn first to the Appendix A to Exhibit A2-15. And I see, Mr. Chairman, that Exhibit A2-15 also includes a copy of the BCUC IR 4.451.1, which wasn't intended to form part of the exhibit, but I'll be referencing that in any event, so.

Proceeding Time 2:23 p.m. T55

Mr. Fulton: Q: Now, I'd like to ask you some questions that you can take subject to check, and if you are comfortable to comment on the numbers.

Page 5 of the negotiated settlement, which is the first page that I gave you, under section I shows that the forecast for F2008 for light industrial and commercial sales was increased from 18,381 in fiscal F07-F08 to 18,700 in -- or to 18,700, sorry. And that is an increase of 319 gigawatt hours. Do you agree with that subject to check?

Mr. Tiedemann: A: Yes, that appears to be correct.

Mr. Fulton: Q: Yes. And at line 1 of the Revenue
Requirements summary domestic energy costs, on the next page of the exhibit, in the last column the difference is 23.3 million, correct?

MR. MATHESON: A: That's correct.

MR. FULTON: Q: And the footnote number 1 indicates that this is due to an increase in light industrial and commercial energy sales that we talked about a few moments ago, correct?

MR. MATHESON: A: That's correct.

MR. FULTON: Q: And subject to check, the increase in sales volume of the 319 gigawatt hours, when coupled with the increased energy cost of 23.3 million, means that the average cost of the additional sales was put at $73 a megawatt hour? Would you take that subject to check?

MR. MATHESON: A: Subject to check, okay.

MR. FULTON: Q: Thank you.

MR. BERGNER: I rise because, as everyone in the room was aware, this is a negotiated settlement agreement, and so far the questions have simply called for mathematics and I'm content with that. But I'm loath to see this go further.

MR. FULTON: Well, I'm not going to drill into what happened on the negotiated settlement sessions, Mr. Chairman. I can't do that.

THE CHAIRPERSON: Yes, and I wouldn't expect you to.
Proceed, please.

MR. FULTON: Thank you.

MR. FULTON: Q: Now, if we look at line 17, the revenue at current rates, it also references footnote 1 and shows an increase in revenue under the last or difference column as a result of the increased forecasts of the light industrial and commercial energy sales of 17.6 million. Agreed?

MR. MATHESON: A: Agreed.

MR. FULTON: Q: Okay, and then again subject to check, that additional sales generated revenue at an average rate of $55 per megawatt hour?

MR. MATHESON: A: Can you reference the line you're referring to, Mr. Fulton?

MR. FULTON: Q: Line 17.

MR. MATHESON: A: We'll take your word subject to check.

MR. FULTON: Q: Thank you. So that in terms of the settlement then, the rate increase was in the amount of 23.3 minus 17.6 or 5.7 million, if the figures that I gave you earlier subject to check are correct.

Proceeding Time 2:28 p.m. T56

MR. MATHESON: A: We'd be prepared to accept that, subject to check. We haven't had the opportunity to do that kind of math up here on the spot.

MR. FULTON: Q: Right, no, and I understand that, and
that's why I said "subject to check".

MR. SIMPSON:  A:  So, Mr. Fulton, just so we're clear.

Is that the difference between 23.3 and 17.6?

MR. FULTON:  Q:  Yes it is.

MR. SIMPSON:  A:  Oh, okay. Thank you.

MR. FULTON:  Q:  And again subject to check, that would mean a negative margin of $18 per megawatt hour for increased sales.

MR. SIMPSON:  A:  Which you are referring to, comes under --

MR. BERGNER: Forgive me for rising again, but this is the load/resource balance panel. And I'm struggling with the connection of this line to the load/resource balance.

THE CHAIRPERSON: I think Mr. Fulton can proceed. You're not suggesting another panel, Mr. Bergner. If you were suggesting another panel, I'd be more sympathetic.

MR. BERGNER: As this panel did not come prepared to speak to the revenue requirement settlement, we would suggest that this be put over to Panel 6, and we will have a witness there who is prepared to speak to this matter.

THE CHAIRPERSON: Right. I think what Mr. Fulton has been enquiring about could be confirmed by B.C. Hydro before Panel 6 appears, though. If you're operating
in a negative margin of the $18 per megawatt hour, that's something that you can confirm for us, I think, before that panel appears. And that may be useful.

MR. BERGNER: Certainly.

**Information Request**

MR. FULTON: And I think what leads from that, Mr. Chairman, is an appropriate question for this panel in terms of resources, and that is relating to the impact that that might have on the energy consumption in the future.

THE CHAIRPERSON: And I expect Mr. Bergner to accept that.

MR. BERGNER: He does.

THE CHAIRPERSON: Please proceed, Mr. Fulton.

MR. FULTON: Okay. And so what I would -- if, Mr. Chairman, you're content with Mr. Bergner's acceptance of it, I won't ask the question of the panel.

THE CHAIRPERSON: Well, I misunderstood. I -- Mr. --

MR. BERGNER: I was agreeing to the question being put to this panel.

MR. FULTON: Q: Okay. All right.

THE CHAIRPERSON: That's what I thought.

MR. FULTON: Q: Thank you.

THE CHAIRPERSON: I did too.

MR. FULTON: Q: All right. Would you agree, Mr. Matheson, that that negative margin, if it has a
significant impact on rate increases in the future, would also likely have a significant impact on energy consumption?

MR. MATHESON: A: Well, I would agree that it would have an impact on energy consumption. Whether I'd be willing at this point to characterize it as "significant," I can't say. The negotiated settlement process is still quite fresh, and we haven't had a chance to build it into our load forecast. So until we do that, I wouldn't be prepared to commit that it would be significant, but I would expect it would have an impact.

Proceeding Time 2:33 p.m. T57

MR. FULTON: Q: Right, thank you. Now, just returning to B17-10 in IR 4.451.1, and the $88 a megawatt hour reference price, would you also agree with me that if the cost of new electricity supply were to be priced at $88 a megawatt hour instead of the $73 a megawatt hour that we've been discussing, that the impact on rate increases would be even higher?

MR. MATHESON: A: So is the 73 and the 88, or -- I know the 88. Is the 73 you're referring to on the same basis, levelized delivered to the Lower Mainland in 2006 dollars?

MR. FULTON: Q: Yes, I think you should take that assumption in answering the question.
MR. MATHESON: A: Well, it seems logical to me that it would -- that if the two -- it seems logical to me that if the two figures are equal, then yes, there would be some level of a rate impact.

MR. FULTON: Q: Does the load forecast take into specific account the impact of future B.C. Hydro -- the impact on consumption of future B.C. Hydro rate increases?

MR. MATHESON: A: The current forecast did not.

MR. FULTON: Q: Okay. The next area that I wish to address is an article that you authored, Mr. Tiedemann, that I circulated earlier to you. Mr. Chairman, the article is entitled "Impact of Energy Conservation on Electricity Sales", and if that might be marked the next exhibit, A2-16.

