MANITOBA PUBLIC UTILITIES BOARD

Re: MANITOBA HYDRO

NEEDS FOR AND ALTERNATIVES TO

REVIEW OF MANITOBA HYDRO'S

PREFERRED DEVELOPMENT PLAN

Regis Gosselin	- Chairperson
Marilyn Kapitany	- Board Member
Larry Soldier	- Board Member
Richard Bel	- Board Member
Hugh Grant	- Board Member

HELD AT:

Public Utilities Board

400, 330 Portage Avenue

Winnipeg, Manitoba

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Pages 5721 to 6013

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LIST OF UNDERTAKINGS (Con't)

--- Upon commencing at 9:01 a.m.

THE CHAIRPERSON: Good morning. I believe that everybody is in position, so we will start today's proceedings. Go ahead, please.

IEC LA CAPRA ASSOCIATES PANEL CONTINUED:

DANIEL PEACO, Previously Affirmed (Qual.)

JOHN ATHAS, Previously Affirmed (Qual.)

MARY NEAL, Previously Affirmed

MR. RICHARD BEL: Good morning, Mr. Peaco. I'm -- I'd like to examine in more detail the No New Gen case.

MR. DANIEL PEACO: Okay.

MR. RICHARD BEL: I want to try and understand it because I think I understand it, but I'm not -- I'm not sure. So the -- the two (2) base assumptions are the 750 -- I'm on page 59 -- slide 59.

So it's -- we have the 750 megawatt interconnection and we have a raise in the import floor, so we double the amount of imports that are allowed?

MR. DANIEL PEACO: Yes.

MR. RICHARD BEL: So there's -- those

two (2) effects are working together?

MR. DANIEL PEACO: That's correct.

MR. RICHARD BEL: So you -- you postulated that the -- the transmission line would be built so that we could -- it was a drought condition.

But the transmission line's working with the import floor because by raising the amount of imports, we're essentially increasing the amount of capacity in the system for exports?

MR. DANIEL PEACO: No, this -- let me -- let me take it --

MR. RICHARD BEL: Okay.

MR. DANIEL PEACO: As the system sits today, the -- the interface between Manitoba and the US has a certain rating for export and a certain rating for import, and they're different numbers. But the -- and so the -- the All Gas Plan, for example, doesn't add any transmission. And so the -- the limitations on -- on import in that plan remain the same as they are today through the -- through the entire study.

In this case, what we said is, Let's -- let's specifically test whether an increase in -- in the ability to import power when you need it has an effect. And so there's -- there's two (2) things you need to do. There's two (2) -- there's two (2) ways to

-- to think about that. One is you need to increase the -- the transfer limit on imports. And we did that -- did that by postulating a build of -- of trans -- an additional transmission line.

And in the Preferred Development Plan, which has the 750 line that was -- was used in this case, it increases both import and export transfer limits by 750 megawatts, so it -- it increases the transfer limits both ways.

And so that gives you an amount of a bill -- you know, extra amount of capacity to -- to import power if and when you need to do so. And then coupled with that, even -- even if you have the expanded import capability, Manitoba Hydro's planning criteria has a separate criteria to -- to rely no more than -- than 10 percent on -- on imports in its overall planning.

And so what we said is, Let's change that -- that policy as well when we do that to see what that does. So we -- I mean, we had one (1) shot. So we said, Let's -- let's do a case and kind of test a couple things together. So we put those in there so that when you -- it allows to -- basically to contract for capacity across that transmission line, as well as use it for energy.

And when you do -- when we did those two (2) things, it obviously allows the opportunity for more imports to come in. Now, obviously, that's working with the existing hydro system. So there are times when the existing hydro system has a lot of water and it -- it is plenty. But when it doesn't, then it has access to an -- expanded paths to import power from MISO.

Is that -- does that answer your question?

MR. RICHARD BEL: I understand -- yeah, I understand that part. But I'm -- I'm trying to understand on the top of that S-curve where that net present value's coming from.

And I'm wondering if, by changing that constraint, it allows us to utilize the existing hydro system more efficiently.

MR. DANIEL PEACO: It would.

MR. RICHARD BEL: In other words, export more --

MR. DANIEL PEACO: It would.

MR. RICHARD BEL: -- at any given situation, because you're kind of buying capacity, or you're --

MR. DANIEL PEACO: Yeah, if you think

about it, a lot of what -- the opportunity here is you -- to the extent you have the added ability, there's -- there's more capacity spec -- particularly to import at night/weekends, when prices are low in MISO, and -- and then return it. In drought conditions the import capacity today limits the amount of energy you can import in those circumstances. So this gives you more -- more division freedom in order to take advantage of off-peak prices to import and -- and manage the reservoir differently than you can with the limitations on the import as it -- as it sits today.

And I think that's what's -- what you're seeing in those numbers.

MR. RICHARD BEL: Okay. And the -- the limit -- I read in one of the reports that the import level that's set right now is a convention. It's not a physical thing. It's --

MR. DANIEL PEACO: Well, when you say--

MR. RICHARD BEL: 'Convention' means that that rule could be changed.

MR. DANIEL PEACO: Well, you said import limit. The import limit is -- is not a -- a convention. That's a -- it's an engineering determination of what the capacity of the interface is. But -- but the -- on the planning policy, in terms of dependable energy --

MR. RICHARD BEL: Right.

MR. DANIEL PEACO: -- there's -- there's a determination as -- it -- you know, how much -- how much are we going to rely on imports is really a -- a policy determination, because there's -- there's a policy that Manitoba Hydro uses in its planning. And it -- and it -- it could be different. And we've -- we've talked about that issue separately in our reports.

And -- and this -- this case was an -- was an opportunity for us to test, you know, does it make any difference if we relax that. And -- and so -- so you see the combined effect of both of those things in that case.

MR. RICHARD BEL: Okay. And one last thing, there's another slide with a -- slide 71. So if we combined your -- the -- the No New Generation case, if we -- if we change the import limit -- I'm not -- I'm not calling it the right -- the right way here.

If we changed the known -- if we added the known -- if we made a hybrid plan between -- between No New Generation and the K19 case, would that that shift the blue line to the right if we made a hybrid plan?

You mentioned in this scenario that you could combine these two (2) things.

MR. DANIEL PEACO: Sure. I -- so I'm -- I'm just -- I want to make sure that I understand the combination you're looking -- looking to talk about.

MR. RICHARD BEL: Okay.

MR. DANIEL PEACO: So the K19 plan, which has -- which -- which includes the -- the transmission line --

MR. RICHARD BEL: And the No New Generation. It means relax the -- or -- or raise the import limit.

MR. DANIEL PEACO: Oh. Oh, I see. Oh. You're talking about the import limit policy?

MR. RICHARD BEL: Right. So what happens to the -- to the -- the K19 S-curve then? It shifts to the right?

MR. DANIEL PEACO: Well, by virtue of building --

MR. RICHARD BEL: Keeyask.

MR. DANIEL PEACO: -- Conaw -- Keeyask, you have more times when you would be surplus and exporting and -- and less time that you would have oppo -- you know, need to be importing. But -- but as we -- as I showed in one of the other charts, even with

Keeyask and Conawapa in there are times when -- in -- in drought condition where the line's being using (sic) for import.

So there -- so there would be the same effect. It wouldn't be as pronounced as in that other case, because -- because Keeyask is not there. You don't have as much energy in -- in province in -- in the -- in the no gen case. But you'd see the same effect, only to a lesser degree.

MR. RICHARD BEL: Okay. Okay. Thank you.

THE CHAIRPERSON: I wonder if we could go back to 59. I want to make sure I understand it too. Because I -- I asked a question yesterday and -- and I think I asked the question in terms of that red line representing avoided cost.

But in reality, you're suggesting that the -- to potential gain -- the potent -- potential man -- maximum gain from the All Gas -- pardon me, the No New Gen case is related to the ability to import power in a drought situation.

Is that -- am I misreading that?

MR. DANIEL PEACO: No, that's -- that's correct.

THE CHAIRPERSON: Okay. And that no

gen case would be available to what extent before you definitely would need power -- new generation in Manitoba?

MR. DANIEL PEACO: I'm sorry, I'm not -- if I understood your question.

THE CHAIRPERSON: At some point, you -- you've maximized the amount of -- amount of savings you could get from DSM and so on. And so, I guess, the question is: In a scerio -- in a scenario where it's high demand, the economy of Manitoba increases and so on, would you have enough power in that's -- in that -- in that eventuality for -- to -- to meet load?

MR. DANIEL PEACO: Yeah, I --

THE CHAIRPERSON: Say, for example, you got a major load increase in the midst of -- of the evolution of that plan. Do you have enough power to -- to...

MR. DANIEL PEACO: Sure. Could -- could you turn to slide 31?

(BRIEF PAUSE)

MR. DANIEL PEACO: So it -- it's a good question, but -- so the -- the No Gen case that we postulated starts with an amount of DSM and an amount of fuel switching, and that essentially takes care of the need through 2029, when the transmission line is built. So what we -- what we plotted on here -- and I think there is, actually, generation added, eventually. Do you remember, John, what the date is?

MR. JOHN ATHAS: Yeah, I think --

MR. DANIEL PEACO: Or near.

MR. JOHN ATHAS: -- it's the -- I think it's '32, around there.

MR. DANIEL PEACO: Yeah. But at some point, you'll see in this chart there -- on chart -- on slide 31, you'll see what would -- we basically plotted the -- the generation. The thermal generation, you could see, is pretty low up until to get to about 2040, and then it starts -- kicks in.

So at that point, we're adding some additional generation, and you're seeing some thermal generation. So the -- the -- I would -- I mean, what that means is you need resources above and beyond the ability to import, and the DSM would -- that's been built into that plan at that point in time.

So effectively, that plan defers any new generation in province until about that time. And I don't really remember the exact date when -- 2037 was -- in that case, 2037 was the first time generation was actually added in province. And I think it was the Gas -- Gas Plan, right?

So -- so you can see, following 2037, that the -- that thermal generation starts to be utilized. Does that help?

MR. RICHARD BEL: Could I ask again -- something else? Okay, on -- back on slide 59.

So the S-cur -- the -- the No Gen case and the Preferred Plan intersect at 75th percentile, somewhere around there?

MR. DANIEL PEACO: I'm sorry, which plans --

MR. RICHARD BEL: Slide 59.

MR. DANIEL PEACO: Yeah.

MR. RICHARD BEL: Okay. I'm looking at the oaks -- the -- the K19/Conawapa25/750.

MR. DANIEL PEACO: Yes.

MR. RICHARD BEL: And the No New Gen case.

MR. DANIEL PEACO: Okay.

MR. RICHARD BEL: Seventeen (17).

MR. DANIEL PEACO: Yes. The red line, yeah.

MR. RICHARD BEL: So they're crossing over around sixty-five (65) -- or 75 percentile in the eight -- range.

MR. DANIEL PEACO: Yes.

MR. RICHARD BEL: So what does that mean?

MR. DANIEL PEACO: Okay. So in -- in the way this is structured, you could -- if you're doing a, basically, comparison between those two (2) cases, it would say that there are -- and let's call -- let's call the cross-point seventy-five (75), just for purposes -- it's somewhere close to that.

So that means that 75 percent of the time -- or 75 percent of the -- the outcomes there on -- on the twenty-seven (27) branches are ones where the conditions are more favourable for the No Gen case than for -- for the Preferred Development Plan. Twenty-five (25) percent of them are ones that -- where the outcome is more favourable for -- for the Preferred Development Plan.

MR. RICHARD BEL: Okay.

THE CHAIRPERSON: I think that's it for the questions from yesterday, so --

MR. DANIEL PEACO: Okay.

THE CHAIRPERSON: -- please go ahead.

MR. DANIEL PEACO: Do we have...

CONTINUED EXAMINATION-IN-CHIEF BY MR. CHRISTIAN MONNIN:

MR. CHRISTIAN MONNIN: M. President, La Capra has prepared a -- a further slide presentation with respect to a comparison of the addendums to Technical Appendices 9A, 9B. And, Mr. Secretary, that would be entered as Exhibit LCA-47.

MR. KURT SIMONSEN: That's correct.

--- EXHIBIT NO. LCA-47: Addendums to Technical Appendices 9A and 9B

MR. JOHN ATHAS: Good morning. What -- what we've -- what I've -- what we're going to do here with two (2) different sets of control of the -- of the screens for everyone is I'll have a little bit of a -- of an introduction to the -- to the addendum from the -- on -- in this PowerPoint. And then we'll also go through a few of the comparisons of how the -- the information on 9A and 9B looks side by side with the update in the addendum. So we'll be putting up, thanks to the technology you have here, the -- the original charts of -- of figures as compared to the updated figures.

So -- but I'll -- first I'll take you through what -- what got us to those figures. The first slide on slide 2 of this pack is a slide that was taken out of Mr. Peaco's presentation yesterday where we -- and using it just for the illustration, we talked about a number -- he talked about a number of facts that go -- went from the original filing NFAT valuation of the different plans to -- to the most recent information filed by -- by Manitoba Hydro. And in this case it was using the example of the 2012 based analysis.

What the addendum, in the short amount of time that we had and the short amount of information that we had for -- for a broad amount of plans, we only -- this addendum discussion that I'm going to have today is just focussing on the update of the capital costs that went on. So it -- so the -- any comparisons between 9A and 'B' and the corresponding figure in 9U is -- is the capital cost increase for Keeyask and Conawapa.

And the other effects of -- of potentially going from changes in the 2012 to 2013 analysis of discount rates and changes in the WPS contract and the levels of DSM, and changes in load are not part of the update in the addendum versus the 9A and 9B.

Okay. So we -- I'll walk through just a

quick thing about the analysis that we have -- that we had at hand from Manitoba Hydro as input, and make sure that -- and this is the -- basically going through the introduction part of 9U of -- of the addendum to 9A and B. I'll talk about our approach, so -- do a little walk through of what's in the addendum, and then -- then start doing some comparisons of real results of -- of -- versus the 9A and 9B figures.

So we had -- this is a quick reminder there's -- we had several Manitoba Hydro analyses the -- that was filed. The two (2) -- two (2) were filed in the NFAT, the 2012 vintage analysis, which had reference scenario results and the uncertainty analysis results. And that was for all fifteen (15) resource development plans.

The second part of their -- I'm on slide 5 of the blue package. The second part of the information set in the NFAT filing was the 2013 update for -- which was done for five (5) plans on the reference scenario assumptions. I believe it's Chapter 12 in the -- in the analysis of -- in the NFAT filing. And so that was only done for, like I said, one-third (1/3) of the plans, you know, Plans 1, 2, 4, 12, and 14.

Now, the update for the capital cost

estimates was supplied in -- for the 2012 analysis in the handout that -- of the presentation that was made in the week of March 10th and discussed, provided information on the uncertainty analysis and the reference scenarios -- ref -- reference scenario analysis for six (6) resource plans: Plan 1, 2, 4, 8, 5, and 14.

Subsequent to the -- to most of the time that we had to work on this presentation there was information provided in some detail about Plan 6 that wasn't in the -- that I actually -- or I didn't see in the original PowerPoint presentation. So -- so that -- that is available to us now, but it -- it hasn't figured -- it didn't figure much into the -- it didn't figure at all into the analysis that's in the addendum. Some of that information on Plan 6 made its way into the presentation that -- that Mr. Peaco went through yesterday.

And the -- the fourth kind of analysis that was -- that was discussed -- that came up in the -- in the PowerPoint of -- of the week of March 10th was they looked at three (3) different levels of activities for DSM, and --- and they looked at that across three (3) resource plans: the -- the All Gas Plan number 1; Plan 14, the PDP, the Preferred Development Plan; and

Plan 5, which is essentially the Preferred Development Plan with gas instead of Conawapa.

So that -- and that was -- that -- that comparison was probably triggered by -- the choice of those plans was probably triggered by a discussion in December with ourselves and John Todd from Elenchus, and the people from Manitoba Hydro.

So with the limited approach that we had -- excuse me -- was that we -- we could only update the 2012 vintage analysis for ref -- the reference and uncertainty analysis. We did update more metrics than the information -- the -- than the information that was provided in the PowerPoint. So we have the additional metric -- metrics of internal rate of return, cumulative present value at three (3) different points in time in addition to the seventy-eight (78) years that Mr. Peaco spoke about, and -- and the breakeven on a cumulative present value basis.

The -- in addition, we have -- we provided comparisons, and you'll see, that show -- based on the derivation of the capital cost estimates, we were able to take the comparisons that we had as their impacts and apply them to similar comparisons. So that's why we actually have some additional comparisons than -- than what information was provided by Manitoba Hydro.

The addendum -- when performing the addendum, we did -- as I'll note going forward, that the -- Manitoba Hydro presented their information with an update to the -- to the -- over the change in their perspective on the capital cost probability distributions.

When they updated the capital cost, they also concluded that they should update the split between the reference and high capital costs in their uncertainty branches. And they went, believe -- I believe, from -- from a 20 percent probability of low, 50 percent probability reference, and 30 percent probability high to 20 percent, 60 percent, and 20 percent. That was -- and that came out of -- in the cross-examination, and we took that from the transcript.

What we decided to do, based on the way we understood the analysis and put together, is that since their probability distribution applied to all kinds of capital costs and, you know, was -- was based on just one (1) piece of information as a quick change, we did our analysis without changing the probabilities. So we have the probabilities base -- that you'll see in the -- in the addendum still with 20 percent probability of low capital cost, 50 percent probability of reference capital cost, and 30 percent probability of high capital cost. And those -- and the capital costs have been adjusted in according -- in -- in their absolute value with Manitoba Hydro changes.

The -- we used the La Capra methodology for developing uncertainty profiles that we discussed -- had a few discussions about and -- and pulled up one of the examples. So that's consistent with our addendum and our preparation of 9A and 9B technical appendices.

And when we show a provincial view, as we discussed in our technical appendices 9A and 9B, we're showing a provincial view that only assumes that the -- that the water rental fees and the capital tax -- that's supposed to be capital tax, I apologize, in that last bullet, instead of capital cost. The capital tax and the water rental fees are the only things that should be considered transfer payments in -- into -- move to a provincial view.

The missing piece between the difference between our view and the view by Manitoba Hydro was the 1 percent provincial guarantee for the loan, the 1 percent fee on the loan. And as Mr. Peaco mentioned and -- yesterday, and that we have in our technical appendix 9A and 9B, based on discussions with -- with MPA (phonetic), that was viewed as being compensatory and not just a pure transfer fee.

Okay. So the contents of the appendum -- of the addendum is that we have a lot of figures in the addendum with a lot less words than we have in our technical appendices, unfortunately, with the time we had. We've labelled figures with the same number with a designation of 'U' so they -- as they correspond to the same figures in the -- the prior technical appendices. And fortunately, we were lucky enough or smart enough to -- to just have identified all the -- the 9A and 9A figures in sequence. So there aren't two (2) 928s. There is a -- a lot of '9' in the hundreds.

So every figure that's in the technical -- in the addendum that says '9' and the number 'U' is -- is the exact number in the Technical Appendix 9A and 9B, and there won't -- will only be one (1) of those.

Now, what we have -- what we had done in a limited period of time, we took some of our sensitivities and some of our comparisons and we were able to put together the information -- the corresponding information. The -- the other -- these were done in an attempt to do as much as we could do with the information we had, because some other comparisons would have required us to have the detailed annual economic model output and not necessarily just a NPV result. Because the presentations were limited to NPV results for seventy-eight (78) years and we were able to derive a lot of information from those, but we weren't abl -- but some of our sensitivities required us to actually do calculations on a -- on a year-by-year basis, so we weren't able to do those.

Principally, one of those -- a good example of that would be the -- the sensitivity, where we raised all three (3) interest rates -- discount rates to do a sensitivity to discount rate. That one we -- we can do now, because we have the detailed cashflows in hand. We got them too late into the process of -- of prepping this addendum to actually be able to -- to do that analysis.

But we do have lots of comparisons versus the Plan 14, 4, and 5 for -- versus All Gas for fifty (50) year and seventy-eight (78) year metrics, and in the uncertainty risk profiles. We did have one -- we do have the ability to have put together one of our sensitivities to discount rates, because that was a sensitivity where we just eliminated the low discount rate branch and essentially split the 100 percent probability between the reference branch for dis -- for discount rate and the high proba -- case for discount rates.

So since that was just a manipulation of probabilities, it was -- it was able to -- we were able to use the -- the endpoint information of seventy-eight (78) year impacts from the -- from the Manitoba Hydro presentations.

We were able to do a sensitivity to the -- one of our sensitivities in our capital cost was if we took the capital cost and just took 10 percentage points of probability from the reference case in Technical Appendix 9A and moved that probability to the high case, so essentially we made the higher capital cost out -- outcome more probable in that analysis.

We had another sensitivity where we actually changed values of the capital cost, and Mr. Peaco spoke about that yesterday, I believe, where we increased capital costs by 20 percent in the reference. And in the high case and in the low case we actually used the reference. That one, again, we needed some more detailed year-by-year information to make that -- to do that update and we now have the ability to do it, but we didn't have it in time for the addendum.

The last sensitivity that we were able to do from -- from Technical Appendix 9A is that we were able to do some low energy price sensitivity, redo that work with the updated capital costs. Again, this is all centred around the updated capital cost information that we had that came out during the -- the economic modelling panel from -- from Manitoba Hydro.

For 9B, we were able to look at -- update some of the information around the alternate resource plan comparisons. Now, Plan 16 and 17, as we called them, the Combined Cycle Plan and the No New Gen Plan, you -- those obvious -- those plans obviously don't change with an update to Keeyask and Conawapa. But there was material there that compared them, as we spoke about it already today, Plan -- to Plan 14, the Preferred Development Plan. And that changes, so we've updated those slides for the up -- updated Preferred Development Plan costs.

We had another section in -- in Technical Appendix 9B where we had the value of the Preferred Development Plan components. So we took piece by piece, going from where -- where's the value kind of created, or not, from the Preferred Development Plan. And -- and that, we have been able to update for the -- with the updated capital cost. So that's -- so that -- that figure is available.

And -- and then we have it -- there were several comparisons of Technical Appendix 9B for -- of Plan 14 versus Plan 5, where we used Plan 5 as the base case and Plan 14 as the change case. That was particularly to isolate the economics of Conawapa. We have that in the -- in the package. I'm not necessar -- I wasn't planning on running through any of that today, because I'm going to take some examples of these to show you what we have.

We had done several export price sensitivities within Technical Appendix 9 -- 9B, and we've updated those as well and -- and with -- for the new capital costs. And we had a -- an uncertainty analysis sensitivity to export revenue changes that we were able to update in -- for the limited number of plans that we have in the addendum. So this is, in some ways, a run through of the index of the -- of the -- the detailed index of the addendum.

So if we go to the comparisons to -- I have to hit the button again? Okay. Okay. The -- the first comparison, and this is actually one that was mentioned to -- to redo this one. We -- we first started showing the -- the slide on -- in Mr. Peaco's presentation before we even got to the update.

So the -- on the left side is the -- is a page right out of Technical Appendix 9A. It's page

48. It shows Figure 9-21, which is a summary table showing lots of the metrics. And this -- this table was in Mr. Peaco's presentation yesterday. I actually forget the slide number, but it was relatively early on.

So it has several statistics or metrics: the present value of capital cost, the -- the net present value over seventy-eight (78) years; the three (3) different cumulative present values: fifty (50), thirty (30), and -- and -- thirty-five (35), and twenty (20); the internal rate of return; and the breakeven year.

The smaller -- much smaller table on the right is a page out of 9U; and I think that's page 7 out of 9U. And we have for Plans 2, 4, 5, 8, and 14 in this figure, labelled 9-21U, how these numbers change. And you can see that if we just take a quick look at some numbers, like the first numbers across the top, we'll see that in a case where we -- of Plan 2 versus All Gas -- and, actually, I apologize. This is -- we -- we didn't have time to get errata in, but I -- the -- the capital column is incorrect in the up -- in the addendum. We need to get the -- provide that in the errata. I just grabbed -- grabbed the wrong sets of numbers when we made the table.

So ignoring that table -- actually that's right. It was corrected in Dan's presenta -- Mr. Peaco's presentation yesterday, so that slide. If we want to -- if we want to discuss those numbers, we can. Thanks, Mary.

So the -- but the seventy-eight (78) year net present value dropped from eight eighty-seven (887), or almost $900 million, beneficial to do Plan 2 in the original analysis by -- by Manitoba Hydro to about a little under $500 million, the four eighty-nine (489) number there. The -- the fifty (50) year value dropped from just under $500 million of value to just under $100 million of value, at the $81 million number. And you can see that the -- correspondingly, the numbers get -- became more negative in the thirty-five (35) year and the twenty (20) year period.

The breakeven year was pushed out eight (8) years for that case, and the internal rate of return of that case over seventy-eight (78) years dropped from estimated 6.6 percent to about 5.9 percent. So it took away about -- about a third of the -- more -- more than a third of the -- of the margin between internal rate of return and cost of capital was -- was lost with this change.

The -- similarly, if we go through -- if we look through the numbers on the Preferred Development Plan line at 14, we had the -- the... I was just trailing the wrong line, so I apologize. The 1.696 billion of the number that -- that is probably etched in everybody's mind pretty clearly at the starting point changed to seventy (70) -- seven ninety-eight (798) in the -- in the Manitoba Hydro update. That number is directly out of their work.

And similarly, the -- that over $800 million erosion in value -- almost $900 million erosion in value happens to the fifty (50) year point, the thirty-five (35) year, and the twenty (20) -- twenty (20) year such that the -- that at the end of fifty (50) years where our metrics in our original document of 9A on Figure 9-21 showed that there was still -- at that point there was -- had been the creation of value of almost -- a little over $700 million, and the economic analysis from Plan 14 now has gone down to -- a drop in economic value of about 200 million -- sorry, about $180 million.

So the -- so that -- and that, not surprising, now says that the breakeven period has pushed out be -- beyond fifty (50) years in the -- in the change in capital cost analysis, and there has been a corresponding drop in internal rate of return from approximately 6.15 percent to 5.6 percent.

So similarly, that's how you read through these -- the comparisons of these -- of the information that was available. These were the -- the numbers -- the table out of Mr. Peaco's presentation, as well. And -- and that -- that's kind of the first comparison that's available in the update of the addendum.

So we go to the next comparison that I've laid out here. And some of these slides in the -- in the update you'll -- are actually the figures that -- or some of these figures in the addendum are actually figures that were used yesterday, but they weren't necessarily shown side by side.

So in -- these here -- we're looking at Figure 9-34 and 9-34U on page 77 in the original 9A addendum -- 9A technical appendix. So that the -- you can see that the -- if you focus on the light blue line, which is the Preferred Development Plan, as we discussed yesterday, that in our methodology that was crossing a -- I believe the number that was is 42 percent as an example as a read, the zero point, and now it moved up to about 55 percent for the -- the probability.

And that number, as you read it in our

analysis, that's the probability that the -- that the Preferred Development Plan will have a higher cost than the -- than the All Gas cost on a net present value basis. So that's what -- so -- so that -- that, percentage point wise, is increased about ten (10) or a little bit more percentage points of probability.

The -- the profiles have changed a little bit, obviously, with the capital cost change. The other plans that were all -- that were somewhat clustered where they crossed the point -- the zero point in around 35 percent has now inched up to about 40 -- 40 percent. But in all reality, the -- I mean, looking at the way these charts are interpreted, the -- it's around zero from the 30 percent in the new chart, from the 30 percent point to the 50 percent point, it's about zero. I mean, we don't want to imply too much precision to the -- to the -- the significant figures here.

But -- so -- so that there's been a small change is what the -- what we -- we had with that update. You know, it hasn't -- it hasn't made -- you know, it hasn't provided such a dramatic change to the metrics that its -- in its own right, just a capital cost change, that -- that conclusions would change -- or observations would change dramatically.

In the next comparison on the -- on the two (2) things, we have essentially the same two (2) charts, only at the -- at the fifty (50) year period. And here the -- the fifty (50) year period has the -- impacts are a little bit more pronounced where you -- again using the Preferred Development Plan. Where it had been crossing in that forty-five (45) to fifty-five (55) period, it's now crossing at probably the seventy (70) to seventy-five (75) period of -- of probability.

One reason why this is more dramatic in its percentages is that all the change in capital cost impacts, except for the residual capital tax issues, is -- is up front so that -- that's happ -- it -- it impacts the comparative nature to the All Gas case at the fifty (50) year point, and the thirty-five (35) year point, and the twenty-five (25) -- twenty (20) year point. Similar numbers, but more dramatically on a -- on a comparative basis -- on a probabilistic basis.

So we go to the next comparison that was -- that -- we had that in there. Actually, you can skip this one. Go to the next one after that, the -- the fourth comparison. The fifth comparison, sorry.

(BRIEF PAUSE)

MR. JOHN ATHAS: Okay. So this -- now we're comparing 9-50 and 9-51 in Technical Appendix A to 9-51U in the -- in the addendum. And here we -- the original chart had compared four (4) plans in their -- and how their risk profiles looked versus All Gas. The -- the new 951U does not have Plan 6, because that was not discussed enough in the presentation for us to be able to extract the information. Again, this is something that we have addition -- more detailed information now available to us, but it wasn't available when we -- we were doing the addendum.

So you can see that in this chart that the blue line is dissimilar -- has kind of had some of the similar changes that we -- that we had. It was the -- but by comparison the -- the relative nature of the plans have -- have, you know, stayed relatively similar in -- in the --

So if we go to the next slide comparison at number 6.

(BRIEF PAUSE)

MR. JOHN ATHAS: Okay. This comparison is one where we took the -- the original analysis at nine-fift -- Figure 9-56 was where we changed the energy price probabilities that I mentioned when I was going through like the overview, where we increased the -- the probability of low energy prices occurring. We -- and we did that -- so we did that analysis over for the Plans 14, 5, and 4, and as well as the All Gas Plan, so that the -- the comparison and the -- the change points for -- and the expected value numbers all change a bit in this -- you know, in doing over this comparison.

The expected value numbers are -- of each plan versus All Gas are similar to the -- the way they were, kind of how they differ from each other. But what you have here is that where in this energy price probability sensitivity that we did, if you look at the box that's on slide -- Figure 9-56, it has a expected value under Plan 14 for seven twenty-seven (727). That number changes to minus $240 million as a result of the capital cost change. If you'll look at the figure -- corresponding Figure 9-56U.

So there was a -- and -- and one thing that again, just to re-enforce, that we -- we quickly went through and made as many of the comparison updates that we could. We didn't necessarily even try to sort through, you know, which ones were the most profoundly impacted or not from the capital cost change. It was more to give you a -- a new set of metrics and -- from the -- from where we had given you in 9A and B.

Okay. If we go to -- just a few more. If we go to the seventh one, that would probably helpful, I think. All the analysis that we was -- that we've been giving examples of before this were the -- were on the Manitoba Hydro perspective. We do have some analysis in the technical appendixes -- appendices for both 9A and 9B from the provincial viewpoint. Again, the provincial viewpoint here -- our diffe -- differs a little bit in -- in what it's trying to show than the Manitoba Hydro, because of the difference in the 1 percent guarantee -- treatment of the 1 percent debt guarantee fee.

So you can see that the -- we have some analysis differences and the -- for example, the top bar in -- in Plan 14, and these are numbers that were showing up on the charts yesterday as well, that the -- from the original Manitoba Hydro analysis, we had a number of twenty-seven ninety (2,790) in our view of the provincial benefits over seventy-eight (78) years. That number dropped to just under $2 billion in benefits.

And the -- and so there was corresponding changes made from the few plans that we had to be able to do the update on.

THE CHAIRPERSON: Could you explain --

MR. JOHN ATHAS: And --

THE CHAIRPERSON: -- could you explain, Mr. Athas, explain why there's a difference there? Why there would be such a dramatic difference? Because we haven't talked about --

MR. JOHN ATHAS: In the --

THE CHAIRPERSON: -- interest rates. What would -- what would impact these values based on the changes you've made?

