MANITOBA PUBLIC UTILITIES BOARD

Re: MANITOBA HYDRO

NEEDS FOR AND ALTERNATIVES TO

PREFERRED DEVELOPMENT PLAN

TECHNICAL CONFERENCE

Ed Wojczynski - Facilitator

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1 --- Upon commencing at 9:15 a.m.

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3   THE FACILITATOR: Okay. So welcome

4 back, everybody. We're -- we're starting a few minutes

5 late. It's Friday. Things are a bit more casual. I

6 see we've got some good orange T-shirts around that

7 help emphasize the relaxed nature of today, or

8 hopefully relaxed nature.

9   So we have a full agenda going to 3:30.

10 We're more or less on schedule from where we thought we

11 would be with the agenda. Joanne is going to pick up

12 right away her presentation and deal with a few issues

13 and answer some questions.

14   Before we do that though we have our

15 senior vice president, Ken Adams, who has offered to

16 make a few comments and pick up where Scott, our

17 president, left off yesterday. And -- and then after

18 that I had said yesterday that when Joanne was

19 presenting we had some questions that we didn't have

20 the witnesses who could deal with all the issues,

21 obviously, here.

22   One of them was discount rate. We're

23 going to have Ian Page talk about that a little bit,

24 and the issue of hurdle rates versus detailed risk

25 assessment. We don't -- we don't have some of the

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1 other witnesses we could have had here that weren't

2 sort of on the agenda. But at least Ian will say a few

3 words to fill in a little bit of what we talked about

4 yesterday.

5   But before that, I'd ask Ken to come up.

6 He -- Ken's our senior vice president with Manitoba

7 Hydro, and he's had an illustrious career at Hydro:

8 built half of the projects we have and -- and operates

9 half the company, and is a good guy to work for.

10

11 OPENING REMARKS BY MR. KEN ADAMS:

12   MR. KEN ADAMS: Good morning. Welcome

13 to the -- the second day of this technical conference.

14 Been around many of these sorts of things over the last

15 little while, but this is the first time, to my

16 knowledge, we've ever held something like a technical

17 conference as an introductory part of the -- the

18 process.   Now, I was encouraged when the -- the

19 Chairman of the PUB said that he recognized that it was

20 new but his objective -- at least this is my spin on it

21 -- was to reduce the number of interrogatories. I sure

22 hope he's right.

23   Mr. Thomson mentioned yesterday this --

24 from your perspective, this is the start of the NFAT

25 review process. Our people, of course, have been

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1 working on it pretty well constantly now for the last

2 couple of years. I -- I'm also quite convinced that as

3 you go through the process, you'll appreciate that the

4 people involved are good at their game. They know what

5 they're doing. But we have -- have as much certainty

6 about what's going to happen in the future as anybody

7 else in the room.

8   But having said that, I'm quite

9 satisfied that the -- the business case that we put

10 forward will clearly demonstrate the long-term benefit

11 of investing now in new hydro.

12   It will also demonstrate that the -- the

13 future going forward is flexible enough that in the

14 event that the -- the world doesn't unfold the way we

15 anticipated, well, there's opportunities to -- to

16 readdress, re -- realign and go in a different way.

17   I would like to comment that the -- the

18 legacy of previous investments in hydro is manifest

19 today in the low rates and the renewable energy that we

20 in Manitoba enjoy today. Obviously, the fact that

21 people made a decision twenty (20) years ago or forty

22 (40) years ago, or even a hundred years ago, doesn't

23 mean that we necessarily have to make the same decision

24 today.

25   But one (1) of the -- the enduring

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1 things is that the nature of hydro is that once you

2 built it, they have a very, very long ter -- lifespan.

3 And as such, they represent a legacy to future

4 generations that we really have to -- to consider in

5 the decision making now.

6   Also I'd like to comment, in the late

7 1970s -- and I'm young enough to remember it -- we went

8 to the NEB and got approval to build a 500 kV

9 interconnection into Minneapolis, or the Minneapolis

10 area. The basis at that time was that in the long-term

11 it would be economic and beneficial.

12   In the thirty (30) odd years since, it

13 has proven to be extremely beneficial to Manitoba

14 customers, both in terms of economics, in terms of

15 reliability, and our ability to import when we're short

16 of energy. The -- the circumstances surrounding the --

17 that 500 kV line back in the '70s are very, very

18 similar to the circumstances surrounding the new 500 kV

19 line that we're proposing today.

20   Also, in 1990, including several of us

21 in this room sat in front of the Public Utilities Board

22 with what was then our long-term development plan and

23 secured a favourable recommendation to proceed with the

24 construction of the Conawapa generating station.

25   Shortly after we got that approval,

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1 Ontario -- I was going to use a different word, but I -

2 - I -- since we're on the record, I'll modify it a

3 little bit. But Ontario cancelled a related purchase

4 agreement, so we had to sit back and reevaluate the

5 plan. And at that time, we determined that we really

6 shouldn't proceed with -- on that particular path.

7   The fact that we still haven't built

8 Conawapa, now some almost twenty-five (25) years later,

9 really demonstrates that we have an inherent

10 flexibility in our process to that -- that in the event

11 that the world unfolds different from what we expect

12 today, that we do have the ability to change direction

13 or modify the development approach.

14   Also in 2003 we went to the Clean

15 Environment Commission in a -- in a joint economic

16 environmental review. And that review panel also

17 recognized the long-term value of hydro development and

18 approved Wuskwatim generating station.

19   So as I mentioned earlier and as Scott

20 mentioned yesterday, it's now your turn to participate

21 in helping to decide Manitoba's energy future. We look

22 forward to learning of your comments and concerns. I

23 know of the times when we -- sitting up until four

24 o'clock in the morning answering IRs. Some of my staff

25 will probably question that comment, but it is an

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1 important part of the process.

2 But having -- once we get your comments

3 and concerns, we will respond to them. And I'm

4 satisfied that we will present evidence through that

5 process; that we will demonstrate the long-term value

6 and the benefit of our pre -- Preferred Development

7 Plan and that we have in place mechanisms to -- to

8 manage the risks associated with that approach and the

9 ability to -- to modify future direction if and when

10 it's necessary.

11 So thank you very much. I look forward

12 to -- to reading the transcript of this. I am prepared

13 to answer questions, but remember I'm not under oath

14 and that it's not intended to be cross-examination.

15 THE FACILITATOR: Any high-level

16 questions for Ken? It's like a repeat of yesterday

17 with Scott. Okay. Thank you, Ken.

18 MR. KEN ADAMS: Okay. Good.

19 THE FACILITATOR: Before we get started

20 with Joanne, I've got to ask Ian just to buttress or

21 fill in a little bit on one (1) of the issues that we

22 said we didn't have the right people here. Bef --

23 before we do that, just a couple of comments. One (1),

24 I was asked that any of the speakers, if you're using

25 slides, give the slide numbers. That assists in the

 1 transcript so that -- people reading the transcripts

 2 later on.

 3   Given that I'm doing two (2) of the

 4 presentations, I guess I'm talking to myself as much as

 5 anything. But so you'll understand why we keep on

 6 talking about the slide numbers, so. And I guess

 7 that's it. Is there anything else I was supposed to go

 8 through? No. Okay. Ian, up here. Yes, please.

 9   Oh, yeah, and maybe just give your

10 background and where you are in the company.

11

12 POWER RESOURCE PLANNING, ALTERNATIVES, AND ECONOMIC

13 EVALUATIONS PRESENTATION CONTINUED:

14   MR. IAN PAGE: Hello. Good morning.

15 My name is Ian Page, and I'm the division manager of

16 Corporate Planning and Strategic Review. And one (1)

17 of my areas of responsibility is -- is interest rate

18 forecasting, and -- and cost -- cost to capital, and --

19 and the appropriate use of hurdle rates when we use --

20 we're looking at risk-adjusted hurdle rate, or discount

21 rates, when we're evaluating projects on a go-forward

22 basis.

23   There was a question yesterday as to

24 whether we used the same discount rate for different se

25 -- different sequences, regardless of what they are --

1 of the different levels of inherent risk in different

2 cases. And I just wanted to make cl -- sort of expand

3 on -- on the answers that were given yesterday, because

4 I -- I don't -- not quite sure if -- if people got the,

5 sort of the -- the sense that we looked at that and

6 chose not to do that for a particular reason.

7   We traditionally have used risk-adjusted

8 discount rates when we're -- when we're looking at our

9 projects, and -- and we actually have a policy that

10 there's appropriate hurdle rates for the different

11 level of risk of a -- of a project. And those of you

12 who were around at the Wuskwatim hearing will recall

13 that we had a lot of discussion over the appropriate

14 use of discount rate, and what the necessary hurdle

15 rate should have to be, and so forth.

16   We recognized risk was going to be a

17 huge portion of this -- of this process because the --

18 the magnitude of the investment we're looking at. So

19 we wanted to make sure that we had addressed risk in

20 the best possible way. So we -- we went back and had -

21 - and had another loo -- had a look at what the

22 appropriate discount rate should be for use of the

23 hurdle rate.

24   And we got into a lot of discussions as

25 to -- as to the, you know, how robust those -- those --

 1 the choice of rate could be and how -- and -- and we

 2 really started to get -- to get -- recognize that

 3 there's a lot of subjectivity in -- in the choo --

 4 choose -- choice of a risk-adjusted hurdle rate, what

 5 that risk premium should be.

 6   So that -- that was a bit of a problem,

 7 so we tried to see if we could get some more -- more

 8 rigour around that calculation. So we looked at things

 9 -- so we got some experts in. We looked at using

10 capital asset pricing models. We looked at comparables

11 to other -- other industries and utilities and so

12 forth. But it still came back t there was going to be

13 that subjectivity.

14   But there was even a -- a more

15 fundamental problem with using risk-adjusted hurdle

16 rates. And that was -- it was -- it -- it's -- it's a

17 bit of a blunt instrument, in that when we're looking

18 at all the different types of risk that were in a --

19 in a cer -- in a particular case, what we do is say --

20 say, Okay, this one (1) is more risky, therefore I'm

21 going to just discount all the cashflows.

22   And what we're typically looking at is

23 that ca -- with these hydro projects, we're looking at

24 the capital investment up front, revenue stream way out

25 in the long term. So if I have uncertainty in the

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1 revenue and, as I say, there's a risk there, I adjust

2 my hur -- risk premium up. I'm going to discount that

3 revenue stream to recognize that inherent risk.

4 Probably not -- not bad.

5   What if my biggest concern is may -- is

6 capital costs? I have really high concern about the --

7 the capital costs and there's a lot of risk around

8 there, and Joanne's slide showing there was a lot of

9 potential variability there. So if we say, Okay, I --

10 I have an uncertainty of the capital cost, so I'm going

11 to raise my discount rate. Then what I'm essentially

12 saying is, because I'm uncertain on my capital costs,

13 I'm going to discount my revenues for the next seventy-

14 eight (78) years.

15   And that's -- it's -- it's a -- and it -

16 - so it doesn't really address the underlying risk.

17 And the other -- the other problem is that once you get

18 past the -- the -- once the project's built, that

19 capital cost risk is no longer there. So you -- you

20 sort of don't recognize that that risk changes over

21 time and you're not really addressing where the -- the

22 nature of the risk.

23   So what -- so that's why we went with

24 the approach that Joanne as -- went through yesterday

25 afternoon, where we're looking at, Okay, well, let's

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1 look at the probabil -- probability distributions

2 around the inherent -- around each of the areas of

3 risk. And then instead of taking sort of these raw

4 cashflows out of our model, discounting them at a risk-

5 adjusted hurdle rate, what we're saying is let's put

6 the risk adjustment embedded in the actual cashflows so

7 that if -- if a project has a high uncertainty on -- on

8 capital cost, they'll be a lot -- they'll be a wide --

9 wide range of dispersion on the -- on the forecast for

10 -- for capital cost.

11   But then when we -- and if it's a -- a

12 revenue issue, we'll see the same thing on the revenue

13 and so forth. And then what we'll do is we'll discount

14 them all at the same, sort of, corporate riskless

15 discount rate. And -- and we think that gives us a

16 much better -- does a much better job of addressing the

17 inherent risk, recognizing the risk, tells us where we

18 need to focus in terms of managing risk. And -- and

19 it's something that I think that once we get -- all get

20 our heads around thinking in probabilistic terms, I

21 think we'll all understand that it's a much superior

22 tool.

23   Now, as mentioned yesterday, Appendix

24 9.3 does go into a lot of the discussion of the choice

25 of the -- of the high and low for the different

1 variables and the -- and the probability -- selection

2 of the probabilities for those ranges. And I would

3 suggest that everybody read that probably at least

4 twice, that appendix, because it's pretty dense. So

5 you know, read -- just to get your head around the way

6 we've done it. And I think once we all sort of

7 understand and appreciate that, I think we'll understa

8 -- recognize that we have treated risk and -- in -- in

9 the process. And I think we've done -- we've done it

10 in probably a much more sophisticated way than if we'd

11 done a risk-adjusted hurdle rate. And -- and I -- I

12 think we'll all be able to -- be able to focus on -- on

13 the -- on how to manage the risk rather than -- rather

14 than, you know, just arguing over should the risk

15 premium be 2 or 3 percent.

16   We had advisors saying, Well, maybe you

17 should use a lower hurdle rate than your cost to

18 capital to recognize the fact that that -- that long-

19 term legacy that -- that Ken just mentioned. If you

20 use a -- you know, with your discount rate, if you jack

21 that up, essentially you're valuing those long-term

22 assets at -- at zero even though they have that eighty

23 (80) or ninety (90) year life. So that -- that's why

24 we chose the method we have.

25   Any further questions? Mr. Todd...?

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1   (BRIEF PAUSE)

2

3   MR. JOHN TODD: John Todd. Wouldn't

4 want you to have hurt feelings with nobody asking

5 questions, so --

6   MR. IAN PAGE: Sure.

7   MR. JOHN TODD: -- I thought I'd come

8 up with something.

9   Is it fair to say that any methodology

10 is going to involve some judgment?

11   MR. IAN PAGE: Yes. And like one (1)

12 of the areas of judgment involved in -- in when we're

13 looking at the probability distributions is there's --

14 I mean, there's an inherent assumption that when we're

15 trying to figure out, well, what's the range of

16 something, you know, we don't -- you know, we're

17 relying on -- on past relationships and assuming that

18 those past relationships are likely going to remain in

19 place. So -- so there's -- that's -- there's a bit of

20 a judgment there.

21   But it's -- I think if you sort of --

22 sort of look at the -- at those numbers and look at the

23 history and try to get a sen -- well, what would cause

24 it to be different, I think that's -- that's a

25 different discussion than whether it should be, I don't

 1 know, 2 percent, 3 percent. It -- it's -- it's a

 2 different type of judgment, but I think it's -- I think

 3 it's a -- a lot more defensible and something that is

 4 easier for everybody to agree on.

 5   MR. JOHN TODD: Yeah. Okay. I hear

 6 what you're saying. And then -- I mean, I think it's

 7 interesting, what we saw yesterday, there's some cases

 8 where there's dominance, which I thought was an

 9 interesting presentation.

10   MR. IAN PAGE: Yeah.

11   MR. JOHN TODD: Where there's not,

12 there's always some tradeoffs and how do you measure

13 those tradeoffs.

14   MR. IAN PAGE: Yeah.

15   MR. JOHN TODD: So at the end of the

16 day, would you say that when things are really close,

17 that there's some, in a sense, confidence level, if you

18 want, that they become indifferent? It's almost like

19 is it statistically significantly different --

20 comparable to that, where it says: They're getting

21 close so the difference ultimately comes to the way

22 we've applied our judgments or may?

23   MR. IAN PAGE: I think what you -- what

24 you want to do when they're looking close is -- is try

25 to look at what's -- what the differences are between

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1 the -- the two (2) cases. Like if you're looking at

2 what we were looking at yesterday, Case 4 and 14, I

3 believe it was, they were fairly close --

4   MR. JOHN TODD: Yeah.

5   MR. IAN PAGE: -- over -- over a fair

6 bit of time. So if you understand sort of what the

7 nature of the risk is, where the exposures are, then I

8 think that helps you understand that difference better,

9 and -- and where they're common and where they're

10 different.

11   Like there's a lot more capital cost

12 risk in one. Well, okay, well, what can we do to

13 manage that capital cost, box that in? And then -- and

14 then that changes the risk profile of that because the

15 -- the other one was more dependent on -- required

16 recurring reinvestment.

17   So, yeah, I'm -- I'm more certain on

18 capital costs for, say, a gas ET today. I don't know

19 what -- what the markets going to be like for gas ETs

20 twenty (20) or thirty (30) or forty (40) years from

21 now, so there's a bit of uncertainty there. And also

22 I'm dependent on -- they'll be a lot more dependent on

23 gas purchases.

24   So what can I do -- I -- you know, what

25 can I do to reduce the -- the variability on gas --

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1 purchased gas thirty (30) or forty (40) years from now?

2 That -- that'll -- that's a different type of

3 discussion than what I can do to manage capital costs

4 for a project that I'm about to -- about to set out on

5 construction, say, in the next year or two (2).

6   MR. JOHN TODD: So I would conclude

7 from your discussion, good points around -- around

8 risk, that -- I just want to know whether you're on the

9 same path, that given that this process is about

10 providing advice to government that the process

11 primarily is about saying, Here's the judgments that

12 have been applied; here's the tradeoffs that we're

13 dealing with.

14   And government ultimately has to apply

15 its judgments as to what those tradeoff -- how -- how

16 those tradeoffs should be -- should -- how those things

17 should be traded off, the risks, the benefits, and so

18 on. And they've got to understand what they're getting

19 into as opposed to saying, This number is higher than

20 that number.

21   Is that a fair conclusion?

22   MR. IAN PAGE: It's -- it's certainly

23 fair to say, Yeah, you can't just say this number is

24 bigger than that one there -- number therefore this is

25 a better one. And that's why we did the -- you know,

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1 the -- the distributions and the S-curves and -- and

2 the little box and whisker. So you can get a sense of

3 when is it better, when is it not, and -- and then

4 there's all the other factors you want to look at. And

5 that's why we -- we went beyond just the -- the

6 economics and -- and financials.

7   We've got the whole multi -- multiple

8 account analysis that -- that's in the Application

9 where we're looking at a whole range of factors outside

10 of just simple present values.

11

12   (BRIEF PAUSE)

13

14   MS. JOANNE FLYNN: Good morning. I am

15 going to resume my presentation, but before I do so,

16 there are a couple of things that I would like to

17 clarify from yesterday's -- yesterday afternoon's

18 discussion. And then I'll also open it back up for any

19 additional questions that you might not have had a

20 chance to ask at the end of the day.

21

22   (MOVED TO SLIDE 42)

23

24   MS. JOANNE FLYNN: So the first one is

25 I -- as I reflected on it last night and early this

1 morning, that -- that there seemed to be a growing

2 confusion between the treatment of the underlying

3 assumptions and the treatment of the probabilities.

4   And so I just want to clarify that for

5 capital costs and energy price forecasts, natural gas

6 and carbon, and electricity price forecasts, that the

7 underlying forecasts as they are prepared, each have --

8 or they're prepared separately, independently, and they

9 have their own ranges. And those ranges are applied in

10 the economic evaluation.

11   So everything, including the quilt that

12 you saw of all of the net present values for all of the

13 plans under each of those scenarios, are based on those

14 ranges. It is only when we get to the probabilities

15 that there -- that there is -- that the factors are

16 grouped, only for the purposes of identifying the

17 probability that's going to be applied.

18   So -- so I did answer a question -- and

19 I had misheard the question basically -- on the capital

20 costs for hydro, wind, and thermal are -- all have

21 their own separate ranges. So a low reference and high

22 are developed considering the characteristics and

23 considerations and issues around those separate

24 resource types. And the same is true of the natural

25 gas and electricity prices. They're separate

 1 forecasting process -- processes that arrive at their

 2 own forecasts, and those separate forecasts are used.

 3   I would also like to correct a statement

 4 I made yesterday in terms of the significance of the

 5 application of the natural gas price forecast. In a

 6 number of the plans, it is not that significant, but

 7 there are other plans where we have a lot of gas

 8 generation in them. And -- and the natural gas costs

 9 are significant in those plans. So I might have

10 confused things yesterday by -- by what I said.

11   So -- so that's one (1) of the major

12 things I'd like to -- to provide the clarification on.

13 The other is I was asked at the end of the day, and I

14 think it's worth repeating for -- for the group, is

15 what is the period over which we are discounting when

16 we do our eval -- economic evaluations. And it is the

17 full seventy-eight (78) year study life. So I'd just

18 like to make that clarification, as well.

19   Patrick, you told me you weren't going

20 to ask any questions.

21   MR. PATRICK BOWMAN: I made it through

22 ten (10) minutes. I'm looking at your S-curves. And -

23 - and maybe any of the tables that have S-curves, just

24 if you -- if there's a way to pull that up.

25

1   (MOVED TO SLIDE 41)

2

3   MR. PATRICK BOWMAN: So your -- your

4   first comment this morning about correcting the -- or

5   clarifying the comment from yesterday was about the use

6   of probabilities on each variable, not necessarily on

7   groups of variables. And that -- that applies to this

8   part of the analysis.

9   Is that correct?

10   MS. JOANNE FLYNN: Yes, the -- the

11 probabilities are used -- or the box plot and the S-

12 curve have the probabilities applied to them. But the

13 underlying -- like if you look at this chart, you see

14 the, "Ref/Ref/Ref net present values," on it. Those

15 are based on the underlying assumptions built up from

16 there. So then the cumulative probability distribution

17 uses the probabilities that we developed.

18   The development of the probabilities is

19 using the process that I described in -- it's -- it's

20 one (1) of your slides, where we look at the

21 relationships between variables. So we look at the

22 relationships between the electricity prices and the

23 natural gas prices and the carbon prices, but only one

24 (1) probability applies.

25   MR. PATRICK BOWMAN: So when you

1 produce these S-curves, how many variables are being

2 varied to produce a point on this chart? Is it -- it's

3 not just three (3). It's -- it's not your three (3)

4 that you have one the quilt. It's some large number of

5 -- of variables, each of which has a probability

6 associated with it.

7   Is that fair?

8   MS. JOANNE FLYNN: Yes, yes. It's the

9 underlying ones, yes.

10   MR. PATRICK BOWMAN: And so somewhere

11 on this graph, for example, there's a dot which has any

12 given combination of those but weighted for its

13 likelihood of occurrence?

14   MS. JOANNE FLYNN: That's right. This

15 is what -- I'll just repeat what -- what Ian Page said,

16 and that is that this is explained in Appendix 9.3.

17 And how those probabilities are derived is explained in

18 detail in that appendix.

19   MR. PATRICK BOWMAN: And so each of

20 them -- so somewhere on this graph is -- is the dot

21 that has something like high export prices but low

22 natural gas prices?

23   MS. JOANNE FLYNN: No, the high ex --

24 high export pri -- no, the energy prices all move

25 together.

 1   MR. PATRICK BOWMAN: And is somewhere

 2 on this graph a dot that would have high discount rates

 3 but low interest rates?

 4   MS. JOANNE FLYNN: No.

 5   MR. PATRICK BOWMAN: No --

 6   MS. JOANNE FLYNN: Those are the -- in

 7 the probabilities, those are combined.

 8   MR. PATRICK BOWMAN: Yeah. Okay, that

 9 -- I just wasn't sure whether you were saying there was

10 forty-two (42) sliders that are moving --

11   MS. JOANNE FLYNN: No, no.

12   MR. PATRICK BOWMAN: -- or three (3) or

13 --

14   MS. JOANNE FLYNN: Not for the

15 probabilities.

16   MR. PATRICK BOWMAN: Right.

17   MS. JOANNE FLYNN: But for the basis of

18 -- of using the -- like especially in terms of capital

19 costs and the energy and -- or electricity and natural

20 gas price forecasts, those are independently applied.

21   THE FACILITATOR: Maybe just a comment.

22 Joanne mentioned yesterday, and I think it's worth

23 repeating, there are twenty-seven (27) points for each

24 line. Those twenty-seven (27) points are the three (3)

25 variables times high, low -- pardon me, high, reference

 1 --

 2   MS. JOANNE FLYNN: Low.

 3   THE FACILITATOR: -- low. So three (3)

 4 times -- three (3) times three (3) gives you twenty-

 5 seven (27), and that's the twenty-seven (27) points.

 6   MR. ROGER CATHCART: Roger Cathcart.

 7 Just quickly, each of those scenarios was separately

 8 evaluated and had separate judgments put into them with

 9 a framework of adjustments?

10   MS. JOANNE FLYNN: For the scenar --

11 what Ed was just saying, the twenty-seven (27)

12 scenarios are based on those three (3) groupings of

13 factors --

14   MR. ROGER CATHCART: Right.

15   MS. JOANNE FLYNN: -- high, reference,

16 low.

17   MR. ROGER CATHCART: Okay.

18   MS. JOANNE FLYNN: What's underneath

19 them, like for capital costs, there's one (1) category

20 called 'capital costs'.

21   MR. ROGER CATHCART: Right.

22   MS. JOANNE FLYNN: That's the capital

23 costs of the hydro, the thermal, the wind -- and the

24 wind, as examples. Okay. So each of those have their

25 own high reference and low range. The probability, the

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1 likelihood, of what the low is going to be, the

2 likelihood of what the high is going to be, that same

3 likelihood is applied, that same weighting or

4 probability is applied to wind, to natural gas, to

5 hydro.

6   MR. ROGER CATHCART: So they're all

7 constant among -- for the construction costs, they're

8 all the same probability weightings?

9   MS. JOANNE FLYNN: Right, but the

10 development of the costs themselves are independent.

11   MR. ROGER CATHCART: And they're all

12 documented with the framework of how they were

13 developed?

14   MS. JOANNE FLYNN: Yes.

15   MR. ROGER CATHCART: And -- and we just

16 have to drill down into 9.3 to find them?

17   MS. JOANNE FLYNN: Yes.

18   MR. ROGER CATHCART: Okay. Thank you.

19   MS. NICOLE FITKOWSKI: I have a

20 question from John Dalton -- two (2) questions:

21   MR. JOHN DALTON (VIA CHAT): For the S-

22 curve diagram reviewed yesterday afternoon, which

23 showed that a natural gas/wind resource mix was

24 dominated by a hydro resource mix, how was the mix of

25 natural gas and wind resources established?

1   MS. JOANNE FLYNN: The wind/gas plan is

2 predicated on being a -- a plan that supplies as much

3 wind energy as possible. And the wind energy needs to

4 be backed up by capacity. So there was a process that

5 was gone through to try and -- and reflect when the

6 amount of natural gas would be required to provide the

7 capacity backup for the wind. And because wind is the

8 major resource through -- throughout it, there's --

9 there's a substantial amount of natural gas backup for

10 it.

11   MS. NICOLE FITKOWSKI: Okay. And his

12 other question was:

13   MR. JOHN DALTON (VIA CHAT):   Was the

14 mix of single-cycle gas turbines and combined gas

15 turbines, or the mix of gas-fired generation versus

16 wind varied -- varied based on natural gas in carbon

17 prices to recognize the op -- optimality offered by

18 this portfolio?

19   MS. JOANNE FLYNN: The -- the intent of

20 the wind/gas plan was to serve the energy requirement

21 through the wind resource. So I think I've already

22 answered that piece through my first -- first answer.

23 Does Ed want to add something to it?

24   THE FACILITATOR: I -- Joanne did talk

25 about that before, but a simple answer, if you

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1 optimized that wind/gas plan -- first of all, it was

2 all simple-cycle turbines, right? Min -- minimal

3 capacity cost. But if you'd optimized it, you'd have

4 done -- gone to all gas. You wouldn't have had any

5 wind.

6   MS. JOANNE FLYNN: Yeah.

7   MR. JOHN ATHAS: John Athas. Just one

8 (1) last thing on the pro -- probabilities as you

9 applied. The -- the key -- it -- it looks like, but I

10 just want to make sure that I understood it, that what

11 you've done is, though, you've -- in your analysis

12 you've placed a kind of a hundred percent correlation

13 between the capital costs being low for all the

14 technologies, or high for all the technologies, when

15 you've -- as you've rolled them through the scenario of

16 the uncertainty evaluation.

17   MS. JOANNE FLYNN: That -- that is, I

18 think, the effect of what we've done. There's some

19 discussion on that in 9.3 -- in Appendix 9.3.

20

21   (BRIEF PAUSE)

22

23   MR. BYRON WILLIAMS: I -- I think -- I

24 think John yesterday, and Patrick in the previous

25 question have this, but I -- I'm being a little thick

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1 today. And Mr. Harper and I are having a fight back

2 here, so I just want to -- oh, it's Byron Williams.

3   So my question is just in -- when I

4 look, are you treating the energy price variable, the

5 discount rate variable, and the capital costs variable

6 as independent, in terms of their corr -- correlation?

7   MS. JOANNE FLYNN: Yes, there's no

8 cross-correlations between them.

9   MR. RICK HENDRIKS: Can you just return

10 to the -- oh, sorry, Rick Hendriks. Can you just

11 return to the page that has energy prices, discount

12 rate, capital costs, and then the three (3) weighted --

13 or the three (3) probabilities?

14

15   (MOVED TO SLIDE 35)

16

17   MR. RICK HENDRIKS: Yes, thank you,

18 that one. So my -- I have two (2) questions. The

19 first one (1) is: I think I understand why you've

20 chosen to apply the energy price probabilities to all

21 of the alternatives equally. And it was explained

22 earlier today by your colleague why you did so with

23 discount rates.

24   I'm having a little bit more trouble

25 with the capital cost one, though, because if I'm

 1 building several wind plants versus one (1) hydro

 2 plant, the probability of having a 30 percent -- the

 3 probability of having a high cost on wind, because I'm

 4 building a number of different plants, the probability

 5 of them all being high is much less likely than the

 6 probability of one (1) plant being high.

 7   So I'm just curious to know how you --

 8 how you dealt with that situation.

 9   MS. JOANNE FLYNN: I -- I'd have to get

10 back to you on that one. I -- I can't recall that one

11 off the top of my head.

12   MR. RICK HENDRIKS: Okay.

13   THE FACILITATOR: But -- but maybe I

14 can just add a comment to that, and then -- oh, sorry,

15 Ed Wojczynski, and Joanne will get back. By the way I

16 should explain, Joanne and I co-managed the

17 evaluations, so that's why I'm sort of popping up with

18 some frequency because we -- we're like the Bobbsey

19 Twins. Well, maybe that wasn't a good analogy. I

20 wasn't going to respond to that.

21   As -- as Joanne explained earlier, the -

22 - the capital cost range for each of the technologies

23 was done uniquely to that technology. So it captures -

24 - that range captures -- and its capital cost, its --

25 its referenced capital cost and its range captures the

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1 uniqueness of that technology. And then, by using the

2 same probability, we can combine them into these

3 scenarios and make the whole thing workable.

4   So the uniqueness of the fact that --

5 that wind has a different set of circumstances on its

6 cost is -- is captured there.

7   And we weren't focussing on one (1)

8 small -- we were assuming there'd be more that -- that

9 we're not just building one (1) plant. We recognize

10 that we're going to be looking at -- in -- implicitly,

11 we recognized that we're building -- that we're looking

12 at more than just one (1) single wind turbine farm. We

13 weren't -- implicitly, we did.

14   MR. RICK HENDRIKS: Okay. It's Rick

15 Hendriks, again. I'm not sure that quite clarifies it

16 for me. And then this may just be an IR and we -- we

17 deal with it that way.

18   I just -- intuitively what I'm saying is

19 if you have three (3) wind plants, a certain portion of

20 the cost of each of those plants is common to all three

21 (3); you know, the hardware, for example. The -- the

22 price is what the market bears. But other aspects of

23 capital costs such as, you know, construction labour,

24 could vary considerably between projects.

25   And so whereas if you have one (1) hydro

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1 project -- so the probability is if -- if I just apply

2 a probability to -- just statistically speaking, if I

3 have three (3) projects and -- the probability of all

4 of them going over by 30 percent is much less than 30

5 percent. That's all I'm saying, statistically.

6   THE FACILITATOR: I probably shouldn't

7 be saying anything more, but I'm going to. I'm prone

8 to that. You've got two (2) variables to deal with

9 that issue. You've got probability, and you've got

10 range. So you can use the range to adjust for those

11 kinds of issues implicitly. You don't have to adjust

12 both.

13   MS. JOANNE FLYNN: And the other thing

14 I want to add to that is that we recognized, in doing

15 it, that -- that the highs were going to -- like the

16 highs and lows could be quite extreme. Do you have a --

17   MR. RICK HENDRIKS: Okay. Sorry?

18   MS. JOANNE FLYNN: -- another question?

19   MR. RICK HENDRIKS: My other question

20 was --

21   MS. JOANNE FLYNN: Oh --

22   MR. RICK HENDRIKS: -- I did have a

23 second question --

24   MS. JOANNE FLYNN: Oh, okay.

25   MR. RICK HENDRIKS: -- sorry, if that's

 1 okay. I just want to make sure I understand, when

 2 you're saying you have a 15 percent chance of having

 3 high energy prices, right, is that -- am I

 4 understanding this correctly? A 35 percent change of

 5 having high -- am I understanding this -- this

 6 percentage right?

 7   Are you saying there's a -- high is 15

 8 percent of -- is it basically how you're ranking on the

 9 -- on the scale what is high? Like I'm not sure I'm

10 understanding what -- what that 15 percent actually

11 means.

12   MS. JOANNE FLYNN: These -- these

13 numbers are used to calculate the probabilities that

14 are applied to the number -- to -- to the -- to the net

15 present value. So this is -- these are the actual

16 probabilities that are applied for the cumulative prob

17 -- for the probability distributions. So to get that

18 effect, it's -- it's the 15 percent times the 35 per --

19 like for a high/high/high on those --

20   MR. RICK HENDRIKS: Right. So the

21 probability --

22   MS. JOANNE FLYNN: -- on those

23 scenarios.

24   MR. RICK HENDRIKS: Right. Okay. So

25 the probability of high/high/high is 15 percent times

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1 35 percent times 30 percent. Am I understanding that

2 correctly?

3   MS. JOANNE FLYNN: I believe so, yes.

4   MR. RICK HENDRIKS: Okay. So the

5 probability of any one (1) of the twenty-seven (27)

6 varies.