THE HEARING OFFICER: Marked A2-16.

(ARTICLE BY MR. TIEDEMANN ENTITLED "IMPACT OF ENERGY CONSERVATION ON ELECTRICITY SALES", MARKED AS EXHIBIT A2-16)

MR. FULTON: Q: And just to confirm, you are the author of this article, Mr. Tiedemann?

MR. TIEDEMANN: A: That is correct.

MR. FULTON: Q: And would you agree with me that the paper in part provides an analysis and discussion of the impact of demand-side management programs on energy consumption and sales?
MR. TIEDEMANN: A: That is correct.

MR. FULTON: Q: If we look at the first -- or the second column on the first page under the heading "Introduction", the words:

"On the other hand, including variables that have limited impact on the load can lead to poor estimation of the key relationships, particularly where there is collinearity among the independent variables."

I take it that you are still in agreement with that statement?

MR. TIEDEMANN: A: Yes I am.

MR. FULTON: Q: And on that same page further down in that column, there are two further statements that have been underlined for you.

MR. TIEDEMANN: A: I see them.

MR. FULTON: Q: Okay. And the first refers to after the fact or ex post facto studies of the impact of DSM on consumption by analyzing billing data, and states that

"Ex post studies using billing data, direct measurement or econometric analysis to estimate retrospectively the impact of energy efficiency measures that have actually been installed..."

And you refer to Nadel and Keating.
Proceeding Time 2:38 p.m. T58

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: Yes. And then at the end of the first page, there's some further underlining, referencing Nadel and Geller and Joskow and Marron. And that last paragraph talks about controlling for the issue of free riders. Agreed?

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And the statement contained -- the statements contained in that paragraph remain accurate?

MR. TIEDEMANN: A: Yes.

MR. FULTON: Q: And in terms of free rider, were you speaking of the type of individual that you identified yesterday in your cross-examination by Mr. Andrews?

MR. TIEDEMANN: A: That is correct.

MR. FULTON: Q: And can you tell us why the identification of free riders is an important issue in evaluating the impact of DSM programs?

MR. TIEDEMANN: A: If a DSM program has a significant number of free riders, that means that people are being incented to undertake what they otherwise would have done in any event, so that reduces the impact of the program on energy and capacity, and also reduces its cost-effectiveness.

MR. FULTON: Q: Okay. And it remains your view that
not everyone agrees that the use of a comparison group as described will control for free riders?

MR. TIEDEMANN: A: Yes, that remains my view.

MR. FULTON: Q: Thank you. I'd now like to turn to issue 3.1, and the methodology used in load forecasting, and start with unbilled sales. And if we could begin with you turning to Exhibit B-10, BCUC IR 2.391.2. And I'll wait till you've read that response.

And in the response, B.C. Hydro refers to Appendix K2, which is found in Exhibit B-1, and states that the forecast found in that appendix do not include an accrual for unbilled sales.

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: But for the purposes of the revenue requirement application, B.C. Hydro would agree that the forecast found in Appendix K2 are adjusted for unbilled sales and used as an input to the revenue forecast in the test years.

Proceeding Time 2:43 p.m. T59

MR. TIEDEMANN: A: The forecast department provides the financial people with adjustments which convert, in effect, billed sales into accrued sales on an approximate basis.

MR. FULTON: Q: And in terms of adjustments, are those types of adjustments difficult and time-consuming?
Generally speaking.

MR. TIEDEMANN: A: We have developed a procedure to do that on a reasonably automatic basis.

MR. FULTON: Q: Can you provide us with some further detail in terms of what’s involved in the adjustments and the time that they would generally take?

MR. TIEDEMANN: A: On the residential --

MR. BERGNER: I do know there were IRs answered on this in the revenue requirement, and we can find those references if it would assist.

MR. FULTON: Q: I don’t know that we need to go to those IR responses.

Well, let me approach it this way because I did provide counsel for B.C. Hydro with a response BCUC IR 2.399.0 in the Revenue Requirements Application. And is that the one that you were speaking about, Mr. Bergner? Well, maybe I’ll come back to that after the break. I can move on without that, Mr. Chairman, and I’ll speak with counsel for B.C. Hydro at the break.

THE CHAIRPERSON: I’d be interested in hearing Mr. Tiedemann's response to this question even if it’s already been answered in the revenue requirements, unless Mr. Tiedemann wants to wait until he has seen the relevant revenue requirements.

MR. TIEDEMANN: A: I think that would be useful, thank
THE CHAIRPERSON: Okay. Then proceed.

MR. FULTON: Thank you, Mr. Chairman.

MR. FULTON: Q: Can you tell me whether it would be difficult, Mr. Tiedemann, to -- both difficult and time-consuming to adjust the other 18 years in a similar fashion once the first two years have been adjusted?

MR. TIEDEMANN: A: The adjustments are done on a monthly basis, based on historical information on the relationship between billed sales as determined from meter readings, and our expectations of what the underlying pattern of usage would be. I believe that those patterns have changed over the course of time because of changes in the frequency and nature of meter reading. So I'm not sure that our current procedures would be germane to earlier periods.

MR. FULTON: Q: Okay, thank you.

THE CHAIRPERSON: Your procedures with respect to meter reading?

MR. TIEDEMANN: A: Procedures with respect to the adjustment to determine accruals.

MR. FULTON: Q: Okay. And without going to any references, do you have some memory that in both the RRA and in the IR responses, that data was sometimes provided that either included or didn't include the...
accruals?

MR. TIEDEMANN: A: I'm sorry, I would have to check.

MR. FULTON: Q: Okay.

THE CHAIRPERSON: So the approximation that you make to go from billed to accruals and the methodology with respect to that has changed over time, is what you're saying.

MR. TIEDEMANN: A: That's correct.

THE CHAIRPERSON: Can you explain why?

MR. TIEDEMANN: A: Initially there were assumptions made that, within a given month that sales would have occurred on the basis of 25 percent in the second preceding month, 50 percent in the preceding month, and then 25 percent in the current month, assuming that there's kind of an even reading of meters over time. My understanding is that that was subsequently changed to better reflect observations of the pattern of billed sales against the load.

COMMISSIONER PULLMAN: So all your meters weren't being read evenly across the month, they were being read more in the first half or the last half of the month.

MR. TIEDEMANN: A: It depends on the circumstances, but it's true, there isn't an even reading of meters every day over the course of the month. So the number of weekend days, for example, can have an impact.
COMMISSIONER PULLMAN: But you don't send meter readers around on the last day of March to sort of read as many meters as they can.

MR. TIEDEMANN: A: That's correct, we don't do that.

COMMISSIONER PULLMAN: I'm glad to hear that.

MR. FULTON: Thank you, Mr. Chairman.

Q: Mr. Tiedemann, can you tell us whether generally there is added useful information provided by not including the accrued amounts that is not available when the information is presented including the accrued amount?