MR. JOHN ATHAS: Well, in that -- in that particular -- like -- like with those two (2) numbers that's basically when -- the couple of dollar here. But that -- that's essentially the eight (8) -- eight-ninety-eight (898) number that was viewed -- that was shown in the -- one (1) of the slides of the Manitoba Hydro package that said this was the difference between when you add the capital costs into the Preferred Development Plan. It went from sixteen-ninety-six (1,696) to like seven-ninety-eight (798), if you remember -- might remember those numbers. And those same -- that same delta translates right over into the provincial view.

THE CHAIRPERSON: I was more interested

in the -- what's happening with the provincial revenues. They're -- they're roughly -- are they roughly the same?

MR. JOHN ATHAS: They should be the same. I mean, there's been -- there's -- there's a slight -- slight difference because the -- the provincial capital tax benefit goes up -- the capital tax payment goes up, so that means the change -- when you take out the transfer payment changes a little bit. But by and large that they -- I mean, the -- the picture would look the same to the naked eye if we didn't even make that change, that secondary change.

But what's -- what's really happened here in the -- the real shift here is that the maroon line -- maroon bar has shifted from -- in the Preferred Development Plan from -- from bigger than the -- the adjustment for the provincial benefits to small. But -- and -- and the blue bars bas -- basically stayed the same.

Okay. So we go -- if we go to -- that was Figures 9 -- 9-76, and we go to the last comparison that I thought it would -- might be good to just run through for examples here today. Actually, sorry, we do have two (2) more left.

So if we do that -- this is the -- this

is the probabil -- probabilistic distribution of the Manit -- of the provincial viewpoint. And so we updated the -- where we had the information we were able to update those as well. So where the -- obv -- obviously the -- on the left-hand side on -- on Figure 9-82, the -- the probabilistic benef -- the probability is much lower that the -- or from the provincial viewpoint, that the Preferred Development Plan will have higher costs than the All Gas Plan, from the provincial viewpoint. So that -- that's down around the -- a little under 30 percent versus being about that 55 percent point that we were talking about. That would -- verus the 42 percent on the left-hand side. On the right-hand side we've dropped this -- that 55 percent point that Mr. Peaco spoke about yesterday for where it crosses for the Preferred Development Plan, back down to about only a 40 percent probability on the Preferred Development Plan having higher costs than the -- than the All Gas case.

So -- so we've -- the -- the change in capital costs has -- has pushed up the line for the -- in terms of the -- well, or pushed out to the right, but pushed up the probabilities, essentially, that the All Gas Plan will -- will be more favourable.

The last comparison, if we could just go to that -- that -- to walk through is we had a -- an illustration of the value of the -- how you -- we would kind of break down from all the different comparisons, the -- approximately break down the $1.696 billion benefits in the NFAT filing Preferred Development Plan.

And we tried to break it down in steps from the Keeyask -- adding Keeyask to the All Gas Plan, to then adding the two-fifty (250) transmission and then going from a case that had the two-fifty (250) to the seven-fifty (750), and then adding Conawapa for the las -- for the last -- for a large amount of the gas capacity that was installed. And then the last thing was to have the change in the WPS contract and investment at that time.

So we're still -- we're still working with the -- with essentially an item of the resource plan, at that time the Preferred Development Plan, being the combination of the original WPS term sheet, and its expectation that WPS was going to make an in the tra -- in the US side of the transmission line.

We -- we now looked at these -- at how these comparisons look with the change in the Preferred Development Plan -- I mean, changing the capital costs to Keeyask and the like, we changed the -- because of the limited number of comparisons we had in the plans, we changed the order a little bit. So that's what that -- that's why that big box has a note there, so it doesn't -- so you -- you don't -- we don't mess anybody up by having you try to just go box for box. So we swapped the order of adding Conawapa and adding the WPS sale and investment in there.

So you can see that the -- that there's been a -- and the scale has changed, so that -- I -- I apologize, we try to keep most of the scales the same -- so the -- the scale on the left hand side of the Figure 9-99 -- 9-99 in 9B is from zero to eighteen hundred (1,800), so it's been, basically, about cut in half -- for you to look at the scale when you -- when we went to 9U. So the scale is zero to a billion.

So while the boxes didn't change in relative size, the number of the -- for -- the value of the Keeyask went from eight eighty-seven (887) to four eighty-nine (489) when you increase the capital costs. The value of the transmission of the two-fifty (250) is -- is a -- was assu -- came out to be about the same.

And, overall, these -- we were able to break down their components. The value of Conawapa went down from two sixty-nine (269) to one thirty-one (131) as an -- as an added component. So it's -- again, on the reference assumptions at seventy-eight

(78) years, this was kind of an illustration for, you know, how all the -- how all the parts add up to the sum.

So I think that -- in an effort to try to get everybody a little bit more familiar with a -- with the addendum that we only finished up late last week and made its way through the -- through the path to the general public in a few steps of -- of only yesterday, and try -- try to jumpstart that familiarization process, I think these were the, probably, the better comparisons to, at least, highlight today. But as I mentioned, there was more comparisons within the addendum to the 9A and 9B. And there is more that we could make on a going-forward basis with the -- some of the additional information we have.

THE CHAIRPERSON: The slight difference in value between the total and the NFAT Preferred Development Plan total, what's going on there in terms of the -- the gray bar and the black bar --

MR. JOHN ATHAS: Oh, that -- the comparisons we had weren't always the -- the cleanest comparisons. Like maybe -- we didn't run -- we didn't have a case where we just asked for the next run and the next run and the next run to make -- to end up with the right kinds of comparisons. So this is more an illustration than a -- a hard decision criteria.

I mean, I wouldn't -- I wouldn't say value the -- eve -- even in the original technical Appendix 9B analysis, I wouldn't say that -- that nine (9) -- the WPS box at two sixty-nine (269) is the -- should be the decision matrix for saying whether the WPS arrangement was -- was good or not. There's obviously better comparisons in the plans to make -- and risk profiles to look at, and things like that.

But this was more ill -- trying to illustrate that, just as we sa -- saw in the Preferred Development Plan, a significant chunk of the value in the -- on the -- in the 9B analysis on -- on Figure 9-99 shows that more than half of the value of the Preferred Development Plan, even though it's got many components, comes from Keeyask, and when you add -- and -- and a lot less of it was really associated with Conawapa.

And -- and more of it was in the way these were looked at the -- there was a positive contribution to -- to the tran -- 250 megawatt transmission line, that's very significant, as well, in the original analysis. And while the combination of Conawapa and the seven-fifty (750) were, basically, in this illustration, a wash in terms of providing -- netting out the -- the impact. And there was some discussion in 9B of our conclusions that the -- that Conawapa needs the seven-fifty (750) and the seven-fifty (750) needs Conawapa. That's -- there were similar discussions in the -- in the NFAT filing by Manitoba Hydro to that -- maybe not as -- as direct a statement as I just made but -- so that's what this kind of shows.

And that -- that's how -- so that's what we really -- really we try to break down, that the -- the real value comes out of the -- the three (3) main components of the first transmission -- Keeyask and the -- and the WPS contract, where WPS was making the investment.

THE CHAIRPERSON: And this includes the investments, doesn't it? These two (2) slides include the --

MR. JOHN ATHAS: Yeah, these both include the investment assumptions that were made in the original filing.

THE CHAIRPERSON: So the effect of -- the effect of -- removing an investment has the effect of increasing the loss related to -- or the apparent loss related to the megawatt -- the 750 megawatt line that's shown here?

MR. JOHN ATHAS: That's right. It would -- the -- the invest -- the WPS investment change in the -- under this 2012 assumptions with their 5.05 percent discount rate, I believe, is around $183 million on a present value basis. In one of their -- one of the Manitoba Hydro slides, it -- they provided that direct comparison under the 5.5 percent discount rate of about $217 million.

So -- so basically it says that a lot of the -- a large chunk of the WPS investment benefits, you know, from the original assumptions under the 2012 analysis reference case with all those kind of -- make sure it's clarity, that's what we're talking right here -- that a large chunk of that two sixty-nine (269) went away with the investment going away.

And the pri -- there was a price change, too, but that's -- that's not trying -- I haven't made an attempt to value that here.

(BRIEF PAUSE)

THE CHAIRPERSON: I think that's all the questions the panel has at the time being, so back to you, Mr. -- Me. Monnin. You're -- you completed your -- okay. So I would basically -- I'm assuming that it's either Mr. Gange or Mr. Williams.

Mr. Gange, please...?

MR. WILLIAM GANGE: It would be helpful to me if we had a short break, and I can get everything arranged and -- and discuss slides with Ms. Vill -- Villalus -- sorry --

THE CHAIRPERSON: I think that's an excellent suggestion.

MR. WILLIAM GANGE: -- Villegas.

THE CHAIRPERSON: I think that's --

MR. WILLIAM GANGE: So that would be helpful.

THE CHAIRPERSON: Okay. Thank you. Let's take five (5).

--- Upon recessing at 9:57 a.m.

--- Upon resuming at 10:11 a.m.

THE CHAIRPERSON: I believe that everybody's in a position. One of the panel members has a question.

Ms. Kapitany, please...?

MS. MARILYN KAPITANY: Thank you, Mr. Chair. Mr. Athas, just going back to Figure 99 -- 9-

99U. I thought I understood this yesterday, but I think it's escaped me again. We've heard from Manitoba Hydro that the 250 megawatt interconnect is really no longer an option, and the 750 megawatt interconnect is really what we need to be looking at. And yet it's showing as -- in terms of component values, it's showing as a negative component value.

And I'd just like to understand that better, if you could go over that again.

MR. DANIEL PEACO: Let me -- let me take a shot at this. What we -- what we're showing here is -- is differences -- or trying to -- to build from cases that were originally filed, the original fifteen (15), and going through and sort of stepping -- sort of adding -- starting with Keeyask, Keeyask plus -- plus the two fifty (250) and seven fifty (750). Of course at the time, the two fifty (250) line was -- was part of the options. And so this analysis builds off of that original application.

But what you're seeing in this analysis is if you step through the way we're talking about here, and you -- you look at the plan in where they ran Keeyask and the two fifty (250) line, it's showing the transmission line obviously adding -- and -- and the contract -- the -- the case that's there really is --

if you think about the comparison that was shown in that first step is -- is comparing to the Keeyask by itself. The -- the Plan 2, I don't think has Keeyask investment and there's no contacts, there's no transmission.

Going to the MP250 plus -- plus the two fifty (250) line, the case that they ran for that, I think it's Plan 4 -- is it...

MR. JOHN ATHAS: Yeah, it -- it was one of the -- it was one of the options --

MR. DANIEL PEACO: Yeah.

MR. JOHN ATHAS: -- for the -- the comparison.

MR. DANIEL PEACO: Yeah. And so in -- in that case, adding in the -- that amount of transmission with -- with the export contracts increases the value over Keeyask by itself.

So then we said, Okay, let's compare that one to the plan that adds -- that adds a 750 line instead of the 250 line. Everything else is the same. And with only Keeyask in and no other changes, you -- you're taking on added cost, because the trans -- the 750 line is more expensive, compounded by the fact that Manitoba Hydro is -- is stepping into what -- what otherwise would be an investment by Wisconsin Public

Service.

And -- and at that point, the -- the increased transfer limits is not providing any more benefit. So all you're -- all you're doing is basically adding cost in taking that step. But then when you go an lay Conawapa in, obviously, there's more energy to export and you could take advantage of the -- of the larger export capacity of the transmission.

So that's -- that's really what you're seeing and it's simply by sequencing in the way we did you're seeing that particular effect. Does that help?

MS. MARILYN KAPITANY: Yes, thank you.

DR. HUGH GRANT: And just to be clear, so the -- the 750 line is still a net benefit though?

MR. DANIEL PEACO: Yeah, if you -- if you take the 250 line -- take the step out that includes the 250 transmission, you're still going to get to the same place. It's just that, you know, some transmission is going to give you benefit. And in this particular analysis, by sequencing and looking at the two fifty (250) first, it's -- it's basically saying you get most of the transmission busi -- benefit from the 250 line. You get all of that benefit if you went straight to seven fifty (750).

So if the two-fifty (250) never existed, you'd end up at the same place and you'd -- you'd see as -- as a benefit accruing to the add -- addition of the 750 line.

THE CHAIRPERSON: I want to make sure I've got that right. You'd net out what -- what's showing here as two fifty (250) and the seven fifty (750). Those two (2) are netted out would still yield a profit, would still yield a positive net value?

If you net out the seven fifty (750) and two fifty (250) on the -- on the left graph?

MR. DANIEL PEACO: Yeah, so if you -- what you would -- what you would get is if you remove the second step, you would have a -- and you go over to -- directly from -- from Keeyask alone to -- to the seven fifty (750), you would have a blue bar that goes up from the Keeyask amount to the bottom of that red bar. And that's -- that would be the positive benefit from going to that step.

THE CHAIRPERSON: So why would there be so little value out of the WPS in that particular graph? It's showing a net present value of six (6).

What you've added there is a contract?

MR. JOHN ATHAS: Yeah, in -- in this case, the -- the -- as you've said, we're -- we're trying to -- well, back up a step. The process by putting together the original illu -- illustration had -- there was -- for most of the components, there were a couple of different comparisons of plans you could make which may -- may or may not have been just directly the exact component change.

So there, for -- for several of the -- the plans -- and even in -- for several of the components, there -- there might have been three (3) choices of ways to look at adding Conawapa, depending on what you had or didn't have for the things, for example. So we chose ones that were tending to be in the middle of the original analysis. In this analysis, we didn't have as clean a comparison of -- because like Plan 16 wasn't run, okay; and that Plan 16 in the original analysis was with and without the WPS investment.

THE CHAIRPERSON: And this probably also excludes the WPS contract, the three-o-eight (308)?

MR. JOHN ATHAS: That's correct. It's still on the old numbers.

THE CHAIRPERSON: Okay. That would be the difference between the two (2) graphs in that one includes the -- the larger WPS contact and one -- the other one doesn't?

MR. JOHN ATHAS: Well, they also -- the -- the order isn't -- is more -- is more indicative of the -- the order was important in this one. And we had a comparison without Conawapa of the two fifty (250) and -- I mean, of the -- of the WPS agreement. And so -- so that's why it would -- it's -- it's a lower number or -- or more just about a wash when you have -- when you do -- try to fulfill it without Conawapa. I know it's tied contractually to Conawapa, but it's -- but the -- but if you did it without Conawapa, that's where the value's that low.

If I changed it to -- and if I had all the plans again to be able to put a value on it after Conawapa, as an addition, it would be -- the -- you know, the Conawapa bar would go down and there would be value in the WPS component, which is one reason why I kind of cautioned about -- like too much of trying to isolate this as a decision on one of those things versus just seeing some of the relative nature.

THE CHAIRPERSON: The panel has exhausted its questions. So I'll turn the microphone over to Mr. Gange, please.

CROSS-EXAMINATION BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: Thank you, Mr.

Chair. Mr. Peaco and Mr. Athas, thank you for being here. Your reports have been very interesting. My name is Bill Gange. I represent the Green Action Centre, and I have a number of questions for you that al -- almost exclusively deal with the analysis of the use of wind energy in -- as an alternative in -- in this NFAT process.

From -- on a -- on a high level, Mr. Peaco, there are certain advantages, would you agree, that we have -- Manitoba Hydro is currently primarily a -- a water-based system, correct?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And as a result of that, one of the potential risks of a hydro -- a water-based system is -- is the potential impact of drought.

MR. DANIEL PEACO: The water varia -- variability from year to year obviously is -- is pronounced in the system.

MR. WILLIAM GANGE: And -- and in looking at the use of -- of wind as part of the Manitoba Hydro system, would you agree with me that there are a number of -- of advantages that wind would have, and one (1) of them would be that there's a significantly shorter lead time from making a decision to putting the -- the energy into place?

MR. DANIEL PEACO: Clearly, wind res -- the -- the time to develop a wind resource is -- is a lot shorter than the time to develop a -- a Keeyask or Conawapa project. Yeah, that's right.

MR. WILLIAM GANGE: And -- and obviously, a second potential advantage in -- in a -- in a hydro-based system such as we have is that wind is likely to be different in terms of the risk with respect to drought.

MR. DANIEL PEACO: Correct. The wind -- I mean, wind resource is -- is not associated with a hydro resource. And so their -- their uncertainties would be -- be derived from different -- different sources. The wind -- wind obviously moves differently than the hydro.

MR. WILLIAM GANGE: Would you also agree that there's -- that one (1) of the advantages of wind over hydro is that there's a higher percentage of energy that is fir -- can be considered to be firm?

MR. DANIEL PEACO: I -- in Manitoba, I'm not sure that that's the case. I think that the -- the -- at least Manitoba Hydro's analysis is the coincidence in the winter peak to production in wind is not necessarily very good. So I think firmness would -- would be tied with its performance during the times of system peak.

MR. WILLIAM GANGE: Okay. Thank you. If we could go to Appendix 3A of -- of La Capra, and page 35.

Sir, down at the bottom of this page, you have the -- you raise the issue of modularity of wind.

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And I don't believe that that's something that you discussed in -- in any detail with respect in -- in your main testimony.

Could you advise the panel, what -- what are you getting at with res -- this phrase 'modularity'?

MR. DANIEL PEACO: Sure. Well, modularity is -- is a term that's related to the lead time issue that you raised a few minutes ago, and it would feed into the -- some of the pathways discussion we talked about yesterday afternoon.

Basically, there's two (2) elements to that. One (1) is, you know, the -- the size of the in -- incremental investment that you'd make. Installing a wind farm or a wind turbine is a smaller-scale resource and it's a shorter lead time. And so your -- your lead time on decision making and being able to change course as years go on is -- is more -- gives you more flexibility over time if you have -- you're making small, shorter lead time decisions in your resource planning as opposed to large, long -- long-term -- long lead time and long-term investment types of decisions.

And so that's the concept of modularity that we were referring to there.

MR. WILLIAM GANGE: And -- and again, that would be one (1) of the advantages that would be available in the -- in -- in a -- in a wind analysis?

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: Thank you. I want to talk, sir, about the base capital cost that was -- that has been used with respect to the analysis of wind by Manitoba Hydro. And if you -- if -- if Diana could go to Appendix 2 and page 13.

(BRIEF PAUSE)

MR. WILLIAM GANGE: On this page, sir -- a little bit down, Diana -- used -- you used a figure, I believe, of one thousand seven hundred and fifty (1,750) for the -- the -- I hope I've got the right page.

(BRIEF PAUSE)

MR. DANIEL PEACO: Are you looking for wind numbers?

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: Yeah, this -- the -- the numbers on -- on this -- on the page you cited are -- are other resources.

MR. WILLIAM GANGE: You know what, sir, I may have been looking at -- well, 2-9, Diana. I'm -- I'm sorry, sir, I gave you the wrong number: 2-9.

(BRIEF PAUSE)

MR. WILLIAM GANGE: Yes, thank you. I -- I think this is the right page that -- that I was looking at, sir. On this page, in -- in the middle paragraph there you -- you're talking about one thousand seven hundred and fifty dollars ($1,750) in 2012?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And where did you take that from?

MR. DANIEL PEACO: It's a US Department of Energy document source there in the Footnote 14.

MR. WILLIAM GANGE: And that one includes transmission interconnection costs --

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: -- correct, sir?

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: In the evidence that was filed by GAC, they used your number of seventeen fifty (1,750) and then deducted fifty dollars ($50) per kilowatt hour for transmission station costs to come up with a number of -- for the -- the base capital cost of seventeen ten (1,710) per kilowatt hour.

Does that analysis -- does it -- does it make sense to deduct the -- the transmission costs from the base capital cost?

MR. DANIEL PEACO: I'm not -- I guess I'm -- I'm not recalling the specific piece of testimony. I'm not sure what the -- what the purpose for deducting -- was it assuming a lower cost for transmission than was included in these numbers?

MR. WILLIAM GANGE: No, they -- they -- Mr. Stevens simply took out the transmission interconnection costs, and -- and he had estimated those transmission connection costs as fifty dollars ($50) per kilowatt hours. And -- which then would leave seventeen hundred and ten dollars ($1,710) as the project cost.

So the -- the only difference that he had was that your seventeen fifty (1,750) included transmission interconnection costs, and the number that he used was seventeen ten (1,710) excluding transmission interconnection costs.

MR. DANIEL PEACO: Yeah, I don't -- I -- I don't have a good number for the interconnection cost component of that number on the top of my head, but...

MR. WILLIAM GANGE: And -- and, so that -- that fifty dollars ($50), you're not sure whether that's a reasonable number or not?

MR. DANIEL PEACO: I'd have to -- I'd have to go back and check. I'm not -- I don't have the number handy.

MR. WILLIAM GANGE: Okay. Thank you. With respect to the trends in capital costs, Manitoba Hydro assumed that the same rate woul -- could be used going forward for the capital costs. Do you recall -- I believe that you testified on -- on that in your direct testimony.

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: And you had

suggested a reduction of up to 40 percent through 2030, correct, sir?

MR. DANIEL PEACO: Yes. I believe that's correct. The -- it's discussed on page 211.

MR. WILLIAM GANGE: And the -- the assumption that you used was a 1 percent per year decline. And I think that this is Appendix 3A, page 26, where you make that -- that assumption.

MR. DANIEL PEACO: Yes. There's a table -- Figure 3-3 has the assumptions there.

MR. WILLIAM GANGE: And -- and, sir, the reason that you used that, could you explain that to the Board again?

MR. DANIEL PEACO: Sure. When we were back -- I mean, it's actually, discussed back where -- in Section 2 on page 211.

(BRIEF PAUSE)

MR. DANIEL PEACO: And it actually -- discussion on it starts on the bottom of page 210. But there's a -- sort of depiction there of a -- of a National Renewable Energy Lab study looking at -- actually, a composite of -- of a number of different studies looking at trends in -- in improvements and technology over time. And they -- so we reviewed that and -- and used a number representative from that study as a -- as a basis for our im -- improvements in costs-over-time estimate.

MR. WILLIAM GANGE: And -- and I take it, sir, that -- but the obvious point of that, that you're making, is that Manitoba Hydro overstated the -- the cost, because it didn't take into account these improvements in -- in, well, in pricing --

MR. DANIEL PEACO: Right.

MR. WILLIAM GANGE: -- going forward, so that the capital costs then would for -- for wind farms would be less than what was put forward?

MR. DANIEL PEACO: Yeah, in their -- in their wind plan, they obviously -- every -- everyone of their plans goes seventy-eight (78) years, and so -- which is beyond the life of a wind farm, and so they were replacing in kind. And they -- they assumed that the costs stay constant, as you replaced in kind through time. And so we -- in our adjustment, we assume when you replaced, you replaced with a -- with a somewhat improved cost performing option.

MR. WILLIAM GANGE: In the analysis that was undertaken by Mr. Stevens, he was somewhat critical of the construction period.

And, Diana, if you could go to GAC evidence and page 29 -- just -- yes, that -- right there, that's perfect.

And -- and what Mr. Stevens was referring to in here -- and I'll -- I'll go to it in a -- in a second -- was that Manitoba Hydro had used a -- a three (3) year time period. And as you can see, approximately, 3 percent of the capital costs were incurred in the first year, 95 percent in the second, and 2 percent in the third year.

Do you see that part, sir?

MR. DANIEL PEACO: Yes, I do.

MR. WILLIAM GANGE: And, Diana, if you can go to La Capra undertaking Tab 308. Thank you.

And -- and you see, sir, that -- that Manitoba Hydro in answer to one of your undertakings -- this is 308, and I believe, it's slide 22 -- and it sets the -- the costs, as you can see there -- their -- their numbers are four point six one (4.61). In year 1, one twenty-eight point nine six (128.96) --

MR. DANIEL PEACO: I'm sorry, could you give me the -- the cell reference here?

MR. WILLIAM GANGE: I'm looking at -- under generating stations, sir.

MR. DANIEL PEACO: Okay.

MR. WILLIAM GANGE: Thank you, Diana.

So four six one (4.61) in first year, one twenty-eight ninety-six (128.96), and two point six four (2.64) in the third year?

MR. DANIEL PEACO: Yes, I see that.

MR. WILLIAM GANGE: And Mr. Stevens's comment was that -- that, that given the relative short time period that a wind project could be put into operation, that those numbers would be better distributed on the basis of 3 percent in the first year, and then splitting the balance the other 97 percent half way, 48 1/2 percent and 48 1/2 percent in years 2 and 3.

In response to that, sir, in -- in your experience, is it likely that 95 percent of the costs are going to incur -- be incurred a year prior to the implementation of the wind farm?

MR. DANIEL PEACO: Well, I think probably, Mr. Stevens's assumptions would be more consistent with some of the recent wind farm developments. Obviously, in -- in the US with production tax credit deadlines, we've seen projects go up in a hurry. And this -- the, you know -- so spending, you know, within the twelve (12) to eighteen (18) months of operation is -- is pretty typical for some of the ones that have recently been built.

MR. WILLIAM GANGE: Thank you.

THE CHAIRPERSON: Does it matter a great deal? I mean, does it matter -- from -- from the standpoint of what we're doing here, does it matter a great deal in -- in terms of the outcome? It wouldn't matter a great deal, would it?

MR. DANIEL PEACO: It would -- it would change the present value stuff of the -- of the investment a little bit. You know, obviously it -- it matters when you're developing the project, but in -- relative to the scale of some of the other changes we were suggesting this would -- this would be a much smaller perturbation in the overall economics. But obviously it would be -- it would be somewhat of an improvement.

CONTINUED BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: With respect to the project life, sir, I believe that your evidence is that -- that Manitoba Hydro underestimated the project life?

MR. DANIEL PEACO: Yeah, we've -- we've -- in -- in the analysis we did is, we -- we used a twenty-five (25) year life, which we've seen accorded in many projects, as opposed to the -- the twenty (20).

We -- the twenty (20) is -- is a much more conservative perspective on -- on the life of a wind farm, and we've seen a -- a number of projects that have been put forward as twenty-five (25) year life.

MR. WILLIAM GANGE: And so when Mr. Stevens used twenty-five (25), that's -- that's consistent with your experience as well?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: Thank you. Mr. Stevens also indicated that -- that if you're going to be doing a levelized cost analysis with respect to the wind farms that you ought to extend that levelized cost analysis out sixty (60) years, so that you're comparing apples to apples.

Would you agree with that?

MR. DANIEL PEACO: I guess I'm not quite sure if I have enough context to answer the question. Would --

MR. WILLIAM GANGE: That -- that -- Mr. -- in -- in terms of -- of doing the levelized cost, what Mr. Stevens indicated in his evidence is that what one ought to be doing is taking into account the fact that if you've got turbines that are twenty (20) years or twenty-five (25) years, that -- that you ought to be taking into account the -- the lifetime of the project as sixty-eight (68) years, so that you're doing a comparison of the wind project on -- at -- for the same time period as the time period that's being used for the levelized cost analysis of the -- of the dams.

MR. DANIEL PEACO: So if you're doing a comparative analysis --

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: -- on the levelized cost ratio between a hydro project and the wind, yeah, you -- you would want to make some adjustments, so you were looking at -- you make adjustments for the differences in life, sure.

MR. WILLIAM GANGE: Okay. Thank you. With respect to wind integration costs, sir -- and, Diana, if you could go to Manitoba Hydro Exhibit 136.

(BRIEF PAUSE)

MR. WILLIAM GANGE: This -- this question came up during the cross-examination of the Hydro panel, sir. And what was noted was that -- that in the economic analysis, in Appendix 9.3, the -- the wind integration costs were cited at four dollars twenty-two cents ($4.22) per megawatt hour in 2005 US dollars, and four dollars ninety-nine cents ($4.99) for

1,000 megawatts of wind generation, and again in 2005 US dollars. But that the wind integration costs in response to the Information Request that you had provided used different numbers than what was in the economic analysis.

So that's the background to this question.

MR. DANIEL PEACO: So can I -- just to clarify. So you're referring to the difference between the -- the two (2) numbers in the bullet and eight-forty-five (845)?

MR. WILLIAM GANGE: That's correct, sir. The -- the -- what was -- what was used in -- in the answer to your IR was eight-forty-five (845) rather than those four-twenty-two (422) or four-ninety-nine (499).

MR. DANIEL PEACO: Right. But -- and those are -- those are different by currency and -- and year of dollars?

MR. WILLIAM GANGE: Yes, correct.

MR. DANIEL PEACO: Okay.

MR. WILLIAM GANGE: Can -- can you comment, sir, on -- on -- now, the -- the statement that's made is that the value of eight dollars and forty-five cents ($8.45) is consistent with the wind integration cost used in the economic analysis and -- and represents an average integration cost for a significant wind billed out over the detailed study period ending in 2047/'48.

Do you understand what that -- what that -- that part of the undertaking is res -- responding? Or what -- what does it mean? I don't understand it.

MR. DANIEL PEACO: Well, give me a second.

(BRIEF PAUSE)

MR. DANIEL PEACO: Okay. So -- so they're using this number in their -- it says, "Levelized cost," so I assume this is a levelized cost that was used in their screening analysis. Is that -- is that --

MR. WILLIAM GANGE: That's correct, sir.

MR. DANIEL PEACO: Okay. And so they're -- they're apparently providing some explanation of what was in their levelized cost analysis. As I sit here, I don't know the currency exchange bet -- and the -- and the inflation adjustments necessary to convert four twenty-two (422) and four ninety-nine (499) to 2012 Canadian dollars. So I'm -- I'm kind of at a loss to know --

MR. WILLIAM GANGE: Okay. The --

MR. DANIEL PEACO: -- to know that.

MR. WILLIAM GANGE: -- the question may be unfair then. I'll -- I'll move on to the next --

MR. DANIEL PEACO: Okay.

MR. WILLIAM GANGE: -- point. Thank you, sir. And, Diana, if you can go to Exhibit 117, Manitoba Hydro Exhibit 117.

(BRIEF PAUSE)

MR. WILLIAM GANGE: This is a similar type of question, sir, because the -- the material that was used in -- in the Appendix 7.2 of the NFAT submission used a fixed O&M cost of thirty nine dollars and fifty-five cents ($39.55), and then the economic analysis used forty-six dollars ($46) per kilowatt hour.

Did -- did La Capra take a look at these O&M costs to determine which one would be the appropriate one to use in -- in the analysis?

MR. DANIEL PEACO: Let me just be clear what you're -- so you're referring to which numbers?

MR. WILLIAM GANGE: So in the -- in Appendix 7.2 of the NFAT submission, the O&M cost that was used was thirty-nine dollars and fifty-five cents ($39.55) per kilowatt year. That's -- that's the number that's in the first paragraph.

MR. DANIEL PEACO: Right.

MR. WILLIAM GANGE: And then in the economic analysis, the fixed O&M costs had been increased from thirty-nine fifty-five (39.55) to forty-six dollars ($46) per kilowatt year. And that's in the first line of the second paragraph.

MR. DANIEL PEACO: Right.

MR. WILLIAM GANGE: And the question that -- that I'd like to know is whether La Capra did any independent analysis of this with respect to choosing which of those -- which of those costs properly reflected the O&M cost.

MR. DANIEL PEACO: We -- we didn't -- we didn't spend a lot of time on that. Again, I think it was -- the numbers are -- are different. But -- but in looking at -- when -- when we went through and -- and looked at all the costs that we've talked about here to decide what to feature in -- in our analysis, this -- this one didn't seem like it was -- I mean, they could be different, but it -- but it would be a smaller perturbation in the overall economics than the ones that we -- the issues we did look -- feature in our analysis.

But -- but clearly, if you were going to refine your analysis, you'd want to look at -- at all the inputs, including --

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: -- including fixed O&M.

MR. WILLIAM GANGE: And if -- if -- I take it then that it follows logically that if one were going to be preparing a capital cost for wind, one would want these numbers to be as accurate as possible.

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: Thank you.