7   MS. JOANNE FLYNN: Yes.

8   MR. RICK HENDRIKS: So these are

9 weighted --

10   MS. JOANNE FLYNN: Yes --

11   MR. RICK HENDRIKS: -- somehow.

12   MS. JOANNE FLYNN: -- absolutely.

13   MR. RICK HENDRIKS: Okay. So when I

14 look at the S-curve --

15   MS. JOANNE FLYNN: Yeah.

16   MR. RICK HENDRIKS: -- I'm seeing

17 twenty-seven (27) points, but those are weighted, if I

18 can use that term --

19   MS. JOANNE FLYNN: Exactly.

20   MR. RICK HENDRIKS: -- they're weighted

21 points --

22   MS. JOANNE FLYNN: That's --

23   MR. RICK HENDRIKS: -- so all of them

24 are not the same, in terms of their power, if you will.

25 Power is not -- that's -- that's --

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 1   MS. JOANNE FLYNN: Yeah, yeah, I --

 2   MR. RICK HENDRIKS: -- I shouldn't use

 3 that word, but.

 4   MS. JOANNE FLYNN: -- know what you

 5 mean. Yeah. Yeah.

 6   MR. RICK HENDRIKS: There's -- you

 7 know, they're -- some are less likely. Even though

 8 they're all plotted on the curve as though they look --

 9   MS. JOANNE FLYNN: Oh, yes. Yeah.

10   MR. RICK HENDRIKS: -- equally likely.

11   MS. JOANNE FLYNN: Yeah.

12   MR. RICK HENDRIKS: Okay. Okay. That

13 -- that's -- I think --

14   MS. JOANNE FLYNN: So we --

15   MR. RICK HENDRIKS: -- for -- I mean --

16   MS. JOANNE FLYNN: Well, we didn't --

17 we didn't go to that next step to say, Okay -- like, it

18 -- it starts to get overly complex to -- to try and

19 take it to that -- and judgmental to take it to that

20 next step.

21   MR. RICK HENDRIKS: Okay. I just

22 wanted to clarify that, that -- that not all the points

23 have the same weight, if you will.

24   MS. JOANNE FLYNN: They are reflecting

25 these probabilities. If you wanted -- the one that

 1 shows you an equal weighting across the -- the twenty-

 2 seven (27) scenarios is the quilt, because there are no

 3 weightings applied.

 4   Okay. Yes?

 5   MR. ROBERT SINCLAIR: Yes. With res --

 6 Robert Sinclair. With respect to energy prices, you

 7 have a high of 15 percent, low of 30 percent. So the

 8 reference case of 55 percent, that's your actual

 9 forecast that you used in assessing the plans, right?

10   That's the -- the price forecast for

11 MISO export prices?

12   MS. JOANNE FLYNN: They're -- they're

13 all the -- the -- the consensus price forecast.

14   MR. ROBERT SINCLAIR: Right. Okay.

15   MS. JOANNE FLYNN: Or the assumed price

16 forecast for -- for -- like, underlying it is the

17 reference, high, and low --

18   MR. ROBERT SINCLAIR: Right.

19   MS. JOANNE FLYNN: -- and we're

20 applying a 55 percent probability as to the reference

21 being the most likely.

22   MR. ROBERT SINCLAIR: Yeah, I get that.

23 So the high reference, is that derived from the

24 consensus forecast? Is there some kind of consensus

25 high, consensus low?

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1   MS. JOANNE FLYNN: There -- there is a

2 consensus high and low and then -- but the

3 probabilities are developed separately from them.

4   MR. ROBERT SINCLAIR: And who develops

5 the probabilities?

6   MS. JOANNE FLYNN: Those -- those

7 probabilities were developed by Manitoba Hydro.

8   MR. ROBERT SINCLAIR: Okay. And we can

9 get some kind of methodology on how that was done?

10   MS. JOANNE FLYNN: That's what's in

11 Appendix 9.3.

12   MR. ROBERT SINCLAIR: Okay. All right.

13 Thanks.

14   THE FACILITATOR: It's Ed Wojczynski

15 here. And Joanne just mentioned 9.3, Appendix. Her

16 staff point out that the quilt in nine (9) point -- in

17 that appendix has the probabilities for each of the

18 twenty-seven (27) scenarios.

19   MS. JOANNE FLYNN: Attached to the end

20 of the table. There wasn't really enough room to show

21 that on the screen, but it might have been helpful for

22 explanation. But -- so there is quite a bit more

23 information on this in the -- in the appendix.

24   Okay. Does that cover the questions?

25 All right.

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1   (MOVED TO SLIDE 42)

2

3   MS. JOANNE FLYNN: Here we're going to

4 change topics now. Oh, is there...

5   MS. PATTI RAMAGE: I was just going to

6 make the comment -- it -- it's Patti Ramage, Cheryl --

7 that I think this discussion has really illustrated

8 perhaps the benefit of the technical conference, not in

9 terms of the questions per se, but I'm hoping this

10 avoids IRs in terms of these questions, I think what

11 I'm hearing, are all in Appendix 9.3. And we recognize

12 that everyone hasn't had an opportunity to read that.

13   But I think it's really helpful because

14 when we do get IRs at times in past hearings, we say

15 it's there, they just haven't seen it. So I -- I think

16 it's really helpful -- I'm just making the comment that

17 -- that we're able to direct you what appendix to go

18 to. And hopefully this topic, once you've read that,

19 will really -- we're going to see less IRs on it, is my

20 goal. But -- anyway, that's where I see the benefit of

21 the technical conference.

22   MR. ROGER CATHCART: Hi, Roger

23 Cathcart. Just one (1) more question on this. From

24 your quilt, did you run the worst-case scenario for

25 each of those options? Like --

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 1   MS. JOANNE FLYNN: For each of the

 2 development plans?

 3   MR. ROGER CATHCART: Right. So that

 4 they could be stacked up with their -- if -- if

 5 everything went sideways on each -- each of them, that

 6 you could line them up and --

 7   MS. JOANNE FLYNN: Yeah. And those are

 8 different combinations --

 9   MR. ROGER CATHCART: Right.

10   MS. JOANNE FLYNN: -- for -- for

11 different plans. And that's why when you look at the

12 quilt --

13   MR. ROGER CATHCART: Yeah.

14   MS. JOANNE FLYNN: -- the red and green

15 point you to those particular plans --

16   MR. ROGER CATHCART: Right.

17   MS. JOANNE FLYNN: -- or combina --

18 scenarios for those -- for each of the plans.

19   MR. ROGER CATHCART: Did you stack up

20 all of the worst-case scenarios and rank them in any

21 way just to say -- just to see how the -- they -- the

22 risk profile distributed among each one of them?

23   MS. JOANNE FLYNN: We didn't do that,

24 but you could certainly do -- like, the information is

25 all on that quilt for you -- for someone --

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1   MR. ROGER CATHCART: Right.

2   MS. JOANNE FLYNN: -- to -- to do --

3   MR. ROGER CATHCART: Okay.

4   MS. JOANNE FLYNN: -- that.

5   MR. ROGER CATHCART: Okay. Thank you.

6   MS. JOANNE FLYNN: Okay. So 2013

7   reference scenario planning assumption. So this is the

8   information in Chapter 12 that I'm going to go through

9   now. So I'm going to start by explaining what the

10 changes in the planning assumptions were between what

11 we assumed in the main part of the filing, so the 2012

12 adjusted assumptions, compared to the 2013 planning

13 assumptions. Lois talked yesterday about how the load

14 forecast had decreased for both energy and peak demand,

15 and there are tables in the -- and graphs in the

16 chapter that -- that show that to you.

17   The effect of that change in -- in the

18 load is, and -- and some of the other planning

19 assumptions, the next generation in-service date for

20 Manitoba load for -- from an energy is still being

21 driven by energy, is deferred from 2022 to 2023/'24.

22 So a deferral of one (1) year as a result of the

23 reduction in the load forecast.

24   In the 2012, we had assumed the Great

25 River Energy Diversity Exchange Agreement extension,

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 1 but the development between the two (2) years is that

 2 it -- it now ends in 2030/'31, rather than 2025/'26.

 3 So that's reflected in the analysis. As well, there's

 4 a new five (5) year, 50 megawatt term sheet with

 5 Minnesota Power that starts in 2015/'16. And that

 6 doesn't show up on our list of sales contingent on new

 7 resources, because it isn't. It -- it can be served

 8 out of existing resources.

 9   As I mentioned yesterday, the 2013

10 reference electricity export prices are higher than

11 those used in the main NFAT submission. We had taken

12 the 2012 consensus forecast and -- and primarily there

13 were decreases to -- to the -- to the electricity

14 prices -- price forecast that we -- and we used that

15 decreased forecast in our main analysis. When we

16 looked at the twenty (20)...

17

18   (BRIEF PAUSE)

19

20   MS. JOANNE FLYNN: So in -- in the 2013

21 analysis we're using the -- or the -- the price

22 forecast is -- is higher than what we're using in the -

23 - in the main NFAT submission. The real weighted

24 average cost of capital, which is the discount rate

25 that we're using in the analysis, increased from the

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1 five point zero-five (5.05) that we're using in the

2 main submission, to the -- to five point four (5.4)

3 point -- five point four-zero (5.40).

4   So that's what we're -- is used in the

5 analysis in this chapter. And the earliest in-service

6 date for Conawapa shifted from '25/'26 to '26/'27. So

7 all of those assumptions are reflected in the analysis

8 I'm going to go through.

9   And I went the wrong way. Okay. All

10 right.

11

12   (MOVED TO SLIDE 43)

13

14   MS. JOANNE FLYNN: So what impact does

15 that have on the development plans? So we only had the

16 time to do this analysis on a selected number of

17 development plans. These are the development plans we

18 chose. I'm on Slide 43. So the numbering is the same.

19 So the all gas, Keeyask gas, the -- the Keeyask '19

20 gas, 250 line, and two (2) of the 750 lines, one (1)

21 being the Preferred Development Plan.

22   And you can see, when you look at this,

23 the impact of the change in assumptions. So you look

24 at Plan 4, and in the 2012 list of plans you will find

25 gas in 2024, not in 2030. So the effect of the change

1 in assumptions is to shift the need for gas out to

2 2030. And similarly you'll see in Plan 12, Conawapa is

3 in thirty (30) -- 2033. In the 2012 list of plans,

4 it's in -- in 2031. You see in the Preferred Plan the

5 deferral of -- of Conawapa from being in 2025/'26 to

6 being in '26/'27.

7

8   (MOVED TO SLIDE 44)

9

10   MS. JOANNE FLYNN: All right. Now,

11 this is similar to the type of chart that you saw in

12 Chapter 9. Chapter 9 is all done in step charts, and

13 there are step charts in Chapter 12 as well, but

14 decided to -- to condense this into this style of chart

15 to put more -- more information all together rather

16 than walking through quite so much of it.

17   So you'll see familiar numbers in the

18 first column. So now we're looking at the development

19 plans and the net present values, millions of 2014

20 dollars. So the first column has the 2012 assumptions

21 using the five point zero-five (5.05) discount rate, so

22 the same ones that you would find in Chapter 9.

23   So you might recognize the eight eighty-

24 seven (887), which is the Keeyask now '23 gas plan, but

25 this actually, in the first column, reflects Keeyask

1 '22, followed by gas shown in the 2012 assumptions.

2 Compared to the all gas plants, it's still an

3 incremental analysis. And you will recognize the net

4 present value associated with the Preferred Development

5 Plan at sixteen ninety-six (1,696).

6   What the second column does is it uses

7 all the 2013 assumptions I've described to you with the

8 exception of the discount rate. We've held the

9 discount rate constant. So we can see what the impact

10 of the discount rate is by itself. And it's a fairly

11 significant impact is what -- what we're going to see

12 in the end.

13   So holding the discount rate constant,

14 instead of eight eighty-seven (887) for Keeyask gas

15 compared to all gas, it would become nine sixty (960).

16 You see it quite dramatically on the Preferred Plan,

17 where it would go from sixteen ninety-six (1,696) to

18 twenty-one twenty-five (2,125).

19   What the last column shows is -- is the

20 impact of now applying the change in assumption on the

21 discount rate, so 2013 assumptions, including the 5.4

22 percent discount rate. And you see the numbers change.

23 You see the Keeyask gas plan drop from the nine sixty

24 (960) in the previous column to seven twenty-eight

25 (728), so lower than the 2012 assumptions at eight

1 eighty-seven (887). And this is true all of the plans.

2   So when you look at the Preferred

3 Development Plan you see it's now gone from sixteen

4 ninety-six (1,696). If we had held the discount rate

5 constant, it would be up at twenty-one twenty-five

6 (2,125). At the 2013 assumed discount rate, it's at

7 fourteen sixty-two (1,462).

8   And I'm going to be coming back to some

9 of these numbers when I -- when I talk about the -- the

10 DSM sensitivity. So we'll -- we'll be -- maybe be able

11 to flip back to this chart at that time.

12   The one (1) other point I would make is

13 that a large part of the reason that we undertook the

14 probabilistic analysis and -- and the broader ranges is

15 because we recognize that there is a lot of

16 uncertainty, especially when you're going out into the

17 future as far as our study period does go.

18   And there's always an interest in having

19 the latest and greatest assumptions in place. What

20 this analysis also shows is that the 2013 assumptions

21 fall within the ranges of the analysis that we've

22 undertaken for the probabilistic analysis.

23   So it isn't always necessary to redo

24 everything with the latest and greatest information if

25 you can look at things from that broader perspective in

 1 -- in looking at what the risks are and the ranges that

 2 could occur.

 3

 4   (MOVED TO SLIDE 45)

 5

 6   MS. JOANNE FLYNN: Okay, so now I'm

 7 going to go into the analysis on the one and a half (1

 8 1/2) and four (4) times DSM. And once again, I

 9 mentioned this yesterday, that the point of this

10 analysis was to demonstrate the relative impact of

11 higher levels of DSM on selected development plans, not

12 to assess the attractiveness of the DSM plans

13 themselves, but would -- how would higher levels of DSM

14 affect particular development plans.

15   Yes?

16   MR. JOHN ATHAS: I just want to

17 understand -- this is John Athas. I just want to

18 understand that -- that point you've made, that -- when

19 you went through your screening way back in the earlier

20 parts of your discussion you said one (1) of the

21 options moving forward in the resource options was more

22 DSM?

23   MS. JOANNE FLYNN: Yes.

24   MR. JOHN ATHAS: And none of the plans

25 had more DSM as a planned thing to do --

 1   MS. JOANNE FLYNN: Right.

 2   MR. JOHN ATHAS: -- correct? And --

 3 but -- and now you're emphasizing that you're not

 4 testing the economics of more DSM by this kind of

 5 analysis.

 6   Is there any place where you've done --

 7 in the Application where you've done analysis as DSM as

 8 an alternative to either gas or the -- or the hydro?

 9   MS. JOANNE FLYNN: No, there isn't, and

10 there -- there was some discussion on this. I'll --

11 I'll let Ed take -- take this one.

12   THE FACILITATOR: Yeah, the motions

13 hearing, or pre-hearing conference on Wednesday, it --

14 it was explained by Manitoba Hydro that now that we

15 have the market potential study -- the DSM market

16 potential study that Lois talked about yesterday, that

17 we are going to have two (2) -- over the next few

18 months, they're feverishly working to put together two

19 (2) sets of overall DSM programs -- an updated one and

20 a higher one, a significantly higher one -- and that we

21 would be evaluating those and presenting the results,

22 both the economics and the financials.

23   And the plan is, as long as the

24 interrogatories don't take up too much of the time of

25 the people doing this work -- it's all the same people

304

1 -- that we would have that before the hearings. But

2 that would be looking at the economics of DSM, per se,

3 the two (2) different levels.

4   So that's -- that's a partial answer to

5 your question. But we won't be able to do all the

6 plans -- do that for all the plans. On the economics

7 we're hoping to do it for the Preferred Plan and one

8 (1) of the others, probably the all gas plan. But

9 we're still having to work all that out.

10   MR. JOHN ATHAS: So that'll be --

11 that'll be filed in this -- in this appli -- in this

12 docket -- this whole hearing process?

13   THE FACILITATOR: It -- the intent is

14 that will be filed, but it won't be filed -- well, it

15 can't be filed until it's done --

16   MR. JOHN ATHAS: Yeah.

17   THE FACILITATOR: -- and it won't be

18 done until prob -- early in the new year bef -- the

19 intent is before the hearings. As soon as it's

20 available, we'll file it. But -- and it would be part

21 of this process, yes.

22   MR. JOHN ATHAS: Thank you.

23   MR. BYRON WILLIAMS: Ed, in -- it's

24 Byron Williams, CAC. In terms of the DSM scenarios,

25 why would you use the all gas instead of perhaps Plan 4

305

 1 and the -- and --and the best scenario with no

 2 interconnection?

 3   Wouldn't that be more useful

 4 information?

 5   MS. JOANNE FLYNN: Byron, may -- maybe

 6 I'll just answer that one. It's -- we haven't

 7 determined yet which ones we will -- will use it on.

 8 And you -- you can see in the analysis that we did here

 9 that that is what we did. We -- we didn't do it

10 against the all gas plan. So we're -- we're still

11 going to be sorting that out.

12   MR. BYRON WILLIAMS: And we -- we --

13 it's Byron Williams again for CAC. We -- we'd invite

14 you to seek at least the input of Intervenors on -- on

15 that point, because we think it's a pretty important

16 question.

17   And I guess the other one is, the DSM

18 potential study, at least our preliminary analysis

19 suggests it's quite an outlier in terms of other

20 reports in North America. And I -- I guess a question

21 is:

22   Is that -- you know, is that a reliable

23 base on which to do this analysis?

24   THE FACILITATOR: Yeah, Patti?

25   MS. PATTI RAMAGE: Yeah, we're -- we're

306

1 going way far afield, Byron, of questions of

2 clarification. And by your laughter, I know you --

3 you're aware of that, so.

4 THE FACILITATOR: On -- on the first

5 part of that, I'd -- I'd -- I'm looking at Joanne, but

6 I don't know why we couldn't have some sort of

7 arrangement to have what -- what the second set of DSM

8 plans and what they're applied to, have some sort of

9 input on that.

10 But our primary purpose on that one is

11 to start with the Preferred Plan, and we are -- we

12 don't -- it's going to be a challenge to do the

13 financials on that. And we -- we don't see it as being

14 viable to -- to do it for a second set of plans on the

15 financials.

16 And the economics, we have some good

17 hope that we would be able to but the -- with the --

18 it's not physically possible to have four (4) sets of

19 financials done; only the two (2) sets.

20 MS. JOANNE FLYNN: Yes?

21 MR. JOHN ATHAS: Just -- just a

22 definitional question: so, when you changed the DSM in

23 the -- in the sensitivities, was there any timing

24 changes of the resources in the plans?

25 MS. JOANNE FLYNN: Yes, I'm going to

307

1 show you that. Okay. So we're on Slide 45, and I

2 wanted to show this slide because -- and Lois mentioned

3 this yesterday, this is how we went about determining

4 the levels of DSM. And because the -- because there's

5 was limited information available from the study, what

6 we did is we literally took one and a half (1 1/2) and

7 four (4) times the 2013 base DSM forecast numbers. So

8 starting right off in 2014/'15, and out to twenty (20)

9 -- out of the end of the study, the detailed study

10 period, we applied those percentages.

11   So in looking at it, this yields a

12 higher overall energy savings on an -- pretty much on

13 an annual basis, than -- than we believe will come out

14 of the market potential study. The '27/'28 year is the

15 year that it kind of aligns. So it is a good test for

16 -- for the output of that study.

17

18   (MOVED TO SLIDE 46)

19

20   MS. JOANNE FLYNN: Okay. Now, this is

21 the heart of the -- the analysis. And what -- and this

22 is slide 46. What this graph depicts is an analysis of

23 differences and -- of differences. So the first set of

24 differences is based on the original chart, or the

25 earlier chart I showed you on the net present values.

308

1   So the seven-thirty-four (734) that you

2 see in the first column, there is the -- is the

3 difference between the net present value for the

4 Preferred Plan, compared to the all gas plan, minus the

5 net present value for Keeyask '23 applied to -- or

6 compared to the all gas plan.

7

8   (MOVED TO SLIDE 44)

9

10   MS. JOANNE FLYNN: So if I go back a

11 couple of slides here, it's the fourteen-sixty-two

12 (1,462) minus the seven-twenty-eight (728). That's

13 what the seven-thirty-four (734) is in this chart.

14

15   (MOVED TO SLIDE 46)

16

17   MS. JOANNE FLYNN: So I'll just start

18 with that. The next column is -- it's the same idea.

19 So it's the -- with one and a half (1 1/2) times DSM,

20 the Keeyask gas plan shifts from 2023 to 2024. So

21 you're seeing the impact of the DSM levels and the need

22 for -- for that resource. The Preferred Plan dates

23 stay the same for this one (1).

24   When you look at four (4) times DSM,

25 we've also shifted the in-service date for Conawapa

1 from 2026 to 2030. And in reality, when we looked at

2 the numbers there was very little, like I think it was

3 $11 million or some very small difference in net

4 present value, but -- between the two (2) plans,

5 whether we held the date constant or not. But we've --

6 we've allowed the date to move. So those are the

7 differences.

8   Now, when you look at the application of

9 DSM, the one and a half (1 1/2) times DSM, and the

10 economic results of that, we're now looking at the

11 seventy (70) -- seven-seventy-one (771) for one and a

12 half (1 1/2) times DSM, compared to the seven-thirty-

13 four (734), with the base level of DSM in it. And that

14 difference is 37 million -- 37 million higher when you

15 apply the level of DSM to the value that you get when

16 you compare those two (2) plans.

17   The four (4) times DSM shows an even

18 higher number, and of three hundred and twelve (312).

19 And that is the -- the ten-eighty-three (1,083) when

20 you look at it from that perspective. So in the case

21 of one and a half (1 1/2) times DSM and four (4) times

22 DSM, when compared to the Keeyask followed by gas plan,

23 no new interconnection, the Preferred Plan benefits in

24 both case -- both cases, by increasing the level of

25 DSM.

310

 1   (BRIEF PAUSE)

 2

 3   MR. BILL HARPER: Bill Harper.   So I

 4 guess -- because there's really two (2) -- two (2)

 5 questions here.   One (1) is whether -- whether,

 6 basically, advance in Keeyask and building your high

 7 interconnection is economic under different levels of

 8 DSM.   And what -- what you're por -- portraying here

 9 is, over the range of which you believe is a reasonable

10 DSM, it makes sense to do the advancement under all

11 cases.   Wha --

12   MS. JOANNE FLYNN: Right.

13   MR. BILL HARPER: What this doesn't

14 tell you, and if I understand what your analysis is

15 doing is, does it make economic sense to do more de --

16 to go gang busters on DSM, basically, which is -- but,

17 basically, you know, does -- and but that -- that --

18 and that's the second question is, wha -- that's your

19 analysis that you're undertaking right now is -- is

20 going to be doing is seeing to what extent do --

21 doesn't make sense to go gang busters on DSM as opposed

22 to doing just an all supply side por -- portfolio

23 because what -- that's what you got essentially now.

24   Is -- is that the case?

25   MS. JOANNE FLYNN: Well, ye -- yes,

 1 that is what we're going to loo -- do, is look at the

 2 attractiveness of the DSM itself.

 3   MR. BILL HARPER: Okay. That's what I

 4 understand. Okay.

 5   MS. JOANNE FLYNN: Yeah.

 6   MR. JOHN ATHAS: John Athas again. So

 7 the -- in these cases, the DSM -- the increase in DSM

 8 doesn't have any cost?

 9   MS. JOANNE FLYNN: Right, there's no

10 cost supplied here.

11   MR. JOHN ATHAS: Yeah.

12   MS. JOANNE FLYNN: And like from the

13 economics perspective, the costs would be the same for

14 all the plans, so it wouldn't really be a factor. You

15 really need the financials to see the effect of the DSM

16 cost. Okay. All right.

17

18   (MOVED TO SLIDE 47)

19

20   MS. JOANNE FLYNN: So the -- so the

21 similar analysis was undertaken but, this time,

22 comparing it to you Plan 4, which is Keeyask '19

23 followed by gas and the 250 interconnection.

24   So in this case -- and so the same

25 approach. So it's still a differences -- first of all,

312

1 the differences between the Preferred Plan and Plan 4.

2 So that's what's represented by the three twenty-nine

3 (329), the three forty-two (342), and the one ninety-

4 six (196) under the different levels of DSM.

5   And so when you compare these columns

6 you now get a difference of 13 million between the one

7 and a half times DSM and the one (1) times DSM, so

8 basically resulting in a similar -- similar effects,

9 whether the DSM is there or not -- or not, or almost a

10 ne -- negligible impact on the Preferred Plan --

11 Development Plan if we go to a one and a half (1 1/2)

12 times DSM, but it doesn't cause it to decrease.

13   At the level of four (4) times DSM what

14 we are seeing is that Plan 4 can derive more benefit

15 from that high a level of DSM than the Preferred

16 Development Plan can. Now, the fact that the net

17 present value is positive, it's a hundred and ninety-

18 six (196), it has decreased the value of the -- it --

19 its value overall, but it is still a -- it's still

20 preferable.

21   So what it means is the -- the order of

22 the plans has not changed. The economic -- as far as

23 the economic impact of the plans, the order and the

24 ranking of the plans does not change.

25

313

```
 1                      (BRIEF PAUSE)

 2

 3                 MR. RICK HENDRIKS:   So just to

 4  summarize then, of course, these are NPV differences?

 5                 MS. JOANNE FLYNN:    That's right.

 6                 MR. RICK HENDRIKS:   What happens --

 7  what's happening to the global NPV here?

 8                 MS. JOANNE FLYNN:    With the global NPV?

 9                 MR. RICK HENDRIKS:   Like is four (4)

10  times DSM lowering the NPV of all of the plans and,

11  therefore, it's lowering some more than others?  I

12  mean, this is just a difference, so.

13                 MS. JOANNE FLYNN:    Well, we don't -- we

14  don't have all of the plans analyzed.  These are the

15  only plans we have analyzed.

16                 MR. RICK HENDRIKS:   Right, but you --

17  in order to calculate the difference between the NPVs

18  you --

19                 MS. JOANNE FLYNN:    Yes.

20                 MR. RICK HENDRIKS:    -- would have had

21  to calculate the revised NPVs with four (4) times DSM?

22                 MS. JOANNE FLYNN:    Right.  And that's

23  what the one ninety-six (196) is showing, is the

24  difference.

25                 MR. RICK HENDRIKS:   Showing the
```

 1 difference.

 2   MS. JOANNE FLYNN: Yeah.

 3   MR. RICK HENDRIKS: But it's not

 4 showing what each of them... It's the difference

 5 between two (2) plans, correct?

 6   MS. JOANNE FLYNN: Yes. Right.

 7   MR. RICK HENDRIKS: But what I'm

 8 interested in is the difference totally in all the pla

 9 -- like, okay, so if one (1) plan was two thousand

10 (2,000) -- the difference was -- let's say one (1) plan

11 was -- was 10 billion and one plan was 9 billion

12 before. Now, the difference is 1 billion, okay.

13   MS. JOANNE FLYNN: Right.

14   MR. RICK HENDRIKS: And now the plans

15 have gone to 8 bil and 7 billion. The difference is

16 still 1 billion, but all of the plans have been

17 decreased by -- by 2 billion. That's what I'm trying

18 to get at. What's happening globally behind this as a

19 result of the DSM?

20   MS. JOANNE FLYNN: Well, I'd have to --

21 I have to go back and look at those numbers. I don't

22 know them off the top of my head.

23   MR. RICK HENDRIKS: Okay.

24   DR. PETER MILLER: In the -- Peter

25 Miller. In the previous example, the -- the four (4)

315

1 times DSM was higher; here, it's -- it's lower. Does

2 this mean that the difference between the one point

3 five (1.5) and -- and the four (4) times DSM, that in -

4 - further increment just lowers the value of the

5 project --

6   MS. JOANNE FLYNN: Well --

7   DR. PETER MILLER: -- relative to one

8 point five (1.5) times? One point five (1.5) is

9 marginally higher.

10   MS. JOANNE FLYNN: That's only when

11 compared to one (1) particular plan, only when compared

12 to Plan 4. Like what we saw on the previous slide is

13 if you compare it -- you're going to get a difference

14 answer when you compare it to different plans.

15   DR. PETER MILLER: Okay.

16   MS. JOANNE FLYNN: But when we compare

17 it to -- to Plan 4, which is -- which is one of the

18 better plans, or the higher net present value plans

19 that we have on a base level or reference level, what

20 this -- what this is showing is that Plan 4 can derive

21 more value from the four (4) times DSM than can the

22 Preferred Plan.

23   Now, there's still positive net present

24 values there when you look at the differences, and it

25 doesn't change the ranking of the plans when you apply

1 the -- the four (4) times DSM to it. It's still -- the

2 Preferred Plan still has the highest net present value.

3 It's just not quite as high.

4 DR. PETER MILLER: But you can't make a

5 judgment as to whether four (4) times, because of

6 intertie limitations or something like that, produces

7 less value overall than in -- in the plan than one

8 point five (1.5)?

9 MS. JOANNE FLYNN: I -- I think the

10 information is there to look at that.

11 MR. JOHN ATHAS: It's John Athas again.

12 Ju -- just to try to train the thoughts of some of the

13 things you've put -- put forward. You had a -- and we

14 had a discussion around the question I asked.

15 In the S-curves that had four (4) and

16 fourteen (14) compared, there was a lot of overlap and

17 --

18 MS. JOANNE FLYNN: Right.

19 MR. JOHN ATHAS: -- similarity. And we

20 talked about the box and whiskers as being -- having

21 shown different things for the 75/25. And so now if I

22 look at Slide 44, I see kind of at the reference case

23 we were starting at before with a basically $350

24 million difference between the four (4) and fourteen

25 (14) --

317

 1   MS. JOANNE FLYNN: Right.

 2   MR. JOHN ATHAS: -- and the changing of

 3 assumptions all the way to the right-hand side narrowed

 4 that gap a little bit.

 5

 6   (MOVED TO SLIDE 44)

 7

 8   MS. JOANNE FLYNN: Right.

 9   MR. JOHN ATHAS: And really what you're

10 -- what you've got, with the way you've modelled it, if

11 I could just understand it correctly -- I'm not trying

12 to put words in your mouth -- that because what you've

13 modelled, the way you've modelled DSM as basically a

14 change in load growth with no costs or anything like

15 that, that it basically says that a lower load growth

16 would narrow that gap significantly between four (4)

17 and fourteen (14).

18   MS. JOANNE FLYNN: It will narrow it

19 more, yes.

20   MR. JOHN ATHAS: Because it gets --

21   MS. JOANNE FLYNN: Yeah.

22   MR. JOHN ATHAS: -- because that's how

23 it gets dow -- that's how I interpret getting down to

24 one ninety-six (196) now. So from ye --

25   MS. JOANNE FLYNN: Yes.

318

1   MR. JOHN ATHAS: -- yesterday we were

2 at the three fifty (350) level at the references, and

3 now we're -- now, if -- if we do the -- a lower load

4 growth associated with four (4) times DSM --

5   MS. JOANNE FLYNN: Yeah.

6   MR. JOHN ATHAS: -- that you're now

7 down at one ninety-six (196)?

8   MS. JOANNE FLYNN: Yes.

9   MR. JOHN ATHAS: Okay.

10

11   (MOVED TO SLIDE 48)

12

13   MS. JOANNE FLYNN: Okay. I will be

14 showing one (1) more sort of related piece to this.

15 But just to -- I think we've probably summarized the --

16 these conclusions when you're looking at that

17 comparison to the Keeyask followed by gas, no

18 interconnection, that from an attractiveness

19 perspective in -- in both -- at both levels of DSM, the

20 Preferred -- the economics for the Preferred

21 Development Plan improves.

22   At the same levels, when compared to

23 Plan 4, they're basically indifferent or there's very

24 marginal difference at the one and a half (1 1/2) times

25 level. But at the four (4) times level, Plan 4 will

 1 result in a higher net present value, which will

 2 decrease that difference between the economics for the

 3 Preferred Development Plan and the -- and this -- and

 4 Plan 4.

 5

 6   (MOVED TO SLIDE 49)

 7

 8   MS. JOANNE FLYNN: In addition to that,

 9 we reflected on the low load sen -- sensitivity that is

10 really discussed in detail in Chapter 10. It's based

11 on the 2012 planning assumptions.

12   What we wanted to look at once we saw

13 that the four (4) times DSM, when applied to the -- to

14 Plan 4, resulted in a greater benefit to Plan 4 than to

15 the Preferred Plan. We wanted to have some sense of

16 what might happen to the all gas plan. So we went back

17 to the low load sensitivity in -- in Chapter 10 and

18 brought that information forward.

19   The 10th percentile Manitoba load

20 sensitivity is -- yields a greater number than for --

21 for the -- than the four (4) times DSM. It's a little

22 bit higher than the four (4) times DSM, so it's -- it's

23 a conservative comparison.

24   So this is the -- the reference

25 economics on the left, so these are the numbers from

320

1 2012. You see the eight eighty-seven (887) and the

2 sixteen ninety-six (1,696). When we look at the low

3 loads in Chapter 10, we -- what we get is a reduction

4 for the -- for -- for both of the plans compared to all

5 gas.

6   And this, I think, might be getting back

7 to sort of Rick's underlying question, Is -- does it

8 shift the -- the whole economics. And I think this

9 gives you an indication that it does.

10   So under the -- something a little bit

11 higher than the four (4) times DSM, and based on the

12 2012 assumptions, we see the net present values decline

13 from eight eighty-seven (887) to seven thirty-six (736)

14 and sixteen ninety-six (1,696) to thirteen ninety

15 (1,390).

16   I'm just seeing what I'm doing here.

17 Okay. So, on that basis, we've -- we've judged that

18 that -- if we use that as sort of a proxy for what the

19 comparison would be to the -- the all gas plan, what we

20 can say is -- is it doesn't change the economic

21 ranking.

22   I don't know exactly what it would look

23 like with the DSM numbers but it doesn't change the

24 economic ranking. You would still have the Preferred

25 Plan as the -- with the -- with the highest net present

1 value.