MR. TIEDEMANN: A: I believe that for planning operation of the system and for the vast majority of our users, providing forecasts on the basis of forecast billed sales is adequate. For financial management purposes, more resolution is needed, and that's why it's useful to have assumptions that will allow us to generate estimates of accruals.

MR. FULTON: Q: Thank you. Could I next ask you to turn to Exhibit B-1F, and Table 8-2, found at page 8-11.

MR. TIEDEMANN: A: Would you please repeat those references?

MR. FULTON: Q: Yes. Exhibit B-1F, page 8-11, Table 8-2. B-1E, I do apologize.

MR. TIEDEMANN: A: I believe we've found the table now.
MR. FULTON:  Q:  Okay. Would you agree with me that the
load forecasts in the first three lines of the table
do not include an accrual of unbilled sales?
MR. TIEDEMANN:  A:  That is correct.
MR. FULTON:  Q:  And can you also agree with me that the
values that the line table total supply include the
forecast of the output of all of the listed resources
and amount of power forecast to be purchased in the
forecast years?

Proceeding Time 2:53 p.m. T1A

MR. MATHESON:  A:  Sorry, could you repeat the question?
MR. FULTON:  Q:  Yes. Does the line total supply
include the forecast of the output of all of the
listed resources above the line, and the amount of
power forecast to be purchased in the forecast years?
MR. MATHESON:  A:  Yes, that's correct.
MR. FULTON:  Q:  And to the extent that the forecast is
higher or lower, the amount of the new requirements,
and we can agree that that amount is called the gap,
can we not?
MR. MATHESON:  A:  I think we can, yes.
MR. FULTON:  Q:  To the extent that the forecast is
higher or lower, the gap will be higher or lower.
MR. MATHESON:  A:  Certainly the forecast is key in
producing that.
MR. FULTON:  Q:  And because there is no forecast of
unbilled requirements in the load forecast that you've used, will actual new requirements be different from the gap shown by the amount of unbilled requirements not accounted for?

MR. MATHESON: A: I think it depends on the year, but it seems to roughly be around 200 gigawatt hours for most years, so that's not an enormous difference but it would contribute to what we had to bring online in terms of supply.

MR. FULTON: Q: Thank you.

THE CHAIRPERSON: Excuse me, what is about 200 gigawatt hours a year?

MR. TIEDEMANN: A: The difference in some years between estimated annual accrued sales and billed sales.

MR. MATHESON: A: According to Exhibit B-16, BCUC IR 2,399.0, the total at the bottom of the page for the years fiscal '07 and fiscal '08 are 27 and 34 respectively.

MR. FULTON: Q: Thank you.

And Mr. Chairman, I was going to ask that that be marked the next exhibit, but unfortunately I don't have additional copies of that at this time, so I'll make them at the break and provide them to the panel.

THE CHAIRPERSON: Okay.

MR. FULTON: Q: Now, having referenced the 27 and 34
numbers in that BCUC IR 2.399.0 in the RRA, can you
tell us how the amount might grow over time? In other
words, is it likely to become an amount either
positive or negative that would be significant?

MR. TIEDEMANN: A: If we compare for previous years the
relationship between the annual billed sales and the
estimated annual accrued sales, there does not appear
to be a consistent pattern between that difference, in
that difference, either positive or negative. So it's
difficult to estimate what the future impact might be
for forecast years.

MR. FULTON: Q: We can agree, though, that over the
course of the time that the table covers, at times the
amount of unbilled energy was much larger from both a
positive and negative standpoint, correct?

MR. MATHESON: A: Are you speaking beyond the terms of
the exhibit?

MR. FULTON: Q: No, I'm speaking within the exhibit.
So I see --

Proceeding Time 2:58 p.m. T02A

MR. MATHESON: A: Mr. Fulton, the energy amounts on the
exhibit are -- in the context of our entire system are
very, very small increments, whether they're positive
or negative.

MR. FULTON: Q: Okay. And do I take it, then, from
that answer, Mr. Matheson, that the values would not
have had an impact on the load forecasts for the years covered by the tables?

MR. TIEDEMANN: A: For the residential sector, which is the major source of the difference between annual accrued energy and annual billed energy, because of the fact that many of our residential customers are on a two-month billing cycle, the larger confounding factor is the variability in the load due to changes in weather. So we work with weather-adjusted actuals from the past in order to estimate weather-adjusted -- or normal weather actuals for the future. So that's a much larger factor in terms of understanding the pattern of the load than the accrual issue which we felt to be, first, relatively minor, and second, not really capable of greater resolution given that we're not able to compare to any significant extent customers with billed sales on the billing cycle and those few that we have on ongoing metering, which would be the only way in which we could understand the relationship between the accrued and the actuals.

MR. FULTON: Q: Thank you.

MR. MATHESON: A: Mr. Fulton, you'll notice on Table 8-2 that you referred us to the high, the mid and the low forecasts. Each of those figures are rendered in terms of round numbers. Most of the figures on BCUC IR 2.399.0 fall within that rounding error.
MR. FULTON: Q: Thank you. I'm going to next move to the issue of price elasticity. And some general questions first. Would you agree that the response to a change in real price will occur with a time lag?

MR. TIEDEMANN: A: I would agree to that.

MR. FULTON: Q: And does B.C. Hydro have any empirical evidence to support that?

MR. TIEDEMANN: A: The result of a number of studies that have used econometric methods to understand the impact of price changes suggest that price effects occur with a lag. We use that information in our Monte Carlo analysis, where we have short-term and long-term lags for price effects. Within those models, approximately 80 to 90 percent of the impact of the rate change is experienced within five years.

MR. FULTON: Q: If I could refer you to Exhibit B-10, BCUC IR 2.395.1. And if you could let me know when you've finished reading the response.

MR. TIEDEMANN: A: I've read it.

MR. FULTON: Q: Would I be correct in understanding this response to mean that B.C. Hydro was in agreement that the values of long-term elasticities used by B.C. Hydro are on the low end of the external studies that B.C. Hydro based its estimates of price elasticity?

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And the first reason for using the low
estimates is that B.C. Hydro has seen no discernable
response to the F2005 and F2006 rate increases, 
correct?

MR. TIEDEMANN:  A:  That's correct.

Proceeding Time 3:03 p.m. T3A

MR. FULTON:  Q:  Okay. And the magnitude of those rate
increases were 4.65 percent in 2005?

MR. TIEDEMANN:  A:  In nominal terms, yes.

MR. FULTON:  Q:  Yes. And in real terms would that be
approximately 2.6 percent?

MR. TIEDEMANN:  A:  That's correct.

MR. FULTON:  Q:  And would you agree with me that the
real rate increase is what is important for impacting
consumption?

MR. TIEDEMANN:  A:  Yes, I would agree.