(BRIEF PAUSE)

MR. WILLIAM GANGE: And, Diana, if you could go to -- back to the GAC evidence, page 31 -- 32, at the bottom.

(BRIEF PAUSE)

MR. WILLIAM GANGE: What Mr. Stevens

then did was to prepare a revised levelized cost calculation. And he used the -- the following assumptions: that -- that the capital cost would be updated using the declines, similar to what you talked about, in terms of the weakness in the Manitoba Hydro analysis.

That would be a proper calculation, would it not, sir?

MR. DANIEL PEACO: I'm sorry, which one?

MR. WILLIAM GANGE: Use -- to take into account the declines in the capital cost?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And in order to -- to revise the levelized cost, one would also want to take into account the difference in the equipment life for the turbines from twenty (20) years to twenty-five (25) years?

MR. DANIEL PEACO: Yes, that's the same adjustment we did.

MR. WILLIAM GANGE: And -- and Mr. Stevens also reduced the wind integration cost on the basis that it had been overstated. And if one -- if one accepts that wind integration cost was overstated -- and -- and I -- I understand, sir, that that's not something that you want comment on -- upon.

But -- but if one keeps that conclusion, that would be another thing that would be proper to take out of the levelized cost calculation, correct?

MR. DANIEL PEACO: If the wind integration costs were lower, then obviously that would improve the levelized cost analysis.

MR. WILLIAM GANGE: Right. If we could go to page 33, Diana, the next page, and right down to the bottom. You did a similar thing; you reduced -- you -- you made the changes to the capital cost, correct, sir?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: You made changes to the capacity?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: You made --

MR. DANIEL PEACO: Capacity factor.

MR. WILLIAM GANGE: And you made changes to the lifetime?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And you made changes to -- with respect to the cost decline?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And as a result of

that, sir, what was your -- the change in your calculation?

MR. DANIEL PEACO: Well, actually, I think I featured that in a slide yesterday. I -- I think the number -- if I recall, the number was something like a change in the overall cost of -- the present value cost of the plan, the Wind Plan of -- of about a billion two (1,200,000,000). Is that what you're looking -- is that the number you're looking for?

MR. WILLIAM GANGE: Yeah, that's -- that's fine.

THE CHAIRPERSON: It's covered off in slide 35 of the presentation from yesterday.

(BRIEF PAUSE)

CONTINUED BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: And -- and in looking at this one, sir, when you say, "change in cost of plan versus Preferred Development Plan," are -- are the numbers on the right -- do they take into account the revised numbers that Manitoba Hydro has brought, which then leads you to your revised Appendix 9?

MR. DANIEL PEACO: No. No, these are -

- that's the -- I believe these are all -- I don't know what this says, but I believe these are the original -- orig -- these -- these are original 2012 assumptions.

MR. WILLIAM GANGE: Would it be possible to redo this chart on the right using the updated numbers so that -- so that there's a -- a current change in cost of plan versus the current Preferred Development Plan?

(BRIEF PAUSE)

MR. JOHN ATHAS: Just to make sure I understand, the -- the numbers here are comparative costs of the plans, right. So the -- then the -- the change that you're wanting, it would be the change in the first bar?

MR. WILLIAM GANGE: Yes.

MR. JOHN ATHAS: Okay. That's -- we have that number available.

MR. WILLIAM GANGE: So -- so you could provide an undertaking to provide a revised chart that's shown on slide 35, using, with respect to the Preferred Plan, the -- the revised numbers?

MR. JOHN ATHAS: So just -- let me try this to make sure we're clear. So we'll -- we'll provide a revised chart that includes the updated capital costs for the Preferred Plan?

MR. WILLIAM GANGE: Okay. Thank you.

MR. JOHN ATHAS: Yes.

--- UNDERTAKING NO. 101: La Capra to provide a revised chart that includes the updated capital costs for the Preferred Plan

CONTINUED BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: And -- and the effect of that would be that the Board would then be able to see where the -- how -- how these two (2) bars on the lef -- whether the three (3) red bars would compare, correct, with -- with that change?

MR. DANIEL PEACO: If I -- if we understand your request correctly, the -- the first red bar, the Preferred Development Plan, would increase.

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: And the other -- the rest would be the same.

MR. WILLIAM GANGE: Yes, thank you.

(BRIEF PAUSE)

MR. JOHN ATHAS: Just to make sure that I understand what the last -- the -- the impact on the Preferred Development Plan economics that Manitoba Hydro put in their presentation for the -- for the 2012 assumptions had the impact of the change being about eight hundred and ninety-eight (898) -- I think it was $898 million of net present value change.

I believe that will be what we increased the Preferred Plan bar by. So it'll go up to -- from a little under three (3) -- a little under 3 billion to a little -- a little bit more, under 4 billion for -- for the picture.

MR. WILLIAM GANGE: I see. So then -- and then the -- the -- what you expect would be that the -- the Preferred Plan red bar would be just slightly less than the adjusted Wind/Gas bar?

MR. JOHN ATHAS: It's probably about an equal amount below 4 billion as it -- as the other is above.

MR. WILLIAM GANGE: Okay. Thank you.

(BRIEF PAUSE)

MR. WILLIAM GANGE: Yeah, I -- I would like the undertaking. I would like to see that graph, if -- if that can be provided?

MR. CHRISTIAN MONNIN: That's fine, Mr. Gange, yeah.

MR. WILLIAM GANGE: Thank you.

--- UNDERTAKING NO. 102: La Capra to provide graph

CONTINUED BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: If we could go to page 33 of Appendix 3A, and just down to -- to the -- the paragraph itself. Thank you.

Mr. Peaco, in -- in this paragraph you indicated that La Capra looked at the impact on the crossover point of using La Capra's onshore wind assumptions in the economic analysis.

And you indicated that the crossover point would move out eleven (11) years to 2057 for the Wind/Gas Plan, and ten (10) years to 2052 for the Wind/Conawapa Plan.

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: That -- that crossover point is -- again that's -- that's prior to the revised numbers?

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: And would those

revised numbers change that crossover point for those -- for those two (2) plans?

MR. DANIEL PEACO: Yes, it would.

MR. WILLIAM GANGE: Is it possible for you -- for you to advise us with the revised numbers what those crossover points would be?

(BRIEF PAUSE)

MR. DANIEL PEACO: Yeah, we could do that. It's -- it's -- I was just checking to see if it was something that was in our -- in our -- the updates that we talked about this morning, but apparently it's not. But it's -- it's -- would be a similar exercise as the -- as the update to Appendix 9 that we talked about this morning.

MR. WILLIAM GANGE: Okay, thank you.

(BRIEF PAUSE)

MR. DANIEL PEACO: So if I -- so the -- they asked us to provide updated crossover point calculations consistent with -- I know I seen the page number here. Is there...

MR. WILLIAM GANGE: Page 3A-28.

MR. DANIEL PEACO: Page 3A-28, provide updated crossover points for the Wind case cited on the bottom of that page with the -- reflecting the change in the Keeyask and Conawapa capital cost.

MR. WILLIAM GANGE: Thank you.

--- UNDERTAKING NO. 103: La Capra to provide updated crossover points for the Wind case, reflecting the change in the Keeyask and Conawapa capital cost

CONTINUED BY MR. WILLIAM GANGE:

MR. WILLIAM GANGE: Thank you, sir. I just have to find something...

(BRIEF PAUSE)

MR. WILLIAM GANGE: If we could go to page 14 of the Addendum 9A.

(BRIEF PAUSE)

MR. WILLIAM GANGE: Oh, Diana, you know what? I -- I've got a different page.

MR. DANIEL PEACO: This is -- what's on the screen is -- is the up -- is the update package? Is that what you're...

MR. WILLIAM GANGE: I -- I'm looking at, yeah, 9U-7. Yeah. Yes, thank you.

So Figure 21U, that -- that you've prepared here, sir, you've calculated net present values for all scenarios for the selected development plans affected by the new Keeyask and Conawapa costs.

Is that correct?

MR. JOHN ATHAS: That's correct.

(BRIEF PAUSE)

MR. WILLIAM GANGE: And -- and if we could go to Technical Appendix 9B. Sorry, Diana, but 9B.

(BRIEF PAUSE)

MR. WILLIAM GANGE: I'm -- I'm -- Mr. Peaco, I'm looking for Figure 30 on -- on -- in 9B.

Do you know what page that is?

MR. DANIEL PEACO: Figure 30 would be 9A. Because we numbered 9A and 'B' sequentially, so 9

-- I think there were more than thirty (30) figures in 9A, so it would...

(BRIEF PAUSE)

MR. DANIEL PEACO: It should be on page 71, 9A.

(BRIEF PAUSE)

MR. WILLIAM GANGE: You know what, sir, I -- I'm sorry, I'm not -- I -- I don't want to waste time. I -- I'm going to -- I'll -- I'll skip that.

Sir, you've read -- you -- you made certain criticisms of the way that Manitoba Hydro had -- had calculated the cost of wind in your report, sir.

MR. DANIEL PEACO: I'm so -- I'm sorry. I -- I did find the page for Figure 30.

MR. WILLIAM GANGE: You know what, I -- I'm looking at something different and I can't find it and --

MR. DANIEL PEACO: Okay.

MR. WILLIAM GANGE: -- it's -- the world isn't going to turn on this, so I'll -- I'll move on --

MR. DANIEL PEACO: Okay. All right. I apologize. Can you give me the question again?

MR. WILLIAM GANGE: Yes. And -- and this is the ending of my cross-examination, so -- but in your report you made numerous criticisms of the way that Manitoba Hydro has dealt with the wind analysis.

That would be fair?

MR. DANIEL PEACO: That's correct.

MR. WILLIAM GANGE: And Manitoba Hydro gave a rebuttal with respect to your analysis of the cost of wind.

You reviewed Manitoba Hydro's rebuttal evidence, sir?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: And -- and you considered the -- the comments that Manitoba Hydro made with respect to your analysis?

MR. DANIEL PEACO: Yes.

MR. WILLIAM GANGE: Does it change any of the criticisms that were made?

MR. DANIEL PEACO: No. We reviewed it. We didn't really -- I mean, I understand we have a difference of opinion about information that we rely on, but it didn't really -- I think we -- we've explained the information we rely on and it -- and nothing that -- from the rebuttal really changes that?

MR. WILLIAM GANGE: Changes your mind. Just one (1) last point, sir. We heard evidence from a -- a lawyer from Minnesota whose name is Eric Swanson. Mr. Swanson does a great deal of regulatory work in the state of Minnesota. And he indicated that Minnesota has a prohibition against new fossil fuelled base load supply.

Are -- are you aware of that?

MR. DANIEL PEACO: Generally.

MR. WILLIAM GANGE: Do any of your comparisons involving the gas generation in Manitoba take into account the prohibitions of -- of the -- the prohibition in Minnesota with respect to new fossil fuelled load?

MR. DANIEL PEACO: I guess...

(BRIEF PAUSE)

MR. DANIEL PEACO: Let me make sure I understand your question. So the question is, you're -- you're referring to our -- to the natural gas plants?

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: And your question is --

MR. WILLIAM GANGE: What -- what I -- what I'm really referring to is -- is the -- is the fact that -- that power coming into Minnesota, according to Mr. Swanson, that there's a prohibition against new fossil fuelled base load supply.

So with respect to the wind generation, do your comparisons take into account the fact that the -- the wind generation would qualify as part of the base load supply in Minnesota?

MR. DANIEL PEACO: We -- we didn't really look at a specific scenario of sort of building wind for export, if that -- if that's your question?

MR. WILLIAM GANGE: Yes.

MR. DANIEL PEACO: We didn't look at that in particular. We -- we simply sort of looked at the economic assumptions in the wind case that Hydro did. We didn't -- we haven't postulated other scenarios.

(BRIEF PAUSE)

MR. WILLIAM GANGE: And -- and, sir, the -- the scenarios that were run that -- that included wind and gas, did -- did you take into account whether those scenarios could be used for export, given the -- the ban in Minnesota?

MR. DANIEL PEACO: We didn't look at that specifically, no.

MR. WILLIAM GANGE: Okay. Mr. Chair, those are my questions. Thank you.

THE CHAIRPERSON: Now, one (1) obvious question in my mind is the costs that are shown here with respect to wind would not reflect any disparities with respect to the US/Canada? I mean, they're all entirely based on US data. And I'm guessing at -- differences in the values of the, you know, of currency, and I expect higher costs in Manitoba relative to the -- North Dakota.

I mean, all -- all that wouldn't nec -- necessarily be captured in -- in the data that you've examined here?

MR. DANIEL PEACO: That's right. You need to do a more specific analysis than -- I mean, obviously, the -- the material that Hydro put together and that we put together are -- really are, you know, secondary source information to try to get a sense of what ballpark is this -- is this wind resource in and is it worth pursuing. I -- you would need to develop a more specific cost estimate for projects in -- in -- if you were going to do a project in Manitoba.

THE CHAIRPERSON: Did you look at any Canadian data at all? Were you able to find any Canadian data regarding costs associated with --

MR. DANIEL PEACO: We -- we looked -- actually, we -- we spent some time. There's just a lot more data in the US available. And so we -- we -- actually, one of the conversations we had with Mr. Zavadil, is like, You know, we can't find any Canadian data; do you know where you can -- you know, and so he was -- you know, so we looked around, but there's just a lot more data from the US projects available.

So that's -- I mean, unfortunately, that's -- that's most of what the information is. It goes to the -- the core cost of the projects, but any -- any local, you know, specific cost differences would be -- would have to be developed. And we -- we just didn't find a lot of data on that.

THE CHAIRPERSON: Do you know of any utilities in the US that generate their own -- that -- that build their own wind as opposed to having a third part -- I mean, not so much building. In Manitoba, there are third-party generators that feed wind into the system and Manitoba pays a fee.

In the US, is that the practice as well? I mean, or do they -- utilities actually have -- build and -- and operate their own wind?

MR. DANIEL PEACO: Well, yeah, there is -- there is some. I mean, I would say the preponderance is -- is third-party contracts. But, you know, actually, we worked on a couple cases. Oklahoma Gas and Electric builds and owns and operates a couple of their own wind farms. And, so -- that -- that's one (1) example of a utility that actually owns and operates wind facilities that I'm aware of.

I don't know, John, if you're aware of any others?

MR. JOHN ATHAS: Yeah. A fa -- a wind project that's that's less than 100 megawatts I know first hand that is -- that it's owned by the Green Mountain Power, the utility in Vermont. They go -- they would -- had direct ownership. I -- I think there's -- that they are other utilities studying ownership in -- in their IRPs that we've reviewed, but I -- as well.

THE CHAIRPERSON: I think that's it for the questions from the panel. So I'm prepared to turn over the microphone to you, Mr. Williams. Good morning.

CROSS-EXAMINATION BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Good morning, members of the panel, and good morning, La Capra.

MR. DANIEL PEACO: Good morning.

MR. BYRON WILLIAMS: Mr. Chair, there are two (2) exhibits that we'd like to submit to assist the discussion this morning and, perhaps, early afternoon. One (1) is an excerpt from the Brattle Group's Integrated Resource Plan for Connecticut. It's a four (4) page document. And we would suggest that be marked as CAC Exhibit 45-12.

--- EXHIBIT NO. CAC-45-12: Excerpt from the Brattle Group's Integrated Resource Plan for Connecticut

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: And I just note that -- and earlier we had submitted a bit more of this document in our discussion with the good doctor from the Brattle Group way back in week 2.

And the other document is just an excerpt from the Hyd -- Hydro Exhibit 87. It's a single page. I'm going to be doing some handwriting on it; I don't know if you will choose to or not. But we would suggest that be marked as CAC Exhibit -- Exhibit

45-13.

--- EXHIBIT NO. CAC-45-13: One (1) page excerpt from
Hydro Exhibit 87

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: And if Diana could -- just to start with, I'd like to have near at hand La Capra's Exhibit from this -- yesterday, 12-2, which is the addendum, page 9U-24; as well as Manitoba Hydro Exhibit 104-2. And maybe if we could pull up page 9U-24 from the Exhibit, being La Capra Associates Exhibit 12-2.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Mr. Athas, I suspect you recognize the -- this -- this page?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: And I'm just going to follow-up a bit of a discussion you had with Board Member Kapitany and the Chairperson Gosselin -- Chairperson Gosselin this morning. And I've just been trying to wrap my head around the derivation of -- of the numbers here.

And let's just start on the extreme -- we note that in the note in the middle of this figure, this looks to be an update responding to the six (6) plans analyzed in the Manitoba Hydro 2014 update.

Is that right, sir?

MR. JOHN ATHAS: Correct.

MR. BYRON WILLIAMS: And that update would be Manitoba Hydro Exhibit 104-2.

Would that be fair, sir?

MR. JOHN ATHAS: I believe so.

MR. BYRON WILLIAMS: Subject to check. Okay. And let's start with the -- the figure for the NFAT PDP (phonetic) in the extreme right -- right hand. You're suggesting a net present value of $798 million.

Is that right, sir?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: Now, if we could just flip to Manitoba Hydro Exhibit 104-2 for a moment, page 2, and scroll down to the -- the bottom. Keep scrolling, please -- oops -- perfect.

And, sir, if we look in the bottom right-hand corner of this Exhibit 104-2, page 2, we'll see under the column for Plan 14, that exact same 798 million figure.

Is that right, sir?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And that is the net present value for Plan 14, taking into account the WPS sale, correct?

MR. JOHN ATHAS: Correct.

MR. BYRON WILLIAMS: And it would also be taking into account the updated capital estimates, correct?

MR. JOHN ATHAS: Correct.

MR. BYRON WILLIAMS: And the other thing that would be in there would be the -- what used to be the proposed investment by WPS in the transmission line south of the border, agreed?

MR. JOHN ATHAS: That -- that's my understanding.

MR. BYRON WILLIAMS: Okay. So if I just compare that Plan 14 to the Plan 15 -- excuse me, Plan 5, immediately adjacent to it we'll see -- you'll accept, subject to check, if I was to subtract the seven hundred and ninety-eight (798) NPV minus the six sixty-seven (667) NPV, I'd get a figure of $131 million, agreed?

MR. JOHN ATHAS: Agreed.

MR. BYRON WILLIAMS: And again, that's looking at Plan 5 including the WPS sale, agreed, sir?

MR. JOHN ATHAS: Agreed.

MR. BYRON WILLIAMS: And we'll come back to this, but if we could just flip over to 12-2, La Capra Exhibit, page 9U-24 for a second. And, sir, moving over to the blue column -- blue bar above Conawapa, I see that exact same $131 million figure.

Do you see that, sir?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: And presumably, that would represent the difference between Plan 14 and Plan 5, agreed?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And again, it would include in this analysis the WPS sale?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: If we can flip back to Exhibit 104-2 for a moment, sir...

(BRIEF PAUSE)

MR. BYRON WILLIAMS: In terms of the ref/ref/ref figures, the highest under this result, being Hydro Exhibit 104-2, is from Plan 4 at $917 million NPV, sir? Is that right?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And if I were to compare that to Plan 5, two (2) -- two (2) columns over, of 667 million, would that suggest a difference, sir, of roughly 250 million?

MR. JOHN ATHAS: That looks about right.

MR. BYRON WILLIAMS: So if we could just flip back to the other page, 9U-24, the red bar, sir, of 256 million, you know, give -- give or take 6 million, would be representative of the difference in value between Plan 4 and Plan 5?

Would that be fair, sir?

(BRIEF PAUSE)

MR. BYRON WILLIAMS: In -- in essence, sir, you're going --

MR. JOHN ATHAS: Yeah.

MR. BYRON WILLIAMS: -- you're looking -- comparing the value of a plan with 250 megawatts versus a plan with 750 megawatts?

MR. JOHN ATHAS: That -- that's correct. We looked at the -- for the value of these components, multiple comparisons, with and without the components, to try to not -- not isolate one (1) sequence of additions, because they weren't necessarily -- the sequence wasn't as critical to try to get here as -- as just the general value.

MR. BYRON WILLIAMS: And -- and, sir, that's fair enough, and you've -- you've made it clear it's illustrative. But there were some questions by the Chair earlier on about whether the WPS sale was -- was in here.

And -- and it is in here, first of all, agreed?

MR. JOHN ATHAS: Yes, it's in the comparisons at some point.

MR. BYRON WILLIAMS: And just finally, sir, we don't need to do the -- the math, but the $459 million difference in the second column between the new 250 megawatt and the -- and the Keeyask by itself would in essence be a comparison between Plan 4 and Plan 2, agreed?

MR. JOHN ATHAS: I believe that's -- I believe that's correct. The -- the -- well, the four fifty-nine (459) -- I would have to see the other chart, if you want -- if we could put up the other chart right now.

MR. BYRON WILLIAMS: We could go back to that, for sure. And here, sir, you'll see in the --

we're comparing the Plan 4, 917 million, minus the Plan 2, forty-nine (49). I might get a -- a slightly smaller figure of 428 -- 28 million.

But, in essence, that's the two (2) plans that you're comparing.

MR. JOHN ATHAS: And generally that's the effect -- the same effect, because the difference in the Keeyask in-service dates makes it not a direct comparison.

MR. BYRON WILLIAMS: And -- and that's helpful. And, again, we were just trying to understand that exhibit for our client's benefit. Mr. Peaco, I want to focus on the -- one (1) of the main messages of your reports for a moment.

Would it be fair to say that even before the significantly increased capital estimates for Keeyask and Conawapa, it was the view of La Capra that the economic case for the Preferred Development Plan was marginal and required a very long-term perspective?

MR. DANIEL PEACO: Yes, it sounds like a quote from our first report.

MR. BYRON WILLIAMS: An staying in that pre-$800 million capital estimate update --

MR. DANIEL PEACO: Okay.

MR. BYRON WILLIAMS: -- based upon your

sensitivity analysis, it was your view that the economics of the business case were not robust.

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And if we could turn to page 72 of your exhibit from yesterday. I believe it's La Capra 45. And if we could pull that up on the screen. Thank you. And I want to direct your attention to the third and fourth series of bar graphs on the right-hand side.

Sir, would it be fair to say -- and to back up, sir, the -- the third bar graph over captures the updated capital costs and removes the WPS investment, correct? The -- the third row of bar graphs?

MR. DANIEL PEACO: That -- that's correct. Yeah. It's stated right below that group of bars.

MR. BYRON WILLIAMS: And how would you des -- is it okay with you, sir, if I call it the third set of bar graphs?

Or is there -- is there something more elegant that you can suggest?

MR. DANIEL PEACO: No, given that we -- we culled this together over the weekend, there wasn't much elegant about it. But go ahead.

MR. BYRON WILLIAMS: An the fourth or the -- on the ext -- extreme right-hand side you're putting in some estimates of what the impact of adding Level 2 DSM would be.

MR. DANIEL PEACO: Yeah, that's correct.

MR. BYRON WILLIAMS: And focussing on the Hydro perspective, the Manitoba Hydro view, rather than the provincial perspective, it would be fair to say that the -- adding increased capital costs and review -- removing the WPS investment is relatively bad news for the Preferred Plan in comparison to the other plans presented here?

MR. DANIEL PEACO: The -- that's correct. Obviously, taking -- adding cost in the -- in the form of the WPS investment to the Preferred Plan is obviously negative to that plan. And the -- relative to the -- the plan as postulated in the prior bars. And the analysis that -- that Hydro has presented on the plans showing that DSM has -- has benefit in that plan, but it has more benefit in the plans it's being compared to. So it's a -- it -- it ends up in a net move -- negative movement for the Preferred Development Plan when compared to the others.

MR. BYRON WILLIAMS: And so if -- if

your perspective pre-significant updates was -- was that the -- the economic case for the PDP was marginal and not robust, would it be fair to say that your confidence in the Preferred Plan has been further shaken, sir?

MR. DANIEL PEACO: Well, the economics clearly have eroded.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Sir, have you memorized the plans? Do you have them off in the --

MR. DANIEL PEACO: We sill have a scorecard here, but close -- we're -- we're getting close.

MR. BYRON WILLIAMS: Okay. Well, rather than flip back and forth, let's stay on this page and -- and see how good my memory is, and yours.

Would it be fair to -- to say that, when we look at this -- this page 72, when we see Plan 5, that is Keeyask with gas, a 750 megawatt interconnection, and both the Minnesota Power and Wisconsin Public Service sales?

MR. DANIEL PEACO: It's my understanding, yes.

MR. BYRON WILLIAMS: And when we see Plan 6, that contains the 750 megawatt interconnection and the Minnesota Power sale, but it can be distinguished from Plan 5 in that gas comes at a later date and that it does not include the WPS sale?

Would that be fair?

MR. DANIEL PEACO: That's my understanding as well, yes.

MR. BYRON WILLIAMS: And Plan 4 features a 250 megawatt interconnection and a 250 watt -- megawatt Minnesota Power sale, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: It does not include the bigger interconnection or the WPS sale, correct?

MR. DANIEL PEACO: Correct.

MR. JOHN ATHAS: Just -- just for clarity. When you -- every place that you said, "WPS sale," it's sale and the WPS investment on the -- on the US side.

MR. BYRON WILLIAMS: Fair enough. But not on -- not on this particular graph, in the third, inelegantly stated, set of bar graphs to the -- to the right?

MR. JOHN ATHAS: At that point, the

effect is removed.

MR. BYRON WILLIAMS: Okay. Thank you. Now, Mr. Peaco, you referenced this yesterday, but there's some evidence on the record that -- that Plan 4 has either -- either Hydro has committed suicide with it or Minnesota Power has offered the death knell to it.

You've -- you've heard some evidence to that effect?

MR. DANIEL PEACO: I've heard it's -- it's been deemed hypothetical.

MR. BYRON WILLIAMS: Yes, and whether it's a self-inflicted hypothetical, I guess, is -- is the question. But if we focus on that -- the third bar to the right, that would -- would suggest that if Plan 4 in the dark blue was still in play, it -- it has become quite attractive from the Hydro view.

Would that be fair?

MR. DANIEL PEACO: It's -- it's the -- of the plans featuring hydro investment, it's the -- it's the best -- has the best economic performance of the -- of their plans at this -- at -- at that juncture, yes.

MR. BYRON WILLIAMS: And using this analysis --

THE CHAIRPERSON: Sorry, Mr. Williams, could you repeat the question, please?

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: I'll do my best. I was suggesting that -- that Plan 4 in the dark blue, if it is still in play, would be quite attractive from the Hydro view.

MR. DANIEL PEACO: Well, quite attractive at diff -- being -- than being the best here, so I'm -- as long as we're clear that it's attractive relative to the other plans that feature hydro.

MR. BYRON WILLIAMS: Yeah, and I had your answer. Is that -- that satisfactory, Chair -- Mr. Chair?

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Focussing on the plans that are presented here with -- all with hydro components, and again on the third set of bar -- bars to the right, after Plan 4 under this analysis, the next most attractive for this particular scenario would be Plan 6.

Am I right, sir?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And we've got the approximations of adding Level 2 DSM in the far right series of graphs. And again, sir, Plan 6, at least on -- on a estimated look, appears relatively attractive in comparison to Plan 5 and -- and also Plan 14?

Would that be fair? Again from the Hydro view.

(BRIEF PAUSE)

MR. JOHN ATHAS: The -- what -- in looking at the fourth set of --

MR. BYRON WILLIAMS: Yeah.

MR. JOHN ATHAS: Yeah, so that -- that shows that under this metric that there's more value for -- for Plan 6 than the -- than 5 and 14.

MR. BYRON WILLIAMS: And our clients were certainly glad to hear that. They remain interested in this plan.

I -- I wonder if I could ask, Diana, to pull up Hydro Exhibit 129-7? And go to the next page.

And I don't know if La Capra's had a chance to see this exhibit or not. Is this one familiar to you?

(BRIEF PAUSE)

MR. JOHN ATHAS: I have not seen this exhibit, but many of the numbers were represented in -- in the -- except for Plan 6, I believe, and would have been represented in one of the other -- various other exhibits.

MR. BYRON WILLIAMS: Are you okay, sir, with me running through a little bit of this with you and then getting some -- some commentary from you?

MR. JOHN ATHAS: Yeah. I won't comment on what I am not comfortable with.

MR. BYRON WILLIAMS: What this -- if we go to the Level 2 DSM column and leave -- leave out the pipeline added category, you'll agree with me that there is a comparison of three (3) of the plans, being Plan 6, Plan 5, and Plan 14?

Would that be fair?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And focussing simply on this review of these three (3) plans, this would suggest that the lowest net present value would be the Hydro Preferred Plan at $45 million?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And one would see Plan 6 at about 386 million net present value, agreed?

MR. JOHN ATHAS: Yeah, that's the number there from Hydro's analysis.

MR. BYRON WILLIAMS: And Plan 5 at -- at four hundred and ten (410) NPV?

MR. JOHN ATHAS: Correct.

MR. BYRON WILLIAMS: And -- and so, sir, would this suggest to you that, again, at the two (2) times DSM level, Plan 6 and -- and Plan 5 are -- are relatively stronger in comparison to the Preferred Plan?

MR. JOHN ATHAS: At the Level 2 DSM in the 2013 analysis, that's correct.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: And we'll see Hydro has gone on to perform some Level 2 DSM analysis with pipeline load added for Plan 5 and Plan 14, agreed?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: But not for Plan 6?

MR. JOHN ATHAS: It doesn't show up here.

MR. BYRON WILLIAMS: And again, for Level 3 DSM, we'll see that analysis has been prepared for Plans 5 and 14 with and without pipelone -- pipeline load, agreed?

MR. JOHN ATHAS: That's -- that's correct.

MR. BYRON WILLIAMS: But none for Plan 6?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And I guess -- or, I know, the -- the question to you is: Based on the results of Level 2 DSM, would -- would Plan 6 be a plan that you would like to see some more analysis of, compared to these other -- other plans, sir?

MR. JOHN ATHAS: It probably isn't the plan that I would want to see more analysis of. But -- but Plan 6, the -- and there may be more analysis than what's on that, than what's even on the chart that is for some of the other -- other boxes, but I -- I would certainly -- if -- if one was going to use the pipeline load cases as -- as having importance versus the no pipeline load it would probably be a good -- a good idea to see Plan 6 analyzed with the pipeline load.

MR. BYRON WILLIAMS: And I was intrigued by your -- the first few words of your response. I think you said it -- or you suggested that there might be another plan you'd like more analysis on, sir.

Did I -- or did I mishear you?

MR. JOHN ATHAS: The -- the first level of analysis that I wish I had time to do, as -- as opposed to doing the addendum, would have been to see if there -- if there's any implication that other plans are -- would be -- it would be very important to do those -- that -- that analysis. I have not done that comparison to say -- to do inferences to the other plans. So I think that the -- that this -- it's an important step at least to eliminate the -- whether the other plans need -- need the detailed analysis.

MR. BYRON WILLIAMS: And so what I think I hear you saying, sir, is that with these material changes in circumstances, being both the change in capital plans and the changes in DSM estimates, that there is further evaluation of -- of some of the other plans that you would have wanted to see to elim -- either in -- include them as contenders or eliminate them?

MR. JOHN ATHAS: Well, just to make

sure, there -- there isn't a charge for us to conclude of -- of a plan. In the -- there is a charge of us to provide a full array of metrics, so that decision makers can see as much information that they want to place importance on for making their decision and conclusion. So that -- that filling out more -- on a more consistent basis the same metrics for more plans is -- is generally what I wish I had time to do.

MR. DANIEL PEACO: If I could add to that. In the presentation yesterday, you know, we -- we went through an exercise to use the information that we did have in hand from the analyses to triangulate as close as we could to what would be -- in -- in this case I think we kept Plan 6 in because if you -- if you recall the discussion I had yesterday afternoon regarding the pathways. I think what you're saying about Plan 6 is that it excludes the -- the WPS investment and the WPS contract.

And to my understanding the -- basically, the -- the refined asset that Hydro has on the table today is closer to Plan 6 than other of their other plans. And so we were -- we were kind of hoping we would have had Plan 6 to work our stuff together for the -- for the presentation, because that is the closest approximation to what we understand they're not putting forward, given that the -- the WPS contract is contingent on Conawapa. And I don't know if that's where you're going, but that -- I just wanted to tie it back to that discussion yesterday.