2   MR. BILL HARPER: Bill Harper.

3   MS. JOANNE FLYNN: Yes.

4   MR. BILL HARPER: Given the conclusion

5 from the previous slide, which was that the four (4)

6 times DSM seemed to benefit the -- the Plan 4 --

7   MS. JOANNE FLYNN: M-hm.

8   MR. BILL HARPER: -- or the Plan 14. I

9 guess I was just curious, did you look at what going

10 down to the 10 percent load -- 10 percent Manitoba load

11 profile would do to the Plan 4? I noticed that was

12 absent and I was just wondering if that's something

13 that -- that you had looked at already or not, and how

14 it changed its relative economics relative to the --

15 relative to the change we're seeing in the Preferred

16 Plan.

17   MS. JOANNE FLYNN: I don't believe we

18 have that in the submission.

19   MR. BILL HARPER: No, I know it isn't

20 in the submission, and I guess I was just curious.

21 That's why -- that's why I was asking whether it was

22 something you had looked at already or not.

23   MS. JOANNE FLYNN: Not explicitly, no.

24   MR. BILL HARPER: Okay. Thanks.

25   MR. RICK HENDRIKS: Just to clarify

322

 1 that --that 5.05 percent. This is the information

 2 taken from Section 10 as opposed to --

 3   MS. JOANNE FLYNN: From Chapter 10.

 4 This is -- because that's the only place we have that

 5 comparison back to all gas.

 6   MR. RICK HENDRIKS: Okay. I just

 7 wanted to clarify that because we -- you've been --

 8   MS. JOANNE FLYNN: Yeah, the --

 9   MR. RICK HENDRIKS: -- talking the five

10 point four (5.4) context --

11   MS. JOANNE FLYNN: -- they're all the

12 2012 -- only the 2012 assumptions. That's why I was

13 saying, you know, we're making a judgment that it would

14 have the simi -- a similar result when -- if you use

15 the 2013.

16   MR. JOHN ATHAS: John Athas again. I

17 just wanted to -- and I -- I don't know whether this

18 will cause -- outside the scope of today or what, but

19 you haven't presented the -- for discussion, today or

20 yesterday, any of the information on the drought

21 sensitivities in -- that are in Chapter -- Chapter 10,

22 Table 10.8 on page 41.

23   And I didn't know whether we could have

24 a discussion of that at all today, or -- or just -- or

25 -- or what 'cause it's -- I mean, these -- this

 1 discussion has been very helpful to clarify your

 2 thinking and -- and your process for -- for modelling

 3 and other things, so it would be insightful to get that

 4 kind of inter -- interaction, if we can do it.

 5   THE FACILITATOR: It's Ed here. We're

 6 -- we didn't plan on doing the drought sensitivity

 7 because we have a lot of material and, if you look at

 8 the time, it's 10:30. We're already half an hour

 9 running late and Joanne's not finished yet. If we

10 started doing the drought one, and some of the other

11 things that we could do, I think we would then have to

12 scrap some of the other things we're planning to do

13 today. So that was the rationale, and it's -- whether

14 there needs to be a separate session for the experts,

15 or -- on that, that, that's -- that's another -- that's

16 a separate possibility. But I don't know, Joanne,

17 if...

18   MS. JOANNE FLYNN: Yeah, it -- it was

19 really just in the interest of time, but certainly

20 you'll --

21   THE FACILITATOR: Okay. Oh, sorry.

22 Apparently, on the financial presentation there's a

23 little bit on drought, so that might be of assistance.

24 But, sorry. Joanne?

25   MS. JOANNE FLYNN: Yeah, that's not --

1 I don't have anything to add to that.

2   DR. PETER MILLER: Yes, Peter Miller.

3 Okay. Low load has a lower net present value. Does

4 this mean that you are essentially depending on

5 Manitoba ratepayers to make this worthwhile, as opposed

6 to increase dependable sales to the states?

7   MS. JOANNE FLYNN: Well, I mean, all

8 the benefit always comes back to the Manitoba

9 ratepayers, so -- Can you ask that again?

10   DR. PETER MILLER: Low -- low load

11 means that Manitoba ratepayers are paying less in -- in

12 --

13   MS. JOANNE FLYNN: M-hm?

14   DR. PETER MILLER: -- your revenue

15 stream. And the question is, if -- if that frees up

16 dependable power and you were to sell it --

17   MS. JOANNE FLYNN: M-hm?

18   DR. PETER MILLER: -- would -- would

19 that reverse that net present value? In other words,

20 if -- if you created an additional block for sales -- I

21 guess you're holding sales constant here.

22   MS. JOANNE FLYNN: No, no. Sales are

23 not constant. When this -- when the low loads come in,

24 that energy is freed up and goes to market.

25   DR. PETER MILLER: But not at your

 1 contract rates?

 2   MS. PATTI RAMAGE: Peter, I think we're

 3 -- we're going down the path again further. There -- I

 4 don't believe there's financial analysis on this, which

 5 is what we would require to be able to answer those

 6 questions. Am I correct, Joanne?

 7   MS. JOANNE FLYNN: It would be helpful

 8 to have the financial analysis.

 9   MS. PATTI RAMAGE: Yeah. So it -- it's

10 not one (1) we can answer here.

11   MR. BORIS FICHOT: Boris Fichot, with

12 Knight Piesold. One (1) of the items that we haven't

13 covered, and I don't see in the -- on the agenda today,

14 might be covered in the financial analysis, is the --

15 the O&M aspects. I realize that they're usually

16 marginal when you're talking NPV, but they are -- there

17 is an O&M cost, especially when we're talking about the

18 thermal options, and the -- and the wind -- wind power

19 options there, so.

20   I just want to make sure that that's

21 somewhere in the material and the -- and the supporting

22 information.

23   MS. JOANNE FLYNN: I'm sorry, I didn't

24 quite hear you. What kind of costs?

25   MR. BORIS FICHOT: O&M, operation and

 1 maintenance costs.

 2   MS. JOANNE FLYNN: Oh, yeah, O&M shows

 3 up in the -- in the financials, but we didn't focus on

 4 the O&M. But those costs are all described in Appendix

 5 9.3 and itemized for you in the tables.

 6   THE FACILITATOR: It's Ed here. Just a

 7 clarification, but the O&M costs are embedded in all of

 8 these runs. Okay.

 9

10   (MOVED TO SLIDE 50)

11

12

13   MS. JOANNE FLYNN: Okay. This -- and

14 just going into the last slide, and I think we've --

15 we've pretty much covered it, but this -- this is --

16 this -- overall, for the 2013 reference economics, the

17 -- the Chapter 12 conclusions, moving from the '12 to

18 the '13 assumptions, the economic ranking of the

19 development plans remains the same. The incremental

20 economics is narrowed in the analysis, primarily due to

21 the change in the discount rate.

22   The 2013 planning assumptions are within

23 the range of the uncertainty analysis that we've --

24 we've went -- gone over in some detail. And the

25 economic ranking of the development plans also remains

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1 the same under the higher levels of DSM. And that --

2 sorry, I'm on slide 50. And that -- that is the end of

3 my presentation. If there are any further questions on

4 this?

5   MR. JOHN ATHAS: Just a quick one (1).

6 John Athas, again. A quick one (1) on the last point.

7 The -- when you discussed four (4) and fourteen (14)

8 yesterday, one (1) of the differences that -- that was

9 made fourteen (14) attractive, the Preferred Plan, was

10 the higher expected value even though it had a bigger

11 risk range.

12   With the -- so your conclusion is the

13 same even though the -- the reference case and, thus,

14 maybe even the expected value has -- would have

15 narrowed significantly?

16   MS. JOANNE FLYNN: Yes.

17   THE FACILITATOR: Are there any more

18 questions for Joanne before the... I think what we're

19 going to do is take a break and -- but let's keep it

20 short because we are running behind. So let's have a

21 ten (10) minute break. And then we'll come back and

22 Liz will present on the financials, and I'll -- I'll

23 present the more general business case side. Thanks.

24

25 --- Upon recessing at 10:39 a.m.

328

1   --- Upon resuming at 10:53 a.m.

2

3   THE FACILITATOR: Okay, if we could get

4   again, please. A couple of things. We're going to

5   have Liz present on the financial part of the business

6   case. And then I'm going to pick up the rest of the

7   business case. And before we do that, there were two

8   (2) things I'd like to do.

9   First of all, Joanne was going to say a

10 few additional words, but she has an important family

11 matter to go to out of the province. And she -- what

12 she wanted to comment on is she was asked in the

13 earlier part about, I think, the worst of the worst, if

14 I can put it that way, when you have the twenty-seven

15 (27) scenarios.

16   In each one (1) of those for each plan,

17 there's got to be a worst case, and was there an

18 analysis of the -- of all the worsts against each

19 other. I can't remember -- who was it, Roger. So it

20 wasn't in her overheads, but what she wanted to

21 reference everybody to is in Chapter 10, the

22 probabilistic analysis, the scatter plot. It's on page

23 15 of 62.

24   And what it is, is for each of the

25 fifteen (15) plans, it's the twenty-seven (27) points

329

1 plotted. And you can see on it when you go and look on

2 it -- we're not going to put it up or anything -- that

3 obviously for each of the twenty-seven (27), there's

4 the worst one (1) on the bottom. And you can see all

5 those worst of worst immediately. I will say that the

6 very worst of worst is the wind/gas plan. And the

7 second worst of worst is the all gas plan. So that's

8 one (1) thing.

9   And then the other thing, I expect we're

10 going to lose people over the course of the day. So

11 rather than -- is it -- are we okay? Rather than wait

12 until 3:30, I'll just explain one (1) thing.

13   Naturally, over the course of preparing

14 a five thousand (5,000) page submission -- and,

15 frankly, we were scrambling. We were working fifteen

16 (15) hours a day every -- I was going to -- every day,

17 including weekends. And, inevitably, when doing that,

18 there's some little glitches, typos that are pretty

19 minor.

20   Sometimes somebody -- the formatting or

21 something, in getting it ready for the final report,

22 some things get mixed up a little. So what the lawyers

23 are going to do, I'm not pro -- hopefully next week, I

24 think, is issue like an errata kind of sheet, letter

25 that'll go to everybody that'll explain where some

330

 1 things might have been missing or -- or in the wrong

 2 place or something like that, various... None of them

 3 are major. None of them change any major conclusions

 4 or anything. But we thought we -- it would be useful

 5 to do that.

 6   Marla, Patti, I don't think there's

 7 anything more I need to say on that?

 8

 9   (BRIEF PAUSE)

10

11   THE FACILITATOR: Yeah, we'll be

12 updating the online version, and also sending out a

13 letter of some kind, just giving a quick explanation

14 and referencing that for people. I think that's it.

15   And we've got Liz Carriere. She's the

16 department manager of Financial Planning. And -- and

17 the division manager, Hanri Jacobs, is sitting there,

18 who's -- she's going to jump up and answer questions

19 too. Right, Hanri?

20   So Liz is -- had a lot of experience and

21 is very knowledgeable in doing the financial analysis.

22 We don't have our whole financial team here. We've got

23 people -- other division managers in the financial

24 area. So we won't be able to answer every single

25 question, and I'm thinking particularly the things like

1 the debt and credit ratings and things. We're not

2 really in a position, with the people here today, to

3 answer those kind of questions.

4   Liz...?

5

6 FINANCIAL EVALUATION OF DEVELOPMENT PLANS PRESENTATION:

7   MS. LIZ CARRIERE: Thank you, Ed. Good

8 morning, everyone. As Ed mentioned, I'm the manager of

9 Financial Planning in Finance and Regulatory. My staff

10 and I are responsible for the preparation of the

11 integrated fi -- financial forecast that you can find

12 in Appendix A to this submission, but we're also

13 responsible for the financial evaluation in the

14 associated appendices with Chapter 11.

15

16   (MOVED TO SLIDE 2)

17

18   MS. LIZ CARRIERE: Sequentially, the

19 financ -- I should -- on Slide 2. Sequentially, the

20 financial evaluation follows the economic evaluation.

21 It uses the same set of assumptions and applies

22 accounting policies and practices that are used by

23 Manitoba Hydro to generate a set of projected pro forma

24 financial statements. In doing that, we calculate

25 revenue requirement, finance expense, borrowing

1 requirements. And the focus of our financial

2 evaluation is on the comparative impacts of the future

3 customer rates and our -- the comparative exposure to

4 financial risk of the various development plans.

5   Now, Ed says -- as Ed said, I'm not the

6 expert on the financial risk and creding -- credit

7 ratings and so forth, so I'm not going to discuss any

8 of that in any great detail today. But I will talk a

9 bit about the fut -- the impacts on future customer

10 rates.

11   An important thing to note is that the

12 projected pro forma financial statements, they're not

13 an incremental analysis. They are full cost and

14 revenue representations of what each of the plans and

15 scenarios are going -- are going to look like, given

16 the set of assumptions that are included in those --

17 those scenarios.

18   We begin -- we've begun with the IFF12

19 and updated for the export price forecast as Joanne

20 mentioned in the -- in the economic evaluation and

21 we're using the electric operations only. We haven't -

22 - it's not a consolidated look, we're -- and we're not

23 looking at the gas side of the business; it's the

24 electric only.

25   We start from IFF12, which is a twenty

 1 (20) year forecast, and we've extended it out to fifty

 2 (50) years. We then add, remove, or replace the

 3 development plans' specific assumptions, such as your

 4 capital costs, flow-related revenues, thermal cost

 5 purchase -- power purchases, water rentals, operating

 6 and maintenance costs, to develop these pro forma

 7 financial statements.

 8   Costs, revenues, assets, or liabilities

 9 that are common to all of the development plans and

10 scenarios are carried forward from scenario to scenario

11 and don't change in terms of real costs.

12   Yes...?

13   MR. ROGER CATHCART: Hi. Roger

14 Cathcart. Quick question: The fifty (50) year

15 horizon, is that just for IFF12, or did you -- have you

16 been doing that for IFF09 and onward?

17   MS. LIZ CARRIERE: That is not -- we

18 haven't -- for IFF purposes, we have not done any

19 longer than twenty (20) years. For resource planning

20 purposes we've done thirty-five (35) years but for the

21 purposes of -- of the NFAT analysis we have extended it

22 out to fifty (50) years.

23   MR. ROGER CATHCART: IFF12 comes out

24 sometime during this year. When would that be

25 available? Is there going to be an IFF13?

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1   MS. LIZ CARRIERE: IFF13, normally, I

2 think, it would come out in approximately the end of

3 November.

4   MR. ROGER CATHCART: Oh, good. So I

5 won't ask for it as a First Round question.

6   MS. LIZ CARRIERE: Yeah. However,

7 we're -- we're concurrently doing IRs and -- and the

8 IFF process at the same time. So it's not for certain

9 yet, but we might have an abbreviated version of IFF13,

10 followed by the full version once we're kind of through

11 the IRs -- IR process.

12   MR. ROGER CATHCART: Do you have an

13 IFF12-2 or --

14   MS. LIZ CARRIERE: No, we don't.

15   MR. ROGER CATHCART: Okay. So you just

16 updated for 2013 export prices in the IFF12?

17   MS. LIZ CARRIERE: Correct.

18   MR. ROGER CATHCART: And no other

19 adjustments for anything else?

20   MS. LIZ CARRIERE: Well, other than the

21 -- the assumptions specific to, so for example the

22 Keeyask and Conawapa estimates are changing depending

23 on the scenarios.

24   MR. ROGER CATHCART: Okay. No capital

25 expenditure forecast '13 yet?

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 1   MS. LIZ CARRIERE: No.   The -- the

 2 capital expenditures that would be done regardless of

 3 which plan you undertake is consistent throughout.

 4 Now, the only thing I'll say is, in the scenarios where

 5 we've --

 6   MR. ROGER CATHCART: Thank you.

 7   MS. LIZ CARRIERE: -- in the scenarios

 8 where we've -- we use -- use an alternate -- alternate

 9 economic -- so the interest and escalation rates, the

10 underlying common capital have been recalculated to

11 include those -- the revised -- or those -- the -- the

12 new assumptions in those scenarios in the high and

13 lows, high/low in reference. Okay?

14   I think -- so the pro formas are

15 generated by our financial forecasting model. I'll

16 call it fine/fore for short. That's the -- the common

17 name that we use for it. It's a detailed model that

18 simulates the bus -- business transactions and the

19 accounting principles and practices that we use here at

20 Manitoba Hydro.

21   It is not an Excel-based model. The

22 complex nature of the transactions and the

23 relationships between the variables makes Excel -- it -

24 - it's not the best platform for -- for a model of this

25 sort. And it tend -- doesn't lend itself well for --

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1 to the definition of the formulas in individual cells,

2 and increases the inherent risks that are in

3 spreadsheets. The other thing is, is that many of the

4 calculations in the financial model related to cash and

5 -- and finance expense are iterative, and Excel just

6 doesn't have the capacity to perform those

7 calculations.

8   So the model is -- is actually a

9 specialized model using a specialized financial

10 planning software called Interactive Financial Planning

11 System, and it runs on a Unix operating system. It

12 provides a large capacity and high-speed modelling

13 capability, and allows us to perform what-if and goal-

14 seek analysis.

15   And we optimize primarily the -- the

16 rates or the revenue requirement in order to meet a

17 range of financial constraints. And we're able to do

18 that with this model in a relatively short period of

19 time. For example, for each development plan it would

20 take -- it would take -- it takes approximately twenty-

21 seven (27) minutes to run. Well approximately --

22 exactly twenty-seven (27) minutes to run through goal-

23 seeking rate increases on each and every year. It

24 would takes days in -- in an Excel-based model.

25   The unique feature of the financial

1 forecast model is it's based on double-entry

2 accounting. And the benefit of that, it uses the full

3 range of cash and -- and accrual entry journals, and it

4 has a balancing function. So often in incremental

5 analysis where you might miss a relationship of a

6 variable, we tend to be able to follow that all the way

7 through the financial statements, and it actually keeps

8 itself in balance.

9   The model is generally annual for

10 accruals but for cash it's monthly. We use the same

11 model for the preparation of the IFF and we also -- and

12 it's used in -- in this -- in the preparation of the

13 financial analysis for NFAT.

14   It's not integrated with many of -- any

15 of the other operational or planning models. We are

16 fed input data from text-based data files that are

17 either created manually or we use automated procedures

18 to -- to create -- convert data, usually from an Excel-

19 based file.

20   I think moving -- we've talked about the

21 fifty (50) year study period already.

22

23   (MOVED TO SLIDE 3)

24

25   MS. LIZ CARRIERE: Moving onto slide 3.

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1 This is showing the development plans, the full suite

2 of plans that are identified in the economic

3 evaluations, and the screening and in -- and the

4 uncertainty evaluations. These are the plans that have

5 been evaluated for financial purposes. The key ones

6 are -- are the Preferred Plan, the Keeyask gas, all

7 gas. And then we also have a range of the -- the --

8 whether it's 250 or 750 megawatts.

9   Similar to the uncertainty analysis that

10 Joanne was talking about, we have also done the

11 uncertainty analysis -- analysis on the financial

12 evaluations. So for every plan, there are twenty-seven

13 (27) separate scenarios run, based on the -- the three

14 (3) risk factors identified.

15   So we have revenues that vary the energy

16 prices, and the gas costs, and so forth, the -- the

17 commodity gas prices. We have the economic ins --

18 indicators, so we varied the -- the interest escalation

19 and US-Canadian exchange rates. And we have varied the

20 capital costs for both -- for Keeyask, Conawapa, as

21 well as the thermal plants.

22

23   (MOVED TO SLIDE 4)

24

25   MS. LIZ CARRIERE: On Slide 4, now Ed

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1 was speaking just before I started about correction of

2 errors, and I believe it was discussed at the pre-

3 hearing conference the other day, it -- unfortunately -

4 - rather unfortunately, we've experienced a technical

5 glitch where the cash flow statements that can be found

6 in 11.4 has an incorrect line item on it. The -- it --

7 the -- the top portion above -- between the -- the two

8 (2) blue spaces, you see a red line under, "Investing

9 Activities, Other." That's actually other revenue and

10 doesn't belong -- it's already captured in the cash

11 flow statement and doesn't belong here.

12   When we generated the financial

13 statements it just pointed to the incorrect database

14 line and -- and it should be sinking fund payment,

15 which is the yellow highlighted piece, or line. Now,

16 just to note that you'll see that the totals under the

17 investing activities has not changed. Those totals are

18 correct, it's just the line item that was -- was

19 incorrectly referenced.

20   And there is no other -- there is no

21 corrections that are required to be made to either the

22 operating statements or the balance sheet statements.

23 So this was just a -- a technical glitch in -- in

24 generating. So those will be provided at some -- some

25 time next week.

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 1   MR. ROGER CATHCART: Roger Cathcart,

 2 quickly. So the adds work on this schedule?

 3   MS. LIZ CARRIERE: Yeah.

 4   MR. ROGER CATHCART: Is there another

 5 line item that goes there to make it add up?

 6   MS. LIZ CARRIERE: Well, the "Other" --

 7   MR. ROGER CATHCART: Yeah.

 8   MS. LIZ CARRIERE: -- will be replaced

 9 by the sinking fund. So if you --

10   MR. ROGER CATHCART: Okay.

11   MS. LIZ CARRIERE: -- add up the bottom

12 --

13   MR. ROGER CATHCART: Okay. Great.

14   MS. LIZ CARRIERE: -- it works.

15   MR. ROGER CATHCART: Okay, thank you.

16   MS. LIZ CARRIERE: The bottom portion.

17 Okay? So we apologize if -- I know you've all been

18 madly analyzing those cash flow statements. So if this

19 causes you any inconvenience, we are truly sorry. So

20 one (1) of the key things that -- in looking at future

21 customer rates, is the rate setting we -- approach we

22 use to compare rates and analyze rates.

23   I guess one (1) distinction that I

24 should make for everyone here, and it may be very

25 obvious to some of you, but to others it may not be, is

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1 that Manitoba Hydro is regulated under a cost of

2 service regime. And what this do -- means is that it

3 makes a -- gives us a little bit more of a challenge in

4 terms of projecting fu -- future customer rates and how

5 to make sure that we're applying the principles of --

6 that Manitoba Hydro uses as -- for rate setting

7 consistently across all the development plans and all

8 of the scenarios, such that you end up with results

9 that are comparable, a solid basis of comparison.

10   In a -- in a rate -- rate-based rate of

11 return jurisdiction it's relatively simple. It's

12 formulaic to -- to derive rates in an -- annually, but

13 we tend to use for -- for cost of service and our rate-

14 setting principles we use sort of general principles of

15 regular reasonable rate increases.

16   And there -- there's no real hard and

17 fast rules other than we have our financial targets to

18 -- to guide us and that we must -- we have to make

19 reasonable annual contributions towards retained

20 earnings such that in order we -- in order that we can

21 maintain a reasonable capital structure sufficient to

22 withstand the adverse financial effects of potential

23 risks faced by the Corporation without incurring un --

24 unduly large or sudden rate increases on our customers.

25   So our -- what we view as a reasonable

1 capital structure is represented or reflected in our

2 financial targets which are a 75/25 debt-equity ratio,

3 one point two (1.2) times interest coverage ratio, and

4 a one point two (1.2) times capital coverage ratio.

5   Now, if you've had a look at the

6 financial statements, it's easy to see that we do

7 expect those financial indicators to deteriorate during

8 construction of these -- these plans.

9

10   (MOVED TO SLIDE 5)

11

12   MS. LIZ CARRIERE: So what we've looked

13 at in terms of an approach to rate setting is to look

14 at it returning to 75/25 by the end of the twenty (20)

15 -- twenty-one (21) -- '31/'32 time period. Now, that's

16 consistent with the approach that we've used in the

17 IFF. It's the end of the twenty (20) year period. So

18 there's not necessarily any significance for that.

19 It's just providing consistency or comparability to

20 what the Board has already seen in terms in -- in

21 previous IFFs.

22   After that point in time we use -- we

23 looked -- we set rates to achieve a one point two (1.2)

24 times interest coverage ratio in each and every year to

25 the end of the fif -- fifty (50) year forecast.

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1   Now, that does result in a little -- in

2 some variability in the rates in -- in that short --

3 when we first make that shift but -- and we -- you

4 know, we -- if there's variability in rates, it's not

5 something that we would necessarily implement.

6 Obviously, it's way out in the future, but it's just to

7 -- it's to provide a mechanistic approach and increase

8 that comparability between -- between plans and

9 scenarios.

10   Actual rate increases are going to --

11 are going to vary from the ones we are projecting, and

12 will be dependent on future revenue requirements and

13 water flow conditions and other factors that influence

14 our revenue requirement of that day. And those rate

15 increases will be subject to full corporate review and

16 review by the pu -- Public Utilities Board, you know,

17 in the form of a GRA, a general rate application.

18

19   (MOVED TO SLIDE 6)

20

21   MS. LIZ CARRIERE: So at the risk of

22 confusing everyone further, we're going to look at

23 Figure 11.1, which is a box plot of the cumulative

24 rates. They're nominal cumital -- cumulative rates,

25 and they're shown for five (5) year intervals. It's

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1 not each and every year of the fifty (50) year forecast

2 period, it's -- it's five (5) years. and within each

3 year we see eight (8) -- all eight (8) of the

4 development plans.

5   So yesterday -- or yesterday and today

6 Joanne has introduced the -- the box plot in her

7 presentation on the economic uncertainty evaluation.

8 And we've used the same graphical representation to

9 summarize all eight (8) times twenty-seven (27) pro

10 forma statements with the -- the nominal cumulative

11 rates there.

12   So, I guess, just to note that the red

13 bar is the all gas case. The -- the lighter blue or

14 turquoise bar is the Keeyask/gas 250 or Plan 4 in --

15 from -- from Joanne's presentation. And the green bar

16 is the pre -- Preferred Plan, or Plan 14 from Joanne's

17 presentation, as well.

18   The coloured box represents the 25th to

19 75th percentile. Actually, before I go into that I'm

20 going to take a crack at trying to explain how we came

21 up with these number -- how we came up with these.

22   So for each development plan there's

23 twenty-seven (27) scenarios. If you -- if you took pro

24 forma statements from Appendix 11.4 and looked at the

25 cumulative rates from -- from the operating statement

345

1 in that Appendices, and you picked off '21 -- or

2 '31/'32 and said that you would end up with a

3 cumulative rate, I don't know the exact number, of

4 about -- just over 100 percent -- cumulative rate

5 increase of over 100 percent.

6   Now, if you applied the weightings

7 according to the probability analysis to that number,

8 so under -- if you look for example at the -- the --

9 what we call the Ref/Ref/Ref, so the scenario where you

10 have the reference energy prices, reference economic

11 indicators, and the reference capital costs, you

12 multiply that 100 percent out by the 55 percent

13 probability for energy prices, the 50 percent

14 probability for economic indicators, and the 50 percent

15 probability for capital costs. That weighting that's

16 applied to the -- the rating -- cumulative rate in that

17 year is about 14 -- 14 percent.

18   Now, if you do that for each of the

19 scenarios and then you rank them from lowest to

20 highest, and then add up the probability as you go from

21 lowest to highest, that's how you develop those S-

22 curves.

23   In this case, we have -- we -- we're not

24 looking at an S-curve but we're interpolating and --

25 and plotting only the points at 10 percent, 25 percent,

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1 50 percent, 75 percent, and 90 percent. So the box --

2 the coloured boxes represent the -- the cumulative

3 rates between the 25 and 75 percent probability points.

4 The dark hash is the 50 percent probability point. And

5 then the tails are the 10 and the 90 percent

6 probability point.

7   So if you were to go to Appendix 11.4

8 and look at the cumulative rates and picked one (1) of

9 the years here, you would generally be able to find

10 that somewhere -- that cumulative rate somewhere on

11 this -- this plot unless it falls outside the ten (10)

12 and the ninety (90). And there -- I mean, there are a

13 few that do that but we're capturing about 80 percent

14 of the results within this graph. Any questions?

15   MR. RICK HENDRIKS: So all of the --

16 Rick Hendriks here. If I look at -- I just want to

17 make sure I understand this -- 2015 to 2030 you have

18 100 precent increase, more or less, in rates for all of

19 the ones on this particular chart.

20   MS. LIZ CARRIERE: Correct.

21   MR. RICK HENDRIKS: Okay. So just as a

22 point of clarification, has Manitoba Hydro already

23 applied for approval of some of these rate increases?

24   MS. LIZ CARRIERE: Not -- not that far

25 out, no --

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 1   MR. RICK HENDRIKS: Okay.

 2   MS. LIZ CARRIERE: -- because our --

 3 our Rate Application tends to come in around January

 4 but we're only looking at a -- usually a two (2) year

 5 period.

 6   MR. RICK HENDRIKS: Okay, so your --

 7 your period is two (2) years.

 8   MS. LIZ CARRIERE: Yeah.

 9   MR. RICK HENDRIKS: Okay.

10   MS. LIZ CARRIERE: And that's what I

11 said. Like, these are -- these rates that we're

12 projecting are indicative, and for comparative and

13 evaluation purposes only. And I -- and I had mentioned

14 that actual rate increases that would be implemented

15 will be dependent on conditions of the day and be

16 applied for through a general rate application, you

17 know, much closer to the time.

18   MR. RICK HENDRIKS: So when was your

19 last GRA approved by the PUB?

20   MS. LIZ CARRIERE: We just finished it.

21   MR. RICK HENDRIKS: Okay.

22   MS. LIZ CARRIERE: I guess we wrapped

23 it up in January or February of this year? New rates

24 were implemented for May, for the electric business.

25 Yeah.

 1   MR. ANTOINE HACAULT: Antoine Hacault,

 2 for the record. In these calculations, what are

 3 considered variable costs with respect to the capital

 4 projects, and how does that treat it? I'll try to dumb

 5 it down the way I understand it.

 6   In the last hearing we had, for example,

 7 a lot of overhead costs related to capital that were

 8 treated differently now with the new accounting

 9 standards. And a lot of the costs that were attributed

10 to capital projects and kind of rolled into the costs,

11 that started to change in the numbers.

12   So how is the accounting of variable

13 costs treated? Is that something you can answer, or

14 give us an idea? Or is it somewhere in the materials

15 that I...

16   MS. LIZ CARRIERE: Well, I'll say that

17 this analysis has the same -- uses the same underlying

18 assumptions about IFRS. So the overhead is treated in

19 the same way. But in terms of variable costs, I think

20 that might be best left to Dave Bowen's presenting

21 later.

22   So when we are given an estimate, we

23 apply overhead rates to the labour portion. And those

24 labour -- those overhead rates are based on the IFRS

25 assumptions. But if you mean variable costs, Dave

 1 Bowen would have a better -- like, we're given a base

 2 estimate of base cash flows.

 3   MR. ANTOINE HACAULT: I have one (1)

 4 more question that's related in the financial way. The

 5 last hearing we dealt with depreciation.

 6   MS. LIZ CARRIERE: M-hm.

 7   MR. ANTOINE HACAULT: And the major

 8 capital projects, the way I recall the evidence, did

 9 not reflect in the IFF the -- kind of a revised

10 depreciation, which would increase the depreciation

11 expense.

12   Do you know whether or not all these

13 calculations change the way depreciation is treated for

14 the major capital projects? Does it update it to the

15 new study, or is it still treated in the old way?

16   MS. LIZ CARRIERE: I can't -- I can't

17 recall if we've changed the depreciation. For

18 financial evaluation purposes, we use a higher level

19 methodology for -- for -- if I -- for estimating

20 depreciation, and we look more at the average service

21 life of the -- of the asset. I believe the -- I don't

22 -- I don't know that we have depreciation rates fully

23 developed for Keeyask and Conawapa yet. And I believe

24 the issue was more with -- with Wuskwatim at the GRA.

25 So I'd have to confirm that, though.

350

 1   MR. ROGER CATHCART: Hi, Roger

 2 Cathcart. Just quickly, just interpret the -- the axis

 3 is percentage increases in rates?

 4   MS. LIZ CARRIERE: It's the cumulative

 5 percentage rate increase that you would see -- normally

 6 see in the operating statement.

 7   MR. ROGER CATHCART: Okay. And I look

 8 out on the axis on -- on the bottom, and I go out to

 9 2080, or...

10   MS. LIZ CARRIERE: 2060.

11   MR. ROGER CATHCART: 2060.

12   MS. LIZ CARRIERE: Yeah.

13   MR. ROGER CATHCART: When is the

14 crossover where gas becomes more expensive for

15 ratepayers than the other options?

16   MS. LIZ CARRIERE: It depends on the

17 scenario. But, generally, you start to see separation

18 of the Preferred Plan around, like beneficial

19 separation, around 2030. And by 2040 the Preferred

20 Plan is better than all of them -- all of the other

21 eight (8) plans analyzed.

22   MR. ROGER CATHCART: Okay. Thank you.

23   MR. JOHN ATHAS: This is John Athas

24 again. Could you -- do you have any -- from looking at

25 your -- your runs, do you have any key observations as

351

1 to what's driving that decrease from -- general

2 decrease in the numbers from 2030 to 2035?

3   MS. LIZ CARRIERE: That was -- that's

4 in part due to the -- the methodology we've used for

5 rate-setting. That's where we -- we shift. Going from

6 a -- an even annual rate increase to achieve a debt-

7 equity ratio. And then we switch to setting rates to

8 achieve a one point two (1.2) times interest coverage.

9 So in those years in a -- in a short period of time

10 following that switch you see all plans are showing

11 significant rate increases and then decreases. But

12 overall those are -- are dropping.

13   The other thing that's happening is in

14 plans that have Keeyask and Conawapa, those plants are

15 -- are fully in service by that time. And within a

16 relatively short period of time after in service of

17 those plants, we start to see the benefits of the

18 export revenue pulling down the -- the requirement for

19 rates.

20   MR. JOHN ATHAS: So with that switchover

21 time period --

22   MS. LIZ CARRIERE: M-hm.

23   MR. JOHN ATHAS: -- that you have there,

24 that's -- that's saying that the target 75/25 versus

25 the one point two (1.2) the target produces higher

352

 1 revenues -- revenue requirement?

 2   If all these go down when you change the

 3 --

 4   MS. LIZ CARRIERE: Yeah. Generally,

 5 yes.