MR. FULTON:  Q:  Now, if we were to assume a price
elasticity of .5, that .5 is higher than the values
used by B.C. Hydro, correct?

MR. TIEDEMANN:  A:  That is correct.

MR. FULTON:  Q:  And as a result, the .5 would cause a
bigger drop in consumption than the values used by
B.C. Hydro, correct?

MR. TIEDEMANN:  A:  The modeled results would show a
bigger effect.

MR. FULTON:  Q:  Okay. And would you agree with me that
at a price elasticity of .5, a one percent real price
increase will eventually cause a .5 percent decrease in consumption?

MR. TIEDEMANN: A: If that overall price elasticity referred or was relevant to all sectors of our load, that's correct.

MR. FULTON: Q: Okay. So that the 2.6 percent number that we discussed a few moments ago, real rate increase in F2005, would eventually cause a 1.3 percent reduction in per customer consumption at some point, would it not?

MR. TIEDEMANN: A: If it were followed in subsequent years by nominal price increases at the rate of inflation so that in future years the real rate increase after that first change was zero.

MR. FULTON: Q: Right, thank you. And over a period of one or two years, is the impact likely to be higher or lower than the amount of unbilled consumption not accounted for in the load forecast?

MR. TIEDEMANN: A: It depends on the magnitude of the price increase which you're referring to.

MR. FULTON: Q: Okay. What about if we stick with the one percent real price increase?

MR. TIEDEMANN: A: Well, if we assume that the load is in the vicinity of 50,000 gigawatt hours per year, and we had a 1 percent change in the load due to a 2 percent change in the real price with an elasticity of
minus 0.5, unless my arithmetic is incorrect, that
would generate a change of 500 gigawatt hours per year
in the longer term.

MR. FULTON: Q: All right, thank you. If in the same
exhibit, Exhibit B-10, you could next turn to BCUC IR
2.397.2, so just a few pages along.

And I'm in your hands, Mr. Chairman. I
have about five to ten minutes' worth of questions on
this IR, so we could either take the break now or I
could conclude and --

THE CHAIRPERSON: Let's take our break now. We'll take
15 minutes.

(PROCEEDINGS ADJOURNED AT 3:07 P.M.)

(PROCEEDINGS RESUMED AT 3:21 P.M.)

MR. FULTON: Mr. Chairman, just by way of housekeeping,
I've provided the Hearing Officer with a copy of the
BCUC IR 2.399.0 from the Revenue Requirement hearing,
and I would ask that that be marked Exhibit A2-17.

THE CHAIRPERSON: Thank you.

THE HEARING OFFICER: A2-17.

("BCUC IR NO. 2.399.0, DATED AUGUST 17, 2006...", MARKED
AS EXHIBIT A2-17)

MR. FULTON: And counsel for B.C. Hydro has some exhibits
to mark as well.

MR. BERGNER: And I just have one preliminary comment,
which was that Mr. Fulton had earlier circulated a list indicating 2-399 was one he was going to put to this panel. I had simply misread the list, because of the way the columns lined up, so I wanted to do that mea culpa on the record. And because I referred to other IRs that related to this same topic, I can advise that we've located the Revenue Requirement Application, IR BCUC 1.170.2 through 170.5. And because they're referred to, I propose that they be entered as the next Exhibit, which is -- sorry. 48?

Proceeding Time 3:23 p.m. T5A

THE HEARING OFFICER: B-50.

MR. BERGNER: B-50.

("BCUC IR NO. 1.170.2 TO 1.170.4 AND 1.170.2 ATTACHMENT 1...", MARKED AS EXHIBIT B-50)

MR. FULTON: Q: When we left off, Panel, we had just about begun to look at Exhibit B-10, BCUC IR 2.397.2. And you'll agree with me that this response provides a weather normalized residential use per residential account from 1991 to 2005.

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And is the drop-in residential use per account in fiscal 2005 consistent with the rate increase in fiscal 2005?

MR. TIEDEMANN: A: The change in the weather normalized use rate is relatively small. I'm not sure that one
can draw a conclusion from its sign or its magnitude.

Proceeding Time 3:25 p.m. T06A

MR. FULTON: Q: Would the 1.5 percent of the fiscal 2004 per customer use amount to approximately 165 kilowatt-hours, subject to check?

MR. TIEDEMANN: A: Would you please indicate what reference you're -- what you're referring to?

MR. FULTON: Q: Yes, I'm still on the same table.

MR. TIEDEMANN: A: I'm sorry, I meant with respect to the 1.5 percent that you just referred to.

MR. FULTON: Q: Yes. The increase from '04 to '05.

MR. TIEDEMANN: A: So are you referring to the last column, the weather-normalized with DSM use rate?

MR. FULTON: Q: Yes.

MR. TIEDEMANN: A: So from fiscal 2004 to fiscal 2005, there's a reduction in the use rate?

MR. FULTON: Q: Yes.

MR. TIEDEMANN: A: That reduction appears to be on the order of 1.5 percent.

MR. FULTON: Q: All right, thank you. And it translates to about 165 kilowatt hours.

MR. TIEDEMANN: A: I think it's approximately 126.

MR. FULTON: Q: Okay, thank you. Now, while it might be difficult to quantify, and there are considerable variations in the normalized use per customer from year to year, would you agree with me that the use per
residential account appears to be on the rise?

MR. TIEDEMANN: A: On a weather-normalized basis over
the period covered here, the weather-normalized with
DSM use rate appears to be increasing.

MR. FULTON: Q: And would you also agree that for most
of the period covered by the table, the real price of
electricity was falling in part because of the rate
freeze?

Proceeding Time 3:28 p.m. T7A

MR. TIEDEMANN: A: I would agree with that.

MR. FULTON: Q: And has B.C. Hydro made any attempt to
use this data to estimate residential price
elasticity?

MR. TIEDEMANN: A: We have attempted to estimate
residential price of elasticities using the
information that we've had available.

MR. FULTON: Q: Yes, and what were the results of the
attempts?

MR. TIEDEMANN: A: So we did this in a context where we
were trying to understand the impact of various
drivers on the load. So we looked at using the
residential electricity price, the residential gas
price and GDP in our experimental analysis. So in
general terms we found significant but low price
elasticities of demand for electricity. We haven't
been able to significantly find an impact on the gas
side, and the sign is intuitively incorrect.

Maybe just to clarify that, an increase in
the price of gas should, other things equal, lead to
an increase in the use of electricity because of
substitution, and we haven't been able to determine
such an impact through our econometric work.

MR. FULTON: Q: If we look at the column "weather
normalized before DSM", and "weather normalized with
DSM", the two fiscal 2005 numbers, the difference
between the 11,167 and the 10,845 is 322 kilowatt
hours. Would you agree with that, subject to check?

MR. TIEDEMANN: A: Yes, I would agree.