MR. BYRON WILLIAMS: Fair enough. I'm -- I'm going in a couple different places, but let's -- we'll come back to that thought in just a -- a couple of moments. Let's go back to slide 72 of La Capra-45 for a moment.

And, Mr. Athas, with the additional information from Hydro Exhibit 129-7, would it be possible to update the extreme right series of columns at least for Plan 14, Plan 5, and Plan 6?

(BRIEF PAUSE)

MR. JOHN ATHAS: I'm not -- I'm not sure if I could do it for Plan 6 because it did not have the base -- the base DSM amount in that -- in that exhibit. So I'd have to -- have to think about how to get that.

Because these are -- the effect that I put -- you put into Lev -- DSM Level 2 is, in this comparison, is the change in economics of -- I -- I guess -- I think -- yes, you're right. You would be able to do -- I'd be able to fill in the numbers from that -- that exhibit into these bars.

MR. BYRON WILLIAMS: But you would not be able to fill in Plan 4, because it does not appear that there was a -- a two (2) times DSM for Plan 4 on the record.

MR. JOHN ATHAS: Actually, can we go back to exhibit -- I think that the -- the answer is I can only do it by approximation versus put it in, because I believe the other exhibit that -- that Manitoba Hydro filed --

MR. BYRON WILLIAMS: The 29-7, sir.

MR. JOHN ATHAS: -- filed is 2013 information. This -- this bar chart on -- on page -- on slide 72 is 2012 information, so that it's not a direct one (1) for one (1) insert. There has to be approximations and judgment placed to get -- to make the change from the third set of bars to the fourth set of bars.

MR. BYRON WILLIAMS: Fair enough, sir. And just so I understand, would that be any more precise than the striped bars that currently appear in La Capra 45, slide 72, on the extreme right?

Would this information assist, or -- or not?

MR. JOHN ATHAS: Yeah, I'm not sure if much would change, but I don't -- I haven't focussed on the Plan 6 information as much that -- that's in that exhibit.

MR. BYRON WILLIAMS: Okay. I -- I may have a conversation with your counsel offline at the break, and I'll reflect on that.

(BRIEF PAUSE)

THE CHAIRPERSON: Just from the standpoint of my understanding with respect to Plan 6, the introduction of wind in the generation mix in lieu of gas, what -- what would it -- it would have -- it would have the effect of increasing the gains, wouldn't it?

So -- so Plan 6 involves introducing gas in '31. You know, there's some adjustments have been made by Hydro, and I guess I'm asking a question:

If you introduce gas into this mix as -- I'm sorry, if you introduce wind into this generation mix as opposed to gas, would it have the effect of increasing the -- the values that -- the NPVs of all the -- of Plan 6, or the other plans?

MR. DANIEL PEACO: Well, it's -- it's a little hard to know because what we have -- the only -- the only case we really -- well, we have the wind with Conawapa, and we really haven't -- we'd have to kind of look at that case to see what wind in combination with incremental hydro would -- would do, as compared to the -- the Wind/Gas case that we -- that we've looked at.

So -- but it does also come with the expanded transmission, which gives the system more flexibility obviously if its -- when its got surplus energy. So, you know, it's -- it's -- there's a few things that would be different from -- from the Wind case that we've looked at that, you know, I hesitate to speculate too far on that but those are the things we didn't look at.

But I think that there's a -- maybe the -- the Wind/Conawapa combination case is probably the closest thing to that, and we'd have to take a look at that and see if we could learn something about how that would work together.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Just before we leave this slide -- I'm assuming the Chair was...

THE CHAIRPERSON: I think I'm done.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Before we leave this slide, is the inference I can draw from the last two (2) sets of bars that Plan 5, including the WPS sale, and Plan 6, excluding the WPS sale, are quite competitive?

MR. DANIEL PEACO: I think the -- the economic results of those two (2) cases are -- are similar because the -- basically what you're doing in the case that you keep the contract in is you're advancing the combined cycle unit to basically supply that energy. And so that obviously adds some cost that -- that is making it more or less offsetting so that they're -- they end up performing fairly similarly.

MR. BYRON WILLIAMS: Okay. And if we could turn to slide 68 of La Capra Exhibit 45.

And you set out a variety of pathways on this page, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And the first one, Path 1, includes DSM Level 2, the advancement of Keeyask, Minnesota Power 250, and the 750 megawatt transmission, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: It excludes the

WPS contract?

MR. DANIEL PEACO: Yes, in the sense that -- as I explained yesterday, I know you sort of -- my understanding of the -- the WPS contract that's now signed is -- is specifically structured to be contingent on both Keeyask and Conawapa. So it -- in my mind it -- it doesn't go away -- it's -- but it's an option for -- for a layer step in the pathway.

MR. BYRON WILLIAMS: Okay. Yeah, and I did listen in --

MR. DANIEL PEACO: Yeah.

MR. BYRON WILLIAMS: -- yesterday from afar. In essence, it looks a lot like Plan 6?

MR. DANIEL PEACO: Through -- through the -- the second resource that they add, yes.

MR. BYRON WILLIAMS: and certainly, based upon your striped bar analysis up from slide 72, additional DSM makes this a pretty attractive option?

MR. DANIEL PEACO: Relative to the Preferred Development Plan, yeah.

MR. BYRON WILLIAMS: Now, turning to slide 70 for a moment and -- yeah, scroll down -- that's great -- you'll recall that you had some conversation about this slide with Board Member Kapitany yesterday?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And as I understand it, this slide based upon the 2012 reference case assumptions?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And it includes the updated capital costs, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: It does not update to two (2) times DSM, agreed?

MR. DANIEL PEACO: Correct. The only -- the only change in here is the updated capital costs.

MR. BYRON WILLIAMS: And it -- so it does not include the 2013 updates?

MR. DANIEL PEACO: Yes. If you recall Mr. Athas's presentation this morning, we circled the -- the green circle with the capital costs. This is the first table -- actually, it's -- it's corrected because the -- the first -- the first column is now in -- in the slide is correct. And it needs to be supple -- an errata needs to be in the -- in the package. But this is the update -- only updated exactly as Mr. Athas described this morning of -- on the updates in -- in the tables in 9U.

MR. BYRON WILLIAMS: So if I look at

this table, I should be aware of course that it still includes the WPS transmission in -- investment?

MR. DANIEL PEACO: In those plans it included, yes.

MR. BYRON WILLIAMS: And -- and that, of course, that investment is no more, agreed? It's not -- not in plan anymore?

MR. DANIEL PEACO: The --

MR. BYRON WILLIAMS: The -- there's no longer the WPS...

MR. DANIEL PEACO: Oh, the W -- WPS participation in the transmissions, correct.

MR. BYRON WILLIAMS: So the results when I look at the NPV -- or -- or the -- in terms of Plan 14, which includes that transmission investment -- would be somewhat overstated, agreed?

MR. DANIEL PEACO: Yes. And that's -- that's kind of why we went through the whole waterfall yesterday, to -- to show the rest of that.

MR. BYRON WILLIAMS: And just to finish, the same would be true of Plan 5, where those results would be somewhat overstated, agreed?

MR. DANIEL PEACO: Yes, 'cause it only considers the -- it only changes the updated capital cost.

MR. BYRON WILLIAMS: Going back to a discussion I had with Mr. Athas earlier this morning, and acknowledging that this based upon 2012 assumptions, how important for a final determination in this proceeding, in your view, would it be to up -- update this material to the 2013 assumptions?

MR. DANIEL PEACO: Well, we -- we believe that -- it was our understanding the panel would prefer to have all of current information on cases. And -- and as we discussed yesterday, much of what we did, including the -- the lightly shaded bars on the DSM, we were trying to infer as much as we could about what today's look looks like from what the information that we have, which -- which is less than the -- the inf -- the entirety of the information you -- you'd want to have. And so we would -- we would -- so we were seeking to -- to help the Board get as close to that as -- as possible. So that's the -- the attempt that we were trying to make at putting the --

MR. BYRON WILLIAMS: And I'm --

MR. DANIEL PEACO: -- detail together.

MR. BYRON WILLIAMS: -- not being critical, I'm just trying to get your sense of the judgement. Is it a -- a big deal that we -- we don't have this updated for 2013 -- a medium size deal --

MR. DANIEL PEACO: Well, if we go back -- yeah, if we go back to the...

(BRIEF PAUSE)

MR. DANIEL PEACO: If you go to page 18 of our -- our slide def -- of the same document.

MR. BYRON WILLIAMS: So you're referring to page 18 of La Capra Exhibit 45?

MR. DANIEL PEACO: Yes. Everything that we've talked about in that prior table is -- relates to the one (1) change that shows the -- the red bar labelled eight one eight (818). So that's the change in capital cost.

And what we've mapped in here is our best judgment of the change in expected value of -- of the Preferred Development Plan as a result of all of the changes. So you can see, in addition to the Level 2 DSM and the capital cost, the change in discount rate, which is part of the 2013 assumptions, and the decrease in load, the combination of those take the expected value result for the Preferred Dev -- Development Plan to be less favourable than the All Gas alternative with Level 2 DSM.

So this -- this is sort of our depiction of what we currently understand the -- the nature of the changes as in -- in that one (1) plan relative to All Gas. That's enough of a change to say a lot of the other alternatives really come into economic parity, or better, with the Preferred Development Plan from -- from Hydro's analysis.

And so at that point, it's -- it's a different -- it's a different discussion than you had with the 2012 information, right.

MR. BYRON WILLIAMS: Stay on this page for a minute, because we're -- I was going to ask this of you a little later --

MR. DANIEL PEACO: Okay.

MR. BYRON WILLIAMS: -- while we're here. Would it be possible to get a -- a footnote or a derivation for this -- this slide, being slide 18, showing the -- the sources of your -- of your calculations individually?

MR. DANIEL PEACO: Sure.

MR. BYRON WILLIAMS: And likewise, if I could get that for slide 17?

MR. DANIEL PEACO: Yeah, they would be similar, but we could do that.

MR. BYRON WILLIAMS: So you would undertake to provide a footnoted explanation with sources of the derivation of the calculations underlaying slide 18 and slide 17 of La Capra Exhibit 45?

MR. JOHN ATHAS: One (1) question I was going to ask is I know you've been discussing a lot focussed on the Manitoba Hydro view, so do you -- do you mean slide 16 as the other slide?

MR. BYRON WILLIAMS: Do you know what, sir, you're right; I meant slide 16 and slide 18. I apologize.

MR. JOHN ATHAS: Yes, we can provide derivation work papers.

MR. BYRON WILLIAMS: And just for the reporter, if I misspoke previously, it would be for slide 16 and 18, but the undertaking would be the same apart from that. I'll confirm that with Me. Monnin.

MR. CHRISTIAN MONNIN: Fine. Thank you, Mr. Williams.

--- UNDERTAKING NO. 104: La Capra to provide a footnoted explanation with sources of the derivation of the calculations underlaying slide 16 and slide 18 of La Capra

Exhibit 45

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Now, Mr. Peaco, I -- I think I heard you yesterday suggesting you're an engineer, amongst your many skills?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And, Mr. Athas, as well, you are an engineer amongst --

MR. JOHN ATHAS: That's correct. That's correct.

MR. BYRON WILLIAMS: -- your -- amongst your many skills? And I think I over-spoke you, and the court reporter will yell at me, so I'll just get you to confirm that.

MR. JOHN ATHAS: Yes, I -- yes, I am an engineer.

MR. BYRON WILLIAMS: And going back to another main message from your reports, but without asking you to elaborate, it would be fair to say that you characterize the need date in the arisen -- original Hydro business case as very conservative?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And, again, without asking you to elaborate, but asking you to confirm, in terms of the alternatives considered, you described them as narrow and suggested that they were not fully optimized?

MR. DANIEL PEACO: Correct.

MR. BYRON WILLIAMS: And generally -- and my -- and My Friend Mr. Gange -- My Learned Friend Mr. Gange went over a little bit with you, it would be fair to say that you offer a number of criticisms of Hydro's resource planning analytic framework relating both to the assessment of the need date and the examination of alternatives?

MR. DANIEL PEACO: Yes.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Now, I'm going to, in the next couple of moments, examine some of your analysis of the Hydro resource planning. And I was hoping to use the term 'chicken soup' improvement to suggest an amendment to the planning or decision making pro -- process that would make it better, but be unlikely to make a material difference. And I was hoping to use the word 'magic vaccination' to suggest an -- an improvement to the planning process that would make a material difference to the overall analysis.

But, Mr. Peaco, would chicken soup and magic vaccination be terms that you would normally use an engineer?

MR. DANIEL PEACO: Not one I've used lately.

MR. BYRON WILLIAMS: Are there other terms you could suggest that we use? I'm trying to get at criticisms that would be an improvement to the planning process, but not materially change the analysis versus criticisms that could materially change the analysis.

Are there terms you're more comfortable with than chicken soup and vaccination?

MR. DANIEL PEACO: Material and non-material works for me.

MR. BYRON WILLIAMS: So if I...

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Okay. And we'll come to that in a few moments. I'm not sure if we'll get to it before the break or not. I was hoping we could work with chicken soup, but material and non --

MR. DANIEL PEACO: I'm -- I'm happy to -- I'm happy to work with your -- your terminology, if you'd prefer.

MR. BYRON WILLIAMS: Well, we'll -- we'll play around with that a little bit. But just going back to 68, page 68 of La Capra Exhibit 45, for a moment.

I -- I see that your Path 2 is DSM Level 2 and -- and then Keeyask in 2023.

Is that right?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Presumably there's no Minnesota sale in there?

MR. DANIEL PEACO: That's my understanding.

MR. BYRON WILLIAMS: And no expanded interconnection?

MR. DANIEL PEACO: Correct.

MR. BYRON WILLIAMS: And would you accept that that sounds a lot like Manitoba Hydro Plan 2?

MR. DANIEL PEACO: Yes. With the exception of the DSM.

MR. BYRON WILLIAMS: So to your knowledge, is there analysis on the record which addresses the question of Plan 2 results at a Level 2 DSM?

MR. JOHN ATHAS: I'm not sure that they -- that that case exists. I have to -- I have to check through the exhibits. I -- the exhibit that you had up before might --

MR. BYRON WILLIAMS: 129-7?

MR. JOHN ATHAS: -- I'd verify that it exists right there.

MR. BYRON WILLIAMS: I think it -- I think it might do the opp -- opposite.

MR. JOHN ATHAS: Yeah. Okay. So I -- the fact that it's not there would make me believe that there's not information on that -- on that case.

MR. BYRON WILLIAMS: Okay. And so, subject to check, and of course we're rel -- would you recommend that analysis be undertaken on Plan 2 at Level 2 DSM before the -- the Board reaches a determination in terms of its advice to the -- to the province?

MR. DANIEL PEACO: Given that it's one (1) of three (3) paths that Hydro has left on the table, and we -- and we've included it in our table as well, obviously that's -- that's a plan that you'd want to have as much information as you -- as -- as is possible.

MR. BYRON WILLIAMS: I wonder if we can

turn to your evidence, App -- Appendix 9B, page 84.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: We'll come to this information in just a second, Mr. Peaco, but I believe I heard you -- you can scroll down on this page, please.

MS. ODETTE FERNANDES: Sorry, Mr. Williams, if I could just have a moment with Mr. Peters before you continue?

(BRIEF PAUSE)

MR. BOB PETERS: Mr. Chairman, in light of the hour might this be an opportune time to recess a few minutes early for lunch, so I can continue my discussion?

THE CHAIRPERSON: Is your recommendation that we take forty-five (45) minutes?

MR. BOB PETERS: That would be satisfactory from our --

THE CHAIRPERSON: Okay. Let's do forty-five minutes, which would take us to twenty-five (25) to -- to 1:00. So have a good lunch, everyone.

--- Upon recessing at 11:53 a.m.
--- Upon resuming at 12:44 p.m.

THE CHAIRPERSON: I believe that everybody is in position, so we can resume the proceedings. Hope everybody had a good lunch. And I think we have some documents to acknowledge.

MS. PATTI RAMAGE: Yes, we do. Manitoba Hydro has three (3) exhibits to file. The first one (1) is Exhibit number 163. And this is a written response. It was -- it's provided in response to a question of Mr. Williams. It wasn't recorded as a formal undertaking. But you may recall when Manitoba Hydro's partners were here, Mr. Williams invited the representative, TCN, if he wished to elaborate on TCN's experiences in relation to employment and ongoing training and the challenges they face. And TCN has provided its response, and that's being distributed and marked as Exhibit 163.

--- EXHIBIT NO. MH-163: TCN's experiences in relation to employment and ongoing training and the challenges they face

MS. PATTI RAMAGE: The next is a question again not formally marked as an undertaking. But I certainly believe you, Mr. Chair, intended it to be one. It is -- we're suggesting it be Exhibit 164. It's from transcript page 2,763, and that was your question: Can Manitoba Hydro extrapolate the extent to which a homeowner can reduce his or her bill by adopting DSM? And so the response to that question has been provided.

--- EXHIBIT NO. MH-164: Manitoba Hydro's response to the question: Can Manitoba Hydro extrapolate the extent to which a homeowner can reduce his or her bill by adopting DSM?

MS. PATTI RAMAGE: And then finally, as Exhibit number 165 is a copy of the correspondence from Manitoba Hydro to BBE Hydro Constructors Limited Partnership. And that is the -- the April -- I'm looking for the date. It's -- it's actually dated April 7th, and that's the confirmation of notice to proceed with Phase 2 site work.

--- EXHIBIT NO. MH-165: Confirmation of notice to proceed with Phase 2 site work

THE CHAIRPERSON: Thank you. I believe that we're ready to turn over the microphone to Mr. Williams, please.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: I think we had a moment of excitement with this page, but my understanding is that we can proceed. So we're looking at page 84 of Appendix 9B of Manitoba Hydro's -- excuse me, of La Capra's evidence.

And Mr. -- Mr. Athas, just first to you. I'm -- I'm sorry I have mispronounced your name all this morning, so I apologize for that. I blame Mr. Peters for -- for no reason in particular, but I'm looking for a scapegoat. I'll -- I'll endeavour to do better this afternoon.

Before we turn to this specific paragraph, Mr. Peaco, you -- I believe you interest -- indicated yesterday that you've been staying pretty apace of the hearing, staying up to date with it to the best of your ability?

(BRIEF PAUSE)

MR. DANIEL PEACO: Yeah. I -- I'm not so current with the last couple of weeks, but prior to that, yes.

MR. BYRON WILLIAMS: Okay. And -- and if you're not familiar your -- with -- with anything, you'll -- you will just indicate that?

But you -- you are aware also -- are -- are you aware of evidence from Potomac suggesting that carbon pricing -- that the carbon price scenario and the no carbon price scenario are equally likely?

MR. DANIEL PEACO: I am not. Was that evidence he gave in -- in oral testimony? Yeah, I haven't reviewed the transcript from that.

MR. BYRON WILLIAMS: And again, sir, are you aware whether or not Meyers -- MNP indicated that -- that it was a roughly a 50/50 whether there would be carbon pricing over the first twenty (20) years of the forecast?

MR. DANIEL PEACO: I'll take your representation. I'm not -- I'm not -- I was here for part of their -- their appearance, and I don't recall whether that was discussed when I was in the room or not.

MR. BYRON WILLIAMS: Okay. And fair enough. And would you be aware of any views expressed by the CAC (Manitoba) witness, Dr. -- Dr. Doug Gotham, regarding the prospects for carbon pricing?

MR. DANIEL PEACO: No.

MR. BYRON WILLIAMS: Well, that didn't get us very far. But that's...

It would be La Capra's view, though, that al -- although it is not the largest determinant of potential export revenues for new hydro development, carbon pricing is an important assumption, with significant uncertainty?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: An in order to test the impact of a change in reference scenario pricing as a result of there being no cost for carbon emissions, you undertook an exercise to determine the percent reduction in opportunity export prices, and adjusted your economic analysis to match that.

Is that fair?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: And so just so I understand your methodology, you -- you focussed on the opportunity export, rather you -- you didn't look to firm contract sales?

(BRIEF PAUSE)

MS. MARY NEAL: I believe we looked at non-committed firm sales as well as opportunity sales. But the actual firm contract sales where they have a signed contract, we wouldn't have done anything with those.

MR. BYRON WILLIAMS: Just to make sure I understand, the committed firm contracts were excluded from the analysis; included would be opportunity sales and non-committed firm?

MS. MARY NEAL: Yes.

MR. BYRON WILLIAMS: And you concluded, with regard to the -- a comparison between the Preferred Development Plan and the All Gas Plan over seventy-eight (78) years, that the re -- results were significant, dropping the relat -- the relative Preferred Development Plan benefits by about $340 million.

Is that correct?

MR. JOHN ATHAS: I was looking for a table if you had -- if we had -- yes.

MR. BYRON WILLIAMS: I don't think I can look at the tables that you can look at, sir, so. Now, it -- it looks to me that you may have conducted an analysis for all fifteen (15) development plans.

Is that right?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: So would you be in a position to provide a -- a relative comparison of the impact of a no carbon pricing scenario comparing, for example, Plan 5 against All Gas?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: Okay. Through your counsel, I'm going to ask you to consider an undertaking to provide a comparable analysis for Plans 5, 6, and 2, as was undertaken between the Preferred Plan and All Gas on page 9B -- excuse me, page 84 of Appendix 9B.

(BRIEF PAUSE)

MR. CHRISTIAN MONNIN: We undertake to do so, Mr. Williams.

MR. BYRON WILLIAMS: Is that satisfactory for the reporter?

--- UNDERTAKING NO. 105: La Capra to provide a comparable analysis for Plans 5, 6, and 2, as was

undertaken between the
Preferred Plan and All Gas
on page 84 of Appendix 9B

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Mr. Peaco, this can probably go to you. You've already shared your prelimin -- preliminary thoughts on the Hydro need analysis and alternatives analysis.

Do you remember that conversation we had earlier this -- today?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Would it also be fair to say that La Capra formed the opinion that options such as wind and solar, whose economics can be expected to materially improve over the planning horizon, were handicapped in Manitoba Hydro's alternative analysis by outdated, conservative, and static economic analysis?

MR. DANIEL PEACO: It was clearly our view that they did not look at any indications that -- that assumed any -- any current or prospective expectations of cost for wind and solar that are consistent with what we've -- we've seen and -- and see in the -- in the industry literature.

So those -- those types of scenarios were not tested in anything that was included in the NFAT submission.

MR. BYRON WILLIAMS: And you formed the opinion that this was handicap -- handicapping these technologies in the -- in the analytical exercise?

MR. DANIEL PEACO: Yeah, because the only cases presented were ones that we felt were -- were conservative, but they never got...

(BRIEF PAUSE)

MR. BYRON WILLIAMS: I'd like to get some advice from La Capra in terms of future regulatory examination. To do so, I'd like to give you some context from some references from the transcript. I'm hoping that your legal counsel will let me draw -- draw you through them simply for the purposes of background context. And -- and we'll see where -- where we go.

MR. CHRISTIAN MONNIN: We certainly will see where you go.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: If -- if we could turn to page 4,239 of the transcript. Oh, dear Lord, the date.

(BRIEF PAUSE)

MR. BOB PETERS: Oh, thank goodness for Mr. Hacault. It's the 27th of March, 4,239. And if we'll scroll down to the bottom of the page. Right there's fine. You'll see, starting at about line 18, we're chatting about the -- the need to decide by early 2018 if we're going to be building Conawapa for 2026.

Do you see that reference?

MR. DANIEL PEACO: I do.

MR. BYRON WILLIAMS: And the question that I'm posing to Mr. Wojczynski, who I welcome to the hearing this afternoon, is trying to clarify in this discussion whether we were talking about the province deciding after getting independent advice from a tribunal, such as the Public Utilities Board.

Do you see that reference? If you flip to the next --

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: -- we can... And just bear with me for a couple more seconds. If we'll scroll down to page 4,240, lines 5 through 12, you'll see a discussion from Manitoba Hydro's perspective of the decision involving Hydro's planning process, Hydro's executive committee, Hydro's board, and the provincial gov -- government.

Do you see that?

MR. DANIEL PEACO: I do.

MR. BYRON WILLIAMS: And finally, if we can turn to page 4,243. Scrolling down towards the bottom, lines 22 to 25, and then onto the next page. You'll see a suggestion that the schedule that Hydro's been working with does not currently envision another NFAT.

Do you see that, sir?

MR. DANIEL PEACO: I see that.

MR. BYRON WILLIAMS: So if you feel comfortable giving advice to my clients, feel free to. If not, you'll let me know.

But you're well aware that the investment in Conawapa may be over $10 billion?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And you'd expressed some commentary in this proceeding that the need analysis undertaken by Hydro was very conservative, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: You've expressed

some commentary in this hearing that the alternatives analysis was overly narrow, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: You've suggested as well that the business case for the Preferred Development Plan is not robust?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Given these factors, would you suggest it's important to have some mechanism for independent advice to the government prior to making a decision about Conawapa?

And - -and if you feel uncomfortable, Mr. Monnin, that's fine.

MR. CHRISTIAN MONNIN: I'm just not sure that it's within his scope.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Fair enough. Let -- let me ask a different question, sir. What are the key steps La Capra might offer, in terms of improving the hydro planning process, that you would recommend prior to a future NFAT?

MR. DANIEL PEACO: Distinguishing between the planning process and -- and the review process?

MR. BYRON WILLIAMS: Exactly.
MR. DANIEL PEACO: Okay. Well, if...

(BRIEF PAUSE)

MR. DANIEL PEACO: Well, I -- I guess it's --
THE CHAIRPERSON: I wonder if I could -- I could intervene at this point. I'll -- you know, I -- given the scope of that -- that question, I wonder if it wouldn't be wise to ask Mr. Peaco to think about that overnight.
MR. BYRON WILLIAMS: For sure.
THE CHAIRPERSON: Yeah. I think that would generate probably a response that is more thorough, and probably be added to weight, I think.
MR. DANIEL PEACO: So I was in the process of formulating, I think, what was going to be some clarifying question. Something that might be helpful, and then I can -- then I'll take the thought problem.
And so -- and I guess I was in part trying to think of ways to answer your question. And I guess one way to do it would say, What would -- would we have expected to see, what we would like to have

seen in the process that's led to where we are today? So if we had a do over of this process, what -- what could be done differently?

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Yeah. You've -- you've framed the question than I would. So what I am asking you to do by -- by way of written undertaking, if you're prepared to accept it, would be to articulate steps, if -- if one was re-envisioning this analytic process, of -- of how you would redo it, or do over.

(BRIEF PAUSE)

MR. DANIEL PEACO: And you know what? We -- we talk -- you talk about me providing a response early in the morning. Do you want it as written, as well, or do you want oral -- an oral response in the morning, as well?

MR. BYRON WILLIAMS: You know, I -- I think probably -- it's up to the Chair, but written is -- is fine from my client's perspective.

THE CHAIRPERSON: And I think it would be fine for us, as well.

MR. DANIEL PEACO: We'll take it as an

undertaking.

MR. BYRON WILLIAMS: The undertaking is to identify measures that would have improved the planning process leading up to the current NFAT.

Is that satisfactory, sir?

MR. DANIEL PEACO: Yes.

MS. MARILYN KAPITANY: Just a question, Mr. Peaco. Would you see that being done this week while you're still in Winnipeg? I'm just wondering in case we have any questions about it.

MR. DANIEL PEACO: Well, that's kind of why I thought was maybe -- was suggesting it to -- to come back in the morning with an oral response, but I'm -- and if -- if that's your pleasure, I'd be happy to do that. I'm not necessarily prepared to -- to do -- do the written piece. But if -- but if you'd like sort of my -- my thoughts that I can follow in writing later on, I'm happy to do that.

THE CHAIRPERSON: I think it would merit an off-ramp discussion amongst counsel and so on, just to --

MR. DANIEL PEACO: Yeah, just for -- you know --

THE CHAIRPERSON: -- if that's okay with you, Mr. Williams, just to make sure that -- that it's framed appropriately and generates the most available information.

MR. DANIEL PEACO: Whatever your -- whatever your pleasure is.

MR. BYRON WILLIAMS: Okay. So what I'm going to suggest, and I'll ask Ms. Menzies to remind me at the break, or -- is that before I -- I leave to go home to bed that we -- we have a discussion to just -- we'll withdraw this undertaking and we'll -- we'll put a -- a more carefully articulated one on the record after the -- after the break.

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: Mr. Peaco, I believe that in outlining your qualifications yesterday, you commented upon your thirty-five (35) years of experience with integrated resource planning.

Would that be fair?

MR. DANIEL PEACO: Thirty-five (35) year experience. Integrated resource planning hasn't existed my entire career, but I have -- have a lot of experience with -- with integrated resource planning, yes.

MR. BYRON WILLIAMS: And, Mr. Athas, you as well have significant experience with integrated resource planning, or IRP?

MR. JOHN ATHAS: That's correct.

MR. BYRON WILLIAMS: Would it be fair to design -- to define 'integrated resource planning' as a plan for meet -- for a -- let's say a utility to meet forecast annual peak and energy demand, plus some established reserve margin through a combination of supply-side and demand-side resources over a specified future period?

MR. DANIEL PEACO: That's a reasonable definition.

MR. BYRON WILLIAMS: So it's a definition we can work with for the purposes of our discussion?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And would I be fair to suggest that among the steps taken in the creation of an integrated resource plan would include the forecast of future loads, the identification of potential resource options to meet those future loads, and the determination of the optimal mix of resources based upon the goal of minimi -- minimizing future electric system costs?

MR. DANIEL PEACO: That's actually probably a -- a narrower definition than I would use, because the -- sort of it's what -- I mean, some -- some folks in the industry will use the term 'least cost planning' as a -- as -- as that definition, as -- as apart from integrated resource planning, which considers, perhaps, not necessarily that particular cost minimization focus, because there are issues other than cost minimization that come into play in making a -- making a decision.

MR. BYRON WILLIAMS: So what will -- so the more expanded steps that you would in -- you're taking issue, I take it then, with the suggestion of the determination of the optimal mix using a goal of minimizing future electrical system costs?

MR. DANIEL PEACO: Yeah, minimizing cost and meeting reliability are two (2) important metrics or criteria that you would -- you would expect to see in any IRP. But there -- there are also other objectives that -- that come into play, in terms of emissions reductions or other -- other considerations, that are also part of that process. And so there are attributes other than minimizing cost and meeting reliability that typically come into play.

MR. BYRON WILLIAMS: So I thank you for that. So what I believe, in terms of that third step of optimization, it could be directed at, in part, minimization of cost, in part reliability, and you're also referencing a potential other major component such as emission reductions.

MR. DANIEL PEACO: Correct.

MR. BYRON WILLIAMS: I want to talk about the integration of DSM into the Hydro planning process in just a couple of seconds. But before we do, I won -- I wonder if we can turn to the -- give a practical example from the Connecticut integrated resource plan excerpt. And -- and I'll refer you first of all to CAC-45-12.

MR. DANIEL PEACO: I have that.

MR. BYRON WILLIAMS: And then I'll ask Diana to have up as -- ready to bring up CAC-45-3, page 58. I'll come to that in a moment. And I can put this to either of the witnesses.

If -- if memory serves me right, Mr. Athas, you reviewed this IRP as part of your work for the regulator in that jurisdiction?

MR. JOHN ATHAS: The -- a large La Capra team that included Mr. Peaco, as well, reviewed that. I -- I appeared for the hearing.

MR. BYRON WILLIAMS: Okay. So either of you feel welcome to -- to answer.

MR. DANIEL PEACO: Yeah, just -- just

to be clear, so -- we -- our client in Connecticut, in this context, was an -- an organization called Connecticut Energy Advisory Board. And they had -- they had governmental responsibility for the IRP from the 2008 to 2010 period. And the -- the utility -- the utilities collectively had responsibilities to do an analysis, for which they hired Brattle. And we -- our client was the CEAB, and so we were working in tandem with the Brattle work for the utilities in that process.