 6   MR. JOHN ATHAS: So if you -- if you

 7 change the timing of when that -- when you made that

 8 switchover, that may not have looked so abrupt or

 9 something in --

10   MS. LIZ CARRIERE: That's right. In

11 practice, we're not -- we don't -- we're not going to

12 set rates in this manner, like I said. And even --

13 even where we use the -- the even annual rate increases

14 to say -- to -- to achieve 75/25 by '21 -- or '31/'32,

15 it's only for evaluation purposes it's not actually

16 something that we would evaluate because we tend to set

17 rates in three (3) year sort of chunks of -- of time

18 frame.

19   So you'd never see this actually being

20 put into practice, it just -- we're -- we're using a

21 mechanistic approach to -- to improve the comparability

22 between plans. So all of the plans see this -- this

23 variation in rates and -- and the drop in -- in rates.

24 So when you're looking at the differences between the

25 plans it makes them more comparable.

353

1   MR. BILL HARPER: Bill Harper. I was

2 just curious, does the application of the one point two

3 (1.2) post-2030 lead you to a wide variation in debt-

4 equity ratios by the end of the period, or are the

5 debt-equity ratios for the various scenarios roughly

6 around the same amount?

7   MS. LIZ CARRIERE: I think they're

8 roughly around the same amount, because what you see is

9 -- is by the end of the per -- end of the period your

10 net debt and retained earnings are all converging

11 towards roughly the same -- same number.

12   MR. BILL HARPER: Right. So the

13 results wouldn't be that much different if I was trying

14 -- so one point two (1.2), if I was trying to even rate

15 increases for the balance of the period to maintain the

16 same debt-equity ratio? The -- the relativities would

17 come out roughly the same.

18   MS. LIZ CARRIERE: You would end up

19 with -- you wouldn't get convergence of your debt and

20 equity or your -- your net debt and retained earnings

21 because of the -- the different levels of fixed assets,

22 net fixed assets, that we're working with in a gas-

23 based plan versus a hydro-based plan.

24   MR. BILL HARPER: I'll have to think

25 about that. Okay. Thank you.

354

1   MR. RICK HENDRIKS: Rick Hendriks. Just

2 in terms of those fixed assets, I'm assuming you're

3 referring to the assets that exist in the case of all

4 the plans?

5   MS. LIZ CARRIERE: Yes. When -- and on

6 the balance sheet it reflects all of Hydro's assets.

7   MR. RICK HENDRIKS: Right. So when I -

8 - when we look at this table here or this graph here,

9 this cumulative increase, is that the actual rate or is

10 it -- how do I explain this? If -- if the rate in 2015

11 is five (5) cents, all right, that I -- that I'm paying

12 as a consumer, and then the rate in 2030 doubles so now

13 I'm paying ten (10) cents. Is that how I understand

14 this? Or is this --

15   MS. LIZ CARRIERE: Yes.

16   MR. RICK HENDRIKS: -- the -- the

17 increase only attributable to the assets in the plan?

18   MS. LIZ CARRIERE: No --

19   MR. RICK HENDRIKS: This is --

20   MS. LIZ CARRIERE: -- these are the

21 absolute cumulative rates. They are not the

22 incremental rates.

23   MR. RICK HENDRIKS: Okay. Thanks.

24   MS. LIZ CARRIERE: Okay. So just to go

25 over some of the observations that we made in -- in the

355

1 financial evaluation, ra -- obviously rate increases

2 are required for all of the -- all of the plans that we

3 have evaluated. It shows that higher rates are

4 required in the -- in the medium term for all plans

5 regardless of whether the -- the plan is gas based or

6 hydro based.

7   The bottom line is that new energy

8 cannot be provided at the same low -- current low rates

9 that we've enjoyed for the last two (2) decades. In

10 the near term, by 2020, the cumulative rates -- rate

11 increases for the various alternatives are relatively

12 similar, and we can see that by the very tight boxes in

13 that year.

14   MR. ROGER CATHCART: Roger Cathcart.

15 Just quickly, did you net present value the rate

16 increases from time frames? I -- I mean, just -- I'm

17 looking at it. I -- I see a large -- large rate in --

18 I see a crossover point some time in the future. But

19 did you --

20   MS. LIZ CARRIERE: Yeah.

21   MR. ROGER CATHCART: -- bring

22 everything back to 2014 to see what the ratepayer would

23 be looking today at?

24   MS. LIZ CARRIERE: Well, not on the

25 rate -- rate increases but on -- on the overall

356

 1 revenue.

 2   MR. ROGER CATHCART: Overall additional

 3 domestic revenue?

 4   MS. LIZ CARRIERE: Yes.

 5   MR. ROGER CATHCART: Okay.

 6   MS. LIZ CARRIERE: Yeah.

 7   MR. ROGER CATHCART: And that -- that's

 8 been net present value?

 9   MS. LIZ CARRIERE: Well, we can do it.

10 I mean --

11   MR. ROGER CATHCART: Okay.

12   MS. LIZ CARRIERE: -- we have the

13 revenue figures in the operating statement, and they

14 can be discounted, yes.

15   MR. ROGER CATHCART: Okay. Okay, thank

16 you.

17

18   (BRIEF PAUSE)

19

20   MS. LIZ CARRIERE: So by 2030 we can

21 see that cumulative rate increases for the capital

22 intensive plans are generally higher than other

23 alternatives. But by 2035, following the in-service of

24 both Keeyask and Conawapa, cumulative rate increases

25 for the Preferred Plan, the green one, we start to see

 1 separation from the other plans.

 2   Bu 2040, the cumulative rate increases

 3 for the Preferred Plan is lower than all other

 4 development plans when you look at all levels of

 5 probability, at least the ones graphically presented

 6 here at P10, twenty-five (25), fifty (50), seventy-five

 7 (75), and ninety (90).

 8   But from 2045 to 2060, the development

 9 plans with both Keeyask and Cona -- Conawapa, so that

10 would be the pink, green, and looks like kind of grey,

11 silvery colour, have the lowest cumulative rates. And

12 by the end, the Preferred Plan is about 65 to 70

13 percent lower than the all gas plan under the reference

14 scenario.

15   The range of potential cumulative rates

16 expands over time for all the evaluated alternatives.

17 The all gas plan has the widest range or the greatest

18 uncertainty in terms of cumulative rates. And the

19 associated risk is -- is greater for -- for customers,

20 particularly look -- when you look at the -- the 10 and

21 90 percent probability levels.

22

23   (MOVED TO SLIDE 7)

24

25   MS. LIZ CARRIERE: This is another blo

358

1 -- box plot found in Figure 11.2. And I'm on page 7 of

2 the presentation. This shows the even annual rate

3 increases that are required to achieve the 75/25 debt-

4 equity target by 2132. As we saw in the previous

5 slide, we can see that rate increases are higher than

6 the expected rate of inflation for all of the evaluated

7 alternatives.

8   At the 50 percent probability level

9 across all -- all development plans the even annual

10 rate increases range from 3 1/2 percent to about 4.3

11 percent. And when you consider the -- the 25th and

12 75th pro -- probability points, the even annual rate

13 increases range from about 3.2 to 5.1 percent. During

14 this time frame, for -- up to 21 -- '31/'32 the even

15 annual rate increases for the Preferred Development

16 Plan, or the green bar, are generally higher in keeping

17 with the upfront capital costs.

18

19   (MOVED TO SLIDE 8)

20

21   MS. LIZ CARRIERE: Slide 8 of the

22 presentation is -- reproduces the Figure 11.3 from

23 Chapter 11. And this shows us the equivalent even

24 annual rate increase over the entire fifty (50) year

25 time period.

359

 1   So if we took -- took the cumulative

 2 rates and calculate what -- you're averaging -- you're

 3 smoothing those rates over the entire fifty (50) year

 4 time period, you would need approximately 1 1/2 percent

 5 under the develop -- Preferred Development Plan

 6 compared to 2.1 percent per year compared to the all

 7 gas plan at the 50 percent probability level.

 8   The Preferred Plan also is the

 9 narrowest, or shows the least amount of uncertainty

10 relative to the other plans.

11

12   (MOVED TO SLIDE 9)

13

14   MS. LIZ CARRIERE: Now, the next slide

15 -- I'm not going to go through in detail. It just

16 summarizes for you some of the key metrics for the

17 reference scenario.

18   I should have pointed out that in

19 Joanne's presentation on the box plots, the hash marks

20 on the box plots are not the reference scenario that

21 the economic evaluation presentations had indicated.

22 These are the 50 percent probability level.

23

24   (MOVED TO SLIDE 8)

25

360

 1   MS. LIZ CARRIERE: So just to provide

 2 similar kind of information, these are the reference --

 3 reference scenario key metrics.

 4

 5   (MOVED TO SLIDE 9)

 6

 7   MS. LIZ CARRIERE: As I mentioned

 8 earlier, the -- if we look at Column A which is the

 9 cumulative rates by the end of the fifty (50) year

10 period, we can see that the preferred plan and -- or

11 plans with both Keeyask and Conawapa are 65 to 70

12 percent lower.

13   In Column B, that was Figure 11.2,

14 summarizes the reference -- reference case that's --

15 that falls within that Figure 11.2 projected rate --

16 annual rate increases over the period from '14/'15 to

17 2031/'32 are about three point four-two (3.42) to three

18 point nine-eight (3.98). Then if you look at the

19 equivalent ann -- even annual rate increases in Column

20 B they're ranging from 1.44 percent to two point o-

21 seven (2.07).

22   Now, we've provided the net fixed

23 assets, net debt, and retained earnings for all of --

24 all of the plans that were analyzed here, as well, but

25 I'm not going to go over those in detail today.

361

 1   (MOVED TO SLIDE 10)

 2

 3   MS. LIZ CARRIERE: So here's -- this is

 4 a little part about -- we've got a slide, Slide 10, on

 5 the drought risk that we did for the financial

 6 evaluation. The economic evaluation provides us with

 7 the cost of drought in real terms for reductions in

 8 revenues, costs to purchase additional power from --

 9 from customers outside of Manitoba, as well as

10 reductions in water rentals, and -- and the cost to

11 burn thermal here in Manitoba.

12   Now, we take that and then we apply the

13 impacts related to financing that result from those --

14 those reductions or increases in -- in fuel and power

15 purchases. We didn't do -- as similar to DSM and load

16 and so forth, we didn't analyse all eight (8) plans

17 under the financial evaluation but we tried to select

18 obviously the Preferred Plan, Plan 4, the Keeyask/gas

19 250, as well as the all gas plan.

20   And we looked at basically five (5) time

21 periods of drought commencing, and they're all five (5)

22 year droughts: '14/'15, during the construction of

23 Keeyask; '21/'22, affecting early revenues from Keeyask

24 and during the construction of Conawapa; affecting --

25 '27/'28, affecting the early revenues of Conawapa; and,

362

1 then, beyond the early revenues from Conawapa.

2   I'll just briefly say that the near term

3 impact on drought -- on net flow related revenue is

4 actually -- approximately the same for all development

5 plans and that's because we don't have any new gen --

6 generation coming online. It's only until you get to

7 after Keeyask and Conawapa are online that you see any

8 market differences in the -- in the net flow related

9 revenue impacts.

10   Although the absolute dollar impact for

11 a five (5) -- five (5) year drought is greater with

12 plans with Keeyask and Conawapa in them, retained

13 earnings at the end of the five (5) year drought are

14 higher under the Preferred Development Plan than

15 compared to the all gas plan. And this is -- is --

16 indicates that plans with Keeyask and Conawapa are more

17 robust in its ability to absorb the financial impacts

18 of adverse -- of drought.

19   The most adverse timing of a five (5)

20 year drought occurs in -- in the -- the two (2) earlier

21 time periods, so 2014/'15 and 2021/'22. You have a

22 greater likelihood that it may result in negative

23 retained earnings balance under the all gas plan. And

24 while it's signif -- retained earnings are

25 significantly reduced under the Preferred Plan, it

1 remains positive in these time frames.

2

3   (MOVED TO SLIDE 11)

4

5   MS. LIZ CARRIERE: So final two (2)

6 slides: just a summary of the observations or

7 conclusions from the financial evaluation, that rate

8 increases are required for all evaluated alternatives

9 in the long term. The development plans with Keeyask

10 and Conawapa are projected to have the lowest

11 cumulative rates.

12   In the medium term the capital inve --

13 intensive plans are projected to have cumulative rate

14 increases that are generally higher than the other

15 alternatives. And the Preferred Plan is projected to

16 have the lowest overall rates to Manitoba customers in

17 the long term.

18

19   (MOVED TO SLIDE 12)

20

21   MS. LIZ CARRIERE: On Slide 12 we have

22 some of the -- a summary of the conclusions on the

23 financial risk in the long-term development plans, that

24 include Keeyask and Conawapa, have the strongest

25 projected balance sheet. Net debt levels converge

364

 1 towards the end of the study period for all development

 2 plans. In the medium term, while net debt levels are

 3 highest with the development plans that include both

 4 Keeyask and Conawapa, they also have the highest fixed

 5 assets and highest retained earnings.

 6   Development plans with both Keeyask and

 7 Conawapa are more robust in their ability to absorb the

 8 adverse financial impacts of drought and other -- other

 9 risks faced by the Corporation. So that's the end of

10 the financial evaluation presentation. If there's any

11 other questions? Everyone's hungry for lunch?

12

13   (BRIEF PAUSE)

14

15   THE FACILITATOR: Are there any

16 questions for Liz?

17

18   (BRIEF PAUSE)

19

20   THE FACILITATOR: Going once. Going

21 twice.

22   MS. LIZ CARRIERE: Gone.

23   THE FACILITATOR: Liz, will you be here

24 after lunch?

25   MS. LIZ CARRIERE: I'm here over lunch.

1   THE FACILITATOR: Okay. So if you

2 think of any last-minute questions you'd like to ask

3 Liz, your chance is lunch. We are running about an

4 hour or so late. So what we're going to do is, I

5 think, take a lunch break now. In the business case

6 side there were two (2) parts to it. There was: Liz

7 can do the financials, then I was going to wrap it up

8 with the business case, pulling it all together and a

9 few other little odds and sods.

10   There's not enough time to do that

11 before lunch because lunch is getting delivered at

12 11:45? Yeah, so which is just in a couple of minutes.

13 So what we're going to do is -- I -- I know -- I've

14 talked to Josee. There's a couple of meetings over

15 lunch, but we thought we'd squeeze the lunch to half an

16 hour and ask the people having that -- those lunchtime

17 meetings try and fit that in. And then we would pick

18 up, let's say, quarter after 12:00. Start again.

19   And the idea is we are going to finish

20 by 3:30. We know there's people who have got flights

21 out of the city and we'll make sure you get there. So

22 we may have to scrunch a little bit.

23   I was talking to Dave Bowen. I know a

24 number of people have expressed to him they really want

25 to hear his presentation, so we're not going to squeeze

366

1 the capital cost presentation. The last one on the

2 socioeconomic and environmental, I'm presenting that

3 one as well, so I have some flexibility. I think that

4 one we can scrunch a bit and -- and get inside our

5 timelines.

6   So that's the plan. Does that work for

7 people? Does anybody have a -- some concerns with

8 that? I'm looking at Josee right now. Does that work

9 still?

10   MS. JOSEE LEMOINE: I think so.

11   THE FACILITATOR: Okay.

12

13   (BRIEF PAUSE)

14

15   THE FACILITATOR: Okay. So if we could

16 lunch...

17

18   (BRIEF PAUSE)

19

20   THE FACILITATOR: Sorry?

21   MS. JOSEE LEMOINE: Where are the

22 meetings going to take place? Still, at the other --

23   THE FACILITATOR: The meetings -- are

24 the meetings are to be still in the end?

25   MS. JOSEE LEMOINE: Yes.

367

1   THE FACILITATOR: Yeah, still in the

2 end. And lunch, again, will be out in that hallway,

3 again. And so let's take a break now and at quarter

4 after 12:00 we will get back together. Thank you.

5

6 --- Upon recessing at 11:48 a.m.

7 --- Upon resuming at 12:30 p.m.

8

9   THE FACILITATOR: Okay, if we could get

10 restarted. Sorry about having you cut lunch a bit

11 short, but we are running behind and -- because I said,

12 we got people flying out, so we will finish at 3:30.

13 The -- Liz presented the first half of the business

14 case part of the sessions, and I'll be doing that

15 second half.

16

17 BUSINESS CASE AND RISK ASSESSMENT PRESENTATION:

18   THE FACILITATOR: And the -- the --

19 when we were -- the -- when we were talking about the

20 business case, it's sort of trying to pull everything

21 together into one (1) place, and so I'll try and do

22 that.

23   Obviously, we don't have time to go into

24 a lot of detail on it, so I'm going stay fairly high

25 level. And then I'll finish off briefly, very briefly,

368

1 with the last chapter, which is risk management and

2 implementation plan chapter. But, again, that's going

3 to be very brief.

4   Then we're going to have a presentation

5 by Dave on the capital costs, which there's been a lot

6 of interest in, so we're going to make sure we keep

7 time for that. And then, lastly, we got the

8 socioeconomic and environmental, which is going to get

9 squeezed a bit for us to get done in time.

10

11   (MOVED TO SLIDE 2)

12

13   THE FACILITATOR: So just to get

14 started then, based on some discussion yesterday, and I

15 did a mental run through at 4:00 in the morning while

16 in bed, I -- I revamped this presentation this morning.

17 And starting off with the focus being -- taking us

18 right back to the beginning of this whole effort, what

19 is it we're actually looking for here? What is it

20 that's got to be decided?

21   And so the first two (2) overheads are

22 dealing with that. And this -- this is virtually

23 verbatim from various places in the submission:

24 overview, executive summary, Chapter 14. What we need

25 is -- what Manitoba Hydro's seeking from the government

369

1   is approval for Keeyask GS to start construction

2   June/July 2014. Realistically, I guess we're looking

3   at July. Our construction people would prefer earlier,

4   but to go ahead in conjunction with that 250 megawatt

5   tile -- export sale with Minnesota Power that Dave has

6   talked about a few times, and -- and associated with

7   that, a new tie-line. And the tie-line we're seeking

8   approval for is a 750 megawatt tie-line.

9   And then we've had a lot of talk about

10 WPS. We had a WPS sale agreement that's 100 megawatts

11 that goes over existing transmission that's already a

12 signed deal, and the only thing missing from it is NEB

13 approval. So we would -- wanted to be proceeding with

14 that. And it finishes, I think, in 2028, something

15 like that, Dave? Yeah. And that's already in -- in

16 place, except we just don't have NEB approval yet.

17   And for the US friends who are here,

18 National Energy Board is our federal regulator on

19 exports and tie-lines or inter -- to get into the US.

20   The last one is, as Dave talked about

21 and Joanne talked about, we have the 300 megawatt

22 Wisconsin Public Service sale which effectively absorbs

23 the hundred megawatt sale once it gets started.

24   So if we have this one start, say, in

25 2026, the 300 megawatt sale, it's not three hundred

370

1 (300) plus one hundred (100); it still stays at three

2 hundred (300). So that is what we're seeking approval

3 for from the government at the end of this process

4 where the -- the NFAT process will give recommendations

5 to government.

6   We are also dealing with Conawapa. Our

7 -- our preference is to get a recommendation that says,

8 from the PUB, and then approval from government later

9 on, Yes, we should proceed with government -- with

10 Conawapa. But at the same time, we are not making any

11 final construction decisions on Conawapa in the next

12 few years.

13   For -- the earliest in-service date

14 we're looking at is 2026. For that, you have to make a

15 commitment in 2000 -- 2018. That's a construction

16 commitment. You have to spend money ahead of time to

17 do the -- the environmental -- finish the environmental

18 studies, regulatory process, do construction and

19 engineering preparation. But no -- no boots on the

20 ground, so to speak, before 2018.

21   And so that decision on Conawapa,

22 whether it's Conawapa, whether we even protect

23 Conawapa, whether -- for other -- we do other things

24 instead, higher DSM levels, say down the road wind

25 turns out to be economic, there's a whole bunch of

1 things that would be considered in that -- what are

2 energy prices four (4) years from now? What did our

3 load growth do? What was the impact of the new

4 pipeline announcements that have come out that are not

5 yet in our load forecast. You've heard about Enbridge

6 and TCPL and all that. Not all of that is in the load

7 forecast. But what else will be happening?

8   So the export negotiations. So we're

9 going to go -- I'll go through very briefly some of

10 those other factors as we go along. That -- that's

11 fundamentally what we're seeking approval for.

12   And I think the next overhead -- and

13 this is in the submission, as well -- is another way of

14 putting it. What are the decisions that are really

15 required that we have to address? It's another way of

16 putting the question forward.

17

18   (MOVED TO SLIDE 3)

19

20   THE FACILITATOR: And the first one is:

21 Do we go with a -- at least in the front end, with a

22 natural gas future, our next generation source, or do

23 we go with a hydro option? If you're going to go with

24 -- assuming you go with the hydro option, should you

25 put in an interconnection? And secondly -- or thirdly,

372

 1 should that interconnection be 250 or 750 megawatts?

 2   The -- the fourth one is, assuming

 3 you're doing a big interconnection, because a small

 4 interconnection would be essentially filled up with the

 5 MP sale, if you're doing the big interconnection,

 6 should we do the WPS sale?

 7   Those are the -- the hard decisions that

 8 are needed one (1) year from now or -- or ten (10)

 9 months from now. I'm sure, like any other regulatory

10 process that anybody ever goes through, there will be

11 ancillary conclusions and commentary and

12 recommendations from the regulatory body, but -- but

13 these are the core decisions that we really need.

14

15   (MOVED TO SLIDE 4)

16

17   THE FACILITATOR: So you've seen this.

18 Joanne presented this. And I bring this up as a bit of

19 a reminder 'cause it was yesterday she presented it,

20 and I'm going to try to keep my summary of economics

21 very brief. Joanne spent a good time with you

22 explaining a lot of the stuff. There was a good

23 session this morning.

24   Just coming back to this one 'cause most

25 of the -- virtually of her presentation was focussed on

373

1 the private economics of just Manitoba Hydro or -- or

2 the projects, without consideration of the provincial

3 government transfers.

4   But the provincial government transfers

5 are a significant pic -- element of the overall picture

6 because the decisions that are going to be made

7 regarding the future electricity plan will not just

8 consider the -- the impacts on Manitoba Hydro, per se,

9 but also things like the -- the cash transfers to the

10 province. So -- 'cause the decisions will be

11 considering the overall -- what's best for Manitobans

12 overall. And if you go back to the terms of reference,

13 it -- it indicates that.

14   And she's explained this to you, so I'm

15 not going to go through it again. I will, though, make

16 one (1) or two (2) points. If you look at the

17 Preferred Plan compared to the all gas plan, just like

18 Joanne said, yes, it's $1.7 billion more attractive

19 than the all gas plan. But if you look at the total

20 picture from a provincial point of view, including the

21 transfers to the province, you -- you're at around 4

22 billion and just a few hundred million, almost 4

23 billion more when you look at the total transfers to

24 the province and the private -- the -- sort of that

25 Manitoba Hydro and its partners' analysis.

374

1   So the -- the numbers become much larger

2 when you look at the bigger picture. That's not to say

3 we shouldn't look at the -- the private analysis or --

4 or corporate analysis and ignore it. No, no. It's

5 still the primary one. But we also have to look at

6 that broader picture. And in the business case, we're

7 trying to bring all those things together.

8   The -- the second piece coming out of

9 this is one of the -- the big difficulties, or -- as

10 I'm going to be talking about, one of the less clearer

11 -- yes? Can I just finish this one comment and then

12 that will finish this overhead.

13   One of the less clear conclusions out of

14 the economics is what we call the difference between

15 Pathway 3 and Pathway 4, the 250 line versus the 750

16 line if you have no WPS. And I'll be talking more

17 about that.

18   If you look at this here, if you compare

19 one of the 750 lines versus the two fifty (250) -- and

20 really when you talk about the 250 line people are

21 tending to think of the gas one here; and when you talk

22 about a 750 line it may be the one with Conawapa here -

23 - over here -- you're talking about roughly a half

24 (1/2) billion dollars difference between them when you

25 look at the cash transfers to the province included.

375

1   So again, it's -- those cash transfers

2   can make a difference when you're trying to conclude

3   between them.

4   MR. JOHN ATHAS: Thank you.   This is

5   John Athas again.   The one (1) thing that -- that

6   strikes me when I was looking at this, especially when

7   I start trying to figure out the right kind of

8   consideration for the provincial government transfers,

9   is the -- there's a -- almost a premise over this

10   entire period that you'll -- you'll never build

11   Conawapa if you -- in the cases where it's not in,

12   like, the descriptors.   And so -- so -- and -- and I

13   don't think that's in the -- in the decisions that you

14   just laid out, you know, that there -- there's an

15   implication of that in these other plans to never make

16   use of that water and never have these kinds of

17   provincial government transfers.

18   So in -- and maybe -- you don't have to

19   answer it necessarily now because if -- a lot of other

20   slides to help us understand how you look at the

21   business case.   But I'd like to -- to try to understand

22   how you think about that.

23   THE FACILITATOR: You're absolutely

24   right. First of all the -- the way these are

25   structured, Keeyask gas -- we don't have Conawapa down

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1 the road. It assumes Conawapa never happens.

2 Realistically, none of these plans are going to work

3 out exactly as we said in here. You're going to have

4 all kinds of other things doing -- I -- I imagine we

5 are going to be doing wind down the road. I imagine

6 that we're going to be doing more DSM.

7   When? How much? Nobody knows. Are we

8 going to do some biomass at some point? Are we going

9 to find some -- there's not much co-generation

10 potential in Manitoba. But are there some other things

11 that we're going to be doing, finding that -- that

12 aren't in the plans? Absolutely.

13   So what we tried to do is come up with a

14 number of plans that are representative of what -- what

15 possibly will happen and try and cover the range. And,

16 yes, ultimately we expect that somewhere down the road

17 Conawapa will probably happen. But what -- we've gone

18 through previous processes and made those kind of

19 assumptions. We're told, Well, you're biassing the

20 answer by making that assumption because now you only

21 have to bring it forward a certain number of years.

22 Like, you have to prove that Conawapa would have been

23 built eventually anyways. So we've tried to keep this

24 pure by not making those kind of assumptions and making

25 what we're doing explicit.

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1   So ideally, we would have done these

2 fifteen (15) plans and another fifteen (15) or thirty

3 (30) plans with Conawapa at various times. It's just

4 not physically possible to do all of those,

5 particularly when you're doing all the scenarios. So

6 we do have to think about your point that pro -- that

7 probably -- it's a judgment call, probably at some

8 point Conawapa will be built, but we don't know when.

9 But that's a judgment call; not everybody would agree

10 with that.

11   And that's a very important judgment

12 call, because later on we'll be -- that's one (1) of

13 the factors when judging between the 750 line and the

14 250 line. Do you think Conawapa is going to be built

15 in the foreseeable future? And in the end -- right now

16 you can't prove it. It's -- ultimately there will be a

17 judgment.

18   And -- and we had a dis -- question this

19 morning is: Will judgment play a part in the ultimate

20 decision-making? Of course. How can it not?

21   MR. JOHN TODD: John Todd. Ed, I think

22 this is a bit of a follow-up on yesterday and I sort of

23 thought that there was going to be a continuation on a

24 bit of our discussion yesterday.

25   In looking at this, as I understood it,

1 there was no analysis being done of impacts on

2 government of the level of debt here. And if we're

3 looking at these benefits to the province -- financial

4 benefits to the province, I don't know whether it's

5 fair, but in the sense the province is making -- by

6 doing a debt guarantee, it's making an investment in

7 the project and has an -- almost an RLI on its

8 investment.

9   But certainly, potentially there are

10 impacts that should play out in the judgment of the

11 province as to say what else might be getting squeezed

12 out? Are there consequences for the debt rate which is

13 going to cost us something? All these types of things,

14 that's not part of this analysis.

15   So I guess my question is: How --

16 within this process, how do we evaluate these

17 provincial benefits in isolation of the total

18 provincial consequences?

19   THE FACILITATOR: Well, that's a good

20 question. We've had so many good questions these few

21 days. I -- I can give you -- I can't answer that fully

22 because the experts who we have who deal with the

23 provincial debt guarantee and the rating agencies and

24 all that isn't part of our meetings right now and --

25 and -- but will certainly be one (1) of the experts

 1 who's part of our NFAT process, and that will be part

 2 of the process.

 3   But I -- but I'll answer other stuff.

 4   MR. JOHN TODD: Yeah. No. Okay, so

 5 the important thing is, okay, so it is being addressed

 6 in that context, from your perspective, in this

 7 proceeding?

 8   THE FACILITATOR: Yes. I mean, we

 9 don't have a rigorous analysis included in the

10 submission in Chapter 11 or something.

11   MR. JOHN TODD: Yeah.

12   THE FACILITATOR: But it is certainly

13 part of the consideration that we have been given -- we

14 have been giving and we'll be in a position to speak

15 to, either in interrogatories or whatever, to the

16 degree it is appropriate.

17   MR. JOHN TODD: Okay, that's the

18 important --

19   THE FACILITATOR: Yeah.

20   MR. JOHN TODD: -- piece of information

21 for today. Thank you.

22   THE FACILITATOR: Yeah, okay. But just

23 carrying on to address part of your question, we've got

24 two (2) components here. We have to water rental and

25 capital tax, and that's totally separate from the debt

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1 guarantee fee. And that's a pure tax.

2   And the third component is the

3 provincial guarantee fee, which is a hundred basis

4 points. And you're right, there's been testimony in

5 previous GRAs. And I won't try and comment on those

6 because I'm not in -- in a position to, and I don't

7 think anybody else here is.

8   So it is providing the government

9 significant amounts of money to cover -- to -- to

10 provide us the guarantee so we get that interest rate.

11 Our assumption, as I said yesterday, is that the --

12 whether we go with a plan with 20 billion or whatever

13 the numbers are, the larger amount of debt, or the --

14 the not so large amounts of debt, that the interest

15 rates the province pays and what we pay will not be

16 affected.

17   But that -- there -- is there a risk

18 that's wrong? It's certainly a risk, and -- and we

19 will have to be able to talk to it. I think that's it

20 for this one. Any other questions?

21   MR. DAVID CORMIE: I -- I don't know if

22 everybody's aware that -- that the 250 megawatt line

23 only has a capacity of 250 megawatts. It's a 230 kV

24 line that can't be upgraded.

25   What the 750 megawatt line is the

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1 minimum capability of a 500 kV line, and it has the

2 optionality to go to 1,100 at some time in the future,

3 so it's -- it's the minimum investment necessary to get

4 the -- get the infrastructure put in for the 500 kV

5 line, which is the conductor and the right-of-way and

6 the -- the towers.

7   And then, down the road, if -- if it --

8 it becomes attractive, we have the option of increasing

9 it by another three hundred (300). So the -- the

10 comparison between the two fifty (250) and the seven

11 fifty (750) is not as simple as just three (3) times.

12 There's actually much more capability there that could

13 be had into the future.

14   MR. CRAIG SABINE: Craig Sabine here.

15 Just to add to that, was that potential or extra

16 potential quantified in the analysis in any way?

17   THE FACILITATOR: That answer's no, but

18 I'll be talking about that later.

19   MR. CRAIG SABINE: Okay, thanks.

20   MR. RICK HENDRIKS: Just -- Rick

21 Hendriks here. Just to follow up on the other

22 question, now some of these plans -- I realize you

23 didn't an -- analyze every possible scenario. Some of

24 these plans don't have -- have Keeyask proceeding, and

25 presumably the same argument that you made about

 1 Conawapa would apply to Keeyask. In that --

 2   THE FACILITATOR: Absolutely.

 3   MR. RICK HENDRIKS: In that instance, I

 4 -- I noticed that -- that Plan 7 and 8 have Conawapa

 5 coming first then, before Keeyask. And even though

 6 Keeyask is not there, it's implied that it might be

 7 there at some point down the road. Why was -- if

 8 Keeyask is first -- or if Keeyask is before gas it

 9 seems to be first, and if Keeyask is after -- hydro is

10 after gas then Keeyask is second.

11   Can you just clarify again why that's

12 the case?

13   THE FACILITATOR: Well, you can bin

14 this in different ways. How we did -- and I'm going to

15 talk about pathways right away so we -- we're -- we're

16 actually getting into the definition of pathways a bit,

17 but what we are looking at -- just -- just look at

18 these top five (5) here.

19   These top five (5) -- and this is sort

20 of how Joanne presented it, as well. These are the --

21 the plans -- plans without any interconnection. So

22 we're saying, assuming no new interconnection, what

23 makes most sense. Do you start with Keeyask? Do you

24 start with simple-cycle gas? Do you start with

25 combined-cycle gas? Do you start with -- with only

1 gas? And so we tried to use those as being

2 representative.

3   With Conawapa, you can't -- in -- in

4 this load forecast we needed something in 2022, and the

5 earliest we could get Conawapa in without having

6 Keeyask in front of it is 2026. So we had a four (4)

7 year gap. So we filled the gap with gas turbines.

8 That seemed to be the -- the most logical thing to do.

9   So really what you've got is something

10 where you have a gas sequence, something where you have

11 a -- Conawapa sequences, and something with Keeyask

12 sequences.

13   MR. RICK HENDRIKS: Correct, but

14 there's -- there's no gas Keeyask.

15   THE FACILITATOR: There's no gas

16 Keeyask, and that was because from work we'd generally

17 done, advancing Keeyask was economic to do, and but we

18 could have done a keeya -- a gas Keeyask sequence and

19 it would mean another plan to evaluate.

20   And actually when you -- we get to the

21 pathways discussion and the decision tree you will see

22 we do actually say that. You could have gone gas and

23 then followed by Keeyask eventually. There's many

24 different plans we could have looked at as well, and we

25 didn't. You're right, that -- that one is not there.

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1   Any others before we leave this one?

2

3   (MOVED TO SLIDE 5)

4

5   THE FACILITATOR: So just to summarize,

6   and you -- we just talked about the -- the 1.7 billion

7   Preferred Plan compared to all gas. It's nearly 4

8   billion when you consider the transfers compared to all

9   gas. I'm putting this one up because you -- you -- it

10 isn't -- I don't think to the players at this table, or

11 these tables, this next paragraph is that pertinent but

12 I wanted to explain why we have it in the overview and

13 in Chapter 14.