MR. FULTON: Q: Now, in terms of the whole period
covered by the table, if one considers that period, it
seems that the impact of the millions of dollars that
have been spent on residential PowerSmart have been
more than offset by the increased consumption caused
by falling real prices. Would you like to comment on
that?

Proceeding Time 3:31 p.m. T08A

MR. TIEDEMANN: A: There are a number of factors which
affect the average residential load. They include
such things as an increase in the average size of
dwellings, proliferation of end-using electricity --
end-using appliances, including computers, larger
television screens and other electronic equipment.
So, I don't think it's possible to conclude on the basis of the information in this table that improvements in energy efficiency due to DSM measures have been overtaken by specific factors.

MR. FULTON: Q: Thank you. Well, let me approach it this way. Does B.C. Hydro make planning-level forecasts of the change in its retail prices over the 20-year load forecast horizon, and incorporate such price forecasts into the load forecast?

MR. TIEDEMANN: A: B.C. Hydro undertakes examinations of the electricity and gas markets, and prepares forecasts. Those are not used in the load forecast per se, though.

MR. FULTON: Q: All right. So the answer to my question is "No."

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: Would you agree with me that the results of the F2006 CFT suggest that the costs of new supply are likely to exceed revenues associated with added sales, and thereby cause an upward pressure on rates, at least in the near future?

MR. TIEDEMANN: A: I wonder if we could, for a moment, please, go back to your previous question.

MR. FULTON: Q: Yes.

MR. TIEDEMANN: A: Okay. So, what I was intending to say was, when we look forward and do a forecast in a
typical year, we assume that real prices are constant. When we actually have information on changes in approved rates, we then incorporate that into revised forecasts. So I mis-spoke.

MR. FULTON: Q: Okay. Right, so if we can go to my next question --

MR. TIEDEMANN: A: Would you be so kind as to repeat it?

MR. FULTON: Q: Yes. Would you agree with me that the result of the fiscal 2006 Call suggest that the costs of new supply are likely to exceed revenues associated with added sales?

MR. BERGNER: The question appears to be driving at rates, rate-setting and rate design. If -- I see there may be a link to load forecasting, but it's not apparent in the question.

MR. FULTON: All right, well, I can move on, Mr. Chairman.

I'd like to next ask you some questions about GDP intensity over time. And if you could turn to Exhibit B-10, BCUC IR 2.402.1. And I'll let you read the answer, and you can let me know when you've read the answer.

Proceeding Time 3:36 p.m. T9A

MR. TIEDEMANN: A: I've read that response now.

MR. FULTON: Q: Thank you. And would you agree with me
that what this response suggests is that commercial
and industrial use relative to GDP has been dropping
over time, and as a result, B.C. Hydro has modeled the
relationship between sales and GDP using 11 years of
data rather than 15 or 20 years?

MR. TIEDEMANN: A: That's what the response states.

MR. FULTON: Q: Yes. And would you agree with me that
to the extent that the relationship may continue to
decrease over time, that the load forecasts for this
sector would be inflated?

MR. TIEDEMANN: A: The relationship between commercial
energy use and GDP on the one hand, and industrial
energy use and GDP on the other hand, is based on
historical relationships. So the models are assuming
that those relationships will continue to be valid for
the future. If there were structural changes in the
economy which led that assumption to be incorrect, to
that extent there could be changes in the actual
compared to the forecast, or differences between the
actualls and the forecasts.

MR. FULTON: Q: Right. And so from that can I take it
that if the relationship continues to decrease over
time, the load forecasts for the sector will be
inflated?

MR. TIEDEMANN: A: Under your assumptions, other things
equal, the forecasts would tend to overestimate the
load in the future.

MR. FULTON: Q: Thank you. Now, in the response B.C. Hydro says that it's reviewing the literature and considering the use of a trend in future forecasts. And without giving you a specific reference at this point, and I can likely provide you one if you need one, but generally would you agree with me that B.C. Hydro has indicated elsewhere that models are being updated for the upcoming load forecast? In this application.

MR. TIEDEMANN: A: Would it be possible for you to give a specific reference?

MR. FULTON: Q: I don't think I can at the moment. Actually I can give you a reference and it's found in the very response that we've been talking about, where you talk about reviewing industry literature to better model changing trends of industrial intensity using a regression framework, and this may include the use of a trend variable in future regression-based forecasts.

MR. TIEDEMANN: A: Would you please restate your question then?

MR. FULTON: Q: Have you -- or has B.C. Hydro done the -- completed its review and begun using a trend of the type that's referred to in the answer? And I'm speaking specifically of the industrial and commercial
sectors.

MR. TIEDEMANN: A: We have undertaken an informal look at the relevant literature pertaining to industrial load forecasts. I can't speak to whether or not a trend variable is explicitly included in the F2006 load forecast which is currently being completed.

Proceeding Time 3:41 p.m. T10A

MR. FULTON: Q: Okay. And I take it, then, you could not also tell us whether a trend or decrease in GDP intensity over time has been modeled, or can you?

MR. TIEDEMANN: A: Because the models are linear regressions with a constant term, they will automatically lead to a reduction in GDP, or energy GDP intensity over time, in any event.

MR. FULTON: All right.

MR. TIEDEMANN: A: So that effect is already substantially included.

MR. FULTON: Q: Okay.

THE CHAIRPERSON: Is there a trend variable that's been used in the 2005 load forecast?

MR. TIEDEMANN: A: Not in the forecast as published.

MR. FULTON: Q: Still in Exhibit B-10, if you could now turn to BCUC IRs 2.403.1 and 2.403.2.

MR. TIEDEMANN: A: Okay, we have those.

MR. FULTON: Q: Okay. And would you agree with me that the first response provides six pages of adjustments
to the forecasts which are not provided elsewhere, and
the second response states B.C. Hydro's intention to
provide expanded explanations of adjustments within
the main body of future load forecasts.

MR. TIEDEMANN: A: Yes, there are six pages of
explanation which are not provided elsewhere. And
that intent is present in 403.2.

MR. FULTON: Q: Okay. Turning to peak forecast, if you
could -- again in the same Exhibit, B-10, turn to the
response to IR 2.406.1. This response states that the
peak forecast underlying the IEP is based on the
bottom-up peak forecasting methodology.

MR. TIEDEMANN: A: Yes, that's what it states.

MR. FULTON: Q: Okay. And can you describe the purpose
that is served by a top-down forecast?

MR. TIEDEMANN: A: The peak forecast is built up of a
number of elements which at their basic levels start
with forecasts by distribution substation and
transmission substation. So there are 240-odd
distribution substations and 120-odd transmission
substations, which are individually forecast in the
first instance.

Those individual forecasts at the
distribution substation level start with an estimate
of the weather-normalized load for each of those
substations. Because of the fact that in some winters
for some substations there's relatively little variability in the weather, there are concerns about whether or not we're properly reflecting long-term weather in the adjustments to the weather-normalized load. And so we use a top-down model as a check upon that and, as appropriate, make adjustments to the weather normalization of the overall load.