MR. BYRON WILLIAMS: Okay, thank you and thank you for that clarification. If we just turn to page 2 of CAC-45-12 for a moment -- and right there's fine. And then we'll scroll down to the alternative resources strategies in a moment.

But, generally, I would be correct in suggesting to you that fo -- in -- in 2010, the Connecticut integrated resource plan included six (6) alternative resource strategies?

MR. DANIEL PEACO: Yes, I see where you're at -- see that.

MR. BYRON WILLIAMS: And they were looking at various issues, including mixes of energy efficiency, development of renewable generation, and the development of traditional generation.

Would that be fair?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And if we scroll down to the bottom of the page, you'll see reference to a -- a reference strategy, which contained a -- contemplated cur -- current funding for DSM, or desa -- demand-side management, but no more?

Would that be fair?

MR. DANIEL PEACO: I'm sorry, say that again.

MR. BYRON WILLIAMS: Yes, I'm refer -- I'm referring you to the reference strategy.

And you would agree that in terms of DSM, the reference strategy focussed on current funding for DSM --

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: -- but no additional funding?

MR. DANIEL PEACO: Okay, thank you. I -- I'm with you, I see that.

MR BYRON WILLIAMS: Agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And in addition, there was another portfolio with a different mix of DSM in it ter -- called the targeted DSM expansion portfolio, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And there they focussed on implementing four (4) specific high potential new energy efficiency initiatives, agreed?

MR. DANIEL PEACO: Correct. Correct.

MR. BYRON WILLIAMS: And -- and finally, on the -- scrolling down to the next page, we see that there was a -- a third mix of DSM within the resource plans, one including all achievable cost-effective DSM.

Would that be fair?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And if we could pull up CAC-45-3, page 58.

And Mr. Peaco, I'll -- I'll ask you to accept, subject to check, that this is again an excerpt from the Connecticut integrated resource plan.

MR. DANIEL PEACO: Okay.

MR. BYRON WILLIAMS: Do you accept that, sir?

MR. DANIEL PEACO: Yes. The form of the chart looks familiar.

MR. BYRON WILLIAMS: You don't need to turn there, but if -- if you would flip back to page

52, you'd see the cover page of the -- for this same -- same document.

But in -- in essence, what we see here is an examination of all six (6) resource plans against a number of scenarios relating to load growth, gas prices and CO_2 pricing, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And -- and not that it matters that much for our discussion today, but under the particular analysis undertaken in Connecticut under that IRP, we see, in terms of lower costs, all achievable cost-effective DSM fighting it out with efficient gas expansion on the far right.

Would that be fair?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And going from the specifics of Connecticut to both your and Mr. Athas's extensive experience with integrated resource planning, would it be common in an integrated resource plan to see a -- a number of DSM scenarios?

MR. DANIEL PEACO: Yeah, you would -- you would look at -- it would be typical to do a -- a potential study that broadly casts the net, in terms of what resource -- what the scale of the resource could be potentially be. And then you would structure some -

- some amount of scenarios in combination with -- with other resources to get an understanding of where -- what levels of DSM could provide the most value.

MR. BYRON WILLIAMS: And as I understand it, sir, you would -- you would look at attempting to optimize different portfolios with a mix of DSM and some different supply-side options?

There would be an -- that type of an effort that would be undertaken?

MR. DANIEL PEACO: Typically there would be, yes.

MR. BYRON WILLIAMS: And I ask you these questions because I'm not sure that integrated resource planning is as much a part of our conversation here in Manitoba as -- as we might like. And presumably, within different portfolios you might see, in an effort to optimize, they might have, I don't know, a mix of gas and wind and -- and solar, for example?

Those -- is that the type of optimization we might see?

MR. DANIEL PEACO: Well, yeah, and I think that you would -- you know, there's always the -- the tradeoff between -- you know, there isn't any -- any process that sort of has an elegant model that can in -- in real time -- or in reasonable time solve for all -- all possible permutations and combinations of resources. But there's usually a structured discussion about the viable resources and how they might -- how you might structure an analysis to see how they would best knit together into a plan.

MR. BYRON WILLIAMS: Fair enough. Thank you. And we'll go to some specifics with -- with regard to hydro in just a moment.

But can La Capra advise me whether, in preparing for this assignment, you would have reviewed the advice from the Clean Environment Commission to the province with regard to the Wuskwatim generating station Need For and Alternatives analysis?

MR. DANIEL PEACO: The -- the document again?

MR. BYRON WILLIAMS: It's a report from the Clean Environment Commission to the -- its recommendations with regard to the Wuskwatim generating station?

MR. DANIEL PEACO: I don't know.

MR. BYRON WILLIAMS: That's fine, if...

MR. DANIEL PEACO: I don't -- I don't recall seeing that document.

MR. BYRON WILLIAMS: Okay. And you

don't recall those recommendations coming up in the course of your conversations with Hydro?

MR. DANIEL PEACO: We -- we were pointed -- we were pointed to the governing statutes of -- of the process, but...

MR. BYRON WILLIAMS: Fair enough. I wonder if we could turn to CAC book of documents, 45-13, page 2. Mr. -- Mr. Peaco or -- or Mr. Athas, in -- in the course of your exhaustive review of the trans -- of the record, this -- this page, being an excerpt from Hydro Exhibit 87, page 50, no doubt came to your attention?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And you see this is described as Hydro's DSM IRP process?

Do you see that description?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And I -- I'm going to explore this for a few moments with you in terms of your analysis of the Hydro approach to examining the Need For and Alternatives To.

But -- but generally -- and before we get into the specifics of your examination, if we -- if we look at what Hydro has depicted here, would you suggest -- agree that it looks like they've used a single DSM plan to feed into their supply-side option mixes?

MR. DANIEL PEACO: That's what this depicts, yes.

MR. BYRON WILLIAMS: And they're considering it against -- notionally against a number of options: different hydro options, different wind options, gas options, biomass options, and co-generation options, agreed?

MR. DANIEL PEACO: That's what -- yes, that's what it shows.

MR. BYRON WILLIAMS: Ultimately creating a resource plan with a mixture of hydro, gas, and DSM. That's what it depicts?

MR. DANIEL PEACO: That's my understanding of it, yes.

MR. BYRON WILLIAMS: So I want to use this picture to -- to discuss certain limitations of the Hydro Resource Plan as presented in the original NFAT business case. And I'd ask you to keep in mind our chicken soup magic vaccine discussion, or your -- your words, your non-material/material discussion.

Would you be okay with that, Mr. Peaco?

MR. DANIEL PEACO: Okay. I'll -- I'll -- hang with you.

MR. BYRON WILLIAMS: And you don't need to use chick --
MR. DANIEL PEACO: -- hang with you --
MR. BYRON WILLIAMS: -- chicken soup.
Let's start with DSM. It -- it is La Capra's analysis that -- that the Hydro resource planning only involved, in any particular year, one (1) particular DSM plan, whether it was Power Smart 2012, or Power Smart 2013.
Would that be fair?
MR. DANIEL PEACO: Yes, all the -- all the development plans had the same level of DSM.
MR. BYRON WILLIAMS: Okay. So if we were looking at this funnel, we wouldn't see in here at this point in time DSM scemar -- Scenarios 1, 2, or 3, agreed?
MR. DANIEL PEACO: So I'm not sure if I followed your question.
MR. BYRON WILLIAMS: Okay. So, sir, you've confirmed for me at the time that the Hydro business case was presented for any pre -- for either the 2012 reference case or the 2013 update, there was only one (1) DSM plan in play and it was applied equally to all plans.
MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And you're aware, in February of 2014 Hydro presented three (3) additional DSM scenarios, being Scenario 1, Scenario 2, and Scenario 3.

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: It would be your understanding that for the purposes of the business case analysis, the earl -- the preliminary analysis or the -- the filed analysis, those Scenarios 1, 2, and 3 were not considered.

MR. DANIEL PEACO: Yes, that's correct.

MR. BYRON WILLIAMS: Okay. So I'm going to write those outside the funnel. And, sir, if I recall your evidence yesterday in terms of DSM Scenario 2, you described it as being about four (4) times the level in the reference case.

Does that ring a bell?

MR. DANIEL PEACO: Yes, and that's my -- that's my -- my understanding of how Hydro described -- characterizes it.

MR. BYRON WILLIAMS: And we're going to come back to this page, but if we could flip for a moment to Manitoba Hydro Exhibit slide 4.

Oh, sorry, I misspoke. Manitoba Hydro Exhibit 95, slide 4.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Slide 4. And, sir, if we focus on the DSM 2 scenario you'll see here that based upon that analysis filed in -- in this hearing, Hydro's evidence is that that would move the need date both for dependable energy and winter peak capacity out to 2031/'32, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And even with increased pipeline load it would move the dependable energy date out to 2027/'28, agreed?

MR. DANIEL PEACO: That's correct.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: And -- and so, sir, that type of alternative DSM analysis in essence opens up an important analytical issue in terms of whether a construction of Keeyask can be deferred out to the 2027/'28 period, agreed?

MR. DANIEL PEACO: With -- with respect to the need for new dependable energy and capacity supplies, yes. There -- I mean, obviously advancing -- the advancing of that construction could be done for other economic reasons like export market opportunities. But in terms of domestic requirements that would be the case.

MR. BYRON WILLIAMS: And it -- it changes the analytic equation, does it not?

MR. DANIEL PEACO: Yes. And -- and just to -- to be -- to be clear, this outcome is very similar to the outcome that we saw in our no generation case where we postulated something that's somewhat different than this, but it -- it has about the same effect in moving the -- the year of need for capacity in -- in dependable energy.

MR. BYRON WILLIAMS: And that has now become this kind of suggested need to analyze this has become a -- a potential pathway: Pathway 3, as set out at page 68 of your PowerPoint, La Capra 45.

MR. DANIEL PEACO: Well, that was -- Pathway 3 was put out there to say if -- if you determine that -- if you do the DSM Level 2, if you move the year nearer need for domestic capa -- capacity and dependable energy out to 2028 to 2030 time frame, and then you consider timing Keeyask addition to that need day, that would be what this pathway would look like.

Obviously, as opposed to Path 1 where we say -- advancing Keeyask, obviously going along with a -- with a export contract is another plausibility. But this was -- this pathway would be is if you're doing Keeyask standalone as was conceived in Plan 2, then the question is, is there -- is there a domestic -- absent the transmission and export contracts, is there a reason to do it before the year of need.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: And, sir, that type of analysis, the deferral analysis, was not considered in the original business case, presumably because we were working on -- under the apprehension that Keeyask was needed for 2022 or 2023, agreed?

MR. DANIEL PEACO: My understanding of why Hydro chose to do those cases, I -- I can't speak to that. But those are the only cases that were provided.

MR. BYRON WILLIAMS: Okay. Sir, we've -- we've talked a little bit about the -- how the absence of DSM alternatives may affect the need analysis. I -- I want to chat with you a little bit about how DSM could affect the optimization of portfolios.

Okay. Is that fine with you?

MR. DANIEL PEACO: Sure. Fair enough.

MR. BYRON WILLIAMS: It is your understanding that Hydro did not develop assumptions and perimeters for additional DSM resources in its original business case and did not incorporate additional DSM into any of the alternative development plans?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And it would be fair to say that a more robust consideration of DSM in the alternatives analysis could have led to an optimization of other scenarios.

Would that be fair?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And just to give an example of that if we could, if we could turn to Hydro Exhibit 95, page 130.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Sir, this would be a -- a slide you would be familiar with from your review of the record?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And you see on the left-hand side, the comparison of Plan 5 versus Plan 14 at base DSM.

Do you see that, sir?

MR. DANIEL PEACO: I do.

MR. BYRON WILLIAMS: And they're -- they're roughly equivalent, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And, sir, if we move two (2) columns over to the Level 2 DSM, we see a -- a dramatic difference, I'll suggest to you, between the plans due to DSM optimization.

Would that be fair?

MR. DANIEL PEACO: They -- they could -- in one (1) case Plan 5 improves somewhat relative to All Gas and Plan -- Plan 14 obviously erodes by more than $300 million.

MR. BYRON WILLIAMS: And, likewise, sir, you'll recall from our discussion -- I don't think we need to turn there, but certainly from Hydro Exhibit 129-7 this morning, that the economics of Plan 6 as compared to those of Plan 14, Hydro's Preferred Plan, become more attractive under DSM Scenario 2, agreed?

MR. DANIEL PEACO: The Plan -- Plan 6 would perform more like Plan 5 in this -- if it were on this table than -- than Plan 14, because it -- it only -- it does not feature Conawapa, and so that we have a distinction between them.

MR. BYRON WILLIAMS: Thank you. Just -- in the initial business plan, would it be fair to describe the -- the failure to contemplate all -- alternative DSM scenarios as having a material impact, both on the need determination and the alternative analysis?

MR. DANIEL PEACO: Yes, I think -- I think the -- the change in the year of need by implementing this level of DSM effectively moving it the better part of a decade is -- is a significant timing change. And given that some of the plans are moving relative to one another by $300 million when we're looking at plans with benefits of, you know, in -- in the range of, you know, several hundred million dollars to a little over a billion dollars, that -- that's a fairly significant ratio of those overall benefit values.

So it -- it's -- and it -- and it clearly would change -- in some cases it changes the rank, depending on how you look at the DSM.

MR. BYRON WILLIAMS: Now, sir, I'm sure you had a far more enjoyable conversation this morning

with My Learned Friend Mr. Gange.
Do you recall that conversation?
MR. DANIEL PEACO: Yes.
MR. BYRON WILLIAMS: And he is quite enjoyable.
MR. DANIEL PEACO: Okay. I'll take -- I'll take that.
MR. BYRON WILLIAMS: And you're aware that Mr. Gange's client, the Green Action Centre, has a great deal of interest in -- in pursuing a renewable portfolio in -- including wind?
MR. DANIEL PEACO: I -- I would surmise that from his cross, yes.
MR. BYRON WILLIAMS: Now, sir, the improved economics of the wind portfolio, wind/gas portfolio, that -- that you brought forward in this hearing, would it have taken into account Level 2 DSM?
MR. DANIEL PEACO: No. No, all -- all the development plans that -- that were put forward in the NFAT prior to -- to these -- these analyses coming forward were -- were done with the same reference case DSM.
MR. BYRON WILLIAMS: And to your knowledge, on the record there is no Level 2 DSM -- analysis of Level 2 DSM coupled with the wind plan?

MR. DANIEL PEACO: Not to my knowledge, no.

MR. BYRON WILLIAMS: And would it be fair to say for -- for that renewable portfolio, or partially renewable portfolio, sir, that it, too, may have been disadvantaged by the non-inclusion of DSM within its portfolio?

MR. DANIEL PEACO: It's sure -- surely conceivable.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Going back to CAC Exhibit 45-13, sir, would it be fair to say that one (1) renewable that we do not see within that funnel is solar?

MR. DANIEL PEACO: I -- I don't see it there.

MR. BYRON WILLIAMS: And it was La Capra's evidence, I'll suggest to you, that solars -- the solar renewable option was screened out of the alternative's analysis based on today's costs with no consideration being given in the NFAT screening analysis to projected future significant cost declines?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: Just to look at the big picture for solar, sir, it would be fair to say that it has experienced significant declines in cost over the last fifteen (15) years, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And those --

MR. DANIEL PEACO: Fifteen (15), yeah.

MR. BYRON WILLIAMS: And those costs declines, it was the evidence of La Capra, continued into the 2013 year, agreed?

MR. DANIEL PEACO: They've been -- they've been prominent very recently, yes.

MR. BYRON WILLIAMS: And it's also your view that we -- that we can expect those costs to decline out to 2020.

Would that be fair? The -- the more likely case?

MR. DANIEL PEACO: Well, I -- I think there's -- there's a lot of expectation of improvement in the technology. And -- and 'expectation' is -- is probably not exactly the word I would use, but -- but looking at a case and say if that happens does it change your planning assumptions, would be something that you'd -- you'd be interested in -- you might be interested in knowing, because of the -- because of the information out there suggesting that there would be there's -- there's potential for there to be substantial improvement over time.

MR. BYRON WILLIAMS: And in -- and indeed there -- there's evidence that you've cited in your evidence suggesting that -- that at some future point solar could be extremely cost competitive with other energy resources?

MR. DANIEL PEACO: Yeah.

MR. BYRON WILLIAMS: And it would be fair to say -- and -- and if you need a reference, sir, it's page 2-18 of your evidence -- that along with wind La Capra describes solar as being one (1) of the technologies that is handicapped by the Hyd -- Hydro analysis? Page 2-18 at the top, if you're looking. Appendix 2.

MR. DANIEL PEACO: Yeah, it -- essentially they were -- in their screening process, they -- they looked at it and ruled it out without considering. And I guess the thing that's particularly important that -- that we note there, the consideration is given that they're looking at a seventy-eight (78) year planning horizon. If you're looking at long-term, as opposed to, say, what am I going to do the next five (5) years, you would say -- you know, you might use information based upon what you know today.

But if you're -- if you're making a plan where the benefits largely accrue in forty (40), fifty (50), sixty (60) years from now, you'd have to say is there -- is there something, you know, in the category of emerging technologies that could undercut that benefit package. And that's -- so that's -- that's the -- the concept that we're driving at here.

MR. BYRON WILLIAMS: And I appreciate that. And just going back to my chicken soup question, I think we've agreed that the -- the treatment of DSM had a material effect on the -- the ultimate anal -- analysis?

MR. DANIEL PEACO: Right.

MR. BYRON WILLIAMS: In terms of the -- the screening out of solar, how would you characterize the materiality of that, sir?

MR. DANIEL PEACO: It's hard to -- it's hard to -- we -- we don't have any hard information on the potential on how would -- the application would be in -- in Manitoba. So there -- I don't believe there's enough information to know whether it was material.

But I think the -- the point you're just saying here is having some information that would sort of probe that question, to say is there -- is -- if --

if some of this expectation, or this anticipation of improvement in solar were to come to pass, at what point would that -- what point would that have to reach in order for it to be in the pos -- in the position to offer a material change. And if the answer is it would have to be something that's beyond what you can imagine, then -- then you're -- then -- then it wouldn't be material.

But I think that that would be one (1) of the emerging technology tests that you'd want to apply to a plan that -- that has this kind of a -- a time horizon to it.

MR. BYRON WILLIAMS: Okay. So that -- that would have been an option that you would have at least like to have seen explored?

MR. DANIEL PEACO: Yeah, I think -- you know, the -- there should have been some exercise to sort of test, you know, is -- is there any way that -- that solar could emerge as being something that's going to undercut what we think is a good plan, absent that being in the mix.

MR. BYRON WILLIAMS: And -- and just so I understand solar in the mix, sir, that wouldn't necessarily mean a plan dominated by solar; it -- it could -- it could involve a plan with solar in -- in combination with other technologies, renewable or non-renewable, and DSM?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And so conceivably you could have had other alternatives that were both cost con -- cost competitive, but also environmentally competitive with the -- with the -- the hydro dominated plan?

MR. DANIEL PEACO: Perhaps, yeah.

MR. BYRON WILLIAMS: I think you've had probably as much discussion after dealing with Mr. Gange as you wanted, in terms of -- of wind, but the -- would I be fair in suggesting that the treatment of wind in the initial analysis was -- let me try this again.

You went over with Mr. Gange your differences with Manitoba Hydro in the treatment of wind in the original business case analysis, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And it would be fair to say that -- that what I'll -- I'll characterize as prejudicial treatment could have a material impact upon the business case?

MR. DANIEL PEACO: Well, obviously, we illustrated with a -- with a alternative set of assumptions that we produced, that those assumptions were sufficient to take the wind case from being dead last in their list to something that was better than the Gas Plan, and -- and particularly with the change in the -- in the cost in the -- in the hydro plans economically competitive with the others. And so the -- what we felt is that by testing that -- that alternative set -- set of assumptions that we postulated showed enough improvement in the plan to make it in some sort of parity with the other plans that we're being considered.

MR. BYRON WILLIAMS: Okay. Thank you. I -- I think I have your points on -- on gas and import, so I won't walk through the same conversation with you. I have some short snappers, a bit of a change of pace, and I'd like --

MR. DANIEL PEACO: Should I get up and stretch first?

MR. BYRON WILLIAMS: Now, if we can turn to La Capra Exhibit 45, slide 10, at the -- the third bullet.

Sir, you make the point that a full update of the PDP economics is not available, agreed?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And -- and we've

had a bit of a conversation about this before. I just want to make sure my client understands your point. Does La Capra have enough information on the implications of the updated capital and DSM to have confidence in its analysis of the plans?

(BRIEF PAUSE)

MR. DANIEL PEACO: This -- what we -- in our presentation we attempted to characterize every ounce of information that we have, or we can -- or we can infer from what -- what's been done today to -- to characterize our best understanding of where that leaves us, including -- the waterfall chart was our attempt to cobble together inferring from cases that have been done, how that change is likely to occur. That's the best information we have. A -- I have no reason to think it's unreasonable but it's not based upon a full sort of -- a full redo with -- of -- of the -- of the plan analysis that would be comparable to the -- the analysis of the fifteen (15) plans that Hydro did when they -- when they included -- filed their NFAT.

So our only point here is to say, We -- we're making our best effort to share with the panel our best understanding of where those economics are heading with the information we have. And with the qualifier that, in an ideal world, we would have hit redo on the analysis, so we'd actually see what the plan analysis was -- was like.

I -- you know, with the number of changes that have occurred, the -- the set of analyses that are done and the inferences we have to make are -- are probably less than satisfying in terms of piece of information to rely on to make a decision of this magnitude. But -- but we wanted to at least give an indicator of -- with the information at hand what -- what do we -- what do we believe the best information available is.

MR. BYRON WILLIAMS: And I'm certainly not critical of that point. You said "the number of changes," but might you have phrased it better and said, The number and materiality of the changes, sir?

MR. DANIEL PEACO: Yeah, and the -- the intent we -- with our initial waterfalls and -- and the discussion of where we saw the case travel, having the -- the value of the Preferred Development Plan move to the point of being beneficial in the excess of a billion dollars to being negative is clearly a substantial change in the outlook for that plan.

MR. BYRON WILLIAMS: Okay. Thank you. Short snapper number 2, page -- slide 26, the last -- last bullet.

You make the suggestion that these cases show import limitations -- I'll insert the word 'as' -- as a factor in the economics.

Do you see that?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And to clarify for our client, are you referring to the tie-line limitation or the reliability criteria limitation, or both?

MR. DANIEL PEACO: It's perhaps some of both. But I think, in particular, looking at these cases we could observe, for example, comparing the -- the gas plans to the No Generation Plan, we can see how the expanded access to imports improves the economics. And I think that using gas to the extent that it -- that -- that the -- either of the -- either of the gas portfolios do is -- is exacerbated by the fact as you build gas there's -- there's very limited opportunities to supplement that with imports.

When if -- with the -- with the cases where there was the Preferred Development Plan, or -- or the -- the no gen case, the cases with expanded transmission import capability, showed added benefit during dry conditions to supplement the gas and -- and undercut that. So that was the observation.

MR. BYRON WILLIAMS: Okay. So -- and -- and we'll come to slide 30 in a couple moments. But -- so primarily that was focussed on the -- the tie-line limitation and the opportunity to improve the economics through enhanced importing transmission?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Slide 67, please, the second bullet.

You make the reference to defer cases showing similar N -- NPVs to advance cases, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And could you, for the benefit of my client and our analyst Mr. Harper, clarify what you mean by the defer cases?

MR. DANIEL PEACO: Yeah. They're -- so there -- there's two (2) cases that were included in the initial submission. You have -- where is it? Is it seven (7) and ten (10)? No.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Mr. Peaco, if it -

- if you'd like -- if you can answer that right now, great. Oh, you can?

MR. DANIEL PEACO: Well, I was trying to recall, and I was having trouble. But there are cases with different timings of Conawapa. And we -- when you compare them and say, Well, the only thing that's different is the timing of Conawapa, we looked at those to say, you know, does the economics of the plan change materially with the delay? And we were -- so imperfect, because we don't have exactly the case that says, Do Conawapa 'X' versus 'Y'. But we were inferring from cases where they were different to see whether that timing difference was material to the economics, and we didn't -- we weren't seeing them -- you know, a big change in the present value of the plans with a delay.

In the case of Keeyask, we have only -- we have only one (1) case in here which is by itself, Keeyask22. I think I described yesterday, you may recall, that in the interest of understanding that case, we -- we took the -- the detailed results from Plan 1 and Plan 2, and combined those in a way to give us some insight as to what a delay Keeyask result would look like.

And when we did that, we found that a --

that a plan that had Keeyask in '28 with -- with gas first was about the same result as the Plan 2. So that's -- that's what we're referring to there.

So we inferred as best we could from the information that was in these plans as to whether there was a material advantage or disadvantage to timing on Keeyask independent of the export contracts, which is obviously what Plan 2 contemplates.

MR. BYRON WILLIAMS: Thank you. And just to make sure I -- I have your point, in terms of Conawapa, in terms of the defer cases, you're referring to those that have a start date later than 2026?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And in terms of Keeyask, the analysis you undertook, which you described yesterday, was you looked at the results of Plan 2, and then drawing some insights from a more detailed examination of Plan 1 and Plan 2, you constructed a Keeyask28 scenario?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And that Keeyask28 scenario is the other defer case that you're referring to?

MR. DANIEL PEACO: That's right. And again that's -- that's in the category of what we can infer from information we have.

MR. BYRON WILLIAMS: Well, let's take that point one (1) step further. How important would it be to look more deeply into the pathway where Keeyask is deferred out to 2028?

MR. DANIEL PEACO: I guess that's how important -- that's more for the panel to judge than for me as to how important it is to them. But the -- the information -- you know, we rec -- our sense, we did that analysis because we received interrogatory questions along those lines, and we -- and we realized that, particularly with the introduction of DSM Plan 2, that that was something that was -- it's a logical question to ask: What -- you know, what does that do with respect to the timing of Keeyask? And if -- if you're contemplating as -- one of Hydro's paths is -- is Keeyask alone, then the question is what timing.

MR. BYRON WILLIAMS: Okay. Thanks. I think my last -- second last short snapper, slide 71, La Capra Exhibit 45, you portrayed the results for Plans 3, 5, 16, and 17, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Is there a reason Plan 6 was not included?

MR. DANIEL PEACO: We -- as you went --

you discussed with Mr. Athas, we did not have that information.

MR. BYRON WILLIAMS: Okay.

MR. DANIEL PEACO: That was -- that was our initial mission, but then we realized we didn't have the data. The one thing we did -- we do say is, at least for purposes of gross comparisons, Plan 5 and 6, in -- in many of the cases, performs similarly enough that to first order, the results you see here for Plan 5, Plan 6 would come somewhere in the neighbourhood of that.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Fair enough. But the -- the differences between Plan and 5 -- Plan 5 and Plot -- Plan 6 invite, or offer some insight into the -- the value of the WPS sale, do they not?

MR. DANIEL PEACO: The WPS sale in conjunction with the -- the Hydro investment in the transmission, yes.

MR. BYRON WILLIAMS: Finally, just on the short snappers and then after that, Mr. Chair, I do have a few more question, but not that, many you'll be relieved to know.

MR. CHAIRPERSON: I think you missed that, Mr. Peaco. They're more like short punts than they are short snappers.

MR. BYRON WILLIAMS: Well, here's a longer snapper, Mr. Peaco. Slide 30, you discussed this at length with the Chair yesterday, and I just want to make sure that -- that I understand this.

Am I correct that's the -- the analysis portrayed on slide 30 examines the impact of two (2) factors affecting imports: the inclusion of the 750 megawatt interconnection and -- and the relaxation of the limit on using imports as a source of dependable energy for the purposes of meeting the energy reliability planning criteria?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And the red line is your No New Gen -- Generation option, correct?

MR. DANIEL PEACO: That's the -- the results here -- you may recall the discussion yesterday. We re -- we received data from Manitoba Hydro on each of these cases that was disaggregated. Much of the analysis originally provided for the SPLASH results, SPLASH model results, were presented as the average of ninety-nine (99) different runs with different water configurations.

So we actually got the data for each of those ninety-nine (99) runs. And what we -- what we looked at in having that granularity, we said, What's the -- what's the maximum extent to which imports show up, in any of those ninety-nine (99) draws, so that we could sort of see the -- the extent to which these plans might -- might or might not be looking at imports.

So it's not a -- it's not an average condition. This is sort of the -- the boundary condition. But at least we wanted to see to what extend the import limits were being exercised.

MR. BYRON WILLIAMS: Okay. And just so I understand it, so the red presents the results in -- or the -- your expectations in -- in terms of the La Capra No New Generation?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And the grey represents the Preferred Development Plan?

MR. DANIEL PEACO: That's correct.

MR. BYRON WILLIAMS: And so the bump I see in -- from 4,000 gigawatt hours to over 6,000 gigawatt hours on or about 2019/2020, for the grey plan, or the Preferred Plan, -- would be the -- the new interconnection?

Is that right?

MR. DANIEL PEACO: Yes, in conjunction with -- it -- it comes in at the same time that Keeyask is introduced into the plan.

MR. BYRON WILLIAMS: And if I go across to 2029, that's when the introduction of the -- the new transmission for the La Capra No New Generation comes into effect?

MR. DANIEL PEACO: That's right. So the tra -- and as we talked about earlier, because of our assumptions about fuel switching and DSM, that -- in that case, it extended the year of need to 2029. And so the timing of the new transmission was at that date for that reason.

MR. BYRON WILLIAMS: Okay. Just so I understand the -- the -- obv -- obviously on the red scenario, you're going not from four thousand (4,000) to six thousand (6,000), but from four thousand (4,000) to -- to over 10,000 gigawatt hours, correct?

MR. DANIEL PEACO: Correct.

MR. BYRON WILLIAMS: And part of that is the influence of the -- the new transmission line, and part of that is the influence of the relaxation of the 10 percent limit?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: So is -- is the place on the line where the red intersects the grey -- can I understand that to be the impact of the transmission line?

Sir, I'm trying to get a -- a sense of the relative impact of the interconnection versus...

THE CHAIRPERSON: Wouldn't it be the relaxation of the import limit?

MR. BYRON WILLIAMS: I don't know. I'm...

MR. DANIEL PEACO: I -- I got lost at the intersection between the two (2).

MR. BYRON WILLIAMS: Okay, sorry. Sir, I'm trying to get a sense of what's the relative impact of the relaxation of the import limit versus what's the relative impact of the transmission line?

MR. DANIEL PEACO: Oh, that I don't know. And I -- I would not sort of suggest that you merely take the difference between the grey and the red, because the -- I mean, clearly from this data it shows that the Preferred Development Plan is taking advantage of -- of the availability of the extra import capa -- capability in dry years to supplement Hydro in those years.

It -- it's not clear to me that it's

necessarily max -- you know, maxing out there by clearly util -- utilizing it significantly more than -- than the Gas Plan is able to. But we didn't -- you know, we didn't have the luxury of doing a test as saying transmission line 10 percent, transmission line 20 percent, so I really -- you know, it's -- it's -- we had -- we had one (1) arrow to shoot to test a bunch of things and so we included them together. So we don't have the information all bundled, that question.

MR. BYRON WILLIAMS: Just turning to La Capra Exhibit 12-2, your addendum.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: Actually, you know what, I've ask -- I asked those questions earlier. I apologize. Appendix 9B, I have just -- if we can turn to page 9B-22.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: And I want to show Figure 9.94. That's right there. That's lovely right there.

And, sir, just a -- a small question of

clarification, I see for Plan 16 you have the figure of -- at seventy-eight (78) years an NPV of minus one hundred and thirty-six (136).