14   And that is, the general public, the

15 educated smart general public, anybody in the general

16 public, just about nobody understands NPV. So we are

17 trying to come up -- what is the way to make

18 understandable to Jane and John Public what these NPVs

19 meant.

20   So all we did was we took that NPV

21 number, and we took the big NPV number. You won't be

22 surprised we picked the biggest one we could find. And

23 -- and we spread it out after the first year of Keeyask

24 for sixty (60) years to give some sense to the -- to a

25 general public person what -- what this translates

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1 into.

2   So I just wanted to give that quick

3 explanation as to what -- why is that in there. And

4 it's not -- it -- and I don't think that that

5 particular set of numbers is going to be really part of

6 the detailed technical analysis. But -- but I thought

7 it was important to context that.

8

9   (MOVED TO SLIDE 6)

10

11   THE FACILITATOR: We come to the

12 pathways. And exactly the point that was made a couple

13 of minutes ago. We've got five (5) pathways, and

14 actually Liz referred to it a little bit already today.

15   We have a gas pathway, 1. We have a

16 Keeyask pathway, 2. We have a Keeyask with 250 tie-

17 line, 3. We have Keeyask with a 750 tie-line, no WPS,

18 as a 4. And we have Keeyask with a 750 tie-line with

19 300 megawatt WPS as well. So a lot of that will sound

20 familiar to you.

21   And what we did is we took -- all those

22 plans we did, the fifteen (15) plans that we've talked

23 about already -- when you analyze the plan you have to

24 fix in-service dates, you have to fix choices. It's

25 the only way you can evaluate it. The reality is,

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1 That's not how the future is going to unfold.

2   Those plans -- not one (1) of those

3 plans is the right plan. No -- no one knows exactly

4 what's going to happen, so each pathway tries to

5 philosophically try and capture the -- the fact that

6 there's flexibility and things will change in the

7 future.

8   So this was your question, well, why

9 don't you have a gas Keeyask. We have an evaluated

10 plan of a gas Keeyask, but when we -- when we consider

11 the future we have to consider the possibility on the

12 gas one that actually after gas you could go with

13 Conawapa, or you could just continue with gas, or you

14 could go to Keeyask or to Conawapa or wind or DSM or

15 other. That possibility is there. You're not

16 committed to gas forever.

17   Now, we haven't got a plan that

18 evaluates each one of those possibilities, but at

19 least, judgmentally, qualitatively, we have to think

20 about that. Similarly for all the other ones. If we

21 start with Keeyask and -- and we follow with gas, you

22 could foll -- you could have Keeyask followed with

23 Conawapa, wind, DSM, whatever, it's just the same

24 pattern.

25   And I just want to emphasize that we

387

 1 talk about subsequent generation in all cases, I -- we

 2 just use examples of wind, DSM, other. It's just a

 3 general collective. We're not going to try and

 4 describe all the possibilities. And I'll -- I'll stop

 5 mentioning the fact that there are all these various

 6 possibilities.

 7   Keeyask 250, the most economic plan as

 8 you've seen is based on the sort of expected value is

 9 Keeyask followed by gas. But you could, depending what

10 happens, still find it economic to go with Conawapa or

11 go with -- with something else. And -- and we just go

12 along here.

13   And, similarly, our Preferred Plan is

14 the Keeyask 750 with the WPS sale. And the plan would

15 be right now that -- that we would be protecting the

16 Conawapa 2026. But, as I said earlier, there's no

17 decision that's already made on that, it would have to

18 be made right away. We -- the plan is we would protect

19 that, let's say from 2014 June to -- or July/July 2014

20 to July '15, it would cost a commitment -- a cashflow

21 for around $40 million plus a $10 million kind of

22 commitment to protect Conawapa for one (1) more year.

23 And at the end of that year we could drop Conawapa.

24 And what we would have done is invested another $50

25 million. And that's the protection costs.

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1   So each year in this plan, Preferred

2 Plan, we'd protect a Conwapa in-service date but assess

3 it on an ongoing basis just like you do an annual power

4 source plan, and assess is it worthwhile continuing to

5 protect Conawapa. Does it make more sense to push it

6 back? you know, look at all the various variables. So

7 that -- and that is part of our Pathway 5, Preferred

8 Plan. I'll come back to this more later on when we go

9 to the decision tree.

10

11   (MOVED TO SLIDE 7)

12

13   THE FACILITATOR: Just a very, very

14 high level summary of the economics from Joanne. With

15 no new interconnections our judgment -- our -- our

16 conclusion is from the economics, not looking at any of

17 the other factors, that hydro next plans are better

18 than all gas plans.

19   Secondly, that -- that if you're looking

20 at Hydro, Keeyask first makes more sense than Conawapa

21 first. And that if you're looking at no

22 interconnection, which is Pathways 1 and 2, the

23 pathways that have interconnections are clearly more

24 economic than those that don't have interconnections.

25   The difficulty is when you go look at

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1 Pathways 3 and 4. Again, 3 is the one with the 250

2 tie-line; 4 is the one with the 750 tie-line; and 4

3 does not have WPS, either the sale or investment or

4 anything. And in our case we're assuming there's no

5 other new major sales in these plans.

6 In that case now, you don't have a clear

7 answer from the economics. if you think that Conawapa

8 is going to be built within the next two (2) decades,

9 and we come back to the question that was asked

10 earlier, then the analyses say Pathway 4, the 750

11 interconnection makes more sense.

12 On the other hand, if you think that

13 Conawapa is not going to be built for several decades,

14 and there's no -- we don't have a sharp crossover

15 point. But if you're convinced Conawapa is way back

16 for whatever reason, then you should build the two-

17 fifty (250) -- the numbers say you should build a 250

18 interconnection, not a seven-fifty (750).

19 If you take a look at what is the most

20 economic plan in each pathway, the two-fifty (250)

21 makes more sense than the seven-fifty (750). And what

22 I mean by that is the 250 line with gas is more

23 economic than the si -- 750 line with Conawapa based on

24 what we have in terms -- in -- in -- restricted our

25 analysis to. So based on that, you don't have a clear

390

 1 answer, what should you do between a 250 and 3 -- and a

 2 750 line if you do not have the WPS sale.

 3

 4   (MOVED TO SLIDE 8)

 5

 6   THE FACILITATOR: Pathway 5 with the

 7 WPS sale and with the transmission investment, our

 8 conclusion, it -- it is -- it is more economic. There

 9 are some cases where the Preferred Plan compared to,

10 say, a 250 interconnection is not more economic.

11 That's particularly when you have low energy prices,

12 low export prices, low gas prices.

13   And if by 2018 we probably have a sense

14 of that, you know, what's happening with shale gas and

15 all of that, then mitigative measures, you can replace

16 Conawapa with gas generation and still meet your

17 commitments and move forward.

18

19   (MOVED TO SLIDE 9)

20

21   THE FACILITATOR: So just to summar --

22 oh, sorry.

23   DR. PETER MILLER: On the preceding

24 one, the -- Peter Miller -- the WPS transmission

25 agreement, what's in that agreement? They're paying

391

1 for it or -- or Hydro's paying for the transmission or

2 what?

3   THE FACILITATOR: In the WPS, for the

4 750, you're talking about?

5   DR. PETER MILLER: Yes.

6   THE FACILITATOR: Yes. In that one --

7 well, Dave, why don't -- you're -- you're closer to

8 that one. Why don't you... But -- but while Dave's

9 getting that, in this one -- I -- I was going to get

10 into that right away. But in this one, this is the one

11 where the transmission investment has fallen out. But

12 why doesn't Dave talk about where we're at on that.

13   DR. PETER MILLER: So -- so that one is

14 off the table now?

15   THE FACILITATOR: Well, partially. I -

16 - I was going to talk about that.

17   MR. DAVID CORMIE: The -- the analysis

18 has focussed on the WPS sale, but there are other

19 investor-owned utilities who would be interested in

20 investing in transmission. So although the WPS may --

21 has backed out, that doesn't preclude other investor-

22 owner utilities investing.

23   And -- and so the WPS transmission

24 agreement or investment is a proxy for someone else

25 coming along and picking up that -- that transmission

1 cost. So our objective is not to hold transmission

2 assets in the US. Our objective is just to get the 500

3 line built and offload those assets as soon as possible

4 in conjunction with a long-term PPA.

5   So there's lots of capacity available

6 from Keeyask and Conawapa that will ultimately -- that

7 we're ultimately assuming that we'll sell. We expect

8 that there will be investor-owned utilities who will

9 want to pick up a transmission investment at that same

10 time.

11   Our analysis assumed that that's not

12 going to happen except under the assumption that there

13 was a WPS sale and investment, but it -- but it is --

14 it is a possibility. So you have to think of the WPS

15 transmission agreement as a -- as a scenario in the

16 future where -- where somebody else is picking up a

17 portion of those transmission costs.

18   THE FACILITATOR: And very

19 specifically, what the analysis assumes in -- in the

20 submission for Pathway 5 is that Manitoba Hydro picks

21 up 40 percent of the US portion of the transmission

22 cost and operating cost, and all of the Canadian. In

23 all these cases, Manitoba Hydro picks up all the

24 Canadian costs. In the two fifty (250) case, it picks

25 up no US cost. For Pathway 5, we're assuming 40

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1 percent is picked up by Manitoba Hydro. And in the

2 Pathway 4, it's 60 percent, isn't it? Yeah.

3   MR. DAVID CORMIE: But -- but the goal

4 would be that --

5   THE FACILITATOR: Yeah.

6   MR. DAVID CORMIE: -- a hundred percent

7 of -- of the tran -- US transmission costs would be

8 paid for by US transmission investors after Conawapa

9 comes in because the -- the issue is we don't have PPAs

10 in the bridging period between the in-service date of

11 the line in 2020 and the time in which Conawapa comes

12 in, in 2026.

13   So the original arrangement with WPS was

14 that they would pick up their share of those initial

15 transmission costs. That has now fallen off the way,

16 but it doesn't preclude that somebody else will come

17 along at a later date and -- and make -- and make that

18 investment and earn on it rather than Manitoba Hydro.

19   THE FACILITATOR: Yeah. And there's

20 another question there. And while that's being an --

21 someone gets the mic to him, it's Roger over there, so

22 in our analysis we've taken, I'll call it the

23 'pessimistic' or 'conservative' assumption that we will

24 be carrying that the whole time and we don't get to

25 divest it. But as I'm going to be talking about later

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1 and is in Chapter 14, we are planning to divest

2 ourselves.

3   MR. ROGER CATHCART: Roger Cathcart.

4 Just quickly, is there an opt -- is there optionality

5 to engineer it for the seven fifty (750), string it as

6 a 230 line, and then have the option to upgrade it

7 sometime down the road? I mean, there is some more

8 certainty about when Conawapa might come on line.

9   THE FACILITATOR: We've certainly

10 talked about those kinds of things, and we touch on

11 that on -- in Chapter 14. The -- first -- first of

12 all, if you're going to set up -- I used to be a

13 transmission station designer in my youth.

14   What you would have to do and what you

15 just described is -- is put in towers and insulators

16 that are for seven fifty (750) -- for 500 kV. You'd

17 have to design your station to be that and you've got

18 huge capital costs associated with that. You -- and

19 you -- you -- and if you set it up as a two fifty (250)

20 line and then want to switch it to seven fifty (750),

21 you'd have incurred most of your costs anyways.

22   MR. ROGER CATHCART: So there's no real

23 --

24   THE FACILITATOR: Sorry, that was

25 Roger.

 1   MR. ROGER CATHCART: So -- it's Roger

 2 again. So there's really -- you couldn't scale it and

 3 there wouldn't be a step up in costs, or -- or --

 4   THE FACILITATOR: Well --

 5   MR. ROGER CATHCART: -- would -- would

 6 it be -- it's not like you're -- you're -- you'd incur

 7 100 percent of the capital costs of a 750 line to do a

 8 --

 9   THE FACILITATOR: No --

10   MR. ROGER CATHCART: -- 230 line --

11   THE FACILITATOR: -- no, and we don't

12 have the exact numbers, but you'd have to incur most of

13 the capital cost and, then, if you did switch from two

14 fifty (250) to -- two thirty (230) to five hundred

15 (500) later on, two (2) things would happen.

16   One (1) is that you would have more

17 capital cost which would drive up the total capital

18 cost. Secondly, you're going to have to take major

19 outages to that line and it's -- and once you've got a

20 line operating and you're making firm commitments to

21 take it out of service to do the kind of upgrade we're

22 talking about, is very difficult and very costly.

23   MR. ROGER CATHCART: Okay. Well --

24 well, thank you. So -- so the option -- optionality is

25 if you -- if you don't have -- one (1) -- one (1)

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 1 option on the table, now, is you don't have any

 2 operating costs on the US side, if you go with two

 3 thirty (230), at all.

 4   And if you upgrade it, then you'd incur

 5 operating costs, but then you would also incur the

 6 opportunity costs of loss sales of taking the line out

 7 for a period of time.

 8   THE FACILITATOR: And huge capital

 9 costs, still.

10   MR. ROGER CATHCART: Okay.

11   THE FACILITATOR: The total capital

12 cost would be higher.

13   MR. ROGER CATHCART: Okay, thank you.

14   THE FACILITATOR: Dave, is there

15 anything you wanted to add to that?

16   MR. DAVID CORMIE: Yeah. I want --

17 what I wanted to point out is that -- that we also get

18 the 750 megawatt import capability, which is a huge

19 hedge against the late in-service date of plant for

20 either Keeyask, Conawapa load growth.

21   And, so the -- the -- during that period

22 of in-service of new generation and the risk of it

23 coming in on time, we -- we -- and -- and being exposed

24 to energy shortages when we need new generation to

25 serve Manitoba load in '22, '23, or '24, having that

 1 750 megawatt import hedge has huge value to us in

 2 dealing with the odd uncertainty.

 3   So stringing it -- building it as a five

 4 hundred (500) and operating it at a two thirty (230)

 5 you get -- you don't get that import advantage.

 6   THE FACILITATOR: Yeah.

 7   MR. DAVID CORMIE: And -- and then --

 8 and that import advantage if -- if we were to be hit by

 9 a drought in that period of time would be -- would be

10 extremely valuable because you would be able to import

11 750 megawatts at off-peak prices rather than having to

12 go into the on-peak.

13   And -- and so there's -- but lots of --

14 lots of strategic advantage to doing it big, early.

15 And then you have the optionality at a future date of

16 upgrading it to eleven hundred (1,100). The 230 line

17 doesn't give you any of that optionality.

18   THE FACILITATOR: And we -- we did look

19 -- Ed Wojczynski. We did look -- I didn't mention

20 slide numbers, did I? I'm sorry. This is slide 9

21 we're on. I totally forgot my instructions to myself.

22   We did look at start -- doing a 230 line

23 and what if you went to a 500 kV line later; and,

24 again, in Chapter 14, I don't remember the section, we

25 addressed that and you have large capital cost

 1 increases by doing that.

 2   And secondly, you -- you -- by doing the

 3 230 line first you -- you pick some of the low hanging

 4 fruit. And it makes it a lot harder later on for a

 5 second line, a 500 kV line, for it to become economic.

 6 So you probably have a mutually exclusive situation

 7 here, at least for decades.

 8   MR. DAVID CORMIE: And one more thing,

 9 Ed. The 500 line gives us access to the Wisconsin

10 market. So the existing transmission gives us access

11 to our five (5) main customers in Minnesota: Xcel,

12 Minnesota Power, Great River Energy, Otter Tail,

13 Dakota. The 500 line and it's upgrade opens up the

14 Wisconsin market and all the Wisconsin utilities.

15   So it -- so from the perspective of

16 getting value for our surpluses, more -- more

17 customers, more competition, higher values for us. And

18 -- and so there's -- there's strategic value in -- in

19 going down that path, of building the big line and --

20 and I'll -- and...

21   We haven't quantified that in the

22 analysis, what that value of -- of the larger market

23 is. But it's clearly, from my perspective, something

24 that, when you've got fifteen (15) people -- or fifteen

25 (15) companies competing for your power, as opposed to

 1 five (5), there's lots of opportunity there.

 2   THE FACILITATOR: Now, just, we sort of

 3 covered a lot of what I was going to say on this

 4 overhead, but I think I'll come back to one (1) of the

 5 comments, and that is the WPS is not going to invest in

 6 the transmission. They are negotiating. We expect

 7 we're going to get a 300 megawatt export contract,

 8 which will be attractive.

 9   Dave's -- and Daryl (phonetic) and

10 others are working on that. But -- so one can say,

11 Well, Pathway 5 then is really off the table. And with

12 a WPS sale, which isn't in Pathway 4, you've really got

13 maybe a Pathway 4 1/2, which is something between the

14 two (2). To some degree, that's true, and we covered

15 that a little bit yesterday.

16   But the other part, as Dave just talked

17 about, is that we do expect that down the road there

18 will be players who have transmission assets in the

19 States who would find it attractive to invest in the

20 transmission line. WPS have chosen not to, in part

21 because they're not a transmission owner and this

22 doesn't fit with their business model; but there are

23 other people that we expect to be negotiating with who

24 are both se -- generation buyers, sellers, and

25 transmission owners, and -- and investing in the

 1 transmission line would fit their business model.

 2   So we think Pathway 5 isn't exactly

 3 right. It'll -- it'll be less US ownership than we're

 4 assuming by US players in Pathway 5, but it's still

 5 representative of -- of one (1) kind of possibility.

 6   There are so many other changes that I'm

 7 going to talk about, right away, where not one (1) plan

 8 is a perfect fit that continuing with the -- the pro --

 9 the representative plans we have makes sense. And

10 we'll have to use judgment to recognize all the -- the

11 variables, and I'll get into that right away.

12

13   (MOVED TO SLIDE 10)

14

15   THE FACILITATOR: Just to finish off.

16 Just starting this one (1), just to pull together that

17 -- the economic evaluation summary, in our view, the --

18 what the economics say, Pathways 3, 4, and 5 are

19 clearly preferred to Pathways 1 and 2. Between 3, 4,

20 and 5, particularly between 3 and 4, you need something

21 more than just the economics to make decisions. You

22 obviously need the financial in the rates. You need to

23 know what's happening with the export negotiations, a

24 whole bunch of other factors; and I'll be addressing

25 those right away.

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1   (MOVED TO SLIDE 11)

2

3   THE FACILITATOR: Ju -- I added, in the

4 last couple of days, a couple of overheads here because

5 of the discussion we've had on wind and the plans we've

6 evaluated. And Joanne and I thought it'd be useful

7 just to emphasize this a little bit and...

8   This is -- this overhead is pulling out

9 numbers strictly that are already in this submission,

10 and Joanne presented some of this already, but not all

11 of it.

12   So this is Chapter 9 Reference/

13 Reference/Reference scenario. If you look at the all

14 gas plan -- and we use that as a starting point, as our

15 reference, so that's why it's zero. And then, what we

16 did is, we added wind generation throughout the whole

17 sequence. And that's what we used to meet the

18 dependable energy requirements, but we used simple-

19 cycle combustion turbines to provide the capacity

20 support once capacity was required. And the number is

21 huge, minus nearly $800 million, by adding the wind to

22 that gas plan.

23   Now, you get into a couple of issues.

24 This is -- former Chief of Fox (phonetic) is waving

25 goodbye to me, so -- we have next door, the next couple

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1 of days, the Keeyask environmental assessment. And

2 it's a joint Manitoba Hydro/Keeyask partners panel.

3 And -- so you might have noticed the meeting.

4   So this is showing the parallels. We've

5 got one (1) panel sitting over there getting ready for

6 their hearings and another panel over here getting

7 ready for the hearings, so you're going to see -- not

8 all the players that we might want to have in this room

9 are there because they're busy in that room, so...

10   There -- obviously, if you've got to add

11 simple-cycle gas turbines to provide capacity support

12 for the wind, that's going to hurt the wind plan. Tha

13 -- that hurts the economics. So is that what's driving

14 our answer, that the wind isn't economic? So I've

15 included this one in here where Conawapa, you will

16 recall we have no interconnection Conawapa 2026, and --

17 but you have shortages for four (4) years: 2022 to

18 2025. So we need something.

19   So we -- we have in our plans one (1)

20 where we have gas to cover that and another one (1)

21 where we have wind. And, of course, after the 2025

22 period those resources are still available in the plan

23 and evaluated and operated and all that. And if you

24 compare those two (2) and there -- and you did not need

25 capacity support for the wind because you -- it was

403

 1 only energy we were short in that time period, you

 2 still had the wind uneconomic in this case by $250

 3 million.

 4   So even if you're looking at, in the

 5 2020s, wind versus gas and you don't have to worry

 6 about the capacity support issues, we're still

 7 concluding that the wind wasn't economic in there.

 8   So that hopefully addresses some of the

 9 concern people might have, Yeah, well, it's this issue

10 of the capacity, that's what's killing the wind. Well,

11 it isn't -- that's not the whole picture, as I've just

12 shown.

13   Also want to recognize that we've made

14 certain assumptions on wind costs, we're going to be --

15 that's going to be tested, as it should be, in the

16 process. If you go to Appendix 7.1, we have an

17 Emerging Energy Technologies Report. And you'll find we

18 discuss the fact that wind capital costs are going down

19 over time, as -- as it would be for other technologies.

20 And -- and we've als -- we've used data from -- it was

21 EPRI, wasn't it, Terry? It was EPRI we got the -- our

22 wind data from -- wind cost data for North America?

23   MR. TERRY MILES: Some of it.

24   THE FACILITATOR: Yeah, some of it.

25 So -- and other places. So our capital costs that

404

 1 we're using for the wind are based on -- on industry

 2 information for North America, but there's a lot of

 3 uncertainty that -- are our wind costs overstated?

 4 It's possible. And we're quite prepared to, you know,

 5 talk about that. But the point here is there -- the

 6 differences are so big there's a lot of room needed --

 7 a lot of improvement needed to make it -- the wind even

 8 break even.

 9   Now, one (1) more on this wind issue. A

10 -- a good question that got asked the other day and, I

11 think actually it was Peter, was: Well, hang on a

12 second. You're evaluating wind when there's no

13 interconnection. You keep on talking about how these

14 interconnections, particularly the seven-fifty (750) is

15 so good, gives you all these benefits: you've got more

16 on-peak, you can import, you can optimize, you can do

17 all kinds of good things. So you're biassing against

18 wind by only evaluating in a no interconnection case.

19   So I tried -- so what I tried to put is

20 a heuristic explanation that says if the 750 megawatt

21 interconnection improved the economics of wind quite

22 largely, immensely -- let's just say it did that --

23 compared to what it would be in a no interconnection

24 case, what -- what are the implications of that?

25   Well, as I understand what the thinking

405

1 was, you could get away from Conawapa with a 750 line

2 by doing wind and gas, and maybe some other things, and

3 have something that's more economic because your 750

4 line makes the wind so much better.

5   Well, if that happened -- we already

6 have a pathway for a gas plan with no Conawapa, which

7 is 1,097 million and out of Chapter 9. What that means

8 is, you could do better than the thousand ninety-seven

9 (1,097) and that would improve the economics of Pathway

10 4, at least this leg of Pathway 4, compared to the all

11 gas plan.

12   So that's part of why we were

13 comfortable with the kind of analysis and sensitivities

14 we were doing. Either the wind is not more economic in

15 that case or, if it is, it would improve the economics

16 of the Preferred Plan. Now what -- this doesn't

17 address, what happens to the two-fifty (250) plan, you

18 know, there's others issues, I -- I would agree.

19   I'll just finish this and I'll come

20 right back to what I said at the beginning. Yes, maybe

21 with more DSM, maybe with wind, maybe with demand

22 response, maybe with all kinds of things -- and you've

23 got a 750 line, maybe Conawapa is not economic down the

24 road, but we don't have to decide that now.

25   We're going to look at DSM over the next

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1 year; see about a higher level. We'll be looking more

2 at wind. The world will evolve. Di -- Dave's export

3 negotiations will carry on and we'll make a decision

4 down the road. And we could be going down something

5 that's better than this, or we could be going down

6 this, but that -- that's for down the road.

7   Sorry, there's a question?

8   MR. RICK HENDRIKS: Yeah, Rick

9 Hendriks. Just to be fair though, that's the

10 Ref/Ref/Res -- Ref/Ref/Ref situation, not the --

11   THE FACILITATOR: Yeah.

12   MR. RICK HENDRIKS: -- expected value

13 situation, which is quite different.

14   THE FACILITATOR: Yeah, but -- but even

15 in -- in the expected value the numbers will be

16 different and maybe the quantums won't be as big, but -

17 - but they -- directionally they'd be looking the same.

18   MR. RICK HENDRIKS: Sure, however, the

19 expected value difference between four (4) and fourteen

20 (14), which I believe are the two (2) plans there, is

21 quite small if my memory is correct.

22   THE FACILITATOR: Yeah. Oh, yeah.

23 Yeah. I agree.

24   MR. RICK HENDRIKS: Okay.

25   THE FACILITATOR: I don't dispute that.

 1   MR. RICK HENDRIKS: Okay.

 2   THE FACILITATOR: Yeah.

 3   MR. RICK HENDRIKS: This is just a

 4 reference --

 5   THE FACILITATOR: Yeah.

 6   MR. RICK HENDRIKS: -- a reference --

 7   THE FACILITATOR: We -- we could do the

 8 same -- let's -- I -- I understand you now. You're

 9 saying if this -- if this was expected, and I don't

10 even know what the numbers are offhand, but if there

11 was only $50 million between these then -- then the

12 question mark wouldn't have to be very big for this to

13 become more economic than that, right? Absolutely. I

14 agree.

15   MR. RICK HENDRIKS: And that --

16   THE FACILITATOR: And that decision

17 will be made later.

18   MR. RICK HENDRIKS: Right. Just one

19 (1) question for you. Rick Hendriks again. When

20 comparing alternatives, was there simply a minimum

21 threshold criteria? So in other words, what I mean by

22 that is, when you have your Preferred Development Plan,

23 okay, you create a certain amount of capacity by

24 building Keeyask, more than enough at first, correct?

25   Right now you're not capacity

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1 constrained; you're energy constrained is my

2 understanding. So you don't really need, perhaps, to

3 back up wind at first.

4   THE FACILITATOR: And we don't.

5   MR. RICK HENDRIKS: To -- and so when

6 you analyze these, do you assume that you're going to

7 get the same ben -- are you comparing on a benefits

8 basis, or are you just comparing on based on meeting

9 the minimum requirements?

10   So in other words, when you compare it

11 to the Preferred Development Plan it gives you six

12 hundred (600) and how many megawatts for Keeyask? Six

13 hundred (600) we'll say.

14   THE FACILITATOR: Yeah, seven hundred

15 (700), but anyways, yeah.

16   MR. RICK HENDRIKS: Are you -- are you

17 comparing the development plans as though they all have

18 to create that same amount of capacity at the same

19 time?

20   THE FACILITATOR: No.

21   MR. RICK HENDRIKS: No. It's all about

22 meeting the minimum thresholds.

23   THE FACILITATOR: Yeah. And forgetting

24 the interconnection and the fact that MP wouldn't build

25 the interconnection without having a Keeyask, ignoring

1 that for the moment --

2   MR. RICK HENDRIKS: Fair enough. Yeah.

3   THE FACILITATOR: -- Keeyask, the

4 economic thing to do is build it as one (1) lump sum,

5 not build half of Keeyask. So you always start off

6 with an excess in the first years. Yes, I think that

7 was part of your earlier comment. Yes...? Yes...?

8   By the way, you see, I -- I like

9 wandering around so I hope that doesn't create a

10 problem for anybody, but...

11   MR. JOHN TODD: John Todd. Aside from

12 the gas and wind scenario, like just gas, just wind, no

13 hydro, am I correct that, in essence, we're talking

14 about wind for export?

15   THE FACILITATOR: Not in the wind/gas --

16   MR. JOHN TODD: Except for that --

17 except for that scenario. So if you're building some

18 hydro --

19   THE FACILITATOR: Well, the wind --

20   MR. JOHN TODD: -- any wind we're

21 adding is essentially for export, right?

22   THE FACILITATOR: Well, not in the wind

23 Conawapa one, that was for domestic load.

24   MR. JOHN TODD: The wind is not just

25 adding -- it's not that Conawapa is sufficient --

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 1   THE FACILITATOR: No, in this -- this -

 2 - oh, hang on, the previous one.

 3

 4   (MOVED TO SLIDE 11)

 5

 6   THE FACILITATOR: In this one here --

 7   MR. JOHN TODD: Yeah.

 8   THE FACILITATOR: -- this is win --

 9 wind was meeting domestic load for four (4) years.

10   MR. JOHN TODD: Well, after that --

11 after that bridge period, right.

12   THE FACILITATOR: Yeah. And it would

13 be available to meet domestic load later on, too.

14   MR. JOHN TODD: Okay. But -- okay.

15 Beyond there. Okay, so here's my --

16   THE FACILITATOR: It's not just for

17 export, no.

18   MR. JOHN TODD: Okay. Except for those

19 three (3) years --

20   THE FACILITATOR: It's a -- it's a

21 domestic resource.

22   MR. JOHN TODD: For three (3) years?

23   THE FACILITATOR: Four (4) years.

24   MR. JOHN TODD: For four (4) years.

25   THE FACILITATOR: And of -- and also

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 1 later on in the sequence. But once you --

 2   MR. JOHN TODD: When --

 3   THE FACILITATOR: -- if -- once you put

 4 in Conawapa you don't need anything for twenty (20)

 5 years, so --

 6   MR. JOHN TODD: Yeah, exactly.

 7   THE FACILITATOR: And -- but -- but

 8 then -- I'd have to go back and see, Terry, if you

 9 remember, Terry, whether in that sequence with Conawapa

10 -- I -- I expect, subject to check -- I know we're not

11 in cross-examination, but subject to check, that wind

12 also deferred generation later on --

13   MR. JOHN TODD: Yeah, my --

14   THE FACILITATOR: -- for domestic. So

15 it's not just export.

16   MR. JOHN TODD: My wife always says,

17 Subject to check, when I'm talking about something I

18 know nothing about, so be careful how you use that.

19   THE FACILITATOR: Well, I -- I do know

20 something about this, I'm just not 100 percent sure, so

21 I'm --

22   MR. JOHN TODD: Right.

23   THE FACILITATOR: -- I'm going 70

24 percent.

25   MR. JOHN TODD: So maybe that means my

 1 real question is irrelevant, but when we look at hydro

 2 you have no competitive alternative in neighbouring

 3 jurisdictions. When you look at wind, wind can be

 4 anywhere.

 5   So I guess my question is, certainly as

 6 an export resource, how does the wind maps in Mel -- in

 7 Manitoba compare to other places that should be --

 8 could be doing wind for Minnesota and how do losses

 9 compare with, in a sense, the competitive locations for

10 wind --

11   THE FACILITATOR: Yeah.

12   MR. JOHN TODD: -- or do you know?

13   THE FACILITATOR: The -- the wind

14 experts aren't here, but I can give a first-cut answer.

15 We can always, in interrogatories, flesh out -- out

16 something in more detail.

17   South of us we have the Saudi Arabia of

18 wind, is the term that it's called, and mostly in the

19 Dakotas but also in -- some good stuff in Minnesota.

20 So it's a very attractive wind resource, certainly as

21 good as what's in Manitoba. Terry, is that -- yeah.

22 And -- and, if anything, I think somewhat better, but

23 that's subject to check.

24   And -- but it's a very good wind

25 resource, but even more importantly the federal US

413

1 government has a huge -- pardon me, a large production

2 tax credit that is -- there isn't the equivalent in

3 Canada. Thirdly, to some degree, and I don't want to

4 debate how -- you know, how much the degree is, some of

5 that wind development down there is also driven by a

6 portfolio standard kind of requirement.

7 So you've got a combination of things.

8 You -- Minnesota and Wisconsin don't have the renewable

9 option of hydro that we have, so there are put in place

10 portfolio standards for low emissions or for whatever

11 reasons, but -- so there's -- there's a number of

12 issues around that.

13 And as Dave has said, I think, a couple

14 of times, our counterparties down there, they're not

15 interested in buying wind generation from us. They --

16 they want to have a resource that's dispatchable,

17 that's hydro, because they can develop all their own

18 wind themselves. They don't need us for that.

19 MR. TERRY MILES: Terry Miles. Just to

20 add to your comment about the wind and -- and the wind

21 maps. Emerging technologies report in Appendix 7.1

22 gives a high-level wind map of Manitoba. And it

23 extends down into the US and shows where the best, you

24 know, wind resources -- or not the best wind resources,

25 but it shows it based on the wind speed as what's

414

1 there.

2   And you see Southern Manitoba has

3 typically the -- the better wind resource in Manitoba.

4 That improves as you go south into North Dakota. So

5 we're at the upper end of that. So the wind resource

6 does improve as you head down into North Dakota and

7 South Dakota. That's what the -- the maps show. But

8 feel free to have a look at that -- that section.

9 Okay.

10   DR. PETER MILLER: Peter Miller. Two

11 (2) questions. You always do single-cycle gas turbines

12 for capacity. Is there any way to add to capacity for

13 Keeyask or Conawapa by changing the configuration,

14 adding a turbine that you only run some of the time?

15   THE FACILITATOR: Yeah. I'm sorry, I

16 should let you finish.

17   DR. PETER MILLER: Okay. So --

18   THE FACILITATOR: Well, I -- I was

19 going to add to that, and I should -- I realized I

20 should let you ask your question.

21   DR. PETER MILLER: Okay. So you can

22 add to that. And the other one has to do with: What

23 is this NFAT about? Because you're taking about these

24 different pathways and sort of hand-waving about, what

25 come -- what -- what comes after Keeyask, and so on,

415

1 and -- and there are all sorts of possibilities.

2   Are we to presume that there would be a

3 thorough examination of -- of alternatives, even ones

4 that you've thrown off the table like wind, as a

5 possibility in there, or -- or more DSM? And would

6 that be a part of the overall approval, or do you see a

7 new NFAT coming in, in ten (10) years?

8   THE FACILITATOR: I -- my lawyers are --

9   MS. PATTI RAMAGE: Yeah. Yeah, that's

10 something that -- that we can't speculate on, Peter, in

11 terms of what's going to happen next. The -- the

12 Province of Manitoba determines when NFATs occur.

13 They're not a requirement. They're something the

14 province wanted for their benefit. So when they decide

15 they'll have them, it's up to them. And we shouldn't

16 be speculating on that, nor should we be speculating on

17 future filings or anything of that nature.