MR. FULTON: Q: Okay. Can you tell us what the driver is for the peak forecast for the 20 years of IEP? Of the IEP? Is it related to the energy forecast?

MR. TIEDEMANN: A: For the individual substations, there's a residential component. The residential component looks at kilowatts per account, so from that perspective, that key driver is the number of accounts per substation. And that's disaggregated between -- or among heating and non-heating, electric heating and non-heating dwellings, and also between those which are single-family dwellings or duplexes as opposed to other dwelling types. So there's a disaggregation into four housing types for each substation.

For the general rate class customers, the disaggregation is into those with loads under and over 35 kilowatts. There we look at the relationship between kilowatts and kilowatt hours, and then the relationship between kilowatt hours and an economic driver.
So this information is then used to generate a peak for each substation. For the transmission substations they're handled more on a case-by-case basis, depending upon the drivers for the industrial sector to which the particular substation belongs, whether it's pulp and paper or coal mining or copper mining.

MR. FULTON: Q: Thank you. I'd now like to turn to the topic of the industrial forecast. Am I correct in my understanding that B.C. Hydro continues to produce both a forecast of consumption for individual industrial customers, and a regression-based forecast for the entire customer class? And in particular I'm thinking of the adjustment to the forecast that was made for the closure of Highland Valley Copper.

MR. TIEDEMANN: A: Forecasts are made for transmission voltage industrial customers at a customer level but not for other industrial customers.

MR. FULTON: Q: Can you tell us generally how B.C. Hydro decides which forecast to use for each year of the forecast?

MR. TIEDEMANN: A: In general for -- let's see, are we talking primarily about industrial transmission customers here?

MR. FULTON: Q: Yes.
MR. TIEDEMANN: A: Okay. In general we start with studies undertaken by consultants to understand the nature of the load in a given sector. Because of the fact that pulp and paper and forestry and the supporting chemical industry form the majority of the load in the industrial sector, which in turn is 40 percent of the overall load, we focus heavily upon that. We have ongoing studies done to understand the evolution of pulp prices and shipments, and similarly on the forestry side, and those are used to provide us with information on the likely changes in the load in those sectors over time. This information is then applied to historical information on sales for each industrial customer, and as part of that exercise we simultaneously examine the likely course of both energy and peak for those customers, and that provides us with a lot of information.

MR. FULTON: Q: And do you use the same approach for revenue requirement purposes in terms of the forecasts?

MR. TIEDEMANN: A: We don't provide a separate forecast per se for revenue requirement purposes.

MR. FULTON: Q: Still in Exhibit B-10, if I could ask you to turn back to BCUC IR 2.364.1.

MR. TIEDEMANN: A: I've now read that.

MR. FULTON: Q: Okay. And can you tell me how often in
your recollection that the load forecast has been
adjusted, other than in the year of the forecast, for
the appearance of a new customer sometime in the
future?

MR. TIEDEMANN: A: I'm not sure quite what you mean by "how often". Do you mean in how many forecasts does this occur, or for how many customers?

MR. FULTON: Q: Well, let's try for how many customers. I'm just trying to get some understanding of frequency.

Proceeding Time 3:51 p.m. T12A

MR. TIEDEMANN: A: For the fiscal 2004 forecast, for example, we anticipated that there would likely be, at some point in time, increased activity in the mining sector. And so, without having the spreadsheets before me, we anticipated that there would probably be two new coal mines and the possibility of a base metal mine. And so those are lines on the spreadsheet to kind of fill the envelope that's created by the econometric top-down forecasts. In other words, we start with forecasts based on forecasted GDP, which reflect our consultant, the Conference Board's understanding of the evolution of the economy. That provides an envelope. And then we try to understand how best that would be filled at an individual customer level.
MR. FULTON: Q: Right. Now, we spoke earlier about B.C. Hydro modeling the relationship between sales and GDP using 11 years of data. Do you recall that exchange?

MR. TIEDEMANN: A: That's correct, yes.

MR. FULTON: Q: And are the 11 historical years of load data used in the industrial regression analysis adjusted in any way for either new customers who appeared or who closed in the historical period?

MR. TIEDEMANN: A: No. The only major adjustment made to the historical data is an adjustment for strikes.

MR. FULTON: Q: So to the extent that customers have closed or opened in the historical 11-year period, don't the estimated coefficients of the industrial regression equation already take into account, at least in part, the impact of occurrences such as that at Highland Valley Copper?

MR. TIEDEMANN: A: As some customers are closing facilities, other customers are opening or expanding facilities, and this is reflected in the GDP for the province, which is significantly driven by the industrial activity within the province. So, although we don't explicitly take out one portion of the load from the past and add another portion back in, I believe that the GDP relationship is a sound one for the basis of future activities, or estimates of the
load. The Highland Valley Copper situation, because of the large magnitude of that load, is an important and, we think, unique situation, in particular, because of the fact that it has a major impact at the regional level.

MR. FULTON: Q: Would you agree with me that, except for the short-run -- except for short-run rate setting purposes, unless the historical data had been adjusted when obtaining the regression coefficients, that it is inappropriate to make adjustments like the one for Highland Valley Copper for long-run load forecasting purposes?

MR. TIEDEMANN: A: No, I would not agree.

MR. FULTON: Q: Okay, and why not?

MR. TIEDEMANN: A: Because the magnitude of the Highland Valley copper situation is very large, and a discrete, more or less, known event.

MR. FULTON: Q: Okay, next I'd like to turn to end-use appliance saturations. Still in Exhibit B-10, if you could turn to TGI IR 1.14.1.

MR. TIEDEMANN: A: I have that before me.

MR. FULTON: Q: Okay. And would you agree with me that what the tables are showing are the percentage of new customers showing or choosing space and water heating by housing type and by region?

Proceeding Time 3:57 p.m. T13A

Allwest Reporting Ltd., Vancouver, B.C.
MR. TIEDEMANN: A: Yes.

MR. FULTON: Q: Okay. And generally speaking, would you agree with me that it is both easier and cheaper for a consumer to install electric baseboards and electric water heaters than their natural gas counterparts?

MR. TIEDEMANN: A: It certainly is easier and cheaper for the developer.

MR. FULTON: Q: Okay. Can you tell us why you are projecting in the northern region, for example, that in single family or duplex homes, you are projecting about 20 percent of new customers will install electric space heating, but none will install electric hot water tanks?

MR. TIEDEMANN: A: The REAPs model includes components which compete alternative technologies on the basis of their energy efficiency and fuel prices. So these discrete choice models, which are called Logit models, look at the underlying factors and determine the share of the load which will use one fuel as opposed to another fuel. So it's incumbent within the design of those models how the numbers come out, given the information with which we provide it.

MR. FULTON: Q: And in your view, does it make sense for someone to install electric baseboards and not an electric water heater?
MR. TIEDEMANN: A: I certainly find that result interesting. I'd have to think about whether it makes sense or not.