Am I right?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: If -- if you could go to Figure 9 -- 9-5 on the next page, right there. You'll see the -- for Plan 16 in the top right corner of the -- or the -- in the right corner for ref/ref/ref NPV, the -- the figure is 116 million -- excuse me, one hundred (100) -- minus 111 million, correct?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And, sir, we looked at the -- the other two (2) figures being for thirty-five (35) years and for fifty (50) years and the numbers were the -- the same for Plan 16.

Is there any explanation or could you find out why the figure is a $5 million difference between the Figure 9.94 and Figure 9.95?

(BRIEF PAUSE)

MR. JOHN ATHAS: Just for a -- just for a quick clarification, I don't think I'm there yet and I have an answer to your question, but you said the difference is five (5) between --

MR. BYRON WILLIAMS: Oh, I misspoke, sir. I should have said 25 million. And, sir, what I'm referring you to is for Plan 16 on page 9b-22. At seventy-eight (78) years I see a minus 136 million for --

MR. JOHN ATHAS: And -- and the minus one eleven (111) on --

MR. BYRON WILLIAMS: And -- and the minus one eleven (111), the -- the $25 million difference, sir.

MR. JOHN ATHAS: Those -- those should be the same number. I'm not sure what the difference is. So I have to -- I have to check on that for you.

MR. BYRON WILLIAMS: So I'll ask you to undertake to provide the correct figure for Figure 9. -- or 9-94 and Figure 9-95 relating to the seventy-eight (78) year NVP for Plan 16. And then if there are any necessary reconciliations, you'll undertake to do that?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: And I see Mr. Monnin nodding his head.

MR. CHRISTIAN MONNIN: It's not because I'm falling asleep. I accept the -- the undertaking.

--- UNDERTAKING NO. 106: La Capra to provide the correct figure for Figure 9-94 and Figure 9-95 relating to the seventy-eight (78) year NVP for Plan 16; and then if there are any necessary reconciliations to do that

CONTINUED BY MR. BYRON WILLIAMS:

MR. BYRON WILLIAMS: On pages 23 and 24 of Appendix 9B I see 'S' curves comparing Plans 1, 17, and 16, correct? On the various figures, being Figure 9.95, 9.96, and 9.97?

MR. DANIEL PEACO: Yes.

MR. BYRON WILLIAMS: Would I be correct in suggesting that these 'S' curves were -- were pre -- developed using a -- La Capra's regret approach?

MR. JOHN ATHAS: They -- they used the La Capra methodology we described that has been categorized by others as a regret approach.

MR. BYRON WILLIAMS: Oh, I -- I didn't mean to be pejorative, sorry. The La Capra methodology. And I'll withdraw the word 'regret'. But there has been some debate between you and your friends at Hydro about which approach should be used in terms of the 'S' curves.

Would that be fair?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: And given that debate I wonder if you would undertake to provide the same graphs using Manitoba Hydro's methodology?

MR. DANIEL PEACO: These two (2) graphs?

MR. JOHN ATHAS: Yes, we can do that.

(BRIEF PAUSE)

MR. CHRISTIAN MONNIN: We'll accept that undertaking.

MR. BYRON WILLIAMS: Before you finish, Mr. Monnin, in -- in doing so would you -- if there are -- if there are any observations as to whether this alternative methodology would change your conclusions, if you'd be prepared to offer a commentary on how, if at all, they affect your conclusions?

MR. JOHN ATHAS: Well, I -- I think with -- with the way you've asked the question, it's not a problem. But the -- but as I think we've mentioned and in discussion and, like, they try to answer two (2) different questions. So -- so to the -- to the extent that our observations are on the question that we asked, using their methodology isn't going to change our perspective on the question we asked.

MR. BYRON WILLIAMS: Fair enough. Well, I -- maybe I worded it cleverly then. But you'll -- you'll provide the alternative Hydro methodology?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: Okay.

--- UNDERTAKING NO. 107: La Capra to provide 'S' curve graphs using Manitoba Hydro methodology

MR. BYRON WILLIAMS: And just one (1) second, Mr. Chair.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: I just have a couple questions about the financial analysis. If we can turn to pa -- Appendix 10, page A-7, footnote 4.

(BRIEF PAUSE)

MR. BYRON WILLIAMS: You -- you see here in footnote 4 a reference to a IFPS and a financial model?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: And is that your understanding of the -- the model Manitoba Hydro uses for its interactive financial planning?

MR. JOHN ATHAS: yes.

MR. BYRON WILLIAMS: And are you suggesting, sir, in this footnote that this model has been surpassed by -- or supplanted by more sophisticated programming?

MR. JOHN ATHAS: I might use the word "intricate" instead of "sophisticated." I'm not sure how I would apply that to the -- that word to a model.

MR. BYRON WILLIAMS: Fair enough. In -- in terms of the more intricate current methodolo -- technology, sir, would it be -- would it be fair to suggest that it -- it might lead to -- well, what would be the implications of -- of a different technology? Would it be speedier assessment? What -- what would it be; more complicated assessment, sir?

MR. JOHN ATHAS: It depends on the question. If you -- if you ask questions that require broad changes and you have to change a lot of things from a more intricate model, it'll mean -- it'll be -- it'll be slower to do than a -- than a simpler model. If it's -- if you're look -- if you're looking for a very refined number of -- to make a very distinct decision, it might be more accurate.

MR. BYRON WILLIAMS: Okay. Just finally turning you to page 10A-19, Figure 10-8, you set out here your calculations in terms of total annual revenue increases by development plan 2012/'13 to 2031/'32, agreed?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: And we're still awaiting Hydro revised financial analysis, is that your understanding?

MR. JOHN ATHAS: Yes.

MR. BYRON WILLIAMS: Does La Capra anticipate updating this figure upon receipt of the revised Manitoba Hydro financial analysis?

MR. JOHN ATHAS: It's not on our to-do list right now.

MR. BYRON WILLIAMS: How big is your to-do list, sir?

MR. JOHN ATHAS: It's a very dynamic list, given the proceedings.

MR. BYRON WILLIAMS: I'm just trying to

--

MR. JOHN ATHAS: Right now -- right now we -- we are at -- at the stage of the hearings we do -- we have not -- our -- our to-do list was minimal walking in here on Monday.

MR. DANIEL PEACO: Put another way -- put another way, we -- we don't have a specific list of additional work to do after the hearings in terms of further updating our analysis of this, subject to whatever we -- whatever is defined in -- in undertakings or other requests that we would get from the PUB going forward.

MR. BYRON WILLIAMS: Okay.

MR. DANIEL PEACO: So, I mean, I'm not trying to be difficult but -- but we don't want to sort of -- we don't want to commit to doing substantial additional analysis without -- without understanding that that's -- that's what ever -- you know, the PUB wishes us to do.

MR. BYRON WILLIAMS: Okay. Perhaps I'll discuss this, as well as figures -- some other figures with counsel off line. I'd certainly like to on behalf of our clients thank La Capra for the fantastic work that you've -- you've done in this proceeding. We're very grateful. It's been a great resource for the intervenors, and we're very appreciative. And we thank you for your time today.

MR. DANIEL PEACO: You're welcome.

THE CHAIRPERSON: Mr. Williams, I know you're not feeling well, so hence your numerous references to chicken soup, so I -- I hope that you have time to -- to take some of that this afternoon.

MR. BYRON WILLIAMS: I -- I intend to, thank you, sir.

THE CHAIRPERSON: I think it's an appropriate time to take a break before we start the cross by Me. Hacault.

--- Upon recessing at 2:12 p.m.

--- Upon resuming at 2:31 p.m.

THE CHAIRPERSON: I believe that we're ready to resume the proceedings, so I'll turn the microphone over to Me. Hacault.

CROSS-EXAMINATION BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Good afternoon, everybody. I'll start by backing up just a little bit with respect to what we're looking at in -- as far as the overall plan. And if Diana could bring up Manitoba

Hydro's business case. The first slide would be Chapter 5, page 3 of 61.

So when we're talking about various alternatives we're talking about those alternatives in the context of the generation sources that exist. And, Diana, if you could just bring it up a bit.

So -- so, firstly, that's where we're starting from, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And we've heard throughout this hearing, and if you look at hydro generation total, we've talked about dependable energy and -- and how Manitoba Hydro calculates that dependable energy.

And the existing system has some 22,420 gigawatt of dependable energy, correct?

MR. DANIEL PEACO: Gigawatt hours, I think?

MR. ANTOINE HACAULT: Gigawatt hours, yeah.

MR. DANIEL PEACO: I hate to be picky, but...

MR. ANTOINE HACAULT: No, absolutely. But this hydraulic system on average produces over 31,000 gigawatt hours of energy, correct?

MR. DANIEL PEACO: Yes, that's what it says.

MR. ANTOINE HACAULT: And when we are doing all these analysis, we're not doing the calculations based on what the dependable is going to give us, correct?

MR. DANIEL PEACO: The economic analysis considers the dependable energy number for purposes of reliability planning. But -- but the entirety of the energy production is considered in -- in their analysis, looking at the ninety-nine (99) different perturbations of stream flow.

MR. ANTOINE HACAULT: So that all the -- when we're going to be looking at graphs on dependable, there's nearly a 50 percent increase in -- in the amount of energy that's going to be -- have to be disposed somewhere. And that forms part of the economic --

MR. DANIEL PEACO: In the wettest -- in the wettest years, yes.

MR. ANTOINE HACAULT: Now, the wettest years would bring us right up to the maximum, at 37,000 gigawatt hours, correct? So when we consider the analysis, we're considering the good years and the bad years.

But we've got a lot of opportunity product that is pretty important in our calculations, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Some of it'll be off peak and some will be on peak, correct?

MR. DANIEL PEACO: Correct.

MR. ANTOINE HACAULT: And that part of the energy is not part -- a part of the energy that we're -- we can talk about doing firm contracts on a long-term basis, correct?

MR. DANIEL PEACO: The long-term form. I think that there are sort of intermediate steps along the way where those -- tho -- there's opportunities for shorter-term firm contracts, but not multiple years.

MR. ANTOINE HACAULT: Understood. And we've had some talk about, in the hearing, about how to mitigate the uncertainty with respect to adding future generation. And part of the discussion was, Well, we can enter into some long-term contracts, maybe not over the life of the generating station.

But with respect to the dependable portion, we can do some mitigation by entering into context -- contracts, such as the WPS contract that we're talking about, correct?

MR. DANIEL PEACO: Correct.

MR. ANTOINE HACAULT: Now, Diana, if you can go to Chapter 2, page 4 of 59. The one (1) generating station that we've been talking about to a certain eme -- quite a bit is the Keeyask generating station.

And if we go further down in the graph, we'll see again the difference between the annual dependable energy of that facility being about 3,000 gigawatt hours, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And the average annual energy being higher than that, at 4,400 gigawatt hours, correct?

MR. DANIEL PEACO: Correct. Yes.

MR. ANTOINE HACAULT: And finally, with respect to -- at page 38 of 59 of that same chapter, with respect to Conawapa, the dependable energy is some 4,650 gigawatt hours.

And depending on your metric, the average annual energy is somewhere between 7,000 gigawatt hours and 8,000 gigawatt hours, correct?

MR. DANIEL PEACO: Correct.

MR. ANTOINE HACAULT: So with respect to the Conawapa, depending on the view that you take, you've got somewhere around 3,000 gigawatt hours over the dependable energy metric that you've got to deal with somehow, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And you've explained, Well, that -- all you can do with that to a certain extent, maybe a bit more, but probably more on short-term contracts and off-peak and opp -- on-peak opportunity.

MR. DANIEL PEACO: Yeah, there's a mix of those opportunities, correct.

MR. ANTOINE HACAULT: And...

MR. JOHN ATHAS: If I could just inject one thing, if you go back to that first table that you have there...

MR. ANTOINE HACAULT: Yes, that's at -- at Chapter 5, page 3 of 61. The very first one?

MR. JOHN ATHAS: You referenced the -- the difference between the total -- hydro total generation, dependable and average, and you, I believe, categorized it as -- categorized where the -- there's nothing else -- we'll comment on -- after the questions from -- answer from us.

There's nothing else you do. You have to figure out how to dispose of the -- the difference in those two (2) numbers. I just would point out that the -- the dependable energy is a lot -- in its calculation, is a lot like capacity. And the system depends -- when it's planning on the thermal calculation dependable energy right below there so that it has 26,000 gigawatt hours of dependable energy and the -- and so instead of that -- instead of like a nine (9) excess of hydro, that -- from the average to the -- it's more like five (5). And that -- because the -- because the -- on average, the thermal generation barely runs.

MR. ANTOINE HACAULT: Yes, and - and that's a good point. And -- and that's when we're talking about integration of different resources, and we see how having some thermal generation in the mix lessens the proportion of, I'm going to say, non-dependable or capacity, as compared to if you had just a hydraulic system, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: So you correctly point out, if we look at all of Manitoba Hydro operated resources total, just above the 'Wind and Exports' title, or blue line, we see that there's a range of between, as you said, some 5,000 gigawatts up to about 11,000 gigawatts range between the average and the maximum, correct?

MR. DANIEL PEACO: Gigawatt hours?

MR. ANTOINE HACAULT: Gigawatt hours. Yup.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Now, if we can look at MIPUG volume -- oh, I guess we need to mark it -- I've distributed -- sorry, I didn't do that as a preliminary matter -- a small book of documents. Volume VII, which is subject to confirmation by Mr. Simonsen, we would have marked as Exhibit 20-7.

MR. KURT SIMONSEN: That's correct. Thank you.

--- EXHIBIT NO. MIPUG 20-7: Volume VII book of documents

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: If we can go to page 4 of that book of documents, we see Manitoba Hydro's view of where Manitoba firm energy would be with a DSM Level 2.

Do you see that, sir?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And that's

indicated in grey on this slide that they've produced, correct?

MR. DANIEL PEACO: I see that, yes.

MR. ANTOINE HACAULT: And then the top line, the -- entitled 'Dependable Supply', do you see that, sir?

MR. DANIEL PEACO: Yes, I do.

MR. ANTOINE HACAULT: Yeah. And if we were designing a system based on Manitoba need, if we draw a line before we add the first big supply, which is Keeyask, as shown on the top of the diagram at Keeyask19.

Do you see that, sir? Top of the diagram --

MR. DANIEL PEACO: Oh, the -- the subtitle?

MR. ANTOINE HACAULT: Yes.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: So we're adding Keeyask19 there. We're adding dependable supply. But if we look at where the supply is before we start adding Keeyask19, we're basically around 30,000 gigawatt hours with the existing system.

Do you see that?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And if we go to the extreme right of the diagram, we can see that we're maybe a little bit higher than that, as far as the Manitoba firm energy need as of 2035/2036?

MR. DANIEL PEACO: I see that.

MR. ANTOINE HACAULT: And one (1) of the things I've been exploring with other panels was do we take a need approach or an opportunity approach? And our -- should our metrics be different if we're investing in export opportunity?

Sir, we have in blue the signed exports and the -- in yellow the new WPS 308 megawatt. Have you, in your experience, had to deal with utilities that are building solely for export and not even confirmed exports? We see that big, big white gap for Conawapa, which wouldn't be needed. We could -- we've got plenty of dependable supply when we've built 'K' -- Keeyask19. It's at 34,000 gigawatt hours, and the yellow line doesn't even get there.

How does this panel deal with building a Conawapa when none of the contracts that are signed require it, and building a Conawapa some ten (10) years out?

(BRIEF PAUSE)

MR. DANIEL PEACO: It's -- it's my understanding it's a fairly broad question. So let me see if -- make sure I understand what you're asking me to do. Is -- is your question pertaining to the -- the extent to which the -- the build relies on export markets as opposed to domestic requirements?

MR. ANTOINE HACAULT: Should -- should we look at evaluating the plans in a different way if we don't need them for Manitoba firm energy, but we're being asked, as Manitoba ratepayers, to invest in an opportunity where none of the contracts have been signed?

MR. DANIEL PEACO: Yeah, that's -- I mean, it's a fair point and I think one (1) of the things that we've been asked to do in our scope of work is to look at the -- the analysis from the perspective of the impact on -- on the -- on the domestic ratepayers in particular.

And from that perspective, clearly, as you're -- as this chart and your line of questioning points out, a substantial fraction of -- of the production from that -- those facilities are -- are dependent upon for their value over the export markets as opposed to domestic supply, at least in their initial phases.

And with -- with DSM -- with a lower load forecast and DSM Level 2, the gap between -- this chart indicates that there's a substantial gap between a dependable supply that these provide and -- and the domestic supply. It does put a substantial weight on the evaluation, in terms of the understanding of the risks that -- that are taken in the export markets and how those risks translate to the -- sort of the backstopping of that investment by domestic ratepayers if -- if the market isn't -- isn't sufficient to support the investment.

MR. ANTOINE HACAULT: So thank you for that answer. So there's a couple components here.

Are you able to tell me, sir, with any certainty, when we start to pay for Conawapa and take loans out, what the interest rates are going to be in about ten (10) years?

MR. DANIEL PEACO: Can I? No.

MR. ANTOINE HACAULT: Are you able to tell me with any amount of certainty, with respect to all the opportunity sales over and above the dependable energy, what those prices are going to be?

MR. DANIEL PEACO: No.

MR. ANTOINE HACAULT: Are you able to tell me what the contract price is going to be for that big white space for exports?

MR. DANIEL PEACO: No, there -- there aren't any firm contracts for that at this point, to my understanding.

MR. ANTOINE HACAULT: Now, if we go to the next slide, it's page 5, we see that Manitoba Hydro has done a second view of the world, which I -- I think the numbers are somewhere between 1,300 gigawatt hours and 1,700 gigawatt hours of potential pipeline load.

With respect to the dependable supply that's added by Keeyask19, we're still a little bit over 34,000 gigawatt hours, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And it's hard to see exactly where Manitoba firm energy ends up, but it looks like it's somewhere around 32,000 gigawatt hours? We'd be able to get the exact numbers from the -- the financial pro formas. That's about it?

MR. DANIEL PEACO: The -- the -- you're talking about the -- the level -- I'm sorry?

MR. ANTOINE HACAULT: In 2035/2036, on the extreme right.

MR. DANIEL PEACO: Okay. Yeah, I see that. It -- it reaches up to about thirty-four thousand (34,000) at the very end. Is that where you're talking?

MR. ANTOINE HACAULT: Well, that's the yellow, you're correct. If we look at the grey, which is Manitoba firm energy, it seems to be about some 2,000 gigawatts lower than that.

MR. DANIEL PEACO: Oh, I see. Okay. I'm with you.

MR. ANTOINE HACAULT: Does that change your view on whether or not that white space that's afforded by Conawapa in 2026 and '27, where it bumps up is -- we're being asked to invest in that white space?

(BRIEF PAUSE)

MR. DANIEL PEACO: So -- so what you're -- you're -- if I understand your question, you're saying basically in the dependable supply, by virtue of adding -- Conawapa kicks in and takes it form thirty-four thousand (34,000) to above thirty-eight thousand (38,000), the --

MR. ANTOINE HACAULT: Correct.

MR. DANIEL PEACO: -- Conawapa increase, all of that's in the white space for the balance of this curve.

MR. ANTOINE HACAULT: As it relates to

Manitoba firm energy.

MR. DANIEL PEACO: That's correct. And so it's -- at least from this depiction, that dependable energy would all be surplus of any of the firm commitments that -- that are currently in place.

MR. ANTOINE HACAULT: And for 2034/2035, and some time before that, we can see that we'd be hitting really -- there wouldn't be any room left if we had just built Keeyask. Or very little room in the dependable --

MR. DANIEL PEACO: All right. So you're -- so you're saying if dependable supply holds at thirty-four thousand (34,000), that would -- the load would catch up with that by -- by the right-hand side of the curve.

MR. ANTOINE HACAULT: If we add the signed exports, and the WPS 308.

MR. DANIEL PEACO: Right.

MR. ANTOINE HACAULT: Now, we've been talking somewhat with respect to deferral. And, Diana, could you bring up Exhibit 104-1, which I believe is the most current information that we have, and bring it down to Level 2 DSM?

We can see on the left-hand side Level 2 DSM, that's what we've been talking about, Plan 1 is the All Gas Plan.

And were you aware, sir, that Manitoba Hydro was projecting that if we did Level 2 DSM we would only have to add the first thermal generation in 2031 as opposed to 2028, as you've been talking about?

MR. DANIEL PEACO: You're referring to the -- the list in the -- is this the fourth column? Is this twenty (20) --

MR. ANTOINE HACAULT: That's correct.

MR. DANIEL PEACO: -- 2031, 107FA? So I assume that's a reference to a -- a --

MR. ANTOINE HACAULT: We can go back to the top. It's a CGT (sic) column.

MR. DANIEL PEACO: Oh, okay. Yeah, that's what I was assuming, but...

MR. ANTOINE HACAULT: Okay.

MR. DANIEL PEACO: And -- and this document, I -- I missed the reference as to what this document is?

MR. ANTOINE HACAULT: This is Manitoba Hydro's analysis of when new resources would be required assuming different DSM levels, sir.

MR. DANIEL PEACO: Okay.

MR. ANTOINE HACAULT: And you've talked about 2028 for new gas. Were you aware that Manitoba

Hydro's view, as updated in this particular exhibit, was that gas was only required in 2031?

MR. DANIEL PEACO: Right. From a -- from a different chart, or a different piece of information earlier in the hearings. It was a -- a table and I think it was up in evidence earlier today. So depending on whether the pipeline load is there or not, it goes from late '20s to -- to 2031. So I'm familiar with that.

And I think -- I think this -- as I understand this table, this case would be not presuming the pipeline load.

MR. ANTOINE HACAULT: That's right. So without the pipeline load we're at 2014 now, we're actually being asked, as Manitoba ratepayers, to make a decision to add new generation, some seventeen (17) years in advance of when it's projected to be needed?

MR. DANIEL PEACO: In seventeen (17) years?

MR. ANTOINE HACAULT: Being the difference between 2014, this Board has to make a decision today with respect to --

MR. DANIEL PEACO: Oh, so you're not tying it to the in-service date, you're tying it to -- to this decision this year. Okay. I'm with you.

Yeah.

MR. ANTOINE HACAULT: And with respect to Keeyask this Board is being asked to approve a Keeyask in 2019 as an opportunity when the Manitoba need is twelve (12) years further out than that, assuming no pipeline load.

MR. DANIEL PEACO: Yeah. And the twelve (12) years comes from...?

MR. ANTOINE HACAULT: The difference between an in -- in-service date of twelve (12) -- 2019 for Keeyask shown on Plan 5, versus putting Keeyask as of 2031.

MR. DANIEL PEACO: Okay. All right. I'm with you.

MR. ANTOINE HACAULT: And with respect to Conawapa, this Board is being asked to make a decision in 2014. If we look at Level 2 DSM, Plan 14-2, so make a decision in 2014 as to whether or not, under that level of DSM, we need to build something as far as Conawapa in 2031, assuming the contracts that are put --

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: -- and the new interconnection, correct?

MR. DANIEL PEACO: Yes, I see that.

MR. ANTOINE HACAULT: How many times during your career, sir, have you seen a Board being asked to make a decision in 2014 with respect to new generation going out as far as 2031?

MR. DANIEL PEACO: Well, I guess we're generally -- do you want to limit that to the things I've seen in 2014 decision making, or -- or throughout my -- my career? This is -- obviously it's an unusual situation. I mean, to my experience -- and I think it came up yesterday morning -- obviously I'm familiar with -- with Hydro-Quebec and their plans to advance, being on the -- working with utilities that are -- have been on the -- on the buying side of -- of their plans. They've been -- they've been in a similar mode for quite some time. So it's -- it's analogous to Hydro-Quebec's mode of -- of doing business with New England in partic -- and New York, but it's -- it's not so typical of -- of the industry generally.

MR. ANTOINE HACAULT: Have you seen the latest report that came out in February with respect to Hydro-Quebec's -- or somebody's view of what's happened in the Hydro-Quebec opportunity ventures?

MR. DANIEL PEACO: I haven't seen that report, no.

MR. ANTOINE HACAULT: Now, I'm going

from the subject of need and opportunity. I just want to understand a bit, with respect to the story that some of the slides that you've indicated -- or updated tell us, and what's perhaps missing from that. And to be able to do that -- I don't know if possible, Diana, to put on half of the screen from Exhibit 104-8, page 3?

(BRIEF PAUSE)

THE CHAIRPERSON: Me. Hacault, do you mind if I ask a few questions that are related to what you've been asking, before you get into this new topic, I think? And it has to do with the -- the views that some people have expressed that building generation capacity in advance of domestic need means in fact that you're building a merchant generation facility.

And the question I had would -- would relate to the criteria that one would use to make a decision about a merchant generation plant versus the criteria that one would use to evaluate a plant to meet domestic need. And could you -- can you talk -- could you explain to me, and perhaps the rest of the panel, how the criteria would -- would vary between those two (2) kinds of scenarios? In other words, it's assuming that our merchant generation scenario would probably require more equity than would be the case if you're trying to build generation to meet domestic need.

Am I -- am I wrong, or...?

MR. DANIEL PEACO: You know what -- yeah, I -- I don't know if there's any extent to which the analogies to the -- the merchant market in the US applies here. But clearly if -- if you're a gener -- and there's any number of markets in the US now that -- that either have some or all of their generation basically in merchant mode. But in -- in the case of merchant investments where you typically don't have -- unless you have an opportunity to get a long-term contract for a substantial fraction of the output, you know, the -- the financing proposition for a major capital investment in -- in generation has -- is -- is much more difficult than one where you have either firm revenue from a contract, or a -- a firm obli -- you know, a -- a clear understanding that there's cost recovery through some sort of regulatory mechanism, so -- which is sort of antithetical to the concept of a merchant generation.

I think in this case, as I understand the construct, it -- it's an investment by the province in -- and depending on where the load -- load grows it depends on how -- how much you're exposed to the -- to the market, but the -- the risk of -- of any of -- any portion of the production that's exposed to the market that's not covered by a long-term firm contract would ultimately flow back to the domestic ratepayers, or the province, in the event that there's a -- a return in the market against the project.

So if it was -- if it was a straight commercial investment going to a lender, they're clearly going to see that risk. And if -- if the revenue stream is significantly exposed to market conditions as opposed to con -- either locked up in some sort of contractual firm -- firm contractual revenue stream or something. Then -- then it -- then it becomes very difficult to -- to finance that on a -- on a very strict merchant basis. So in this case -- and it's -- it's because there's inherent risk in the markets relative to a specific investment.

I don't know if that -- if that helps where -- where you're going, but --

THE CHAIRPERSON: Well, I think it does. I think we're just having a general discussion around the difference between a merchant generation facility and one that -- a domestic need facility. And I'm just trying to understand from a technical standpoint how the criteria would vary, leaving alone -- you know, leaving aside all of the -- the political issues there's really -- if you -- if you were to -- to evaluate a -- a merchant facility, are the criteria that are used to evaluate different than what otherwise would be the case?

MR. DANIEL PEACO: Well, let's put it this way. If -- if you're asking what the financial institution that's a lender to a merchant generator, what criteria would they apply, you know, we've -- we've worked for some folks and they take pro formas into lenders, they're always, like, What's your lowest price case, and, you know, can -- can you -- does that support the project? You know, they're -- so they'll -- they'll take a -- the lenders obviously are very risk averse, and so they'll take -- so the -- they'll look at pro formas that have, you know, a very pessimistic view of the market opportunity, and -- and consider that as of, like, you know, how -- What can we consider firm about the revenue stream from this project?

And then they'll -- then they'll look at the potential upside and -- and factor that in. But banks aren't -- aren't ris -- in the business of taking risk, and so they're -- they're going to lend to a project that's, you know, doesn't expose them to a lot of that risk.

So if -- if you're asking how would a bank look at it, they're going to look at it in a -- in a very risk averse perspective. Obviously, a merchant investor's going to take a different view; they're in the business in the market and they're going to -- but -- but to do a pure mer -- I mean, to be honest there haven't been very many pure merchant generation facilities built in the US since Enron collapsed in 2003. I mean, the -- it's very difficult to do without some sort of -- at least some -- some material fraction of the output being committed to, and some -- some reasonably longer term commitment.

A lot of the -- the wind development that's been done in the US is all third party, but it's sold -- sold to counterparties in long -- you know, at least fifteen (15) or twenty (20) year, you know, output -- output contracts for most or all of the -- the output of the facilities, as an example.

So I would say I'd characterize the merchant market in -- in the US today generally fairly -- fairly difficult to -- to move forward in terms of getting on unless there's an opportunity to take a, you know, to -- to have a counterparty that's willing to take on a long-term contract.

THE CHAIRPERSON: But is it a case that the -- that the bankers or the -- the financial markets won't support it? Or is it a case where the investor or the -- the merchant generator doesn't see it as an opportunity? I mean, the -- or is it -- I mean, I -- it's hard to know...

MR. JOHN ATHAS: Yeah, I think -- I think there's -- you're -- you're right about where you were just going that there is this difference between the merchant being una -- able to go forward with something that they might want to go forward because of the financing, versus -- versus -- their -- their decision that they don't like this investment.

The -- there is one (1) difference that I want to just point out, that in a merchant opportunity you are -- you have the option, the true option, to do nothing in your investment. So you're -- you're sitting there with -- and by -- by -- especially with the do nothing. Unless you're going to -- unless you have an either/or with capital in a merchant, but just assume that it's -- that they don't have that -- that either/or with capital, they -- when they make -- look at a decision they can revisit that decision again in a year, or in two (2) would be -- and be in a very similar situation. They don't have a -- a investment commitment that they have to make in the alternative to the merchant plant.

So that they're not looking at -- in -- let's look -- let's take the simplest case in a utility where both of them have -- both options would have similar lead times and both options would be coming in at the right time -- right with your need. There you're looking at where do I invest either a lot of money, or a medium amount of money, or maybe less money to make my commitment? But the -- the non-investment case, or the non -- in this case, like the non-hydro case, is -- is one where you might have to make another commitment that has a long li -- long-lived impact.

If you -- but a merchant, the decision -- their alternative to the -- you know, to the -- to the S-curve look, when they have had that investment, might play out similar to what we're looking at here, is, No, let's look at it next year. And the S-curve's the same. It's a very different decision when it's -- but if the -- if the answer is, No, let's look at it next year but I -- say I have to commit to the -- to something else today in a -- in the year of need thinking.

So that -- that's one of the main differences that I see in how -- what could cause a decision-maker to have a different propensity to accept certain elements of risk. If they know that they have to make a alternative decision that has -- puts plant in the ground for thirty (30) years and -- and that -- it could make a difference on how they look at the risk profile.

But if they can -- if they have the merchant opportunity that says, I'll go to the -- maybe I'll go to the bankers next year and it'll be a lot easier to convince them to do it; I'll pay -- much less interest rate when the market improves, like I know it's going to improve and -- and it'll be a much more favourable project to me. So the do-nothing option, which -- which in the -- in the merchant case I think is -- is one that can certainly drive a decision-maker to be viewing something differently.

THE CHAIRPERSON: But in case of merchant generation, the merchant generator would be looking at IRR of various projects, to make a decision about which one to pick, right? And it would also establish the -- the risk benefit profile before undertaking an investment, right? I mean, it -- it...

MR. DANIEL PEACO: Sure. Yeah, they would do -- I mean, obviously it would be a much different financial calculation in terms of what their rates are, what they -- what they an earn in an adverse outcome versus what they could expect to earn if the market turns, you know, to -- to their favour. So -- so sort of a private equity investment decision making process a little bit.

They're not going to consider some of the other intangibles that -- that a provincial government or state government or any other kind of government entity might look at, in terms of the ancillary benefits to the economy and -- and those kinds of things. But the merchant would -- would clearly either have to have very big pockets on his own or be able to -- to firm up in some way the -- the downside sufficiently so -- so the lenders are willing to participate in -- in the debt portion of the -- of the project.