18   THE FACILITATOR: Yeah. The one (1)

19 thing I can say about that one, and Patti would be okay

20 with this, is -- is that we have committed to working

21 on the two (2) levels of DSM and have that be part of

22 this process. Not as early in the process as we and

23 you would have liked, but it will be part of this

24 process and prior to the hearings. That's our -- our

25 plan and our expectation.

416

 1   Pardon me? Yeah, I'm just coming back

 2 to answer your fist question. I -- I jumped in and I

 3 should have held back. We can increase the capacity of

 4 Keeyask and Conawapa compared to what we had planned.

 5 It's a little bit late in the game for Keeyask but,

 6 Glen, you can always do it, right? Our Keeyask project

 7 manager is sitting there and he -- he said he'd come

 8 here as long as we didn't ask him any questions.

 9   The problem is that you could get more

10 capacity out of Keeyask by putting in, let's say,

11 another unit. The problem is that means you have to

12 cycle the forebay more. And one (1) of the things we

13 did on Wuskwatim and are doing on Keeyask is

14 restricting the amount of cycling for environmental

15 reasons.

16   Wuskwatim is virtually ba -- well, is

17 very restri -- more restricted than Keeyask, but -- so

18 you would have to have a wider operating range, which

19 increases the environmental impact. So that's one (1)

20 issue. Something could be done, but then you run into

21 that problem.

22   There are some other problems too of, if

23 you're in a drought year and you got a very peaky plant

24 and now you have to run base load for two (2) weeks

25 because you've got what's called a 'two (2) week cold

 1 snap', you could run out of water. That's also another

 2 constraint.

 3   So when we designed the discharge -- the

 4 -- the amount of capacity in Keeyask, we optimized that

 5 considering the economics of everything, but also

 6 considering the amount of water that comes in and what

 7 happens in the forebay. So there's a tradeoff,

 8 ironically, environment before -- be -- be -- and

 9 versus environment on that one.

10   Conawapa has got lots of capacity. And

11 there's lot of cycling in that, yes, absolutely. And

12 one (1) of the things -- I can't remember if Dave used

13 the term in the last two (2) days, but that's where

14 with Keeyask and with Conawapa we can act as a battery

15 for the wind in the US. And Conawapa gives you more

16 cycling than Keeyask, but even Keeyask wi -- is helpful

17 with that.

18   MR. DAVID CORMIE: Peter, there's

19 twelve (12) units at Kettle. Now, disregarding what

20 actual unit is the last unit at Kettle, the last

21 hundred megawatts at Kettle gets dispatched less than

22 10 percent of the time. So it on -- there's only

23 enough water to run it 10 percent of the time.

24   So that's the kind of -- you know,

25 there's lots of capacity in the system to -- that --

418

1 lots of time available in the system for that last unit

2 to provide regulation service. So I think that's what

3 you were getting at, that there's lots of capacity in

4 the Lower Nelson already to provide that regulation

5 service, yeah.

6   THE FACILITATOR: How do I advance

7 this? It seemed to have stopped working. We are

8 falling even further behind, I'm afraid. Oh, right,

9 never thought of that. How about the next one. Okay,

10 the next one.

11

12   (MOVED TO SLIDE 13)

13

14   THE FACILITATOR: We're on slide 13.

15 We've already talked about some of these. We said the

16 economics alone you can't make your decision on; you

17 need a whole bunch of factors. One (1) of the factors

18 you need to think about are -- are various things that

19 aren't in the economic analysis that -- that -- which

20 would affect the economic analysis or the financial

21 analysis.

22   Joanne's already presented the fact that

23 we already got some new information from the 2013. And

24 you've seen a little bit of a sensitivity on that,

25 which is all we could squeeze in, in time for the

 1 submission.

 2   By the time we get into the hearings,

 3 we'll probably have some additional information, not --

 4 we won't be through a full annual cycle, but I guess

 5 we'll have some new ideas about what's happening with

 6 gas and load and all of that, but -- so by the time we

 7 get into the hearings we'll have 2013 1/2.

 8   Some things we already knew about though

 9 is -- and that's not in the evaluations are -- are the

10 US capital costs have come down since we started this

11 analysis. It's not in the many hundreds of millions of

12 dollars, but it's in the fifty (50) or so. I -- I

13 don't remember the number, but -- and even that's being

14 refined.

15   Dave already talked a little bit about

16 the third one. We've got a 750 megawatt import/export

17 transmission line in the 750 plans. But we know from

18 all the studies that that could be improved to at least

19 1,100 megawatts, import and export. And that would be

20 no cost to Manitoba Hydro because it's a relatively low

21 cost thing that could be done in the US by the US

22 entities who own that transmission of that area and

23 it'd be beneficial to them. So we would be able to

24 gain 1,100 megawatts capacity both ways with no in --

25 investment down the road. And, actually, I've been

420

1 told that it probably is higher than that.

2   On the other hand, though, the 250 line

3 is also not optimi -- the plans don't have a fully

4 optimized one. It seems two fifty (250) export, 50

5 megawatt import. Our transmission people are -- have

6 been studying, what if we could bump that import higher

7 than fifty (50) and maybe even increase the export. It

8 would cost money to do that but their judgment is that

9 probably would be cost effective.

10   So you've got two (2) factors here on

11 the two fifty (250) and the seven fifty (750), both of

12 which would improve their economics. And we can't tell

13 which one it would help more, but it would certainly

14 improve the economics of both of them.

15   The third thing -- we've already talked

16 about the WPS export sale, and Dave has talked about it

17 a lot, and we just talked about it today. I don't

18 think I'll go through that again. Also the fact that

19 we -- we -- our plan would be to divest. This is sort

20 of summarizing chapter 14 as well.

21   The second-last one is one that we

22 haven't talked about very much. Dave talked a bit

23 about it yesterday. The first is -- well, we've

24 assumed certain export sales and then we assume we get

25 a market rate for any surplus after that. But if there

421

1 are some export sale contracts that have attractive

2 rates and -- and fix the rates so you lose some of your

3 downside, that could improve the attractiveness of

4 either -- well, of the seven-fifty (750)

5 interconnection, because the two-fifty (250) is already

6 fully loaded.

7   And there are two (2) that we are -- are

8 very distinct strong possibilities. One (1) is

9 SaskPower. I think Dave men -- Okay, I'll stop there

10 for a sec.

11   MR. JOHN TODD: Maybe where you're

12 going was actually going to answer my question because

13 my question was:

14   What can the intertie be used for other

15 than exporting and importing to Manitoba?

16   THE FACILITATOR: Okay.

17   MR. JOHN TODD: And firstly at -- at

18 the present time --

19   THE FACILITATOR: You mean to the US?

20   MR. JOHN TODD: -- and subject to other

21 --

22   THE FACILITATOR: Yeah.

23   MR. JOHN TODD: For the US intertie,

24 yeah.

25   THE FACILITATOR: Okay. I -- I think -

422

1 - why don't I finish this and then we'll see if I've

2 answered your question.

3   Let me -- let me start with SaskPower

4 because that's what Dave already talked a bit about.

5 We have already had some negotiations, we have an MOU

6 with SaskPower, they'll be an announcement soon of a 25

7 megawatt sale, I think it is, Dave? And the MOU

8 involves discu -- negotiations of -- of up to a 500

9 megawatt sale, long-term firm, with an additional

10 transmission into Saskatchewan. Saskatchewan has got

11 some booming growth, they are very much looking at

12 needing resources and they're quite serious about

13 negotiating with us.

14   Now, that would not be over the US 750

15 tie, but it would definitely require Conawapa. The one

16 (1) thing is they want -- they don't want a GHG kind of

17 resource. I mean, they -- they can build coal if they

18 want. But the key thing is that it would need Conawapa

19 advanced to whatever year, let's just say '28 or

20 something. The exact year doesn't matter.

21   And if -- Saskatchewan would not take up

22 all of Conawapa if it was advanced. So you would have

23 Conawapa power that is not going to Saskatchewan and is

24 not at that point needed for domestic, that would then

25 want to go out over the US tie-line. So then it would

423

1 take advantage of the 750 tie-line and also improve the

2 economics of the 750 tie-line. So that's the

3 Saskatchewan one.

4   NSP, we have a -- we have sort of a

5 standing 500-megawatt kind of sale to NSP, but in the

6 2020 time frame we didn't have enough firm power to go

7 to full five hundred (500), so it's a 375 megawatt

8 sale. And we have the put option of going from three

9 seventy-five (375) to five hundred (500) if we have new

10 hydro generation. And the plan is with Keeyask, we

11 would go up to the 500 megawatts, which stops in 2025.

12   And we expect that NSP will want -- will

13 come to us and want to negotiate with us to extend that

14 500-megawatt sale beyond 2025. They do their planning

15 and they have a -- a regulatory process where they look

16 so many years ahead as to the firm requirements for

17 them meeting domestic load. And they haven't got to

18 that 2025 time frame yet. But when they do we fully

19 expect that they're going to be looking to us to extend

20 the five hundred (500) sale. And again, that would

21 need some additional new generation and probably --

22 well, Conawapa, if we -- if we've already got Keeyask

23 used. And we -- we've been conservative in our

24 assumptions by not assuming it's extended, but we think

25 the chances are it will be.

424

1   There are other entities Dave mentioned.

2 He didn't mention specifically who would be interested,

3 are interested in talking to us about buying long-term

4 from us, but -- but they're not on the table right now.

5 So does that answer your question? Okay.

6   Last one. I think Dave mentioned that.

7 What would -- if we do a 750 megawatt tie-line to the

8 area that tie -- starts to tie us into Wisconsin that

9 gives us a competitive market to Minnesota. It gives

10 us new players to have as counterparties.

11   And what that does is it helps to lift

12 the overall export price we would get on the average

13 and -- and make us in a more competitive situation, and

14 -- and it would actually help to reduce risks as well.

15 That we have not account for in our export price

16 assumptions. We've assumed the same export price

17 structure with -- with and without the 750 tie. And

18 that's hard to put a dollar value on. We're confident

19 directionally, we -- we can't really accurately put a

20 dollar value on it.

21   So I think I've covered tho -- any

22 questions before I move on? Okay.

23

24   (MOVED TO SLIDE 14)

25

425

1   THE FACILITATOR: Well, I've done it

2 now. So, I -- I have referenced the decision tree.

3 Actually we have a handout on this. I meant to -- we

4 don't? Oh. Oh, that's -- sorry, I got mixed up.

5 You're not -- you can't read that. It's in the

6 submission in Chapter 14. And we -- I won't spend much

7 time in this, particularly given how late it is.

8   But this is where we tried to

9 demonstrate over time in each pathway, there are many

10 different options, and this gives some of the decision

11 times for those. And here -- let's just go with the

12 development plan. We say that -- we start off with

13 Keeyask and the 750 tie, and the -- the sales we've

14 talked about.

15   We would continually decide, Do we need

16 to protect early Conawapa date. We -- then we make a

17 decision on Conawapa. Do we go with Conawapa? Do we

18 go with gas? Do we go with gas and then later on do

19 Conawapa? There's a bunch of possibilities.

20   That's true in each one of these plans.

21 And what I won't talk about here but is -- is in the

22 submission -- I won't talk about much -- is that if

23 something happens in Pathway 5 or 4 and we do not get

24 approval for the 750 tie, we will not have started

25 Conawapa yet. And we would then probably push Conawapa

 1 back.

 2   And if we didn't get approval for the

 3 750 tie we could prob -- depending on why we didn't get

 4 approval we could flip to Pathway 3, and then switch to

 5 the 230 line, but that would probably delay the in-

 6 service date. But that's still probably a possibility.

 7   And worse comes to worse, let's say

 8 we've committed Keeyask and then none of the tie lines

 9 get approved and none of the sales get approved. Well,

10 then you flip from -- into Pathway 2. And Pathway 2

11 was attractive compared to Pathway 1 anyways. So we

12 have that sort of flexibility and risk management

13 between the pathways.

14

15   (MOVED TO SLIDE 15)

16

17   THE FACILITATOR: Sorry, pathway --

18 Slide 15. Again, coming back to Pathway 3 versus 4.

19 We talked about the economics of it, so now I'm going

20 to into comparison of the pathways beyond just

21 economics. We had Liz just present on the rates, and

22 talked a little bit about debt.

23   Again, the challenge is, if you don't

24 have the WPS sale, and now you've got to decide between

25 the 750 and the 250 line, the economics tell you, Well

427

1 depends this/depends that, which way you want to go.

2   If you're looking in Pathway 3 and 4 and

3 you have the same in-service date for Conawapa, then

4 the rate increases and debt balances are about the

5 same. They don't tell you anything different.

6   If you've got different in-service dates

7 for Conawapa, that's when you get the early rate

8 increases higher, and then the rate decreases later.

9 And that's true for either Pathway 3 or Pathway 4.

10   If you compare financially the

11 Keeyask/Conawapa 750 with Keeyask/gas 250, you get the

12 -- the 750 tie with Conawapa gives you the higher rate

13 increases the medium term, but then post-'35 they're

14 all lower. So they're lower in the long run.

15   The -- the bigger tie gives you higher

16 retained earnings, which gives you that buffer against

17 drought and other things that Liz talked about. And

18 you -- you will have a debt issue in the peak years

19 that is a challenge but we think is manageable. And

20 this was the question Mr. Todd asked about earlier, I

21 think, in effect. And -- and we have considered that

22 that debt level is manageable.

23   And I think, for us, the -- the deciding

24 feature between 3 and 4, if you don't have the WPS

25 sale, is that Pathway 4, the bigger tie-line, has so

428

1 many advantages that are not captured in the plan

2 evaluations. They have -- they give us much more

3 opportunity to have additional exports and imports down

4 the road later on. It gives us greater energy

5 security. It gives us greater reliability and -- and

6 other related benefits.

7   So for us, in the end, if you don't have

8 the WPS sale and you got to decide between Pathways 3

9 and 4, it's these other things that go beyond the

10 strict economics that probably, in our view, would

11 drive the answer.

12

13   (MOVED TO SLIDE 16)

14

15   THE FACILITATOR: And just finishing

16 off, I think we just finished seeing Pathway 5, if we

17 do have the WPS sale, that it would be the preferred

18 plan.

19

20   (MOVED TO SLIDE 17)

21

22   THE FACILITATOR: And this is just the

23 conclusion overhead on -- on the Chapter 14. If you

24 look at Pathways 4 and 5, overall, the economics are

25 better. It gives you lowest long-term rates to

1 customers, 5 it's more clear than 4. In both cases, it

2 does support our long-term fiscal health. We -- we

3 don't endanger the debt rating in the province; at

4 least we don't think so.

5   You have vast -- much improved for

6 twenty (20) years' reliability and energy security for

7 Manitobans, ability to deal with things like higher

8 load growth, climate change, those kind of events.

9 Provincially, the transfers are much higher. The --

10 the socioeconomic benefits to Manitobans overall,

11 particularly the First Nations and Aboriginal

12 communities in the North, but not just them, all

13 Manitobans are better, higher, whether we're talking

14 about the economy or jobs in Manitoba, those kind of

15 things.

16   We're using a renewable resource rather

17 nonrenewable resource. And we do have a provincial

18 clean energy strategy and sustainable development

19 principles that don't dictate what the answer of our

20 electricity plan should be, but they certainly need to

21 be considered. And that is part of the terms of

22 reference of the NFAT.

23

24   (MOVED TO SLIDE 18)

25

430

 1   THE FACILITATOR: So moving off of

 2 that, and recognizing we don't have -- we're running

 3 out of time, I'm not -- I'm not going to have time to

 4 go through this because we've just -- we're running out

 5 of time.

 6   Chapter 15 says you -- you've ma --

 7 we've made a decision to go with Pathway 4 or 5,

 8 assuming that. We -- there all -- there's always risks

 9 in anything we do. So what are the risks and how are

10 we managing those, and -- and that's true -- the --

11 we've talked a bit about what about energy prices,

12 carbon policy, other US environmental policies that

13 would affect our exports and imports, how do we build

14 Cona -- Keeyask and Conawapa. We have a very extensive

15 set of strategies for construction, transmission. What

16 about the financial side exchange rates, droughts,

17 things like that, a DSM?

18

19   (MOVED TO SLIDE 23)

20

21   THE FACILITATOR: So we don't --

22 there's something called Species at Risk Act, where we

23 have -- lake sturgeon are in the process of affe -- a

24 listing decision. When will that be available? What

25 will the outcome be? There are numerous risks that we

431

 1 know about, are managing, we think we can manage, and

 2 in 15 we deal with that.

 3   This happens to be a picture of the

 4 Conawapa area. Conawapa would be built right there.

 5 Thank you.

 6   Any last questions? Good. So, Dave,

 7 are you ready? Do we need a break or should we just

 8 plunge into it. Five (5) minute break I'm hearing. A

 9 five (5) minute break while Dave is setting up. And

10 let's do keep it to five (5) because we -- we're -- we

11 are going to ru -- we are running out of time.

12

13 --- Upon recessing at 1:49 p.m.

14 --- Upon resuming at 2:00 p.m.

15

16   THE FACILITATOR: Okay, so if we could

17 get started again, please. And we've got Dave Bowen.

18 He's a manger in the generation construction area. He

19 actually -- you -- Dave did present at the previous

20 technical conference. And we have, as an informal

21 support, Glenn Schick, the Keeyask project manager

22 here. And Dave is going to try and squeeze in as much

23 as he can the limited time we have. So, Dave, go for

24 it.

25

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 1 CAPITAL COST ESTIMATES FOR KEEYASK AND CONAWAPA

 2 PRESENTATION:

 3   MR. DAVE BOWEN: Well, thanks, Ed. Am

 4 I on?

 5

 6   (MOVED TO SLIDE 2)

 7

 8   MR. DAVE BOWEN: Thanks, Ed. It's my

 9 privilege to be able to talk to you about the Keeyask

10 and Conawapa capital cost estimates this afternoon.

11 For the benefit of the many new people here today, I'm

12 going to be covering much of the same information that

13 was covered back in July during the July technical

14 conference. There's also additional results being

15 presented at the presentation that's in addition to the

16 presentation presented back in July.

17   The -- the purpose of today's

18 presentation is to basically cover four (4) -- four (4)

19 points here: explain how we estimated the Keeyask and

20 Conawapa capital costs. I'll explain the basis of --

21 of the estimates, how we incorporate historical job --

22 job data, how we stay in touch with the marketplace,

23 what we've learned from past projects including

24 Wuskwatim. I'll also explain how we handle risk

25 through contingency and management reserves and define

433

1 what items are not covered in the estimate. And -- and

2 then finally how in-service costs are -- are defined.

3   I'll also look at the development of the

4 IFF and CEF12 capital cost estimates for -- for our

5 budget for Keeyask and Conawapa. I'll touch on the

6 project execution for -- for those two (2) projects and

7 lesson learned. And then, finally, I'll get into the

8 application of -- of how capital costs have been

9 applied for the purpose of the NFAT analysis.

10   In -- in terms of the estimate

11 development process there's -- there's two (2) major

12 steps. The first step is to -- to basically go through

13 the estimate to develop an in-service cost. First we

14 develop the base cost. The base cost includes both the

15 -- the point estimate contingency and management

16 reserve. And these are -- they're risk-free costs that

17 were developed at a specific point in time, or

18 overnight costs. It includes a development of hundreds

19 of line items. Risk dollars are identified from a rig

20 -- rigorous contingency analysis, and -- and also the

21 use of management reserve is used to -- to handle risk

22 and uncertainty.

23   And then, finally, in service costs are

24 -- are simply applying interest rates and escalation

25 rates to the cash flows to develop in-service costs.

434

1   The next step is to -- to really take a

2 step back and look at -- analyze the key drivers to --

3 to estimate variance or change, look at different

4 levels of confidence in the budget, and to walk through

5 a -- a scenario analysis. The process we follow

6 follows industry best practice defined by AACE and is

7 used by other utilities throughout Canada.

8   So the next -- the next few slides here

9 is going to walk through what we do for the -- the

10 point estimate.

11

12   (BRIEF PAUSE)

13

14   MR. BORIS FICHOT: Hi, this is Boris

15 Fichot, with Knight Piesold. I just wanted to start

16 maybe one (1) -- one (1) element before the point

17 estimate there. There's obviously a certain degree of

18 project definition and who defines what the actual

19 project that you're going to be estimating is and --

20 and where that is -- that fits. And so you get all the

21 planning results, let's say, we -- we want to

22 concentrate these things, but somebody has to define

23 what -- what is the project and -- and who is that, and

24 how's that come about before you can actually estimate

25 it, right?

435

 1   MR. DAVE BOWEN: Sure. Sure. I'm

 2 going to answer your question. We'll just go right to

 3 the next slide here and I hope that answers your

 4 question.

 5

 6   (MOVED TO SLIDE 5)

 7

 8   MR. DAVE BOWEN: So the -- the first

 9 step in developing the point estimate is really to

10 define the project definition. So what are we

11 building? What's the scope of work? In the case of

12 Keeyask we have a -- a seven (7) unit plant. The

13 design is developed to the point where we know the --

14 the size of the generating station. We could estimate

15 quantities of concrete reinforcing steel.

16   We know the develop -- elevation of the

17 -- the forebay and tailrace so we can define -- design

18 our -- our dikes and dams and -- and develop those

19 quantities. The -- the -- that process there I -- I'm

20 not touching on it explicitly today, but in Appendix

21 7.3 it talks a little bit about our stage development

22 process. We go through a stage 1 to 5 process in which

23 the scope is developed and -- and the project is

24 developed from -- from really an idea -- idea phase.

25 So that -- that process there is defined.

436

 1   Just -- just touching on that just

 2 briefly is that the -- there's a stage 1 to 4. At the

 3 end of stage 4, we're -- which is really where we're at

 4 with Keeyask right now, the start of stage 5, in that

 5 the design's been -- been developed to basically put

 6 together all the design information for environmental

 7 approvals. There's been a project development

 8 agreement defined and -- and there's enough detail to

 9 establish the -- the capital costs. I hope that

10 answers your question, Boris.

11   So -- so in terms of the point estimate.

12 There -- there's two (2) parts of the point estimate,

13 which include both the direct costs and the indirect

14 costs. The direct costs are items that are directly

15 attributable to the construction of the primary assets.

16 So -- so things at the end of the day that you could

17 touch and feel, like the generating station, the dams

18 and dikes.

19   The key -- key influences or assumptions

20 for the direct costs are -- are listed in these four

21 (4) boxes here. So we -- we walk through what the

22 construction methodology and sequencing -- what we

23 think it will be based on past job experience. We look

24 at the different market factors affecting the

25 marketplace. We also apply historical job data, past

437

1 job data, so there's labour, material, equipment

2 databases. And then also in those databases there's

3 also databases of production factors, so -- so how much

4 work can we do.

5   So we'll make assumptions on -- say, for

6 example, we're building a dike and we know that we

7 need this type of machinery. We need backhoes,

8 loaders, rock trucks to move material. So we'll make

9 assumptions on -- on how much -- how much materials we

10 can move per hour with a different crew size to do that

11 work.

12   In terms of estimating techniques we

13 use, direct costs are estimated in three (3) different

14 ways, primarily using what we call a 'first principles

15 estimate'. And the next slide we'll -- we'll get into

16 more detail on that. And this is -- the first

17 principle estimate technique is a bottom-up approach,

18 and that's the same technique that's used by -- by

19 contractors in industry to develop costs.

20   Other -- other techniques, we use

21 quotations when we can't do the first principle --

22 first principles and to a lesser extent factor

23 estimates.

24   The first principle estimates used for

25 the general civil contract, the largest contract dollar

438

 1 value for this work, quotations are used for things

 2 like the turbine and generator contracts, mechanical

 3 supply-type equipment, where there's a limited number

 4 of manufacturers in the business that could do this

 5 type of work. And then only small dollar items are

 6 used on a factor estimate.

 7   So I've touched on a little bit about

 8 what the first principle technique is used.

 9

10   (MOVED TO SLIDE 6)

11

12   MR. DAVE BOWEN: And the next slide

13 here I'll just try to draw a bit of an illustration

14 here. So the first principles technique -- first

15 principle estimate, pardon me, comprises about 50

16 percent of the direct costs in the point estimate.

17 It's made up of -- of three (3) categories: labour,

18 equipment, and materials.

19   So this is a -- this is a picture here

20 of the -- one (1) of the scroll cases at Wuskwatim,

21 during construction. So in the estimate, say, for

22 example, we look at -- we're looking at a concrete. So

23 we'd have a -- we'd have a crew of carpenters, all the

24 different carpenters, rebar placers, et cetera, to --

25 to basically prepare -- prepare the structure for

439

1 placing concrete. That would be the labour cost.

2   In terms of materials, you could see

3 here we would cost out all the different materials for

4 the -- the final project, all the reinforcing steel,

5 the embedments that

6 will be cast in the concrete. And then we'll look at

7 all the different form work and false work used to --

8 to basically support the work and the concrete as it

9 cures.

10   And finally we look at equipment to

11 support that work. In this case here you could see in

12 the background here there's a -- there's a concrete

13 pump. So there'll be concrete pump, cranes, different

14 things like that that are used to -- that formulate the

15 costs.

16   So those -- those costs there, in terms

17 of concrete, they would be built from a bottom-up

18 approach making those assumptions. And you'd basically

19 land on a -- a unit price per cubic metres of concrete

20 per volume of concrete in this case here.

21

22   (MOVED TO SLIDE 7)

23

24   MR. DAVE BOWEN: The -- the next part

25 of the point estimate is the indirect costs and these

440

 1 are also referred to as owner cost. These are the

 2 items that are required to -- to basically build the

 3 work, so they're not -- not necessarily things that are

 4 left there once we're done but they're required to

 5 build the work.

 6   And there's -- there's six (6) broad

 7 categories listed here that are used to -- to make up

 8 the indirect costs. There's a substantial amount of

 9 indirect costs to construct any remote project like

10 Keeyask or Conawapa. The -- the largest costs are in

11 the -- the site infrastructure, the camp, the

12 environmental requirements, licensing, and then the

13 site office and labour.

14   Over time these costs have been

15 increasing for our projects, and they comprise about --

16 roughly about a third of the point estimate. In terms

17 of in -- estimating techniques, for -- for indirect

18 costs these costs area largely developed by -- within

19 Manitoba Hydro. Some of the costs are -- are done

20 using first principle estimates while the majority are

21 based on vendor quotations and historical cost.

22

23   (MOVED TO SLIDE 8)

24

25   MR. DAVE BOWEN: So that's -- that's

441

1 the high-level overview of the point estimate. The

2 next slides here talk about how we address risk through

3 contingency and reserve.

4

5   (MOVED TO SLIDE 9)

6

7   MR. DAVE BOWEN: So the -- the point

8 estimate is produced based on a given set of

9 assumptions. Project risk and uncertainty make it

10 certain -- certain that not all assumptions will be

11 correct. Contingencies in alignment with the estimate

12 that's meant to address this uncertainty and is one (1)

13 step of a larger risk management process.

14   It's dev -- developed with the

15 expectation to be spent. And it's Manitoba Hydro, our

16 corporate policy, to use the -- the P50 estimate in the

17 contingency development. And -- and when I say, "risk-

18 free," I'll -- I'll use an example that I used back in

19 -- in July. So when we developed a direct cost for say

20 something like the -- the -- the dams and dikes, where

21 we need a clay material, an impervious material, we'll

22 -- we'll go out and we -- we have gone out and drilled

23 a series of test holes within where -- where that clay

24 material is. And we know what the moisture content is

25 -- is in that -- in that material.

442

1   However, based on the actual

2   construction, when we actually need that material, we

3   may have a wet year or a wetter year than normal, so

4   we'll make assumptions in our -- in our point estimate

5   based on that. But we -- but when we actually come to

6   construction the -- the material may be wetter or drier

7   than what we knew it to be when we did those test

8   holes. And that's what we'll use contingency for, as

9   an example.

10

11   (MOVED TO SLIDE 10)

12

13   MR. DAVE BOWEN: In terms of how we do

14 our -- our risk development, before I get into

15 explaining the -- the curve here, so there's -- there's

16 -- our contingency methodology follows a best practice

17 from AACE, as stated, and we group our risks into two

18 (2) broad categories, which are systemic risks and

19 project-specific risks.

20   Systemic risks are -- are things like

21 the level of product definition of scope. We touched

22 on that in the pa -- few past presentations. So a

23 simple example there is that we have estimates for our

24 gas turbines and wind that are at a very high level

25 definition, so one would expect the -- the range of

443

1 accuracy of those estimates to be much broader than

2 what's -- what we're using for our -- our Keeyask and

3 Conawapa estimates where we've studied them for years.

4 We're -- the engineering is much more developed. The

5 level of project definition is much more developed.

6 The systemic risks are based on em -- empirical

7 industry statistics from -- from past projects.

8   In terms of project-specific risks,

9 these include things like geotech con -- geotechnical

10 conditions, weather, quality of risk. And we use an

11 expected value approach for these. These two (2)

12 risks, they're -- they're combined and implied in a

13 Monte Carlo simulation to produce a contingency curve

14 much like the one that you -- you see here on the

15 screen. This is a sample of a contingency curve.

16   So again I -- I mention that it's --

17 it's our policy to use a P50 estimate value. So what -

18 - what this illustrates here is that normally our --

19 our P50 estimate would show up. In this case here,

20 it's at a 30 percent probability. So there's a 30

21 percent probability of an underrun. And there's also a

22 70 percent probability of a cost overrun in -- in this

23 example.

24   The -- the amount of contingency that is

25 applied to the project estimate would be the difference

444

1 between the P50 level and the -- and the P30 level. So

2 that -- that's an example how -- how we go about

3 estimating.

4

5   (BRIEF PAUSE)

6

7   MR. BORIS FICHOT: Boris Fichot. Just

8 -- and how do you determine the statistics on each of

9 these factors?

10   MR. DAVE BOWEN: For the -- for the

11 systemic risks we use a model. So we hire a -- we've -

12 - we've hired a consultant that basically has a model

13 with -- with past job data that -- that has all those

14 statistics built into it.

15   For the -- the expected value technique,

16 that's basically a three (3) point distribution where

17 we'll pick -- we'll have an expected value, a low, and

18 high. And -- and that's really -- that's based on our

19 past experience and expert judgment.

20

21   (MOVED TO SLIDE 11)

22

23   MR. DAVE BOWEN: The next -- the next

24 step in -- in addressing risk is -- is management

25 reserve. It's the amount added to -- to our budgets to

445

1   cover uncertainty items with higher impacts, and are

2   not -- and substantial risks that are not appropriately

3   covered under -- under a contingency. Question...?

4

5   MR. JAN CARR: Yeah. Jan Carr, with

6   the PUB. I -- the -- this -- sorry, I perhaps should

7   have asked this earlier. You're -- you're talking here

8   about the cost estimating process basically for the

9   hydroelectric generating stations.

10   MR. DAVE BOWEN: Correct.

11   MR. JAN CARR: The other components

12 like transmission lines and various other things, the

13 same approach generally?

14   MR. DAVE BOWEN: This -- the

15 transmission line -- the transmission -- transmission

16 costs are done using a different methodology. They're

17 done by a different business group but there's --

18 there's parallels in the methodology.

19   For the -- the gas and the wind there --

20 those methodologies are -- are much different than

21 this. They're -- they're -- there's a lot more rigour

22 in our estimates for the Keeyask and Conawapa in terms

23 of the methodology used.

24   MS. JAN CARR: I -- I guess sort of a

25 corollary question to that was this -- this is all

446

1 based on, you know, a particular approach to project

2 management where, in effect, Manitoba Hydro, the

3 eventual owner, subcontracts everything and acts as, if

4 you will, as a general contractor in terms of putting

5 the whole thing together.

6   Given that Manitoba Hydro is not a

7 construction company and there are, you know,

8 productivity improvements, I mean, how -- how, for

9 example, did you know that you needed a concrete pump?

10 You know, they were only invented a few years ago, or

11 relatively a few years ago, and -- and -- so -- so

12 where in this process does the impact and the risks

13 associated with state of the art, I guess, in the

14 construction industry, how does that get factored into

15 the cost estimates and the project management?

16   MR. DAVE BOWEN: Well, it's -- it's a

17 good question. So -- so Manitoba Hydro, we've -- we've

18 been building generating stations for forty (40) plus

19 years. Ken -- Ken provided a little bit of background

20 of that this morning.

21   The -- in -- in terms of state of the

22 art -- so in terms of the first principle estimate we

23 work hand-in-hand with contractors. We've been working

24 hand-in-hand with them to understand that -- how they

25 go about doing their construction, how they go about

447

1 their techniques.

2   Certainly a risk for -- for any owner in

3 developing their cost estimates is that until you have

4 your bids in, I think that's where you're going, it's -

5 - it's hard to know with certainty as to what your

6 costs may be. And certainly when you -- when you bring

7 a contractor on board you'll make different assumptions

8 within your -- within your estimate as to the

9 methodology they'll use. But you won't know that until

10 you actually hire the person who is building it.

11   So we -- we spend a lot of time staying

12 in touch with the marketplace, understanding how they

13 build up those risks. Our most experience is on

14 Wuskwatim. We went through all the different first

15 principle estimates with the different contractors who

16 bid on those projects. We've done that with our Pointe

17 du Bois spillway replacement project. There's -- and

18 then we've reviewed that with our experts who -- who

19 develop these costs. But there -- inherently there is

20 -- there is risk in -- until you have bid price in

21 front -- in front of you there is risk in terms of your

22 -- your knowledge of where that -- where that price

23 will end up.

24   I'm not sure if that's -- so if you --

25 if you used -- if you use a engineer/procure/construct

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1 where you just hired one (1) entity to do the work and

2 got a single price up front, that is a -- it's a little

3 bit different methodology. You -- you wouldn't have to

4 go to this -- this degree. Does that answer your

5 question?

6   MR. JAN CARR: Yes, it does. And

7 actually, I guess, you know, again, so do you use

8 different -- different project methodologies, such as

9 design, procure, construct, depending on what the

10 facility is? And -- and I don't mean --

11   MR. DAVE BOWEN: Yeah.

12   MR. JAN CARR: -- I'm -- you're talking

13 about Conawapa or a big hydro station, that's one (1)

14 thing. But there are other elements in -- in the

15 overall plan that's part of the application that --

16 that might be amenable to different contracting

17 arrangements --

18   MR. DAVE BOWEN: Yeah.

19   MR. JAN CARR: -- and, therefore, dis -

20 - different risks and -- and obviously different

21 estimating approaches. That was really the gist of my

22 question.