MR. FULTON: Q: Okay now, when you describe the result as interesting, do you mean that it doesn't -- it's a result that you would not expect to see?

MR. TIEDEMANN: A: I would say it's a somewhat counterintuitive result.

MR. FULTON: Q: All right, and so in other words it's a result that you would not expect to see.

MR. TIEDEMANN: A: It's something we will look into.

MR. FULTON: Q: Is it or is it not a result that you would not expect to see?

MR. TIEDEMANN: A: As I've explained, the models have certain properties and predict fuel shares, so I would have to look into the models to see whether or not they're sensible. So I'm not sure whether I can answer that question per se.

MR. FULTON: Q: Well, Mr. Tiedemann, you told me that the result was counterintuitive. And what I'm exploring with you is what you meant by counterintuitive. And to me, counterintuitive means that it's not a result that I would expect to see. And all I'm asking you is whether you agree with that definition of counterintuitive, or if you don't, what is your definition of counterintuitive?
MR. TIEDEMANN:  A:  Okay. I will accept your definition of counterintuitive.

MR. FULTON:  Q:  Thank you.

If we look next to the Lower Mainland, can you tell us why B.C. Hydro projected zero percent electric water heating for new customers in 2006, but around five percent for all the following years?

MR. TIEDEMANN:  A:  I don't know.

MR. FULTON:  Q:  Would you agree with me that the REAPs model requires B.C. Hydro to make many projections of factors such as appliance saturation?

MR. TIEDEMANN:  A:  Yes, that's correct.

Proceeding Time 4:01 p.m. T14A

MR. FULTON:  Q:  And are you able to tell me the extent that such projections will be required in your new forecast models?

MR. TIEDEMANN:  A:  They will be required to a similar extent.

MR. FULTON:  Q:  Okay. I want to now turn to the issue of ten-year normal weather, and we're still in Exhibit B-10. And we can begin with the BCUC IR 2.316.1.

MR. TIEDEMANN:  A:  I've read that.

MR. FULTON:  Q:  Okay. And first of all, can you confirm for me that for energy forecasting purposes, B.C. Hydro uses the last ten years of heating degree days to normalize residential per customer use.
MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: Okay. And then in the response to BCUC IR 2.316.1, you state that ten years is a representative sample for weather normalizing, based on heating degree days, because having a period much less than ten years would make the calculated normal values too variable. Right?

MR. TIEDEMANN: A: That's correct. I should mention, too, we're using ten years' worth of monthly data to undertake the weather normalization.

MR. FULTON: Q: All right, thank you. And then, if you turn over to the response to BCUC IR 2.316.2, you provide a definition of "representative sample".

MR. TIEDEMANN: A: It will take me a minute to find that, it's not in this binder.

MR. FULTON: Q: Okay.

MR. TIEDEMANN: A: So I have that response now.

MR. FULTON: Q: Good, thank you. All right. So in that response you provide a definition of "representative sample".

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: And I'll emphasize the last few words in that response, "in the future". Having regard to both the responses to 2.316.1 and 316.2, am I correct in concluding that you -- that B.C. Hydro expects that
weather, in terms of heating degree days, in the 20-year forecast period, will look like it has in the last ten-year period?

MR. TIEDEMANN: A: We appreciate that over a period of time there could be variability in the number of heating degree days per month or per year. And consequently, in the Monte Carlo analysis, we include as one of the factors determining the bands around the central forecast variability of weather. So, we expect that that representation appropriately reflects the range of heating degree days we are likely to experience in the future.

MR. FULTON: Q: All right. So it's the 10 years rather than the 20- or 30-year period.

MR. TIEDEMANN: A: I'm sorry, I'm not quite sure what your reference was there.

MR. FULTON: Q: Well, I'm referencing the responses to those two questions.

MR. TIEDEMANN: A: Okay, we use ten years' worth of monthly data to determine weather normalization the residential load.

Proceeding Time 4:06 p.m. T15A

MR. FULTON: Q: And is that because you expect the weather to look like that ten-year -- the last ten-year period, rather than the last 20- or 30-year periods?
MR. TIEDEMANN: A: We've found that in terms of our weather normalization, that a ten-year period works best for us, in terms of understanding the past.

MR. FULTON: Q: Okay. So you expect it to look better than the 20- or 30-year period.

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Thank you. And if we return to the response to 2.316.1, so, BCUC IR 2.316.1, and I'm interested in your -- in that part of the answer that says, "Having a period much less than ten years would make the calculated normal values too variable." Can you tell us what you intended with the use of the word, or the words "too variable"?

MR. TIEDEMANN: A: "Too variable," in the sense that -- in terms of understanding the relationship between the forecast and actual loads for the history that the variability generated by 10 years' worth of weather-normalized data seem to provide a better fit than for a longer period.

MR. FULTON: Q: Okay. And so in choosing the descriptor "too", did you employ a statistical analysis? And by that, I mean did you employ a statistical analysis and then come to the conclusion that it was too variable?

MR. TIEDEMANN: A: In the past we've investigated the use of longer periods of weather-normalized data than
10 years.

MR. FULTON: Q: Okay.

MR. TIEDEMANN: A: And the ten-year period provided us with a better fit.

MR. FULTON: Q: I'm not sure whether you've answered my question. In arriving at the response to BCUC IR 2.316.1, did you employ statistical analysis?

MR. TIEDEMANN: A: I cannot point to a study which has looked at the impact of different assumptions with respect to length of period of time for heating degree days and its impact on the forecast load, if that's your question.

MR. FULTON: Q: All right, thank you, it is. Would you agree with me that many scientists believe that the climate is warming, and that the average temperature will continue to rise?

COMMISSIONER PULLMAN: It's a hell of a day to ask that question.

MR. FULTON: I know, Commissioner Pullman.

MR. TIEDEMANN: A: Yes, I would agree with that.

MR. FULTON: Q: Okay. And did that fact at least in part influence your decision to use a ten-year average rather than a 30-year average?

MR. TIEDEMANN: A: Yes, it did.

MR. FULTON: Q: Okay. If I could next ask you to turn to BCUC IR 2.392.1, this is also in Exhibit B-10.
Proceeding Time 4:11 p.m. T16A

MR. TIEDEMANN: A: I've read that.

MR. FULTON: Q: Thank you. And in that response, B.C. Hydro indicates that a 30 year rolling average of heating degree days results in 17,558 heating degree days, while the 10-year average produces 16,645 heating degree days.

MR. TIEDEMANN: A: Yes, this provides indicative information for the Vancouver airport.

MR. FULTON: Q: And subject to check, the difference is 913 heating degree days, or over five percent. Do you agree with that?

MR. TIEDEMANN: A: That's correct.

MR. FULTON: Q: If you now turn forward to the response to BCUC IR 2.412.1.