MR. JOHN ATHAS: Which -- which is one of the reasons why you have new nuclear considerations be in -- having to almost -- everyone talking about it, that it would have to be some sort of government-backed loan.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Now, there's two (2) concepts that I'm going to follow up with respect to the -- the Chairperson's comments. The first one deals with the -- the risk profile. And that -- part of that risk profile is in your Exhibit 45 at slide 48, I believe, which has, at least, updated capital costs.

Am I right in understanding, if I look at that graph, that if we take a twenty (20) year outlook, the project doesn't look too good from an opportunity perspective?

The dotted line, compared to All Gas, is fairly significantly to the left all the time.

MR. DANIEL PEACO: Yes, so -- so what that says is if you would -- if you have Plan 1 and Plan 14 and you choose one or the other paths and you go forward with that, looking at the -- the net costs and benefits on a cashflow basis through time, as of year '20, given the range of uncertainties captured in the analysis, the Gas plan will always be further ahead at that point in time relative to the Preferred Development Plan, because you've -- it's really the first twenty (20) years captures the years of -- of spending and -- and not many years of operating the facilities that you've -- you're investing in.

MR. ANTOINE HACAULT: And if we change that outlook to thirty-five (35) years, we're still close to 90 percent of the time, as I understand your graph, that the Preferred Development Plan with Conawapa -- so that's kind of -- the merchant part of it -- really doesn't look that great compared to All Gas either?

MR. DANIEL PEACO: That's correct.

MR. ANTOINE HACAULT: And even the fifty (50) year outlook, 70 percent of the time, if you're comparing, it to All Gas it doesn't look that great either.

MR. DANIEL PEACO: Just to be clear, 70 percent of the -- the range of scenarios looked at on -- on a probability weighted basis, correct.

MR. ANTOINE HACAULT: Yeah. So if I was going to a bank with this kind of a slide and said, Well, I want to invest in -- in this plan and in Conawapa, would they be inclined to look at it favourably?

MR. DANIEL PEACO: Well, I mean, and it's kind of our point we want to make, and this -- this -- your line of questioning kind of gets to where we -- we did, is that clearly you have to -- you have to be a very long-term prospective investor to -- to be looking at -- at this kind o an investment with these kinds of numbers.

I mean, banks don't -- don't tend to

look -- look at that -- that longer term. But it would -- it would clearly be if you were -- if you were using the merchant example, the merchant would have to be convinced that over time it could -- it could do that.

So my experience is only governments make investments of that duration. You -- if you go to the merchant market, you're not going to find an example that's, you know, someone who's making an investment that's -- that's beneficial only if you look at it at a fifty (50), sixty (60), seventy (70) year basis.

You know, even the -- as John mentioned, nuclear plants are -- are hard to finance, and any -- any real -- it's difficult enough in the merchant markets for combustion turbines and combined cycles to get -- and those are usually thirty (30), thirty-five (35) year life assets financed over twenty (20) years.

Those are -- those are probably the only things that really have had -- have any evidence of being successfully done in a -- in a merchant con -- pure merchant context. So it -- this is not sort of within that framework.

MR. ANTOINE HACAULT: Yeah. And I guess just as an aside, I've got a four (4) year old granddaughter -- I'm fifty-three (53) -- that if the same pattern develops, she'll be a grandparent by this fifty (50) year metric, and there's 70 percent of the scenarios will tell her that, I still haven't made any money yet.

Is -- is that just -- like putting it into real life terms, my grandchild might have to be a grandmother before she sees some benefits, and -- and that's not too sure because we've got 70 percent of the scenarios which would indicate that there wouldn't be benefits?

MR. DANIEL PEACO: It's -- you're understanding the curve as -- as I understand it.

MR. ANTOINE HACAULT: Now, another question that the Chairperson asked was, Can we look at it differently, and -- and how can we look at it? And if we go back to our book of documents, Volume VII, at -- we can either look at page 5 with the pipeline load -- thank you, Diana.

If, in four (4) or five (5) years from now, Mr. Cormie, who's sitting in the back, is wildly successful and signs some great export contracts to fill all that white space which is reflected under the Conawapa, the dependable supply curve, so that we stack on top of the WPS 308 megawatt sale, we stack a bunch of other ones to get close to your dependable supply, does that change your view of the world?

Because you said we need to have the long-term contract that matches with the facility. We've just looked at fifty (50) years of uncertainty.

Do I have to have fifty (50) year contracts that fill up that gap, or is it sufficient to have twenty-five (25) year contracts that fill up that gap and then see what happens in the next twenty-five (25) years?

MR. DANIEL PEACO: Well, I guess there's -- there's no one (1) answer to that. I think it's -- it's clearly a judgment that -- that Hydro and the -- and the panel need to make as to how much -- as -- as in the case of a merchant example, the investor and the lender would have to decide how much certainty is -- is enough to go forward with.

I think that you -- you would also want to know sort of the quality of those kind of tracks, you know, the -- the more revenue you can get from export con -- on the front end to sort of mitigate the -- it's -- it's a question more of what total revenue you can lock up and no so much the time of the -- of the duration of the contracts.

And so to the extent that there's an opportunity to do that and something that really mitigates the -- the cost in a substantial way so that once you're done with those contracts the -- the balance of the cost of the facilities are -- are manageable, then that's -- that would be what you'd be looking at, is sort of how much -- how much firm revenue you have relative to the expense you're going to -- you're going to incur.

MR. ANTOINE HACAULT: Fair enough, sir. And we've heard some evidence from another expert, Mr. John Todd, that Manitoba at one point in time had signed a contract with a neighbouring province, which the contract was basically going to pay off Conawapa in a twenty (20) year range.

So if we were abl -- and Mr. Cormie was able to negotiate over the next three (3) or four (4) years such a favourable contract that we'd know we'd have Conawapa paid in twenty (20) some years over the life of that contract, that would be a material thing for us to know, wouldn't it?

MR. DANIEL PEACO: That's -- I mean, that's part of sort of understanding what -- what portion of the revenue stream is firmed up. That's correct.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: Now, you've indicated that if it was a merchant facility, we'd look at how the plans fare on low price cases.

The Preferred Development Plan, by and large, under low price cases doesn't fare well at all under the updated information, correct?

MR. DANIEL PEACO: Well, I think that's part of the -- the S-curve we were just talking through. Clearly, the -- tho -- those that are -- that are more negative are -- are the ones that -- in part are the ones with the lower prices and the higher discount rates.

MR. ANTOINE HACAULT: So -- and a visual of that would be if we would go to the fourth page of Exhibit 104-8. I'm going to get back to that. So on the left-hand side you see, sir, that we've got the heading, 'Energy Prices'. And the first three (3) -- or the first -- third is entitled, 'Low'.

These types of quilts are familiar to her -- to you, sir? This is an updated one.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And if we look at the --

MR. DANIEL PEACO: Just -- just for clarif -- the source of this particular one?

MR. ANTOINE HACAULT: This is -- actually, it's an updated one which -- it's March 27. You haven't put that in your particular update. I'll get to that. In all the different versions of what you've put in your updated document, sir, they aren't updated to this table. But we'll get to that.

My question was: If we look at energy prices and look at the Preferred Development Plan, which is 14 on the very right, there's only two (2) instances where you might have some kind of a favourable result in the mix that shows us on low energy prices?

MR. DANIEL PEACO: Yes, I see that.

MR. ANTOINE HACAULT: And we've -- we -- it's when the capital cost would come in at ref, or the capital cost would come in at low, then over seventy-eight (78) years we might see an NPV in a positive way? Thank you.

MR. DANIEL PEACO: That -- that's the way I understand the -- the table, yes.

MR. ANTOINE HACAULT: Now -- so again, with that kind of downside and the low ref/ref/ref, if we go ref discount rates and ref capital costs, and go right across the table, we see a negative $2 billion amount.

Do you see that?

MR. DANIEL PEACO: I'm sorry, what -- which -- which line?

MR. ANTOINE HACAULT: If we go low energy prices.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Reference rates, discount rates, and reference capital costs.

MR. DANIEL PEACO: I'm with you. Okay.

MR. ANTOINE HACAULT: And we go right --

MR. DANIEL PEACO: Minus -- minus 2010?

MR. ANTOINE HACAULT: Yeah.

MR. DANIEL PEACO: I got you.

MR. ANTOINE HACAULT: So just focussing on low energy prices, if we were accurate on our discount rates and we were accurate on our capital costs, we're looking at, with respect to these tables, negative 2 billion?

MR. DANIEL PEACO: Relative to -- to --

MR. ANTOINE HACAULT: To the All Gas.

MR. DANIEL PEACO: -- to the All Gas reference number.

MR. ANTOINE HACAULT: Yeah. So now, the one (1) thing I want to explore is I think this table, at least the way I read it, tells us a different picture than your graphs in your updated Exhibit -- it's Exhibit 12-2 which you provided.

It's dated -- and this is where if we could have the split screen, Diana. Yeah, that's great.

The one (1) thing that you had commented on, sir, was that in your updated information when we compared Keeyask with NPV on -- on your updated information -- this is page 24, your Figure 99, or 9-99 -- you -- it came in at four hundred and eighty-nine (489).

Do you see that? 489 million?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And you compare that to the total revised NFAT PDP at seven-ninety-eight (798) to come to the conclusion that Keeyask was a little bit more than half of the value of the PDP.

MR. DANIEL PEACO: In that particular analysis, yes.

MR. ANTOINE HACAULT: Now, we've had a little bit of an update in this Exhibit 104-8, which is on the left-hand side. And if we got to the bottom of that graph, the number is fairly small, but we see in line 2, which is the Keeyask Gas, at the very bottom it's a ref/ref NPV, and it shows the same number, four hundred and eighty-nine (489).

Do you see that, sir?

MR. DANIEL PEACO: I do.

MR. ANTOINE HACAULT: Okay. So that number has remained consistent between the previous analysis which was based on the March 10th. But this was an update that was provided on March 27, a week later, so our view of the world changed in a week. Two (2) weeks, sorry.

And if we go to the extreme right-hand side, the NPV, with Plan 14, and now the WPS investment is taken out.

Do you see that in the heading, under 14? We see, "WPS sale, no WPS investment." And --

MR. DANIEL PEACO: Right.

MR. ANTOINE HACAULT: -- Hydro segregated, contrary to what they initially provided, segregated the WPS investment. So we see the Preferred Development Plan goes from your number of seven ninety-eight (798) down to six fourteen (614).

MR. DANIEL PEACO: Okay.

MR. ANTOINE HACAULT: Do you see that?

MR. DANIEL PEACO: I do.

MR. ANTOINE HACAULT: Now, if we look, and we're talking about proportions again, we just saw that Keeyask22 and Gas have stayed the same at four eighty-nine (489), correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: But the Preferred Development Plan without the WPS investment is now six hundred and fourteen (614). So it's almost five-sixths (5/6s) instead of being half.

Do you see that?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Five-sixths (5/6s) of the plan's value now is in Keeyask under Plan 2?

MR. DANIEL PEACO: Yeah. If you did the same analysis we did with -- with this new information. Yeah, I see what you're -- I see -- I see what you're -- I'm with you.

MR. ANTOINE HACAULT: And the other thing that this updated information that takes out the WPS investment shows us is that the expected value of Plan 14 is 120 million.

Do you see that on the extreme right-hand side?

MR. DANIEL PEACO: Yes, I do

MR. ANTOINE HACAULT: Now, could you explain, sir -- and in your material and in your testimony you provided some explanation as to why you thought, as I understood your testimony, expected value is something we should pay attention to?

Now, we see two (2) numbers here. We see an expected value of Plan 14 at 120 million, and a ref/ref/ref Plan 14 no WPS investment at six fourteen (614), about a 500 million, or a half a billion dollar difference.

How do I understand that?

MR. DANIEL PEACO: The -- well, two (2) things. One (1) is that we -- we stated specifically, because in under -- in understanding -- what we understand about Hydro's position, they were advocating that this decision should be made on an expected value basis.

Much of -- a lot of their analysis and exhibits have -- have shown -- chosen to feature the reference case scenario, and -- and we've noted that the parameters that they -- they happen to choose for their reference case scenario don't tend to line up very closely to the expected value result from their own analysis. And, so we -- we wanted to make sure that we -- we explain the difference and show both of those in the context of understanding their case.

But that doesn't necessarily mean that

the panel will chose to make the decision based upon the expected value, because as we've seen, and we've -- the charts we've been going through, an expected value of -- whether it's a billion dollars or $120 million, whatever, still comes with -- it's not plus or minus 10 percent; it's plus or minus, you know, several hundred millions to billions of dollars. And so the expected value of that very broad range of outcomes isn't necessarily the only thing you're going to consider making a decision. You're going to think about the upside and the downside, which are -- which are substantially variant from the expected value, or the reference case value.

So -- but we feat -- feature the expected value 'case we wanted to make sure that when -- when people are looking at Hydro's information, they're understanding when they're looking at the reference case and when they're looking at the expected value results from their uncertainty analysis. And then we also -- I feel like you've got a -- you know, in addition to that you've got to understand how long -- how long it takes to get to that number, and how much uncertainty there is around that number in -- in doing this.

So I think the totality of that

information is what would inform a decision as to how to go forward.

MR. ANTOINE HACAULT: Let me take you to another set on this same table, which was Plan 2 that I've -- we started with. It's got a ref/ref/ref of four eighty-nine (489), but we don't see a $500 million difference between the expected value. We see the expected value coming in at two sixty-eight (268).

Do you see that, sir?

MR. DANIEL PEACO: I do.

MR. ANTOINE HACAULT: How do I as a panel make sense of this information? How do I -- how do I use it? Just like, what does it tell me to know that Keeyask22 with Gas has an expected value of two sixty-eight (268) versus one twenty (120)?

MR. DANIEL PEACO: Well, we kind of think about it -- in -- in particular look at this. One (1) of the charts that we did early on where -- if I remember my -- early in my presentation yesterday, where we superimposed the benefits number with the present value of the incremental investment. And so if you look at the context of two sixty-eight (268) or one twenty (120) relative to the present value of the investment you're making, which, I think in the case of the Preferred Development Plan, is over $6 billion present value, and in the case of Plan 2 -- I don't know, do we remember -- do you know the number -- or we could look?. Slide 13? Can we...

(BRIEF PAUSE)

MR. DANIEL PEACO: So this is one way to look at it, sort of put it in perspective. And so if you look at Plan 14 that we've highlighted here, this is the original reference case scenario analysis as filed in the NFAT submission with the $1.7 billion reference case benefit compared to the $6.2 billion investment.

Now, what you're saying is -- in the particular case we're looking at, we know that the -- the investment has gone up by eight hundred (800) and some million dollars. And the -- the benefit numbers are -- are a lot less than shown there, whether you -- whether you're talking reference case or expected value. And to us -- to me, that puts -- puts it in the context of how much benefit are you getting from -- for -- for investments relative to other things that you could do. You know, that's -- that's a context within which to put the numbers.

MR. ANTOINE HACAULT: So am I looking

it at too simplistically if I say we're close to seven hundred (700) -- or $7 billion NPV on Plan 14 now, because it's gone up about eight (8). I'm expecting to get 120 million. If I invest that much versus if I look at Plan 2, which is Keeyask22 with gas, I'm investing a little bit over $2 billion, but my expected value is around a quarter billion dollars.

MR. DANIEL PEACO: Something like that. Of course, the -- the K2 number would go up 'cause Keeyask costs went up but it won't be to the tune of 800 million. It's -- it's something less than that. John, did you want to add to that?

MR. ANTOINE HACAULT: So -- so what does that tell us about investing in other -- is it about $5 billion? What are we getting for our $5 billion?

MR. DANIEL PEACO: Well, I guess -- I guess the way -- the way to look at it is what you're getting is obviously the facilities and -- and -- this is looking at the straight economics of the deal. So this -- this clearly doesn't consider all the other non-economic benefits and costs that go with the project. But -- and -- but you're getting a proposition that's expected to -- with...

Clearly, what the analysis shows there's some potential upside with some -- and there's -- and there's some material potential upside and there's some material potential downside to that. With a -- with an expectation is over seventy-eight (78) years, it'll be close to -- close to a breakeven investment.

MR. ANTOINE HACAULT: Thank you, sir. Now, if we could go back to Manitoba Hydro... Oh, sorry, I think we were going to take a -- a little break around 3:30.

THE CHAIRPERSON: We agreed before we start -- before Mr. -- Me. Hacault started, we agreed we would take a -- a stretch. So let's just stay in the room.

--- Upon recessing at 3:35 p.m.
--- Upon resuming at 3:44 p.m.

THE CHAIRPERSON: I believe that everybody is in position, so back to you, Me. Hacault.

MR. ANTOINE HACAULT: Thank you very much, Mr. Peaco, for your responses. I just want to see what the new quilt, without the WPS investment, is -- what kind of story it's telling us on a couple other issues.

The first issue I want to focus on is

comparing Plan 2, if we go to the bottom, which doesn't have any kind of interconnection with Plan 4.

Am I correct in suggesting that if that option was still open or could be reopened, the economics are telling us this is an alternative we have to seriously consider?

MR. DANIEL PEACO: Yes, with the information that's been updated in the -- in the case analysis, clearly Plan 2 is-- as an analytical exercise is -- is better than the other plans.

MR. ANTOINE HACAULT: Okay, but I'm comparing Plan 2 to Plan 4. We're basically -- I know Keeyask is a little bit different in-service, but Plan 4 we're adding 250 megawatt line. Do you see that --

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: -- and the expected value goes from two sixty-eight (268) to see -- six fifty-one (651).

Directionally, does that tell us if that plan was still available, we'd have to give some attention to that alternative?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And the ref/ref/ref is also telling us the same story. In Plan 2 without the 250 connection, we're at four eighty-nine

(489), and we move up to nine seventeen (917).

So that's -- both of them are telling us the same story, correct?

MR. DANIEL PEACO: And to be -- to be clear, this also includes the Minnesota Power 250 contract.

MR. ANTOINE HACAULT: Correct. Absolutely. Thank you for that precision. Now, the one thing that we've had to grapple with in this hearing, what happens if we can't reopen that whole two fifty (250) scenario, and all we're left with is the seven fifty (750).

Is it still worth thinking about the seven fifty (750) line with the two hundred and fifty (250) agreement from Minnesota Power? And let me take you to -- to these numbers.

That would be comparing Plan 2 that has no interconnection with Plan 6 that has a 750 megawatt interconnection; we'd still have the 250 Minnesota Power agreement, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And directionally, we're moving from an expected value of Plan 2 of two sixty-eight (268) and moving up to a higher expected value of three eighty-six (386).

Do you see that? Under Plan 6.

MR. DANIEL PEACO: So the two sixty-eight (268) is -- oh, Plan -- from Plan 2.

MR. ANTOINE HACAULT: Plan 2 to Plan 6.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: So -- so you have to jump over from Plan 2 up to Plan 6. So we're better on an expected value by about $100 million by choosing the 750 megawatt line no WPS investment, compared to no interconnection.

Is -- is that fair?

MR. DANIEL PEACO: That's -- that's -- I see that.

MR. ANTOINE HACAULT: And the same thing with respect to the ref/ref/ref. If we compare Plan 2 to Plan 6 is -- do -- we still do the 750 line interconnection, we move from Plan 2 of a ref/ref/ref of 489 million up to 662 million.

Do you see that, sir?

MR. DANIEL PEACO: I do.

MR. ANTOINE HACAULT: So directionally, is that telling us that it's worth considering Plan 6 and adding the 750 line to -- to Plan 2, rather than foregoing that opportunity?

MR. DANIEL PEACO: Yeah. And I think

that we -- we discussed that earlier this morning, is that when we did the step-wise analysis from two (2) to four (4) basically to six (6), the -- the 750 line looked negative but -- but overall if you -- if -- if two (2) is an intermediate step -- intermediate step in that -- in that thought process -- I mean, if -- if four (4) is an immediate step in that process, going from two (2) to six (6), you -- you would see benefits from adding transmission.

And I think the only difference is the amount of transmission you get from the 250 option is sufficient to -- to garner most of the benefit of the plan. The seven fifty (750) gives you the same benefit at a higher cost.

MR. ANTOINE HACAULT: Now --

MR. JOHN ATHAS: One (1) -- one (1) thing I might add just to -- in looking at these, I mean, this is -- this is kind of the classic question of why we -- why the risk profile is usually plotted. Besides the expected value, you look at the -- the twenty (20) --

MR. ANTOINE HACAULT: I was going there, thank you. Keep -- keep on.

MR. JOHN ATHAS: Okay. If you look at the 25th and 75th percentiles, there's very, very small differences in the -- in the two (2) plans, Plan 6 and -- and Plan 2. So that -- that would kind of say that there's going to be a large period of time where the differences will be pretty small on a -- next -- on a risk profile.

So if you did -- if you plotted -- if six (6) minus two (2), you probably have a lot of things hovering around zero and -- and the like. It would be a good -- a good risk profile to look at.

MR. ANTOINE HACAULT: And actually, if we look at the 25th percentile for Plan 2, we're at minus 622 million. But if we add the 750 megawatt line, we aren't facing quite as much negativity. We're only facing 556 million of negativity.

So it actually helps us mitigate the negativity at the 25th percentile?

MR. JOHN ATHAS: That's correct. There is a difference in the -- in the numbers. They're not -- not equal at any of these comparison points.

MR. ANTOINE HACAULT: Now, the next thing that I want to compare is if we start with the K22 Gas again, and we've looked at Plan 6 and the expected values and the ref/ref values there, between Plan 6 and Plan 12, the main difference is substituting gas with Conawapa in 2031, correct?

MR. JOHN ATHAS: Yes.

MR. ANTOINE HACAULT: So if we've kind of seen that it's worth perhaps doing the 750 megawatt line compared to the Plan 2 and we've seen that improved a bit, if we do a Conawapa, how does that compare to, on an expected value basis, compare to Plan 6?

Does choosing Conawapa with the seven-fifty (750) make the plan better? On Plan 12.

MR. DANIEL PEACO: You're comparing the expected value between six (6) and twelve (12)?

MR. ANTOINE HACAULT: Yeah.

MR. DANIEL PEACO: Yeah, which -- and -- and putting Plan 12 in -- in this -- in this table is lower.

MR. ANTOINE HACAULT: So tying in the 750 line to Conawapa in -- in this case, Plan 12, does not make our plan better; it makes it worse, both on the expected value and the ref/ref value.

Is that fair?

MR. DANIEL PEACO: Tying in the seven (7) -- I mean, the seven-fifty (750) is in both of those cases.

MR. ANTOINE HACAULT: But with Conawapa, if you tie -- add the Conawapa to the mix instead of gas, the plan does not fare as well?

MR. DANIEL PEACO: Yeah, I -- I guess I -- I thought I understood your question to be asking about a change in transmission and --

MR. ANTOINE HACAULT: No. Given the 750 line --

MR. DANIEL PEACO: Yeah.

MR. ANTOINE HACAULT: -- if you choose Conawapa over gas, so that's choosing twelve (12) over six (6), the plan does not do as well. The expected value moves down from three hundred and eighty-six (386) in Plan 6 down to one hundred and fifteen (115) in Plan 12.

Do you see that?

MR. DANIEL PEACO: Yes. Yes, I see that.

MR. ANTOINE HACAULT: And the same thing with our ref/ref value at -- the Plan 12 does not do as well when we choose Conawapa. It -- it goes down also.

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Now, what about -- we had a comment on the risk. Comparatively, adding Conawapa to the 27th (sic) percentile, what does that do to our risk exposure if things don't go exactly like we think?

MR. DANIEL PEACO: The 25th percentile?

MR. ANTOINE HACAULT: Yeah.

MR. DANIEL PEACO: Yeah, it -- it goes to negative billion four-eighty-two (482).

MR. ANTOINE HACAULT: So we're exposing ourselves at the 25th percentile to close to a billion dollars of additional risk.

Is that fair?

MR. DANIEL PEACO: By that calculation, yes.

MR. ANTOINE HACAULT: So not only does it not fare as well in expected value in ref/ref, but choosing Conawapa exposes us to a fairly significant amount of risk in Plan 12 as compared to Plan 6, correct?

MR. DANIEL PEACO: Yes, correct.

MR. ANTOINE HACAULT: Now, the only other thing that I want to see what this is telling us is -- 'cause we've been asked certain things. And one (1) of the things is, Okay, well, do we invest in the seven-fifty (750) line. I think we've looked at those numbers.

The other thing is, do we decide to go ahead with the WPS sale? Now, we've got Plan 6 which we saw improved from Plan 2. And the difference between Plan 6 and Plan 5 is we're being asked, Let's sign on with this WPS sale.

Is that fair?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: There's a bit of difference as to when you put your gas in.

Do you think that that's a material difference?

MR. DANIEL PEACO: It -- if you think about the changes between -- are we -- and we're comparing six (6) to five (5)?

MR. ANTOINE HACAULT: Yes.

MR. DANIEL PEACO: You -- you put it -- advancing the Gas Plan six (6) years and -- and injecting the contract, obviously, you've got -- it -- it adds some costs and moves forward some costs in time, which is going to increase the cost of the plan from that standpoint. But then you're -- you're adding the -- the offsetting firm revenue from the contract. The contract, I'm not sure it's the same size as the Gas Plan, but that's -- those would be offsetting, you know, costs and revenue.

MR. ANTOINE HACAULT: Okay. But if we look at Plan 6, the expected value is 386 million. And if we choose to sign onto the WPS sale, we don't see an increase to expected value. In -- in fact, it's telling us the reverse is happening.

It's going down to two hundred and sixty-eight (268) expected value, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: So somehow this increased revenue from the sale doesn't appear to be offsetting the extra costs that you've mentioned of putting the gas earlier in 2025.

Is that fair?

MR. DANIEL PEACO: That's what it appears, yes.

MR. ANTOINE HACAULT: And it's the same thing with respect to the ref/ref/ref. If we go to Plan 6 and compare it to Plan 5, which is basically adding, Please accept that we want to do the WPS sale, even at the ref/ref/ref it's telling us that the economics are not as good if we sign on and -- and proceed with the WPS sale -- with -- that's comparing six (6) and five (5).

MR. DANIEL PEACO: I see that.

MR. ANTOINE HACAULT: Now --

MR. DANIEL PEACO: There is one (1) thing I just want to point out, that the -- the reason for the timing change in gas is because you need the dependable energy -- the dependable energy resource earlier. So it's a -- there -- it's not an arbitrary cost change. It's a consistent reliability planning criteria, difference in cost.

MR. ANTOINE HACAULT: Understood. Thank you for that clarification. Now, the last thing that we've been asked to do -- and this is the Preferred Plan -- if we compare going from 6 -- Plan 6 now to Plan 14, we're being asked to go -- to do two (2) things: invest in Conawapa and allow that WPS sale to go ahead.

That's basically the difference between Plan 6 and Plan 14, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And let's focus firstly on the risk that Manitobans would be asked to take in moving to Plan 14 at the 10th percentile and the 25th percentile.

From -- at the 10th percentile, risk in Plan 6 is about a billion dollars to the negative, correct?

MR. DANIEL PEACO: The 10th per -- pro -- you said a billion?

MR. ANTOINE HACAULT: Yes, for Plan 6.

MR. DANIEL PEACO: Oh, Plan 6. Yes. I'm sorry, yes. That's correct.

MR. ANTOINE HACAULT: And Plan 14, the swing is to nearly $3 billion.

So Manitobans are at the 10th percentile being asked to take a $2 billion risk?

MR. DANIEL PEACO: Yeah, I see that.

MR. ANTOINE HACAULT: Now, if we go to the 25 percentile and compare how Plan 6 does, depending how risk adverse we are, we're moving from Plan 6 at $556 million of negativity, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: To Plan 14, at one billion seven hundred and sixty million (1,760,000,000) of potential negativity at the 25th percentile, correct?

MR. DANIEL PEACO: Yes, I see that.

MR. ANTOINE HACAULT: So Manitobans are being asked to take a risk of about $1.2 billion at the 25th percentile.

Do you see that?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: That's comparing Plan 6 to Plan 14. Now, let's talk a little bit about the positive. I don't want to only focus on the negative.

The positive would be at the 75th percentile, right?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: So Plan 6 at the 75th percentile, we've got a little bit over a billion dollars of potential upside.

Do you see that?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Now, for the extra $5 billion of investment at the 75th percentile, how much upside are we thinking we might get?

MR. DANIEL PEACO: It looks like about six dollars ($6). Or six (6) -- $6 million.

MR. ANTOINE HACAULT: Yeah, 6 million. Yeah, don't worry I've been making that mistake all the time. So that -- that, in the scheme of things over the length of time, that's really insignificant.

Would you agree?

MR. DANIEL PEACO: Those are pretty close to dead even.

MR. ANTOINE HACAULT: Yeah. So potentially if we look at the 90 -- the 90th percentile, there is some reward there. But up to the 75th percentile, either it's not good news or we're kind of faring pretty much the same.

Is that fair?

MR. DANIEL PEACO: It's how those numbers lay out, yes.

MR. ANTOINE HACAULT: And if we look at the difference between expected value, Plan 6, and Plan 14 our expected values for Conawapa and the WPS sale and the 750 line don't look as good.

We go down to a hundred and twenty (120) from three hundred and eighty-six (386), correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And even the ref/ref is pretty much the same, but a little less, from six-sixty-two (662) for Plan 6 to six-fourteen (614) for Plan 14.

MR. DANIEL PEACO: I see that.

MR. ANTOINE HACAULT: So with this information, would the graph that you had produced in your update tell us a different story?

You had put -- if we can go, Diana, to page 24 of Exhibit 12-2.

(BRIEF PAUSE)

MR. DANIEL PEACO: This is the...

MR. ANTOINE HACAULT: Maybe it's not twenty-four (24).

MR. DANIEL PEACO: You're looking at my presenta -- you're looking for my presentation, or the --

MR. ANTOINE HACAULT: No, it was the update of 9A and 9B. It's --

MR. DANIEL PEACO: The addendum?

MR. ANTOINE HACAULT: -- 'L' -- La Capra-12-2. And it may be because -- oh, there it is. Yes.

This quilt that I've just taken you through, sir, which is the updated information without the WPS investment, seems to tell us a different story than the graph that you were able to put up, which still included the WPS investment, correct?

MR. DANIEL PEACO: Yeah, that's the one (1) difference between the -- the March 10 numbers that we used to build this table and the -- the more recent quilt.

MR. ANTOINE HACAULT: So would you be able to redo this kind of graph, but with the quilt that we have that I've just taken you through at Exhibit 104 at page 3?

MR. DANIEL PEACO: For the reference

case?

MR. ANTOINE HACAULT: Yes.

(BRIEF PAUSE)

MR. DANIEL PEACO: Yes, we can do that.

MR. ANTOINE HACAULT: Now -- so the undertaking will be to redo Figure 9-99U --

THE CHAIRPERSON: Me. Hacault? Just a second please.

(BRIEF PAUSE)

MR. CHRISTIAN MONNIN: Mr. Chair, she was asking for clarification of --

THE CHAIRPERSON: Okay.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: To update that graph, taking into consideration the reference values shown at page 3 of 7 in Exhibit 104-8 for Manitoba Hydro.

Now, you had also, as part of the updated information, I think it was at slide 72, given us the expected values --

MR. DANIEL PEACO: Could -- could I go back for just one (1) second?

MR. ANTOINE HACAULT: Yep.

MR. DANIEL PEACO: On that undertaking, we had talked about the Plan 4. Do you still want the Plan 4 step in that picture? The 250 line?

(BRIEF PAUSE)

MR. ANTOINE HACAULT: So to clarify, the undertaking would be to redo Figure 9 -- 9-99U from Exhibit -- La Capra Exhibit 12-2, and with the precision that you don't need to put the 250 line. You can put the 750 line only in -- in the bar graph.

MR. DANIEL PEACO: Okay.

--- UNDERTAKING NO. 108: La Capra to redo Figure 9-99U

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Now, sir, we've seen the story change quite a bit just with the capital costs and the no WPS investment. And we've seen the story change again with the level of DSM.

Using my colleague's wording, do you

think that the analysis that we have and the economic analysis works without having a quilt for the Level 2 DSM and seeing how that affects all the plans and the 2012 assumptions, which are not included?