23   MR. DAVE BOWEN: Okay. I'm going to --

24 I'm going to touch on how we developed our product

25 delivery strategy, which really looks at whether or not

449

1 we should employ the same, really, design/bid/bill

2 approach that we've em -- employed for the last number

3 of years at Hydro, or if we should do an EPC, or -- or

4 what that looks like. So I'll try to answer your

5 question at the end there. Yeah.

6   MR. RUSS TYSON: Hi, Dave. Russ Tyson,

7 from TyPlan. if you look at your contingency curve, at

8 what point and what level of estimate do you use to

9 roll that off to the rest of Manitoba Hydro personnel

10 for estimating, forecasting, and everything else?

11   Is it a point fifty (.50) estimate that

12 you do, or is it more concrete than that? So what

13 capital cost number do you give out to all your

14 counterparts so you can run all the other financial

15 models and everything else?

16   MR. DAVE BOWEN: I -- I'm going to get

17 to that, but -- but for the basis of our -- our CEF/IFF

18 number we use the P50 contingency at the point value.

19 And then I'll touch on how we've -- we've looked at the

20 different low, reference, and high capital cost for the

21 different financials. I'll touch on that at the end --

22 towards the end of the presentation.

23   So back to management reserve.

24 Typically -- oh, some more questions. Byron, right

25 behind you.

450

1   MR. ROGER CATHCART: Roger Cathcart.

2 P50 means what, 50 percent chance of being higher, 50

3 percent chance of being lower?

4   MR. DAVE BOWEN: Correct.

5   MR. ROGER CATHCART: Was the same

6 probability weighting used in the costing estimates for

7 Wuskwatim?

8   MR. DAVE BOWEN: To the best of my

9 knowledge, there's -- there was a range -- the

10 contingency was used, a range estimating technique.

11   MR. ROGER CATHCART: The same technique

12 as you're employing now, or did you change it?

13   MR. DAVE BOWEN: It's -- it's -- our

14 technique's slightly different. So it -- it is

15 different, but I believe that number there, Ed, you

16 probably know best, but it was a P50 value that was

17 used back for Wuskwatim.

18   MR. ROGER CATHCART: Another related

19 question just on the lessons learned, and we'll

20 probably get into this, so I'll -- I'll try not to get

21 Patti on the mic.

22   You said that you talked with all the

23 contractors and consultants of that project and had

24 some background conversations or reports?

25   MR. DAVE BOWEN: Well, I guess what I

451

 1 was referring to there is that during Wuskwatim, when

 2 we bid the general civil contract, we had -- there was

 3 four (4) -- four (4) contractors that bid that

 4 contract. They provided a -- a first principle

 5 estimate for that work. So we -- we reviewed those

 6 works with those contractors.

 7   THE FACILITATOR: Ed Wojczynski.

 8 Coming back to what Dave was alluding to, yes, with

 9 Wuskwatim we did use a P50 with a contingency, but with

10 our experience at Wuskwatim, we've done a number of

11 things differently. First of all, the construction

12 people have learned a lot with the modern environment;

13 and B) expanded the -- if I can call it the uncertainty

14 analysis; C) we formally ,at the corporate level,

15 jointly between various divisions in the Company and --

16 visited best practices across Canada with Nalcor, with

17 BC Hydro, OPG, various other people.

18   On an informal basis we held a workshop

19 and we revisited how we put together our corporate

20 estimate and management reserve and the current -- we

21 talked about this bit in the July technical conference.

22 And we put together the process we have now that

23 includes a management reserve in addition to the

24 contingency.

25   So we have, I think, a much better

452

 1 appreciation today than we did ten (10) years ago, but

 2 the uncertainties we're facing -- and we're in a much

 3 better position to deal with them and recognize them

 4 and manage them.

 5   MR. DAVE BOWEN: And thanks, Ed. And -

 6 - and just to remind me of a point there that I didn't

 7 mention. So since -- since Wuskwatim -- Wuskwatim was

 8 the first plant that Hydro's developed since 1990,

 9 Limestone. There hasn't been a pile of development in

10 the industry out -- outside of Hydro-Quebec since then.

11   So we've been in touch with counterparts

12 in BC Hydro, Ontario Power Generation, different --

13 different industries that are developing projects up in

14 northern remote Canada, Nalcor, as well, to -- to make

15 sure that we stay current with the -- the prices that

16 exist of projects that are actually getting built

17 because there's not -- there's not a lot of them. But

18 we're -- we're actively communicating with those owners

19 to make sure that we're aware of -- of what's -- what's

20 happening in the marketplace.

21   So how does -- how does management

22 reserve differ from contingency? Well -- well, first

23 off, it's -- it can only be used -- or -- or, pardon

24 me, unlike contingency as part of the cost of work,

25 it's only spent if that specific event occurs, and to

453

 1 spend it, we require the Manitoba Hydro Electric Board

 2 approval, which is added governance in our project

 3 management structure.

 4   It -- it may or may not be recommended

 5 for the CEF/IFF budgets. It may or may not be

 6 approved.

 7

 8   (MOVED TO SLIDE 12)

 9

10   MR. DAVE BOWEN: Two (2) reserves were

11 approved -- were recommended and approved for the

12 Keeyask and Conawapa budgets. And I'll get to those in

13 -- in later slides.

14

15   (MOVED TO SLIDE 13)

16

17   MR. DAVE BOWEN: In terms of in -- in-

18 service costs, so once we develop the base costs, the

19 base costs do not include interests or escalation. The

20 in-service costs basically take the -- the schedule and

21 the cashflow from those base costs and apply interest

22 and escalation to those rates.

23   Why are -- why are in-service costs

24 important for jobs like Keeyask and Conawapa? Well,

25 because they span multiple years. There's the -- the

454

1 actual impact of those, the -- the quantum of those

2 costs is about 30 percent for Keeyask and 40 percent

3 for Conawapa, so we need to pay attention to them.

4   Conversely, our -- in addition, if you

5 add an additional year of in-service to one (1) of the

6 projects you'll add an additional year of interest and

7 escalation and your -- your costs will go up.

8

9   (MOVING TO SLIDE 14)

10

11   MR. DAVE BOWEN: So in summary, the --

12 the base costs, the point estimates, developed at a --

13 at a single point in time, and it's based on the -- the

14 definition of the project at that time and market

15 conditions.

16   We use contingency to address the risk

17 and uncertainty within the point estimate. The in-

18 service cost includes interest and escalation and also

19 interest on money spent to date. And then third is

20 that the scenarios are used to establish management

21 reserves if required. And this is the part where we

22 take a step back and look at the global picture. And

23 again, I'm going describe what we've done for both

24 Keeyask and Conawapa in the coming slides.

25   There are items that cause us to make

455

 1 con -- to change: scope change, major scope changes,

 2 change the in-service date, major market shifts. Those

 3 type of things would cause the estimate to change.

 4

 5   (MOVED TO SLIDE 15)

 6

 7   MR. DAVE BOWEN: So what we did for

 8 Keeyask and Conawapa back in 2012, the -- any re-

 9 estimate process, the first thing it's driven by is

10 change to project definition or scope. It's -- to do a

11 re-estimate on a job like this, it's a six (6) month

12 process involving a multitude of people and -- and

13 different consultants and experts and people within

14 Hydro.

15   At that time, the -- the Keeyask

16 developed -- developed back in 2009 and Conawapa was

17 developed back in 2010. So they were two (2) and three

18 (3) years old, respectively.

19   So -- so we knew that little had changed

20 in terms of the project definition of scope. But we

21 did -- at this time, we now had a complete experience

22 on what had happened at Wuskwatim. That experience was

23 only partially complete when we had done the estimates

24 back in 2009 and '10.

25   We knew that we had other data from

456

1 projects in Ontario, BC Hydro, from other counterparts.

2 And we also were aware that there's a number of

3 projects within Canada and -- and North America

4 experiencing significant cost growth and issues with

5 labour escalation similar to issues that we experienced

6 in Wuskwatim.

7   So what we did, we stress tested the --

8 the key inputs to the -- the estimate based on this

9 most in -- re -- recent information. And we used this

10 to establish our -- our CEF and IFF12 capital cost

11 budgets for -- for both projects.

12   And what came out of this in terms of

13 the uncertainty analysis was the addition of both an

14 escalation and man -- labour management reserve.

15

16   (MOVED TO SLIDE 16)

17

18   MR. DAVE BOWEN: So in the stress test

19 we found that both labour and escalation, the -- the

20 quantum of those two (2) risk, had had the ability to

21 basically erode our -- our whole contingency, and we

22 knew we'd need to -- to pay attention them clo -- more

23 closely.

24   And we use scenarios -- and in the

25 scenario development we use the scenarios to -- to look

457

1 at these risk in more detail and -- but we -- and we

2 realize they weren't appropriate to be covered in

3 contingency based on the characteristics of the -- of

4 the risk but were appropriate to be addressed using

5 management reserve.

6   So labour reserve, it represents the

7 additional costs if the labour risk cannot be

8 mitigated. So how we -- how we quantified the reserve

9 and looked at it, it was basically modelled after what

10 had happened to us on Wuskwatim. So we -- the --

11 during Wuskwatim, the contractor, during the work, had

12 quite a significant issues with labour: attraction,

13 retention, productivity. What this meant, it caused

14 schedule delays.

15   And when you have schedule delays on a

16 project this size, the -- the cumulative impact to

17 costs are -- for -- you have to keep your camp there

18 longer; if you had more people, you need a larger camp;

19 you have all your project costs to keep the job alive

20 on a day-to-day basis. And these all grow on the

21 indirect costs role (phonetic) if you have schedule

22 elongation.

23   What -- what was driving the labour

24 risk? Well, there's a busy -- busy mega-project

25 marketplace, decreasing craft labour supply, and

458

 1 continued challenges in -- in labour productive --

 2 productivity, particularly in remote projects across --

 3 across Canada.

 4

 5   (MOVED TO SLIDE 18)

 6

 7   MR. DAVE BOWEN: In terms of the

 8 escalation reserve, this slide here shows the CPI in

 9 the -- in the solid -- solid red line. Or is it black?

10 Black line, pardon me -- here. And it compares three

11 (3) commodities of copper, diesel, and rebar.

12   So historically, over long periods of

13 time, escalation has followed more closely to CPI. If

14 you -- if you extended this graph out to, say, the

15 early 1980s, you would see that these commodities would

16 follow CPI more closely.

17   In the graph here we see -- we've marked

18 the start of Wuskwatim construction back in 2006, where

19 we experienced a fair bit of escalation within the

20 marketplace. There's a recession here. And then today

21 is marked in this line here.

22   So -- so during the recession, some of

23 the drivers for the escalation were huge worldwide

24 demand for -- for raw materials, especially in large

25 developing countries such as China, India, Brazil.

 1 We've had major investments in oil and gas, mineral,

 2 and other natural resource developments within Canada,

 3 not only Western Canada.

 4   We also had the -- in this period after

 5 the recession, we had the federal stimulus money which

 6 targeted infrastructure renewal, largely involving

 7 heavy -- heavy civil construction. So we didn't see

 8 any break in -- as a result of that, in the -- in the

 9 recession. And then there's the previous demographic

10 trends resulting in overall shortage of skilled labour

11 and experienced construction trades within Canada.

12   Manitoba Hydro is concerned that many of

13 these factors will persist throughout the construction

14 of Keeyask and Conawapa, and they'll continue to -- to

15 -- in the -- in the forecast here, you see that they've

16 broken off from the CPI. And that -- that will

17 continue. Therefore, we've added escalation reserve to

18 our CEF/IFF numbers.

19

20   (MOVED TO SLIDE 19)

21

22   MR. DAVE BOWEN: So again, back in

23 summary, we've just walked through the two (2) -- two

24 (2) main steps of estimate development, walking through

25 what we do to get the in-service costs from the base

460

1 costs, applying interest and escalation. And then also

2 looked at the different budget scenarios we've -- we've

3 applied to -- to develop the -- the CEF/IFF budget

4 values.

5

6   (MOVED TO SLIDE 20)

7

8   MR. DAVE BOWEN: So what were the

9 results? This -- this table here this is right out of

10 Appendix 2.4 in -- in the submission. It shows that

11 the -- this is based on Conawapa with a 2025 first unit

12 in-service date and a Keeyask 2019 first unit date. So

13 again, the total in-service costs are ten-two (10-2)

14 and six-two (6-2).

15   What I've done here, I've provided more

16 detailed breakdown of what was provided before. And in

17 the point estimate it's broken down between the

18 generating station and the -- and the -- genera --

19 generation outlet transmission. So in the generating

20 station for the point estimate the value is shown.

21   For Conawapa it's four point five (4.5),

22 and for Keeyask it's 3 billion. The contingency

23 amounts on the point estimate amounts are in the range

24 of about 17 percent. The -- the labour reserve amount

25 on the point estimate is -- is approximately equivalent

461

 1 to roughly about 11 percent for both projects.

 2   And keeping going then -- then. So

 3 that's -- that's our base dollars, and then again -- we

 4 have spent to date. This is -- this is as of March

 5 31st, 2012, and they have obviously changed. But we

 6 have $230 million for -- for Conawapa and -- and $500

 7 million for -- for Keeyask, which gives the -- the in-

 8 service costs of ten two (10-2) and five eight (5-8).

 9   In terms of transmission there's --

10 there's little cost in terms of generation outlet

11 transmission for Conawapa. There's other costs --

12 generation costs that are covered within the economic

13 and financial analysis which are a separate scope to

14 this in the analysis. And then there's approximately

15 $200 million for the generation outlet transmission

16 costs for -- for Keeyask.

17

18   (MOVED TO SLIDE 21)

19

20   MR. DAVE BOWEN: So what did we learn

21 from Wuskwatim? I'm going to touch on -- on five (5)

22 key points that we -- we've learned from Wuskwatim and

23 are applying to -- to the Keeyask and Conawapa

24 projects. The first one here is to start

25 infrastructure early.

462

1   So we want to start infrastructure early

2 to -- to ensure that it doesn't impact our critical

3 path of work. To ensure that once we start the work on

4 the generating station, which would -- which would

5 commence next June, that -- that we're ready for that

6 work. That we -- we won't delay the general civil

7 contractor, the first contracts at site.

8   We also wanted to -- to have the ability

9 to capitalize on any lessons that we're learning during

10 the infrastructure -- in the -- during the

11 infrastructure work, which is a Keeyask infrastructure

12 project in the Keeyask case, to -- to use those for the

13 rest of the project.

14   In terms of engineering, early

15 completion of design and earlier constructability

16 inputs. So -- so we're working with our designers to -

17 - to get the design done. We're also, as part of our -

18 - our product delivery, we're bringing on our -- our

19 general civil contractor approximately a year and a

20 half early from the main work to work along with

21 ourselves and our designer to -- to basically make sure

22 that we get any constructability inputs at a time when

23 we actually can react to them and -- and achieve cost

24 savings. And -- and there's other -- there's other

25 reasons -- other benefits for that as well.

463

 1   In terms of human resources, these

 2 projects, they're -- they're built and successful

 3 because of quality team and people -- teams and people.

 4 We've -- we had issues attracting and retaining project

 5 staff and craft labour partic -- at -- at our Northern

 6 sites.

 7   So we're -- in terms of our staff we're

 8 looking to basically complement our Hydro staff with --

 9 with a world-class construction management firm to do

10 the construction management. We're also -- again with

11 the craft labour, we're looking at a bunch of different

12 mitigation activities to mitigate that, and bringing

13 our -- our main general civil contractor on early.

14   MR. ROGER CATHCART: Hi. Roger

15 Cathcart again. Back to slide 20.

16

17   (MOVED TO SLIDE 20)

18

19   MR. ROGER CATHCART: What discount rate

20 did you apply to each of these buckets of money? The

21 same discount rate?

22   MR. DAVE BOWEN: The -- for both

23 Conawapa and Keeyask?

24   MR. ROGER CATHCART: I'm looking at --

25 I'll look -- let's just look at -- you've got ten point

464

1 two (10.2). Then you've brought it back to 2014

2 dollars.

3   MR. DAVE BOWEN: Oh, so -- so here in -

4 - in terms of the in-service costs, we didn't apply --

5 those aren't a discount rate. That's the capital --

6 capitalized interest rate.

7   MR. ROGER CATHCART: Right.

8   MR. DAVE BOWEN: To -- to -- if you're

9 going to compare to the economics those items there, if

10 you're comparing the 2014 dollars, then those items

11 would -- these values would be escalated from 2012

12 dollars into -- to 2014 dollars.

13   MR. ROGER CATHCART: That's -- because

14 that's -- that's CEF12 escalation that had an increase

15 in Conawapa of 2.4 billion, including inflation and

16 management reserves to ten point two (10.2)?

17   MR. DAVE BOWEN: The --

18   MR. ROGER CATHCART: The last -- I'm

19 just going from the last CEF where you -- the last time

20 you updated that Conawapa number to a higher capital

21 cost.

22   MR. DAVE BOWEN: Yeah.

23   MR. ROGER CATHCART: Then you're just

24 bringing that ten point two (10.2) back? Maybe that's

25 a question for someone else.

465

 1   MR. DAVE BOWEN: Oh, the -- well, in

 2 terms of in-service cost basically we're running --

 3 once we establish the base dollars, the base dollars

 4 are in a cashflow from today forward to the in-service

 5 date, which is --

 6   MR. ROGER CATHCART: Oh.

 7   MR. DAVE BOWEN: -- 2025. The interest

 8 and escalation are applied to that cashflow to

 9 basically -- to give you the -- the cost.

10   MR. ROGER CATHCART: Okay, I got you.

11 Now I understand it. Thank you.

12

13   (BRIEF PAUSE)

14

15   MR. BORIS FICHOT: Boris Fichot. When

16 you're talking about 'we', are you referring to

17 Manitoba Hydro or contractors? Because you're talk --

18 there may be some ways in the contracting methodology

19 to defer the risk to the contractor.

20   MR. DAVE BOWEN: Can you --

21   MR. BORIS FICHOT: So when you -- when

22 you talk about difficulty finding labour and craft

23 labour, in some ways, that's a contractor

24 responsibility as opposed to a Manitoba Hydro

25 responsibility --

466

1   MR. DAVE BOWEN: Correct.

2   MR. BORIS FICHOT: -- depending on what

3 type of contracts you set up?

4   MR. DAVE BOWEN: Yeah. What I -- what

5 I meant to -- so -- so Manitoba Hydro, for our site

6 personnel we -- we had challenges attracting, retaining

7 site staff at site. And the contractor also had

8 challenges attracting and retaining their labour at

9 site.

10

11   (BRIEF PAUSE)

12

13   MR. JAN CARR: Jan Carr. The -- these

14 estimates, as I understand it, are what you might call

15 for bricks and mortar. This is -- you know, you wind

16 up with a generating station or whatever the case may

17 be. And the -- the terms of reference to the Public

18 Utilities Board for -- for reviewing the NFAT

19 explicitly exclude the costs related to the partnership

20 with Aboriginal communities and all that sort of thing.

21   Where do -- where do those costs factor

22 into the -- the project? I guess they're not part of

23 these estimates is...

24   MR. DAVE BOWEN: Yeah. I'll refer that

25 question to Ed.

467

 1   THE FACILITATOR: Ed Wojczynski.   There

 2 are costs -- the -- the main co -- there are two (2)

 3 sets of costs with the partnership plus income share.

 4 The largest chunk of costs -- single largest chunk

 5 would be at the front end, with the negotiations,

 6 consultations, process costs, all of those things.

 7   Those are part of the capital costs of

 8 the project. It's -- it's not obvious from this thing

 9 here, but the 10.2 billion includes what we call

10 preconstruction costs that include all the process

11 costs for -- with the communities and any payments we

12 had to make up front, let's say, where there's an

13 adverse effects payment or something.

14   Secondly, there are some -- yeah, it's

15 total dollars spent as of. Secondly, there are some

16 ongoing process costs and commitment costs that are

17 capitalized or taken into account in various ways. And

18 then, thirdly, there's income sharing.

19   The income sharing is dealt with

20 explicitly in the financial analysis. Plus we have in

21 the confidential -- one (1) of the confidential

22 appendices, what the amount of income sharing for

23 Keeyask and Conawapa would be un -- in the various

24 cases. That's confidential because we're still

25 negotiating with the Conawapa nations.

468

1   And obviously what we have in there is

2 what we're planning on or assuming, and it wouldn't --

3 that would be harmful to our negotiations.

4   MR. JAN CARR: So -- Jan Carr. So I --

5 I guess the -- the main reason I'm asking is it is

6 outside -- those costs are outside the scope of this

7 review. But, you know, we -- we're looking at 'C',

8 which is made of 'A' plus 'B'. We need to -- we need

9 to know what 'B' is even though we're not reviewing it

10 so that we can do due diligence on 'A'.

11   And -- and I -- Boris is -- is going to

12 be heavily involved with that. So to what extent --

13 when -- when you say that certain costs are in these

14 estimates, where are they? Are they in the point

15 estimate? Are the in the --

16   THE FACILITATOR: Okay, they're --

17 they're in the total dollars spent as of, so -- so in

18 the -- up to that point. And then -- and -- and then

19 our base estimate going forward, it would it would be

20 in there, as well.

21   MR. JAN CARR: In the base estimate?

22   THE FACILITATOR: In -- well, it's in

23 the point estimate, in -- in --

24   MR. JAN CARR: Yeah. Okay.

25   THE FACILITATOR: -- for going forward.

469

 1 And -- and as of March 31st, 2012, it would be in

 2 there. So it's in -- it's in those two (2) places.

 3   MR. JAN CARR: And from the

 4 confidential information it'd be possible to back those

 5 costs out, would it?

 6   THE FACILITATOR: Okay, well, just

 7 let's back up. The confidential information is the

 8 income sharing.

 9   MR. JAN CARR: Oh, okay.

10   THE FACILITATOR: We have the NPV of

11 income sharing as an appendix on that. And that's not

12 in the submission, because it's one (1) of the

13 confidential things.

14   MR. JAN CARR: My question is --

15   THE FACILITATOR: The -- the costs --

16 the capital costs that are in here, they are in the --

17 they are -- they are not confidential in that sense,

18 no. And -- and the -- the people reviewing the capital

19 costs, that -- that's not confidential.

20   MR. JAN CARR: So they will be able to

21 back it out?

22   THE FACILITATOR: Well, I -- yes, they

23 could.

24   MR. JAN CARR: It -- it needs to be

25 identified --

470

1   THE FACILITATOR: They could -- they

2 could be if -- yes.

3   MR. JAN CARR: Well, they need to be if

4 -- if there's going to be any kind of comparison to

5 normal market conditions, right? Of costs?

6   THE FACILITATOR: From that point of

7 view, yes, they -- they could be.

8   MR. JAN CARR: Yeah.

9   THE FACILITATOR: But -- and our costs

10 on the partnership pre -- preconstruction process

11 costs, are -- are quite -- are -- are very significant.

12 And so, yes, if you wanted to do an apples and apples

13 comparison to some other projects, it would be good to

14 be able to separate those costs out, but you also have

15 to remember that if you are doing a project in a more

16 conventional sense without a partnership, you're also

17 going to have processed costs at the front end. So

18 then you'd have to, if you're looking at a more

19 conventional project approach, then you'd also have to

20 back those kind of consultation process costs out as

21 well.

22   MR. JAN CARR: No, I don't have any

23 difficulty with backing out -- I mean, total dollars

24 spent, I -- I -- sunk costs are sunk. They're known.

25 They're -- it's a number --

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1   THE FACILITATOR: Yeah.

2   MR. JAN CARR: -- it's easy to back

3 out. It's the going forward --

4   THE FACILITATOR: Yeah.

5   MR. JAN CARR: -- equivalent that --

6 that might cause some difficulty in due -- due

7 diligence on, let's call it, the bare costs, or

8 whatever you want to call it.

9   THE FACILITATOR: Yeah. Yeah. Tho --

10 tho -- I think those would be relatively small, but

11 they -- they ultimately could be backed out.

12   MR. BILL HARPER: Sorry. Bill Harper.

13 Actually, I want to go back to the answer you gave to

14 Roger, because unlike him, I'm not quite as quick. I

15 didn't quite get -- get the answer. We're looking at,

16 let's say for Conawapa, a $10.2 billion for an in-

17 service date of 2025/'26. The economic evaluation used

18 things expressed in 2014 dollars.

19   To get that back to the number that's

20 used in the economic evaluation that -- would that

21 simply be sort of deflated back, using your CPI back

22 from 2025 to 2014? Or -- or is there some other way

23 you convert that 10.2 billion back into 2014 dollars?

24   MR. DAVE BOWEN: Well -- well, the --

25 the economics here -- Terry, jump in here if you need

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1 to, but the economics are based on the base dollars.

2 So not -- they're not based on the in-service. The --

3 the financials consider the in-service dollars, first

4 off. And -- and so the base dollars here, if -- if the

5 economics in the case here were done with 2014 dollars,

6 they were escalated.

7   MR. BILL HARPER: Okay. So those base

8 dollar -- when you say, "total base dollars," those are

9 all expressed in 2014 -- to dollars on that line there?

10   MR. DAVE BOWEN: On -- in this line

11 here, they're -- they're based in 2012 dollars.

12   MR. BILL HARPER: Right. And then so

13 to get to the economic evaluation they'd have to be

14 escalated by two (2) years to convert to the 2014

15 dollars that are used and -- because everything in the

16 economic evaluation, it was my understanding, was based

17 on 2014 dollars.

18   THE FACILITATOR: Yes, and Joanne

19 presented, as I recall, I think it was this morning,

20 some of those numbers. The other thing, though, is do

21 -- we do account for the escalation higher than CPI as

22 well. So that change -- that modifies it a little bit.

23 It's not purely just the raw base dollars. Where --

24 where Dave Bowen was talking earlier about, we see in

25 various elements of the project cost parameters,

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1 something higher than CPI. We build that into the

2 financial and the economic evaluations.

3   MR. DAVE BOWEN: Okay. Back to lessons

4 learned in Wuskwatim. The -- the fourth part there was

5 looking at the appropriate project delivery strategy.

6 So we need to basically consider the risk of the

7 project, what capacity exists in the marketplace, what

8 capacity exists for hydro, what -- what defines success

9 for us, and ensure that we have a right match in terms

10 of the delivery strategy for this project.

11   And then the fifth -- final point there

12 was that we need quality project management practices

13 to -- to execute well and efficiently for this work.

14 So we developed the sound processes and standards based

15 on our past experience and ensured a well -- a well-

16 trained team.

17

18

19   (MOVED TO SLIDE 22)

20

21   MR. DAVE BOWEN: In terms of execution,

22 some fundamentals to success for the project are,

23 again, the project delivery strategy, a sound strategy

24 that -- we looked at -- there were some questions on it

25 earlier, so we looked at -- we went through the

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1 exercise.

2   We looked at whether or not we should do

3 engineer/procure/construct. Whether or not we looked

4 at alliance-type contracts. We looked at design build

5 -- design build contracts, design bid build, the -- the

6 whole different gamut. We weighed those against the

7 risks in the project to schedule what we could achieve

8 and -- and the result of that was, basically, we have a

9 bit of a hybrid of a design bid build model where we

10 have EPC contracts. We have an earlier -- early

11 contractor involvement contract for some of the work

12 and then more -- more traditional contracting forms.

13   Just -- just for information, there --

14 there is more information in the submission. I want to

15 make sure I get the right one in -- right one here, in

16 Appendix 7.3 there is further details of our -- of our

17 product delivery strategy.

18   Another part to the project is -- is a

19 comprehensive project schedule. There's numerous

20 contracts, numerous players right from -- through

21 procurement, design, the construction at work, many

22 interfaces. So having a sound schedule is -- is

23 required and -- and we have that for -- for our

24 projects to ensure success.

25   The project team for Keeyask is more

1 advanced, but we have a world-class consultant part of

2 our team, coupled with the Hydro team. We have top-

3 tier suppliers we've engaged to -- to execute the work

4 for us and we'll be continuing to engage those top-tier

5 suppliers.

6   In terms of mitigation strategy for

7 labour, four (4) key points here is that in terms of

8 attraction and retention of craft labour we are

9 constructing a premiere camp. That was one of the --

10 the key things that the construction community has been

11 telling us in terms of attracting and retenting (sic)

12 contractors. So that's being constructed as we speak.

13   We're employing the early construction -

14 - early contractor involvement contract to help us with

15 our labour strategy. The -- the general civil

16 contractor, the contractors manage the labour force;

17 they secure labour and -- and the productivity is

18 largely their responsibility. So -- so we're bringing

19 them on early to -- and working with them to -- to

20 develop techniques for that.

21   We're also investigating changes to the

22 Burntwood-Nelson agreement, modifying the work

23 schedule, different changes in that agreement to -- to

24 better attract and retain and ensure productivity with

25 the labour.

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1   And -- and finally, it's to incorporate

2   all the lessons learned on -- not only just the

3   Wuskwatim project but other work that we're currently

4   working on and other projects that -- that we're aware

5   of within industry and using our -- our contracts,

6   colleagues, right across Utilities across Canada to --

7   to employ those lessons learned and ensure success.

8

9   (MOVED TO SLIDE 23)

10

11   MR. DAVE BOWEN: Now we'll get into how

12 we've applied capital costs for the NFAT. So I

13 mentioned earlier there that there -- there are things

14 that aren't explicitly part of the capital cost

15 estimates which include changes to in-service date,

16 major scope changes, changes in escalation interest.

17 And these -- these factors, and certainly these are --

18 are tests in -- in the NFAT analysis. You'll see here

19 that -- from the graphic here, this is from the earlier

20 presentations from -- from both Liz and Joanne, and the

21 economic indicators. So they're tested in -- in the

22 high, reference, and low.

23

24   (MOVED TO SLIDE 24)

25

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 1   MR. DAVE BOWEN: In terms of -- in

 2 terms of how these risks are testa -- tested, well, the

 3 -- the low represents the -- the low extreme with a

 4 reasonable likelihood of a occurrence; the reference

 5 represents the most likely; and the high represents a

 6 high extreme that has -- also has reasonable likelihood

 7 of occurrence.

 8   These inputs were used in both the

 9 economics and financials from a capital cost point of

10 view for -- for both Keeyask and Conawapa. And

11 adjustments were made to both the -- the contingency,

12 escalation amounts, labour reserve, and interest.

13

14   (MOVED TO SLIDE 25)

15

16   MR. DAVE BOWEN: This information --

17 this information here it's -- again, it's summarized in

18 -- in Appendices 2.4 and 9.3, as to what was used for

19 the low, reference, and high. But to quickly walk

20 through it in terms of capital costs for Keeyask and

21 Conawapa in terms of the base costs, the first item,

22 the -- for the low value it's based on the P10

23 contingency. So if you remember back to the S-curve

24 there, it's on the point -- on the point estimate. The

25 P10 value for the contingency was used with no labour

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1 reserve. The reference point includes the P50

2 contingency, again with no labour reserve, and then the

3 high value includes the P -- P50 contingency plus the

4 labour reserve.

5   In -- in terms of interest costs, when

6 we take the base cost cashflow and apply interest and

7 escalation, again, there's a low, reference, and high.

8 And -- and these were established using the -- the low,

9 reference, and high interest in escalation rates.

10

11   (MOVED TO SLIDE 26)

12

13   MR. DAVE BOWEN: So -- so these -- this

14 slide here -- this slide is not in the submission. If

15 you look at the -- the financial results in -- in

16 Appendix 11.1 you're able to back calculate the

17 reference value. There -- you're not able to back

18 calculate the low and the high values in -- in the

19 submission.

20   So I'm going to just walk you through

21 this -- this slide here as to -- to what it means. So

22 it compares the -- the capital cost --

23   MR. JOHN ATHAS: I -- I just have a

24 question. If you go back one (1) slide.

25   MR. DAVE BOWEN: Sorry.

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1   MR. JOHN ATHAS: Why would -- why

2 wouldn't we -- I would have expected to see something

3 higher than P50 in the high case just because you went

4 lower than P50 in the -- in the low case. I know you -

5 - I know you have labour reserve as a difference there,

6 but can you -- can you tell me a little about the --

7 why -- why you wouldn't use something higher on that

8 curve?

9   MR. DAVE BOWEN: In the -- in the P50?

10   MR. JOHN ATHAS: In the high -- yeah,

11 in the high case. You just have the same --

12   MR. DAVE BOWEN: The --

13   MR. JOHN ATHAS: -- point -- point that

14 you changed the labour reserve.

15   MR. DAVE BOWEN: It -- it has to do

16 with how we developed the -- and it goes back to the

17 stress test. So when we did the stress test back in

18 2012 we -- we stress tested key parameters to basically

19 back check what we had in the estimate to see if it was

20 adequate. We didn't re -- reproduce our contingency

21 curve.

22   It just so happened that the labour

23 reserve was -- was nearly equivalent to that P90 value

24 from our original contingency curve. So that's a

25 little background on it. So that's -- that's why we

480

1 ended up with the -- for the high case with a P50 value

2 with a labour reserve.

3   MR. JOHN ATHAS: And then they're --

4 you think that they're comparable -- and -- they're

5 comparable numerically, but are they the same effect

6 that you're trying to capture with the P90 in the

7 labour reserve because it sounds more specific, the

8 labour reserve, than the -- than -- than P90.

9   MR. DAVE BOWEN: It's -- it's an

10 excellent question. I'm not sure how much more detail

11 I'm going to get into it today. Certainly we could

12 provide more detail on that.

13

14   (MOVED TO SLIDE 26)

15

16   MR. DAVE BOWEN: In -- in terms of --

17 in terms of values this slide compares the -- the

18 CEF/IFF12 values to the NFAT scenarios looking at the -

19 - at the capital costs and economic indicators at the

20 low reference and high. It's for the Keeyask -- again,

21 Keeyask 2019 in-service date and the costs are in

22 billions of dollars.

23   So if you look at the first line item

24 here, the total base cost, excluding spent to date, the

25 -- you can see here in terms of -- it gives you the --

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 1 it gives you an idea of what the bookends are for the

 2 analysis to help better understand. It goes back to

 3 the question that was just asked, the range of those

 4 results.