MR. TIEDEMANN: A: I have that.

MR. FULTON: Q: Okay, and I want to focus on the first paragraph of the response. When speaking of the Monte Carlo model, you say that the 50-year data period provides more information on capturing the variability of annual heating degree days than a 10-year data period would.

MR. TIEDEMANN: A: Yes, this was stated.

MR. FULTON: Q: Now, in the context of energy forecasting though, you use the 10-year period as a representative sample because, as you've said in the
response to BCUC IR 2.316.2, it's a reasonably accurate estimate of the mean and variance that is expected to occur in the future, correct?

MR. TIEDEMANN: A: That's correct. I might also point out that there's only a very limited number of weather stations for which there is an extremely long series of information on weather.

MR. FULTON: Q: Right, so if the ten years of data is a good representation of what variance is expected to occur in the future, why didn't B.C. Hydro use ten years in the Monte Carlo simulations?

MR. TIEDEMANN: A: So the information from the 10-year period on a monthly basis is used to inform the weather normalization of the residential load. So we weather normalize the actuals from the past and use that to forecast the future load.

Proceeding Time 4:16 p.m. T17A

The Monte Carlo study is not aimed at understanding in the first instance the expected mean load, but is used to inform the error bands around that load. We want to understand the full possible range of variability, and because of that we use a longer period of time for the Monte Carlo simulation.

MR. FULTON: Q: Thank you. Has B.C. Hydro performed any analysis to determine statistically or otherwise if there is a long-term downwards trend in the number
of heating degree days?

MR. TIEDEMANN: A: I don't have a study I can point to that's looked at that particular question.

MR. FULTON: Q: Well, you may not --

MR. TIEDEMANN: A: The reason for my hesitation is in the past I did do some exploratory work which I have not kept, just to try and understand those trends a little bit.

MR. FULTON: Q: Okay. So when you say you don't have a study, are you meaning you personally or B.C. Hydro doesn't have a study that you're aware of?

MR. TIEDEMANN: A: I'm saying I'm not aware of any studies that B.C. Hydro has done on the long term heating degree day trend.

MR. FULTON: Q: Okay. Was any impact of a long-term heating degree day trend included in the load forecast?

MR. TIEDEMANN: A: To the extent that the residential historical actuals have been weather normalized, it includes a longer-term trend in that sense.

MR. FULTON: Q: Now, we discussed a few minutes ago the fact that the heating degree days have declined by five percent based on a 10-year versus 30-year average. If that trend were to occur in the future, does that mean that the residential forecasts would be similarly overstated?
MR. TIEDEMANN:  A:  There would be an impact on the other side because of an increase in the cooling load. So it's difficult, without undertaking the analysis, to know what the balance would be between a change in the space heating load and a change in the space cooling load.

MR. FULTON:  Q:  Now, when we discussed the response to BCUC IR 2.392.1 a few minutes ago, B.C. Hydro justified its use of the ten years rolling average heating degree days because it was, in B.C. Hydro's view, a better predictor of the average of the last five years of heating degree days than is the 30-year rolling average, right?

MR. TIEDEMANN:  A:  That's what the response states, yes.

MR. FULTON:  Q:  And would you agree that if the goal was to find the best predictor of the heating degree days for the last five years, that the best predictor would be the rolling average of the last five years?

MR. TIEDEMANN:  A:  I know what a rolling average is, but perhaps you could just clarify the period that you're referring to, like a -- like if you have five years' worth of data, I'm not sure what you would mean by a five-year rolling average.

MR. FULTON:  Q:  Well, you lop off the last year and you add a future year. So you start in 2000 to 2005, then
you go to 2001 - 2006 --

Proceeding Time 4:20 p.m. T18A

MR. TIEDEMANN: A: So you're saying, "Is it worthwhile to update the heating degree day estimate on a rolling basis?"

MR. FULTON: Q: I'm saying, "Would that be a better predictor of heating degree days over the last five years, to use a five-year rolling average?"

MR. TIEDEMANN: A: I don't think a five-year average would have enough variability.

MR. FULTON: Q: And when you say "five-year average", you --

MR. TIEDEMANN: A: Rolling average.

MR. FULTON: Q: Thank you.

MR. TIEDEMANN: A: Yes.

MR. FULTON: Q: And why do you think that?

MR. TIEDEMANN: A: Cold winter days appear to be reasonably unusual events, but they have a very important impact on the load. So as I mentioned, in some years we have difficulty, for example, weather-normalizing substation data because there isn't enough variability in the heating degree days. We've found that if we look at ten years' worth of data, that gives us the requisite variability in heating degree days, so there will be at least one or two extreme winter events in the course of that time frame.
Whereas if we used only five years of data, we could well have five warm winters in a row and not experience the appropriate response of the system to a cold set of winter days.

THE CHAIRPERSON: Well, Mr. Fulton, we can break now.

MR. FULTON: All right, thank you, Mr. Chairman.

THE CHAIRPERSON: Are there any matters I should deal with before we adjourn?

MR. FULTON: I see Mr. Godsoe has one. Just to give people a heads-up, I expect to probably be some time around -- be finished some time around mid-morning tomorrow.

THE CHAIRPERSON: Thank you. Mr. Godsoe?

Proceeding Time 4:23 p.m. T19A

MR. GODSOE: Mr. Chairman, we -- and Commissioners, we have now completed our redaction exercise with respect to the business case for the re-commissioning of Burrard Unit 1, and so I'd ask that that be entered and marked Exhibit B-51.

THE HEARING OFFICER: B-51.

(RESPONSE TO INFORMATION REQUEST AT TRANSCRIPT VOLUME 8, PAGE 1065, MARKED AS EXHIBIT B-51)

MR. GODSOE: And with respect to the operational needs of Burrard and a comparison to the Canadian entitlement, that is for Panel 3. And with respect to the operational costs of Burrard on a going-forward basis,
that would be for Panel 7. And that's all I have.

THE CHAIRPERSON: At the beginning of the afternoon session, Mr. Godsoe, you indicated that the undertaking regarding the permitting for Burrard was going to be provided to us, and I understood from your comment very likely in the form of a legal opinion. Was I --

MR. GODSOE: Well, I wouldn't want to be giving legal advice to the Commission in the form of a legal opinion, but what I did say was that it would be largely composed of a legal analysis of the underlying statutes and bylaws. For example, the GVRD bylaw with respect to the issuance of air emission permits does speak to the transferability of such permits. So, I think it would be an analysis of those underlying statutes, clearly laid out on which permits are even transferable and, if they are, what B.C. Hydro would propose to do with them.

And as I said, I would like to have that well in advance of Panel 7, whereas the questions with respect to the undertaking could be followed up.

THE CHAIRPERSON: Thank you. Are there any other matters before we adjourn?

We're adjourned until nine o'clock tomorrow morning.

(PROCEEDINGS ADJOURNED AT 4:25 P.M.)