MR. DANIEL PEACO: I guess my answer to your question is no different than the one I gave Mr. Williams, that we -- you know, we've put forward the information as best we -- we can. But -- but it clearly would be better to have a complete analysis than not, but we don't have that.

MR. ANTOINE HACAULT: I can appreciate you don't have it and the Board doesn't have it. And I'm kind of sitting in the Board's shoes in saying, Well, listen, I've seen little snippets on a Preferred Development Plan and maybe Plan 5 as to what happens.

Is there any help you can give the Board at this time? Or, really, for the Board to understand what happens, it needs to have the proper quilt with DSM too.

MR. DANIEL PEACO: Well...

MR. CHRISTIAN MONNIN: Mr. Hacault, I believe that Mr. Peaco's answered the best that he can at this point in time, that particular question. If the Board wants further analysis to be done, that's within the purview of the Board, but La Capra has provided the information as best as they can, given the data they have.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: And hopefully I'm not kind of misstating it, but do you have any sense as to whether this new analysis would be a material change as compared to what we have right now?

MR. DANIEL PEACO: Well, the -- what -- what's the chart, the waterfall chart?

(BRIEF PAUSE)

MR. DANIEL PEACO: I think if you -- you know, if you look at slide 18 of our presentation, we tried to distill this, at least in terms of expected value, in terms of what we're expected to see if you were to do this on the Preferred Development Plan. It's -- in the -- you know, we do this in the -- in the interest of realizing that the panel has -- has a deadline to do, and we get a -- help them get -- you know, as -- as imperfect as the information is this is what we have, and take what insight from it we can. But -- so it was our -- our attempt in this to -- to shed some insight into some of the changes that would occur there.

I think that as the focus really has shifted away from the Preferred Development Plan to some of the other pathways, you know, we -- we don't necessarily have as much insight there, but we do have -- well, we recently have received and haven't yet looked at it in much detail, some of the additional information on the plans that have been tested with -- with DSM Level 2, which will give us -- would give some insight to it, but that's -- that's the -- the state of the information we have at this point in time.

MR. ANTOINE HACAULT: Thank you, sir. The reason I was asking the question is if I was -- and I'm not pretending to be sitting on the Board, but if I was sitting on the Board I'd probably want to know, is this going to be material? Do I have enough information? Because one (1) of the tasks that I understood La Capra to have to undertake was to test whether or not it was a sufficient analysis, whether it was reasonable, and whether it was -- there was sufficient due diligence done.

And I know I'm kind of putting you on the spot. If you can't give us a sense as to whether or not these changes across all the plans might tell us a materially different story on DSM, you can't answer.

But if -- if you had been able to give us some kind of insight as to whether or not you -- you thought it might tell us a different story about the alternatives, that would be useful.

MR. DANIEL PEACO: Yeah. I guess my thought is -- I think I've already stated that, and I guess the -- I guess the question is, What else is it you're looking for me to -- to articulate? Clearly we've talked a lot today about the fact that DSM Level 2 really changes the outlook of the -- of the net loads that need to be served, the timing of the need for new capacity and energy to serve domestic load as an economic impact on cases, and changes in material ways the -- the relative economics of -- of other cases.

I'm not sure what else I can offer you in response to the question than what we've already covered.

MR. ANTOINE HACAULT: So it'll be up to the Board to decide whether or not it -- it wants to, or needs to have that information, or whether it even has an option to be able to get it --

MR. DANIEL PEACO: And --

MR. ANTOINE HACAULT: -- and we'll leave it for the Board --

MR. DANIEL PEACO: -- I think -- I

mean, in an ideal world you'd like to have all new update, but I -- but also I know that they're on a schedule, and as -- at some point they have to draw a line. And -- and I'm -- I'm not advocating, you know, doing it or not doing it. I'm just saying that practical realities maybe there's a limit to how much of that you can do.

But what we tried to indicate here is clearly the -- these -- the changes that have come to the fore in the last month clearly, as -- as best we can understand it, do have a material effect on the economic analysis that was previously available to us, and on the table.

MR. ANTOINE HACAULT: Thank you very much. That's very helpful. And that you for trying to answer that question. I know I put you in a difficult situation.

The next area that I'd like to discuss with you, sir, is -- relates basically to the financial analysis.

You completed in your reports an economic analysis and a financial analysis, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: And that financial analysis was done based on the original filing as presented by Manitoba Hydro, correct?

MR. DANIEL PEACO: Yes.

MR. ANTOINE HACAULT: Without the new updates that have occurred since then, correct?

MR. DANIEL PEACO: Yes. I guess my understanding that the financial panel introduced some -- some updates. I'm, as -- as you may know, I'm not -- we haven't had an opportunity to get immersed in the evidence that was introduced in the financial panel.

MR. ANTOINE HACAULT: Okay. And let me try and attack this in the same venue. If we go to Exhibit 12, I believe that's L -- La Capra-9a at the bottom of page -- hopefully it's page 16. That's my note.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: At -- at the bottom of this page -- yes, that's -- that's good, Diana. Thank you very much.

We see a reference to the unleveraged cash flow approach. That's the economic analysis that we've been talking about, sir. Is that correct?

Maybe we can just scroll up a little bit, Diana, I think, at the --

MR. DANIEL PEACO: Yes, that's correct.

MR. ANTOINE HACAULT: Okay. So at the very last paragraph where I'm reading the unleveraged cash flow, I could read the -- Manitoba Hydro's economic analysis approach is primarily a Manitoba Hydro perspective rather than a Manitoba Hydro customer's perspective.

Is -- is -- am I reading that right?

MR. JOHN ATHAS: That's correct.

MR. ANTOINE HACAULT: And if we go to the next page, page 17, at the top of the page, La Capra is talking that this is useful when the analysis is focussed on single investment projects that have shorter installation or construction periods.

Is that correct?

MR. JOHN ATHAS: Yes.

MR. ANTOINE HACAULT: But -- and here, could you explain to me why you make the next comment:

> "Generally anything more involved, such as development plan comparisons, would be better served with financial analysis, or at least where a utility is involved, a revenue requirements analysis"?

Why does La Capra have that view on what the financial metric is going to tell us?

MR. JOHN ATHAS: Okay. Let's take it in steps. The financial analysis part is very analogous to the question of -- of what -- what would you do if you were a merchant generator or a merchant making an investment? And if it was a very big investment and you knew you were going to get leveraged with 60, 50, 80 percent debt or something of that sort, you'd probably want to do -- you'd probably do your analysis on the -- on what your return on equity is after accounting for all the financial and debt costs and other -- other parameters like -- and tax effects and things like that. That's probably the level of prudence that any owner of a company, whether they be stockholder or privately owned, would expect their -- their development community to do.

In the -- in the -- in doing an analysis as -- from a utility standpoint where there is a, you know, rather complex decisions, and it also has to do with -- actually kind of a -- almost most decisions -- and it has the fact that the ratepayer tends to be deep pockets in the -- in the analysis and the -- and the situation that a revenue requirement analysis tends to be more indicative of the eff -- effects on the ratepayers. We did some preliminary analysis and said that -- showed that at the long period of time the -- those -- the revenue requirement analysis doesn't give different indicators than the unleveraged cash flow. But on the -- in the shorter periods of time, like the twenty (20) or thirty-five (35), you'd have a -- you'd have a different -- a difference to be developed.

MR. ANTOINE HACAULT: Thank you. Now, if you -- as you have correctly pointed out, we haven't received a full financial update.

Would it be fair to suggest that if the updates from an economic analysis perspective were material, that one would expect that the updates from a financial perspective would also be material to the analysis?

MR. JOHN ATHAS: It depends on which metric you're looking at for financials. In our financial 10A and -- and in all the information that -- that Manitoba Hydro put forward, there's several different metrics, whether it would be cost of electricity or -- or what's happened to retained earnings or -- or leverage and things like that.

So it -- it will change it materially. It will change the numbers materially enough that you see it in that regard. The interpretations of them is -- is probably best made by -- after you see it.

MR. ANTOINE HACAULT: So this panel will have to decide then whether or not it wants to see the numbers, which you believe would change materially, so it can decide whether or not, in its analysis, it -- it changes their conclusions.

Is that fair?

MR. CHRISTIAN MONNIN: Mr. Hacault, that's -- they -- they can't speak for what the panel will deem to be relevant or not, or what they want to look at. Again, I think the answer has been provided, that they have the data. And in fact, with respect to financials, they don't have the data, but it's up to the panel to determine what -- what they need.

MR. ANTOINE HACAULT: From MIPUG's perspective, we make the request that La Capra have the opportunity to review and analyze the updated financial information. It'll be up to this panel to decide whether or not it does it.

And the same thing with respect to the economic information. We make the suggestion, and -- and maybe a little bit stronger -- the request that it -- it consider having La Capra do updated analysis with the updated economic and financial parts of that analysis.

I'll -- I'll leave that there, I guess.

I don't need a decision. I'm just setting out MIPUG's views.

THE CHAIRPERSON: Your views are noted. Thank you.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Now, sir, there's some things that Manitoba Hydro is going to be doing, as I understand it, in the new financial analysis. But there's a couple points that I just want to bring to your attention that don't appear to be considered by Manitoba Hydro in its financial analysis.

The first one (1) is sunk costs. When I was asking questions of Mr. Rainkie of Manitoba Hydro as to what would happen in the real world with respect to sunk costs, he indicated it would not necessarily follow the assumptions that were used in the financial analysis.

It -- were you able to follow the transcripts to -- to see that? I -- hopefully I'm summarizing it correctly.

MR. JOHN ATHAS: I -- I did get a chance to just glance at that transcript. I think it -- it was very consistent with, in general, that the -- that the -- from day 1, I believe, the financials were put forward here as -- as providing indic -- indicative metrics and not necessarily a financial plan under any of those -- those scenarios for -- whether it be rate path, or -- or financing paths that we use.

And I think that would also probably apply to other elements like how to do the accounting for -- for sunk costs, yes.

MR. ANTOINE HACAULT: So, Diana, it's at our book of documents 20-7. So the latest one, at page 11.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: So -- and you see this is part of the transcript that's reproduced in our book of documents. But it was with respect to a discussion related to the assumptions that are done in the financial analysis versus what would happen in the real world with respect to this 88 to $89 million per year.

If we didn't need to make a plan absorb those costs, would it change the relative merits of the plans?

(BRIEF PAUSE)

MR. JOHN ATHAS: The merits that -- merits that we like to look at are comparative metrics. And the -- to the extent that the sunk costs are sunk, whether it's an economic analysis or financial analysics -- analysis, primarily the effect is -- is small in the financial and nonexistent in the economic analysis.

So I -- I think that the -- taking the assumption that the plan would not have to absorb the sunk costs, I'm not sure -- I'm not sure where those sunk costs go that -- to -- who -- what -- who is going to have to absorb that to -- to even postulate.

MR. ANTOINE HACAULT: Let me -- let me take it step by step. I think in the economic analysis we don't consider the sunk costs at all; we just consider the incremental values.

Is that inconsistent with what your understanding is, sir?

MR. JOHN ATHAS: That's my understanding.

MR. ANTOINE HACAULT: And with respect to the financial analysis, however, when we look at plans that are all gas, the All Gas Plan is asked to assume over eighteen (18) years the sunk costs of Keeyask and Conawapa.

Is that consistent with your understanding, sir?

MR. JOHN ATHAS: Yes, it is.

MR. ANTOINE HACAULT: And when we look at the Plan 2, which we had looked at, which is the Keeyask with Gas, because it doesn't include Conawapa, that Plan is asked to absorb the sunk costs with respect to Conawapa.

Is that consistent with your understanding?

MR. JOHN ATHAS: Yes.

MR. ANTOINE HACAULT: Now, the next issue that I had raised with the financial panel that doesn't appear to be considered by Hydro was the different approach in the depreciation rates. That was a move from equal -- or average service life method of depreciation for the Keeyask and Conawapa plants to an equal life group method of depreciation, which I had taken the financial panel through.

And there was about a 30 million -- it was $31 million difference between those two (2) approaches, which is not included; so $31 million of additional annual expense would be included, say, in the year 2030.

Again, if the evidence of Manitoba Hydro was that they were moving towards that depreciation methodology, would it be something that La Capra would be able to incorporate in its analysis in the same way as it might be able to incorporate, say, the real world view of sunk costs?

MR. JOHN ATHAS: Well, the safest way to answer that is, if that was in the original model would it have changed -- would it have affected the numbers we produced? Yes.

Do I -- depending on how they're going to change it, do I know whether we can easily incorporate it? I don't know.

MR. ANTOINE HACAULT: Okay. And does the same answer stand with respect to sunk costs? You don't know whether you could incorporate if the Public Utility Board asks to say, Well, let's take a real world look at this, not just an assumption, that the sunk costs are going to be fully amortized over eighteen (18) years, is that something La Capra could do, or you don't know?

MR. JOHN ATHAS: I'm not sure.

MR. ANTOINE HACAULT: Okay. I'm going to be asking you the same kind of question. And if, at one point in time, I don't -- this is not an undertaking. But if you have a different view or --

that you might be able to provide us that information and -- could you let us know whether your view changes and what kind of work would be involved if you thought you could do it?

And that would hold true with respect to all the different things that I'm going to cover here that are -- are not included in the Manitoba Hydro analysis. Would you be willing to consider that, sir? It's not an undertaking. But just if -- if your thought process is -- is different at -- when you have more time to think about it.

MR. CHRISTIAN MONNIN: If I can just chime in on that point, Mr. Hacault. My -- my concern is the same as -- as the earlier one which I raised. If you're asking him to speak about something -- or something that they haven't done yet and haven't been asked to do yet based on data that hasn't been provided, again, it certainly was the purview of the Board to request that once that data comes in. But I -- I don't know if they're able to speak to something that's clearly hypothetical of the grandest order.

MR. ANTOINE HACAULT: Okay. Fair enough. Then MIPUG makes known its request and views that these additional items which are not included in the Manitoba Hydro analysis accumulatively affect the financial analysis, and it's MIPUG's view that they should be considered so that the Board can make a proper determination. The --

THE CHAIRPERSON: Your concerns are noted, Me. Hacault.

MR. ANTOINE HACAULT: The -- understanding the limits that the -- that are imposed on the panel, of course, thank you very much, Mr. Chairman.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: The next item that had been dealt with was -- and this is in MIPUG book -- book of documents 20-5 at page 110.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: You'll see, sir, just above the net income heading there's a heading called 'Non-controlling Interest'.

Do you see that?

MR. JOHN ATHAS: Yes.

MR. ANTOINE HACAULT: Do you have any understanding of what that items about? Not really? I'm looking at your face.

(BRIEF PAUSE)

MR. JOHN ATHAS: Our understanding at one (1) point was -- is that that has -- has to do with the -- the -- has to do with the fact that there's minority owners.

MR. ANTOINE HACAULT: Yes. And it relates to a facility called Wuskwatim, and my line of questioning raised that in a prior hearing on December 12 of 2012 the then-CFO, Mr. Vince Warden, had indicated that the amounts that are shown here, he was certain that they would not be collected by Manitoba Hydro, although they are shown in this forecast. The effect would be to reduce the net income by the amounts shown as positive numbers here, ironically.

Knowing the exact numbers as shown in -- in this financial forecast, is that something that La Capra, if requested by the PUB, could model and -- and determine?

Is -- is that clear enough?

MR. JOHN ATHAS: Let me make sure I understand what you're -- are you talking about incorporate that change into our analysis?

MR. ANTOINE HACAULT: Yes.

MR. JOHN ATHAS: I don't think it's

material at all.

MR. ANTOINE HACAULT: You don't think it's -- okay. So it's just another item, but adding the -- because I'm not too sure I didn't add them all.

But about -- over 100 million wouldn't be material?

(BRIEF PAUSE)

MR. JOHN ATHAS: For the purposes and observations of the -- of the numerical analysis that we did to try to understand the impacts of the Preferred Development -- the Development Plans, it would not be material.

MR. ANTOINE HACAULT: Okay. So with respect to rates, sir, if the Corporation had defined over $100 million, do you know how much rates would have to increase to be able to -- to collect another $100 million plus?

Do you have any sense of what Manitoba ratepayers would have to pay, as far as an additional increase to find that $100 million?

MR. JOHN ATHAS: If they were looking at the chart right here, if it says fourteen (14) -- $1.4 billion at approved rates in 2014, then you suddenly added a hundred million dollars to that, it would go up by a hundred million dollars.

MR. ANTOINE HACAULT: And roughly speaking, then you would do the -- the portioning, so it would be some -- perhaps 8 or 9 percent that Manitobans would have to pay more to collect that? It wouldn't be continuing, but the one (1) shot.

MR. JOHN ATHAS: We have not dealt with any proportioning to -- to speak of.

MR. ANTOINE HACAULT: Okay. Now, the next item that we dealt with in the financial panel were the water rentals.

In MIPUG-20-6, pages 37 and 38, the -- were you aware, sir, that the water rentals don't have any inflation factor after the first thirty-five (35) years? Sorry, during the first thirty-five (35) years?

MR. JOHN ATHAS: In -- in terms of the rate of -- that they charge for -- per kilowatt hour? That's my understanding from the way we -- the way we did the economic analysis.

MR. ANTOINE HACAULT: So if the province doesn't keep the water rental rates at a constant level directionally, is that good for the financial modelling, or not so good? Does -- does it make it -- is it an additional expense that makes it look more onerous on ratepayers, or is it a savings that we can pass on to ratepayers?

MR. JOHN ATHAS: If they increase the water rental rate, there would be a increase in some digit, of whether it's -- whether it's the, you know, thousands of cents per kilowatt hour, or a cent per kilowatt hour, I'd have to know exactly what they are talking about for the -- for the increase in water rental cost.

MR. ANTOINE HACAULT: But the difference between the All Gas Plan, when we don't add any additional hydrology, and Plan 14, where we add -- add two (2) units of hydr -- hydraulic power, it would affect the economics of Plan 14, because those plans would generate more water rentals, correct?

MR. JOHN ATHAS: Correct.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: Now, I'd like to switch just a little bit and talk about rate design, and if we could go to La Capra Exhibit 13, that's your Schedule 10A at page 53.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: I'd like to help you, or help us understand what this graph is intended to tell us.

MR. JOHN ATHAS: The -- the understanding that we have at La Capra from how the -- from some of the choice of parameters that were used in the modelling, that some of them are -- I wouldn't call them fixed related to a -- a policy of the province or -- or accounting rules. Some of them have a -- a little bit more up for -- they're more variable.

One (1) of which is the -- is the target year for which they reached the 75 percent debt target, and they chose -- they chose 2032, where that -- where that dashed line is. And the -- and we ran a parametric analysis to say, How would you -- how -- how would the equal annual rate increases metric that was produced by Manitoba Hydro change by -- for a few plans with that -- with that assumption so that where something was in the order of, you know, depending on the plan, 3 1/2, 4 percent at the tar -- at the dashed line. If you suddenly said, I want -- I'm going to move my target from 2032 to 2020, you're now talking about 12 percent of 14 percent equal annual rate increases.

And that was to provide information as

to how big a difference in that metric could -- could show up from the assumption of the year which 75 percent debt is reached.

MR. ANTOINE HACAULT: So that if Hydro was able to convince the rating agencies and other people that need to be involved in that decision that instead of reaching it in 2032 we would stretch that out to 2040, we wouldn't need to see rate increases in the order of 4 percent; we'd be a little bit above 2 percent.

Is that what this graph is telling us?

MR. JOHN ATHAS: Yeah, it's probably like a little less than 4 percent, to two (2) -- like to a little more than two (2) percent, so it might be, you know, a percent and a half.

THE CHAIRPERSON: But a 2 percent -- two (2) point something percent increase stretched out to 24 -- 2040 would yield 75:25 at that point?

MR. JOHN ATHAS: That's correct.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: And this is based on the old 2012 information, not the updated capital costs, et cetera?

MR. JOHN ATHAS: Correct.

MR. ANTOINE HACAULT: Now...

(BRIEF PAUSE)

THE CHAIRPERSON: What's surprising about this is how little the -- the Preferred Development Plan impacts rates going out. You know, you would have expe -- I would have expected the Preferred Development Plan, which is supposed to yield significant returns fifty (50) years out or seventy (70) years out, and so on, I would have expected that to have a material impact on lowering rates to ratepayers.

And it doesn't seem to be happening here.

MR. JOHN ATHAS: For instance, I mean, you're looking at, like, say when you're at the 2060 parameter, that you would have thought that it was a much different equal -- equal annual. That's -- yeah, that -- that's -- that's true at that point. It's -- you know, it -- it hasn't changed it to if you made the 75 percent target way out in that time.

I mean, it's not the same question as if you start -- where that -- how close that would be packed there if you stu -- if you stuck with the target. I don't want to leave anybody the misimpression that that -- that that -- no matter what the assumptions are, that that 2060 number is as clustered as it is.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Now, in its report, La Capra says that before this is done, we would need to confirm it does not need to possible impacts on boring costs for Manitoba Hydro and the province and that it could have further impacts on ratepayers.

Is La Capra in a position at all to provide any insight on whether or not stretching the target date to 2040 would have impacts on boring costs for Manitoba Hydro and the province?

MR. JOHN ATHAS: We're not in a position to...

(BRIEF PAUSE)

MR. ANTOINE HACAULT: Now, another subject that has been discussed in the -- the financial analysis side is the -- the US assets and costs. And on March 21, our understanding is that the new analysis by Hydro would not include the high capital cost scenario for the Great Transmission Line.

Does La Capra have any information on what the additional cost is, or the high metric, is of the Great Northern Transmission Line as compared to the ref costs?

MR. JOHN ATHAS: In the information that we may -- all the information we've collected to try to do some analysis, this probably is the difference in that number. It wasn't something that we focussed on at all, so I -- I don't believe that we -- we would have it in any of our work papers.

MR. ANTOINE HACAULT: So let me show you, sir, in Volume V of our book of documents, page 177. If we go down further, Diana; thank you very much.

With respect to the Great Northern Transmission Line project estimates -- and, sir, this is from some material that was taken from the application for certification of this 500 kV line -- is La Capra aware that the estimates put in front of that regulatory proceeding goes from a midpoint of 507 million to 609 million?

(BRIEF PAUSE)

MR. DANIEL PEACO: We'd have to check to see if -- if we have this particular set of information. I'm not -- we have information on the cost of the line, and I just -- as I say, I don't recall whether this particular document is one (1) that we have or not.

MR. ANTOINE HACAULT: Could you just check to see, sir, whether or not, in the high capital costs scenario, whether or not that high capital cost scenario includes the extra 100 million for the Great Northern Transmission Line to the extent that Manitoba Hydro has to pay for it?

MR. DANIEL PEACO: We -- the high capital cost scenario meaning the -- the updated capital cost analysis?

MR. ANTOINE HACAULT: No, the -- the one that you have. You know, you've -- you have received an initial filing from Manitoba Hydro. As I understand, you're going to look to see whether or not the high capital cost scenario includes a higher capital cost for the Great Northern Transmission Line project to the extent Manitoba Hydro has to pay for it, because it doesn't have to pay 100 percent of it.

MR. JOHN ATHAS: Okay. Subject to check, I -- I think that the change in transmission cost was not -- in high and low was not part of the -- the high -- high or low capital cost scenario, but I can check that.

MR. ANTOINE HACAULT: Okay. Thank you.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: Yes, if you can just repeat what you said, sir, as -- as an undertaking?

MR. JOHN ATHAS: La Capra will be check -- Associates will be checking to see if the high and low estimates on this page are correspondingly used in the economic analysis, the high and low cases for the 2012 analysis.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: It's page 177 of MIPUG Exhibit 20-5.

--- UNDERTAKING NO. 109: La Capra to indicate if the high and low estimates on page 177 of MIPUG Exhibit 20-5 are correspondingly

used in the economic
analysis

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: And, sir, along the same line of questioning with respect to the Great Northern Transmission Line, are you aware as to whether or not La Capra's analysis also included Manitoba Hydro's liability for maintenance of this line over the long term?

(BRIEF PAUSE)

THE CHAIRPERSON: Liability or cost, Me. Hacault?

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Long-term costs for the maintenance. So it's operating and maintenance costs.

MR. JOHN ATHAS: The -- the assumption -- the -- our working assumption is that is in the O&M analysis -- O&M costs in the -- in the financial analysis and in the economic analysis. If it -- if it's not, we weren't aware of it.

MR. ANTOINE HACAULT: So you're not sure, is your answer?

MR. JOHN ATHAS: No, I'm -- I'm -- my working assumption is that that -- that those numbers, to the extent that they -- that they're in some plans and not in the others, would be relevant, and are -- and therefore, are shown -- the O&M costs associated with the application that you mentioned is -- is properly accounted for in the plans.

THE CHAIRPERSON: Would that be -- would that necessarily be the case? I mean, I'm harbouring under the impression that the plans that you reviewed that involved an investment in a transmission line were predicated on the notion that what WPS would be investing in -- in the transmission line.

MR. JOHN ATHAS: Yes, and it's one (1) reason -- I believe there's still some O&M obligations associated with that line that -- that Manitoba Hydro is taking on, and maybe, you know, only -- and -- but I -- we can -- we can check that. I -- you know, certainly it -- it would change as part of the -- when the investment changes to the -- to the new assumption that there isn't a investment by WPS.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: So can you repeat that in the form of an undertaking, that you will check to see whether or not the -- La Capra's analysis includes the ongoing liability of Manitoba Hydro for the operating and maintenance costs of the Great Northern transmission line?

MR. JOHN ATHAS: To the extent that we're working, yes, we can -- I can verify that the -- that it -- that looking at the differences in the cash flows supplied to us on the detailed economic analysis by -- by Manitoba Hydro, I can say it looks -- it -- it gives every indication that they're in there or not. If you really want to know whether they're in there or not definitively, you can -- we -- probably be best to ask the people that put together the economic model.

MS. ODETTE FERNANDES: Sorry, Mr. Hacault. I don't know if it would be of assistance, but Manitoba Hydro did file a response to Undertaking Number 42 as Exhibit Number 139, which was the derivation for the capital cost estimates.

(BRIEF PAUSE)

MR. ANTOINE HACAULT: My suggestion for that is that we take the evening to -- to look at this, and then come back tomorrow morning if we need to do something with it, and that I move on for now.

MR. CHRISTIAN MONNIN: That's -- that's fair. I just -- I just want to make sure the record shows that the attempt at the last undertaking is -- is -- has been scrubbed from -- from the obligations.

CONTINUED BY MR. ANTOINE HACAULT:

MR. ANTOINE HACAULT: Yes. With respect to the cost to the ratepayers, Diana, if you could go to Volume -- the same volume, but page 20? So it's a Mani -- MIPUG Exhibit 20-5.

Sir, let me just preface this. You may not have seen this graph. It was created by -- by InterGroup Consultants, and as you can see at the top of the graph, what's depicted is Plan 14. And as the hearing has evolved, the Plan 14 reference economics and reference the discount rates, but high capital costs mirror pretty closely what the new capital costs are.

I -- I know I'm generalizing, but can we proceed on that basis, and that these numbers are taken from Manitoba Hydro as to what the rates would be or would lead to as far as collecting additional revenues from the ratepayers as compared to the All Gas

reference/reference/reference case.
Has La Capra done similar analysis to show whether or not ratepayers, with the new higher capital costs, what the difference would be in total rates collected from the ratepayers over the time period from 2014 to 2032?
MR. JOHN ATHAS: No, we have not.
MR. ANTOINE HACAULT: Okay. Now, if the calculations are right and the ratepayers are being asked to pay $3.7 billion more under the Preferred Development Plan as compared to the All Gas Plan, would you consider that a material difference?
MR. JOHN ATHAS: I'm not sure I could find anybody that wouldn't.
MR. ANTOINE HACAULT: So from a -- a ratepayer perspective, one (1) of the metrics we can look at, sir, is it fair, is to see what the ratepayers would get for their extra $3.7 billion of investment?
MR. JOHN ATHAS: Yes, that's probably a good kind of analysis to look at, I think, and many of the things have already, the economic analysis comparisons.
MR. ANTOINE HACAULT: But the -- that -- to pick up on that, am I right in understanding that the economics really doesn't look at that? We -- we

saw the -- the numbers on the expected value of the Preferred Development Plan, correct? Let's take it one (1) step at a time.

We saw -- we saw what the economics as revised leads us to, correct?

MR. JOHN ATHAS: That's correct.

MR. ANTOINE HACAULT: But the one (1) thing the economic analysis doesn't tell us is that ratepayers actually pay to Manitoba Hydro $3.7 billion of additional money to get an expected value when we were looking at the graph of about 120 million.

The economic analysis doesn't tell us that the ratepayers paid that money?

MR. JOHN ATHAS: The -- I wouldn't -- I wouldn't expect either Manitoba Hydro or ourselves or a consultant would generally combine the -- the -- a metric that's in present value dollars with a metric that's in nominal dollars, and -- and make that comparison at all.

So I'm -- so I'm not surprised that it doesn't hold anything side-by-side. I -- I would hold out that a very relevant parameter, because we all know that in doing the analysis for Manitoba Hydro under their -- on -- on a leverage cash flow basis, that eventually, those cash flows have to get turned into rates. They have to get collected from ratepayers.

That's why, over the long-term, we've considered that it was reasonable to stay with the unleveraged metric for a little bit of continuity with -- with Manitoba Hydro's work. And the -- the comparison that's -- that seems to be similar to what you're -- you're driving at would be -- it would be best to look at the -- think about that capital -- present value of capital differences between the plan versus net val -- net present value difference at the end of any period of time.

MR. ANTOINE HACAULT: Put it this way. If ratepayers paid the same rates under the All Gas Plan and for the Plan 14, that would change the economics, wouldn't it? There would be less revenue flowing for Plan 14?

MR. JOHN ATHAS: Well, if the ratepayers pay the same rates, the revenue is the same.

MR. ANTOINE HACAULT: The revenue's the same, but the costs are different for Plan 14, so you wouldn't see the benefits that you're seeing, were it not for the ratepayers paying more money.

Is that fair?

MR. JOHN ATHAS: You can look at a present value of ratepayer revenue, ratepayer costs.

You can look at the levelized value of price of electricity. You can look at a number of parameters that come out of the financial model, and properly with a discount rate that would be including inflation. It's just a difference in the models. The -- the techniques are real dollars and nominal dollars.

And you could -- you could put those parameters together, similar to you would put together an economic analysis, and -- and make proper conclusions that -- and if you did that, when you -- in cases where the net present value of -- of costs are substantially lower, the net pre -- I would -- over a long period of time, I would expect that the net present value of revenue differences would also be lower for whichever case you're looking at.

But I don't necessarily know whether that would be the same for nominal, because I don't think it's as -- as relevant a parameter.

MR. ANTOINE HACAULT: It might be a good time to -- to break, members of the panel.

THE CHAIRPERSON: Me. Hacault, I notice that you -- one (1) of the documents was handed out. I don't think we've acknowledged it. We probably should acknowledge it for the record. Is that too early, or --

MR. ANTOINE HACAULT: I think it was marked. I think I confirmed with Mr. Simonsen --

THE CHAIRPERSON: Okay. Okay.

MR. ANTOINE HACAULT: -- that we marked the last Manitoba -- or MIPUG document.

THE CHAIRPERSON: Okay. Thank you.

MR. KURT SIMONSEN: It was marked at 20-7, Mr. Chairman.

THE CHAIRPERSON: Okay, 20-7?

MR. KURT SIMONSEN: Yeah.

THE CHAIRPERSON: Now, I wonder if there's any other business to conduct today? And Mr. Peters, I'm looking to you. If there be no other business, I will adjourn today's proceedings, so we will meet again tomorrow morning at nine o'clock sharp. Thank you very much.

(PANEL RETIRES)

--- Upon adjourning at 5:02 p.m.

Certified Correct,

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Cheryl Lavigne, Ms.