 5   So -- so in -- for the base costs the --

 6 there's a -- a -- basically a point -- a $700 million

 7 spread between the low and the high on the base cost.

 8 The -- the CEF number is approximately equivalent to

 9 the high value. The high value is slightly higher

10 because there's a -- a -- slightly more monies in the

11 escalation reserve that were applied there than that.

12   If we look at the -- the total in-

13 service costs there's a -- a broader range and -- and

14 again, the interest in escalation rates were applied to

15 those same cash flows. So there's a -- a difference

16 between -- of $1.7 million from the lowest of the low

17 to the highest of the high. And -- and the -- the

18 capital cost of CEF -- CEF number follows roughly be --

19 roughly halfway between the reference and the high

20 value.

21   In terms of ranges, if we look at ranges

22 on the -- on the base cost we're roughly minus -- minus

23 eight (8) plus 12 percent. And this is all relative to

24 the reference.

25

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 1   (MOVED TO SLIDE 27)

 2

 3   MR. DAVE BOWEN: The -- the next slide

 4   here tries to bring that into -- into context. So this

 5   slide here is the -- it's -- it's the estimate

 6   classification system for hydro power. It's right out

 7   of the Association of Cost Engineers.

 8   The -- the first column here is the

 9   estimate class, so it ranges from -- from five (5) to

10   one (1), and it -- and it -- the estimate class changes

11   based on the level of project definition. For -- for

12   Keeyask we're within -- we're somewhere in the range

13   between a Class 2 and Class 3 estimate, and for

14   Conawapa we're in a -- we're in the Class 3 zone here.

15   In terms of how it's used, it -- it

16   talks -- it has broad categories for end usage here.

17   So the Class 3 is budg -- budget authorization or

18   control. Class 2 is the control or bid/tender. And it

19   also provides the meth -- some of the methodology

20   typically used.

21   What I -- what I want to talk about was

22   just the ranges here. So if we -- if we look at the

23   expected accuracy ranges, and -- and these -- these

24   apply to the base cost, they don't apply to the in-

25   service cost. That's how this table was developed and

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1 should be interpreted.

2   But it -- it shows -- I -- I mentioned

3 earlier about the contingency percentages for both

4 Keeyask and -- and Conawapa, and then also the

5 percentages in the -- in the previous slide of where

6 we're at with base costs, but it shows that in terms of

7 gut check, in terms of industry gut checked, we are

8 within the ranges, the lows and the highs shown in --

9 in the slide here.

10   Again this table is in the -- in the

11 submission. Question?

12   MR. BORIS FICHOT: Yeah, Boris Fichot.

13 Is the definitions of management reserve and

14 contingency consist -- consistent with those from AACE?

15   MR. DAVE BOWEN: That's -- that's

16 another good question. So -- so this -- this table is

17 really meant for contingency. It doesn't explicitly

18 include management reserve. We -- we have our contacts

19 who are -- who are part of AACE and help develop the

20 standard. We've -- we've mentioned to them that --

21 asked them the question, Well, how does management

22 reserve fit into this? We believe that it fits in more

23 to the contingency analysis part, but it's not

24 explicitly addressed in that -- that standard because

25 it's a -- it's an -- it hasn't been considered by the -

 1   - by the group.

 2

 3   (MOVED TO SLIDE 28)

 4

 5   MR. DAVE BOWEN: In terms of Conawapa,

 6   walking through the same -- same table, same results,

 7   again comparing the -- it's Conawapa 2025/'26 in-

 8   service date and billions of dollars comparing the CEF

 9   values to the NFAT scenarios. Again we're comparing

10   for both capital costs and economic indicators, the

11   lowest of the low, the reference point, and the highest

12   of the high.

13   I didn't -- I didn't mention last slide,

14   I apologize for that, that in terms of economic

15   indicators for the CEF/IFF, they -- they fall very

16   close to the reference. There's a slight difference in

17   the escalation rate that's applied to the reserve

18   amount. There -- we have the experts in the room who

19   could speak to that more directly.

20   So again comparing, if you look at for

21   the base cost excluding spent-to-date there's a range

22   of $1.2 billion from 5 billion to 6.2 billion. Again,

23   the -- the CEF -- CEF value is approximately equal to

24   the high. The difference there is the different rate

25   in the escalation reserve that was applied in the NFAT

485

1 analysis compared to what was used in our CEF/IFF

2 number.

3   For the total in-service cost, there's a

4 larger range here -- larger range here of $4.3 billion,

5 and -- and again the -- the capital costs for -- our

6 capital cost estimate for CEF/IFF is approximately

7 halfway between the reference and the high.

8   MR. JOHN TODD: John Todd. Just a

9 windup question. Back on page 12, management reserves,

10 it says:

11   "The Management Reserve ... may or

12   may not be recommended for inclusion

13   in the Project Budget --"

14   MR. DAVE BOWEN: Yeah.

15   MR. JOHN TODD: -- for Conawapa,

16 Keeyask, the intertie, so on.

17   Were they included or not included?

18

19   (MOVED TO SLIDE 12)

20

21   MR. DAVE BOWEN: They were included.

22   MR. JOHN TODD: Okay. So that high

23 consequence/low probability that does not expect -- you

24 do not expect to spend, is the right definition of it,

25 and it is included.

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 1   MR. DAVE BOWEN: I -- I missed the --

 2 so we -- we recommended both an escalation in labour

 3 reserve, and they both were included in -- into the

 4 CEF/IFF value. So -- so, yes, the -- they're --

 5 they're high consequence/low probability.

 6   MR. JOHN TODD: Yeah. And, "only spent

 7 if the identified event occurs." Yeah, okay.

 8   MR. DAVE BOWEN: But -- but I

 9 characterized -- it's important to note that there is

10 two (2) characterizations of type of -- type of items

11 within the management reserve. There is the -- the

12 high consequence, low probability number, and then --

13 and there -- the escalation. And I also mentioned that

14 there's other items that when we -- there's significant

15 events that don't necessarily fit into the contingency

16 bucket definition. They -- we also looked at the firm

17 management reserves.

18   The characterize -- the characterization

19 of the labour reserve and escalation fit that

20 characteristic.

21   MR. JOHN TODD: I see that -- it's John

22 Todd again -- the management reserve required MHUB

23 approval. In the filing, does that contain the actual

24 numbers for the management reserve?

25   MR. DAVE BOWEN: Yeah. I showed them

1 on --

2   MR. JOHN TODD: Sorry, I missed that, I

3 guess. Okay.

4   MR. DAVE BOWEN: Yeah, so in -- in

5 terms of -- what I meant there is that it -- the --

6 when I -- when we -- how -- when we execute a project,

7 the project manager for Manitoba Hydro is given the

8 authority to spend with a number of controls on it the

9 project budget.

10   If they need to access a management

11 reserve, they need to go to the Board and provide a

12 convincing story, say, Look, this is why I need to

13 access those funds, and have those funds added to the

14 project budget. That's what I meant by that.

15   THE FACILITATOR: Ed Wojczynski. I'd

16 like to add to that last part, because this is the

17 subject of some confusion in the past and in the

18 future. That policy where I said the management

19 reserve may or may not be included in the corporate

20 budget, in the IFF and CEF, was a consciously put in

21 piece when the corporation developed that policy.

22   And the thinking was that when we are on

23 a forward basis putting together our capital budgets,

24 borrowing requirements, whatever else, that the -- the

25 executive and board of the company may desire to have a

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1 larger amount of capital res -- accounted for or

2 budgeted for than we think we're going to have to

3 spend, probably. And -- but not something that the

4 project manager could use unless it was justified and

5 approved by executive and board.

6   What that translates into for Keeyask

7 and Conawapa, and Vince Warden -- there was some very

8 testimony on that in the last GRA -- is so what we have

9 for Keeyask and Conawapa is an in-service cost estimate

10 which is more than our most -- our -- our most likely

11 cost. It is something which has a higher likelihood --

12 now, I'll have to get -- it's late on Friday. The --

13 the cost -- the budget amount in the IFF is more likely

14 to be higher than what we think will happen and then

15 lower than what we think will happen. It's sort of

16 like saying it's more than P50. We don't have an exact

17 probability number for it though.

18   So it's a bit of an issue, 'cause then

19 if you go to Ref/Ref/Ref capital costs estimate, it's

20 lower than what's in the IFF. So it cre -- it's going

21 to create some complications when our financial people

22 present rate results and things, for instance, 'cause

23 what's in the IFF is higher in terms of costs and rate

24 increases than Ref/Ref/Ref.

25   So it -- it's a complication. And I

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 1 just thought it'd be good to -- to clarify. We did

 2 talk about this briefly in the last technical

 3 conference, but this is actually -- now that we've got

 4 numbers and everything else it's easier and more

 5 explicit to talk about it.

 6   Were there any more questions for Dave?

 7 Oh, there are some. Okay.

 8   MR. BORIS FICHOT: Boris Fichot. I

 9 have a few questions. The first one's just a point of

10 clarification. So there's no significant change in

11 terms of the project definition over the last -- you

12 said three (3), is it four (4) or (5), just in terms of

13 the -- we have to review some of the IFFs, so in terms

14 of the project definition, it hasn't changed over the

15 last five (5) years?

16   MR. DAVE BOWEN: Yeah, since -- since

17 2009 and '10, when the Keeyask and Conawapa estimates

18 were -- were first completed, the -- the latest ones,

19 there hasn't been any significant changes.

20   MR. BORIS FICHOT: Okay.

21   THE FACILITATOR: Except for in-service

22 date.

23   MR. BORIS FICHOT: Okay. But in terms

24 of the -- the project itself, the --

25   MR. DAVE BOWEN: I'm taking for granted

490

1 that it says Conawapa 2025 here.

2   MR. BORIS FICHOT: Yeah. And so that

3 changed in which year?

4   MR. DAVE BOWEN: Pardon me?

5   MR. BORIS FICHOT: That changed which

6 year, the -- the in-service date?

7   MR. DAVE BOWEN: So the -- the current

8 in-service date for Conawapa is 2026, so there's

9 additional costs. The -- the ten point two (10.2) has

10 increased because of the -- the changes to interest

11 escalation and -- and carrying costs for another year.

12   MR. BORIS FICHOT: In -- in terms of

13 the staging and the scheduling and construction

14 process, who's been involved? It is solely Manitoba

15 Hydro or is it external? Like, in terms of overall,

16 you -- you've come up with a schedule of how this

17 project is going to be constructed and the cost is

18 derived from that. That's being -- sorry. Does that

19 have a lot of contractor involvement, or is that

20 internal?

21   MR. DAVE BOWEN: In -- in terms of

22 developing the -- the staging sequencing, that's based

23 on our past experience work with our consultants. I'm

24 not sure explicitly how much external review Keeyask

25 has had with external contractors. Certainly, in terms

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1 of when the estimate was developed, but it -- it --

2 from our in-house Hydro people and a variety of

3 consultants, we -- we -- we've looked at that.

4   MR. BORIS FICHOT: I -- I presume

5 you'll -- you will be -- form a list of all the

6 established existing contracts. It seems like you

7 already have the general contractor on board, and is

8 that -- is that the case, or...

9   MR. DAVE BOWEN: No, no. In terms of

10 the contracts -- so the -- the Keeyask infrastructure

11 project started about a year, a year and a half ago.

12 So that's basically we're developing a -- an access

13 road to the site. We're developing the work areas.

14 We're building, basically, a -- small town at the site

15 to house all the workers and staff. So that work is --

16 is actively underway. There's a number of contracts

17 that have been -- that have been put out and are

18 currently being executed to do that work.

19   In terms of the generating station work,

20 the turbine generator contract has been -- work on that

21 has started already. It started about -- I'm looking

22 at Glenn -- a couple of years ago. Approximately two

23 (2) years ago. The general civil contract right now is

24 out for bid. That's -- that's scheduled to currently

25 close in -- in December of this year.

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1   THE FACILITATOR: Any other questions

2 for Dave? Thank you, Dave. So we have twenty-three

3 (23) minutes to wrap up today. This next presentation

4 is going to be somewhat compressed. It'll -- if you --

5 it'll be handed out. So I will...

6

7   (MOVED TO SLIDE 2)

8

9 MACRO-ENVIRONMENTAL AND SOCIO-ECONOMIC CONSIDERATIONS

10 PRESENTATION:

11   THE FACILITATOR: I think we're okay.

12 So I'll speed -- we have speed dating, and now we've

13 got speed presentations. On the macro-environmental

14 and the socioeconomic, I wasn't planning to present a

15 lot of detail on it anyways. Before I get into it,

16 maybe just a -- a general explanation.

17   As I think everybody knows, we've got --

18 for Keeyask, we've already got the environmental

19 assessment process well underway. We're starting

20 public hearings in days. There is set -- I -- I went

21 and measured it. I lied yesterday to a couple of

22 people. I said there was 12 feet of -- linear of -- of

23 appendices and chapters and submissions and

24 interrogatory responses. It's actually only 7 -- 7

25 feet of -- of material, and plus lots more to come of

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1 course.

2   Conawapa, we don't have an EIS yet, but

3 we've got lots of material and technical stuff done.

4 Similarly, on the transmission projects. And we had a

5 bit of a struggle in writing the NFAT submission, that

6 we obviously aren't going to duplicate the CEC process

7 on Keeyask and the next one that's going to be done at

8 Conawapa, nor the processes for the transmission.

9   So how much environmental and

10 socioeconomic do you transfer over into the NFAT

11 submission? Actually, the first draft we had of what's

12 called 'chapter 2' that has the project description,

13 the manager who put it together put in a who -- he used

14 to be the manager of the environmental assessment

15 group, and -- and did the -- the bulk of the Keeyask

16 environmental assessment and started the Conawapa one,

17 and we transferred into the NFAT to give us a hand

18 here.

19   He put in a whole bunch of stuff. And

20 he got some feedback that said, Whoa, whoa, whoa, whoa.

21 The -- the environmental and macro-environmental and

22 socioeconomic was supposed to be there for screening

23 comparison purposes, you've got too much. So -- so he

24 -- he reduced it and we -- we reduced it as a team.

25 But how much should we put in is -- is a bit of a

494

1 struggle.

2   Like I said, we've got 7 feet of

3 material. We could have put in 4 feet or 1 fit (sic).

4 Obviously, that's not what we want. Did we get the

5 right balance? I don't know. So we do have material

6 in there on Keeyask, Conawapa, and the whole range of

7 options.

8   I know there was some concern the other

9 day expressed, Well is there -- do we deal with the

10 Keeyask/Conawapa issues, particularly Keeyask, caribou

11 or -- or mercury or whatever. It is in there. Is it

12 to the level of de -- detail people would like to see?

13 Perhaps if it isn't it could always be expended. If

14 it's -- if we have the information.

15   I -- I do mention that caribou was

16 mentioned about nine (9) times or something, and I --

17 in -- in the front of the report. And we have some

18 more later, but I'll -- I'll just quickly go through.

19 We -- we have the terms of reference that we're -- that

20 talk about this. I -- I -- I don't have -- we don't

21 have time to go through it. It's there. PUB has

22 issued some definitions to utilize. We -- we've --

23 even though we did our work before a lot of this was

24 done, I think we're consistent with it.

25

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```
 1                      (MOVED TO SLIDE 4)

 2

 3                      THE FACILITATOR:   Again the level of

 4  detail may not be what we ultimately want.

 5

 6                      (MOVED TO SLIDE 5)

 7

 8                      THE FACILITATOR:   Just very quickly, in

 9  our process -- Joanne talked about the evaluation

10  process.  We have in -- in it we have a multi-staged

11  screening process for our options that we include in

12  our assessments, ultimately, in our plans.

13                      We start out with the technologies.

14  Then for the technologies we go to options.  And then

15  we -- we screen those options down to get a short list

16  that we put in our plans.  We use technical, economic,

17  environmental, and social information at all stage.

18  But at the earlier stages it's more technical in

19  general, and economic, and -- and then we get more

20  details as we go along.

21                      Ultimately, when we make our final

22  decision-making, whether it was Wuskwatim back a few

23  years ago or -- or here, we do a social benefit cost

24  analysis which now has been reconfigured to be a bit

25  broader to a multiple account benefit-cost analysis.
```

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1 And obviously as per the terms of reference we analyze

2 our plans against the -- the provincial act and

3 principles of sustainable development.

4

5   (MOVED TO SLIDE 6)

6

7   THE FACILITATOR: Just very briefly,

8 the screening information in the submission. I'm not

9 going to summarize it. It's too much. Chapter 7 talks

10 about that. We have in the appendices two (2) emerging

11 technology report review and Appendix 7.2 the range of

12 resource options. That goes through many of them. I'm

13 going to talk about those briefly right away.

14   And, ultimately, we picked up sixteen

15 (16) resource options, and then, ultimately, seven (7)

16 were the ones that we finally included in the plans.

17

18   (MOVED TO SLIDE 7)

19

20   THE FACILITATOR: This is Appendix 7.2.

21 I just want to point out, it's three hundred and

22 seventy-six (376) pages. And these are the options we

23 looked at at a screening level. The first screening

24 level.

25   And -- and the DSM we've talked about a

497

1 fair bit. That -- that's not so much talk -- dealt

2 with. It's more the supply options in here. And we

3 cover a very full, wide range in the submission.

4   Actually in our own work, and looking at

5 other options and dealing with the industry, we

6 actually have more information and more options we look

7 at than this, but these are the ones we got in the

8 submission. And even at this level in Appendix 7.2 we

9 do deal with environmental and social, and other

10 issues, as well, at that top level screening.

11

12   (MOVED TO SLIDE 8)

13

14   THE FACILITATOR: Then in the main

15 submission, Chapter 7, Table 7.1, these are the options

16 that are included in that chapter, and they're fairly

17 broad you can see. And we tried to focus on ones that

18 -- that have a possibly in Manitoba.

19

20   (MOVED TO SLIDE 9)

21

22   THE FACILITATOR: Then we screen that

23 down to a smaller number of options. Let's call it the

24 'short list'. These are the ones you're familiar with,

25 and they're in Table 7.6 in that chapter.

498

1   (MOVED TO SLIDE 10)

2

3   THE FACILITATOR: And this is the table

4   call -- Table 7.6 which have -- we have as a handout, I

5   believe. Is that -- yes, good. And obviously 'm not

6   going to be able to read that, and we don't have time

7   to spend much on that right now. But suffice it to

8   say, We tried to summarize there the -- the

9   environmental -- macro-environmental, socioeconomic,

10   and technical economic parameters against the -- these.

11   And so you don't have to try and read that whole thing.

12

13   (MOVED TO SLIDE 11)

14

15   THE FACILITATOR: These are the

16   characteristics we looked at in that Table 7.6, and

17   it's a fairly broad range. But again it's obviously at

18   a screening level.

19

20   (MOVED TO SLIDE 12)

21

22   THE FACILITATOR: And then we meant on

23   -- and what I -- what I didn't mention was in Chapter 2

24   we -- rather than just that Chapter 7 stuff, Chapter 2

25   for Keeyask particularly, we provide a greater level of

499

 1 detail of -- of what the issues are. And that's

 2 obviously extracted from that 7 feet of material I

 3 talked about. Excuse me. And also in the multiple

 4 accounts analysis.

 5   The multiple accounts analysis is

 6 Chapter 13 of this -- sorry, question? Oh, yeah.

 7 Sorry.

 8   MR. CRAIG SABINE: Yeah, sorry, just a

 9 quick one (1). I know everybody is looking forward to

10 getting out of here. Craig Sabine. I'm just

11 wondering, I -- I know in the chapter it wasn't

12 entirely clear whether there was a set of criteria used

13 to apply to the screening factors against each other to

14 come to sort of an ultimate conclusion of what's

15 preferred versus what's not. Is that in the

16 appendices? Would you say that it's clearly defined in

17 the appendices, or...?

18   THE FACILITATOR: I don't think I said

19 the corr -- the -- the comparison is in there. I don't

20 -- I don't believe I said the final decision criteria

21 were clearly defined, no. When we looked at -- did the

22 screening down, I -- I think you have to say there's a

23 stage process, what -- what -- you know, from -- when

24 you start with the biggest list, what is sort of

25 economically within competitive range of each other,

1 what from a technical sense makes sense in Manitoba

2 from -- offshore wind obviously doesn't make that much

3 sense in Manitoba, as an example. And, ultimately, for

4 the very final short list, is -- is it environmentally

5 acceptable, are there socioeconomic benefits, or at

6 least are the impacts not too -- are they at least

7 acceptable, what makes economic sense. Do we have an

8 explicit decision matrix with weightings that gave us

9 that? No, it was more subjective.

10   MR. CRAIG SABINE: So it's judgmental

11 and subjective --

12   THE FACILITATOR: Yes.

13   MR. CRAIG SABINE: -- from that case?

14   THE FACILITATOR: Yes.

15   MR. CRAIG SABINE: And -- and purely

16 judgmental then on weighing impacts, say, emissions

17 related to impacts, water-related or fauna-related?

18   THE FACILITATOR: Yes. But --

19   MR. CRAIG SABINE: And -- and how you

20 evaluate them on the same plane?

21   THE FACILITATOR: Yeah. But I -- I

22 think it's safe to say that in the end we did not ex --

23 exclude any options quite on that basis in the end.

24 There are a couple -- nuclear we excluded and base load

25 coal we excluded on an environmental point of view and

501

1 a public acceptability point of view. And in good part

2 we've got legislation in Manitoba that -- that deals

3 with that, that expresses the social objective there.

4 So those were screened out.

5   If -- if you just go on purely on cost

6 you'd probably put in base load coal, pulverized coal.

7 But increasingly, that's ei -- just not socially

8 acceptable, and also not meeting the laws and

9 regulations. So -- but in terms of the other options

10 we -- we, ultimately, didn't exclude any of the major

11 options and included them all.

12   MR. BORIS FICHOT: Just following

13 between that Table 7.1 on Slide 8 and the -- I guess

14 the screened options on Slide 9, was the -- kind of the

15 -- the decision about the size of Keeyask and Conawapa,

16 did it occur then or did it occur later?

17   THE FACILITATOR: No, the Keeyask and

18 Conawapa sizing -- and again, we did touch on this in

19 the July technical conference and if we had more time

20 we could repeat that. We went through a twenty (20)

21 year process. I'm thinking more of Keeyask right now,

22 of -- of designing and optimizing Keeyask.

23   I think -- yeah, I did talk about it a

24 bit yesterday, didn't I, or am I dreaming? I -- I

25 believe I briefly talked about it yesterday of -- of

502

1 how we started with 1,100 megawatt options and winnowed

2 it down to what we have to reduce environmental impacts

3 and have it more socially acceptable to the local

4 people, dot, dot.

5   So that wasn't -- that was done as a --

6 as a thorough stakeholder-engaged process covering two

7 (2) decades. That may not be answering your question,

8 I'm not sure.

9   MR. BORIS FICHOT: Yeah. Well, there's

10 an optimization from a specific site perspective, but

11 then there's the optimization in the context of what

12 the large portfolio needs to be.

13   THE FACILITATOR: M-hm.

14   MR. BORIS FICHOT: And those tend to be

15 two (2) -- two (2) different exercises.

16   THE FACILITATOR: Yeah. There --

17 there's project-specific optimization and then there's

18 portfolio optimization. The -- in July we actually did

19 talk a bit about that where I went through the history

20 of the -- the power resource plans and -- and how it

21 evolved. And when we screened out certain options or -

22 - or brought them forward, economics were a big driver.

23

24   But also in parallel with that the

25 environmental parameters were -- an example of that I

1 gave was both Keeyask and Wuskwatim. In the mid '90s

2 we had high-head options. And then based on

3 environmental and social reasons we threw out those

4 options and put in smaller options. And that was part

5 of that staged planning process and part of the annual

6 powers of planning process.

7   And wind was put in in -- early in the

8 2000s and in -- in part it was based on social and

9 environmental preferences rather than purely economic

10 ones. On the other hand, in 2002 we put in a 280

11 megawatt combined -- simple cycle combustion turbine

12 facility at Brandon, and that was based pretty well on

13 economics. And even though from an environmental point

14 of view it was less preferable than -- in our view,

15 than hydro.

16   By the way I should take some kudos for

17 that. People talk about -- I'm going to pull a Byron

18 here. Ha-ha-ha. Mani -- even though we've had various

19 people outside of this room say, Well, geez, all you

20 look at is hydro and these other things, you never look

21 at thermal. We -- we built a -- 280 megawatts of gas

22 turbines in 2002 with no one pressuring us to do it

23 because it made sense at that time, so. And still

24 makes sense, it's -- so we don't just look at hydro.

25 Right, Byron? That's...

504

1   Anyways, does that answer your question?

2 Okay. I'm sorry, we have to cut -- you know, go

3 through this a bit quicker than we would otherwise.

4   The multiple accounts analysis is --

5 tries to internalize externalities and take a social

6 point of view on it.

7

8   (MOVED TO SLIDE 13)

9

10   THE FACILITATOR: We've got various

11 accounts. These are fairly standard accounts.

12

13   (MOVED TO SLIDE 14)

14

15   THE FACILITATOR: When -- if you're

16 doing a broa -- a very broad integration from a

17 societal point of view the market is what Joanne

18 presented.

19

20   (MOVED TO SLIDE 15)

21

22   THE FACILITATOR: The customer account

23 is a lot of what Liz presented, but it also accounts

24 for stuff we haven't talked much about here and that --

25 so. In this customer account, you know, we're dealing

1 with rates and -- short, medium-term rates. But also

2 from the customer point of view reliability and the

3 ability to deal with energy security, which the seven-

4 fifty (750) interconnection gives very big increases on

5 both reliability and energy security.

6

7   (MOVED TO SLIDE 16)

8

9   THE FACILITATOR: The government

10 account we've talked about. That was the transfers to

11 the province. But also -- if you go back there

12 recognizing they're taking on some debt, and that's an

13 issue for the province, we recognize that.

14

15   (MOVED TO SLIDE 17)

16

17   THE FACILITATOR: The Manitoba economy

18 account. And I know I had one of the -- where -- where

19 did he go? Anyways. Asking -- talking to us about

20 that already and the models for that, the input/output

21 models for economic driver, employment, those kind of

22 things. And that's part of the terms of reference

23 looking at the socioeconomic benefits for the province.

24

25   (MOVED TO SLIDE 18)

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1   THE FACILITATOR: Environment account.

2 There are the air emission ones. The greenhouse gas is

3 one that we particularly focus on given the public pro

4 -- profile and societal importance placed on it,

5 including the whole carbon market issue and

6 externalities.

7

8   (MOVED TO SLIDE 19)

9

10   THE FACILITATOR: Biophysical impacts.

11 We recognize you can't just look at air emissions

12 because that is negative for, say, gas. You also have

13 to look at the biophysical impacts, and there

14 definitely are some but there's a lot of mitigation,

15 and we do talk about that a bit in Chapter 7.

16   In the submission with the gas turbines,

17 we focussed on the plants themselves but, of course, we

18 all recognize that there are other impacts that aren't

19 site-specific or site-oriented. If you know about

20 natural gas, the whole production process, the whole

21 pipeline process, as well the emissions.

22

23   (MOVED TO SLIDE 20)

24

25   THE FACILITATOR: Social account. The

507

1 single largest thing are the local communities which

2 are mostly the partner communities, which is why

3 they're partner communities, but there are also others

4 in -- in the area who are not partner communities who

5 benefit and have been involved.

6   We also, from an intergenerational

7 equity point of view, we have this in Chapter 14 as

8 well as in Chapter 13, that, yes, we're seeing medium-

9 term rate increases slightly higher with the Preferred

10 Plan than, say, an all gas plan or some of the others.

11 And then in later generations, we see a much lower

12 rate. So one could argue, from an intergenerational

13 equity point of view, in the medium term Manitobans are

14 seeing some impact, and is that fair from an

15 intergenerational equity point of view.

16   On the other hand, there's an offsetting

17 benefit to that generation in that this is the

18 generation that sees the job impacts and economic

19 stimulus impacts. So they're -- it's not just -- and

20 they are the ones who get the twenty (20) years of

21 reliability in energy security benefits. So from an

22 intergenerational point of view, you are getting some

23 balancing, even though they're on different accounts.

24

25   (MOVED TO SLIDE 21)

508

 1   MR. DAVE BOWEN: I said this was going

 2 to be a speed version. What -- yes, question...?

 3   MR. RUSS TYSON: Russ Tyson, TyPlan.

 4   THE FACILITATOR: We might go five (5)

 5 minutes over.

 6   MR. RUSS TYSON: No, no, I'll keep this

 7 quick. Just a clarification on how you did the

 8 multiple account chapter. I'm assuming you used the

 9 federal guidelines on how to do multiple accounts. And

10 then once you ran all the accounts, you then looked at

11 the provincial input/output model of construction costs

12 to derive the economic benefits.

13   A couple of questions. Reliability

14 seems to come up in the questions. That is a very

15 significant point for your operations and also for the

16 people of Manitoba. Could you explain that one a

17 little more?

18   THE FACILITATOR: Yes, I can. The --

19 the answer is yes to your first two (2) questions. We

20 actually had an external consultant, by the way, his

21 name is Marv Shaffer, do the social benefit, the

22 multiple accounts. He's -- he's -- and he'll be a

23 witness in the hearings.

24   In terms of the reliability, we used --

25 and it's actually in one (1) of the appendices, a

509

1 probabilistic evaluation of the primary scenarios, or

2 primary plans. We used what's called loss of load

3 expectation, using Monte Carlo simulation of the

4 Manitoba system, bulk system interconnected with the ma

5 -- a MISO system. And we have emergency assistance

6 over that, using uncertainty in load forecast, and

7 short-term load forecast, outage rates for the major

8 transmission and generation.

9   And -- and a lot -- so that's all in

10 there. And it's -- it's one (1) of the submissions and

11 we have -- I don't remember the numbers offhand, but

12 quite -- 800 megawatts or something more of what's

13 called 'load carrying capability' of the 750-megawatt

14 interconnection plans compared to the no

15 interconnection plan. So a very substantial

16 improvement. It's somewhat higher for the two-fifty

17 (250) plan, but not a -- what -- not anywhere close as

18 much as the seven-fifty (750) plan.

19   MR. RUSS TYSON: Okay. Two (2) more

20 questions. I'll make them quick. Projected cost to

21 the ratepayers of Manitoba. How is that addressed

22 numerically in the multiple account or in the IO --

23 input/output model? Or was it?

24   THE FACILITATOR: Sorry, I -- I didn't

25 understand the question.

510

 1   MR. RUSS TYSON: The implications of

 2 rate increases to Manitobans.

 3   THE FACILITATOR: You know, that's a

 4 good question, and neither the staff who were involved

 5 in it, nor the specialist is here to answer that. So I

 6 -- I can't tell you.

 7   MR. RUSS TYSON: Fair enough. And one

 8 (1) last question. We all know that there's

 9 significant construction benefits from projects like

10 this.

11   What about operational benefits? What

12 has Manitoba Hydro done, or can you direct me to

13 something in the application that would tell me all the

14 good stuff that you've done in that regard?

15   THE FACILITATOR: Could you repeat the

16 question?

17   MR. RUSS TYSON: How ma -- how are you

18 addressing optimizing operational jobs once

19 construction is complete?

20   THE FACILITATOR: Ah. It's touched on.

21 We have -- for the local communities we have various

22 arrangements and programs and guarantees, and twenty

23 (20) year funded programs. There's a -- it's touched

24 on in Chapter 7, Chapter 2. We'd have to provide more

25 information either in interrogatories or otherwise.

511

1 It's in that 7 feet of material.

2   Just to finish off, and this table is an

3 important table. From a social benefit cost point of

4 view, where you look at the province as a whole from a

5 societal point of view -- and -- and this is how I

6 would interpret. If you're -- look at the terms of

7 reference, the socioeconomic benefit to the province,

8 the societal perspective as opposed to a private

9 perspective, and so we have a -- using a social

10 discount rate, a real discount rate, of 6 percent. And

11 in -- internalizing the externalities, this is the

12 summary of -- at Ref/Ref/Ref. And what you get is the

13 -- and for some reason Marv chose -- preferred to

14 present it this way, so we didn't want to tamper too

15 much with what -- what Marv's analysis was. So he did

16 it the other way; preferred plan, and then negative as

17 opposed to the positive going the other way.

18   So in that one, you see when you add --

19 you do all the adjustments -- and he's got the

20 government transfers, he did not use the debt guarantee

21 fee, by the way. He felt his judgment was that the

22 debt guarantee fee -- that Manitoba Hydro's getting a

23 benefit by having the lower discount rate, that there

24 is some risk to the government, that maybe the debt

25 rating will be affected. There is some risk. John

512

1 Todd was asking about that.

2   So he chose not to in -- as a

3 conservative basis, not to include the debt guarantee

4 transfers in this and in -- in his government transfer

5 line, just the two (2) taxes. And then he brought in

6 the labour component adjustment, and then the

7 environmental externalities, mainly based on

8 greenhouses gases, or entirely.

9   And anyway, so his social -- societal

10 point of view came to more or less the same answers we

11 did, although the numbers are different. And I'm

12 nearly finished.

13   His conclusions, we talked about them.

14 SD principles, I'm not -- be able to go through them.

15 We have -- in Chapter 2 we deal with each one (1) of

16 the principles and also we have the guidelines. And so

17 -- I'm sorry, we don't have time for that. Thank you.

18 Any questions?

19   Okay. It is just past 3:30. I don't

20 know that there -- on a going forward basis, I think

21 this is the end of this workshop. I don't know, Hollis

22 or -- if there's anything that needs to be said about

23 going forward. I don't think so. There's no -- no.

24 Or Bob. I'm looking at Patti and Marla. No.

25   So I know Josee has been -- has -- will

513

 1 be organizing this business with the independent -- the

 2 ex -- experts, if something more needs to be done, in

 3 terms of the meetings. I'm assuming there's a process

 4 for that.

 5   Are there any last questions before we

 6 wrap up? I know we'll be talking in the future, but in

 7 terms of these workshops?

 8   Well, thank you very much and have a

 9 good weekend.

10

11 --- Upon adjourning at 3:38 p.m.

12

13

14

15 Certified correct,

16

17

18

19 _____

20 Cheryl Lavigne, Ms.

21

22

23

24

25

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