MANITOBA HYDRO'S

NEEDS FOR AND ALTERNATIVES TO (NFAT)

PREFERRED DEVELOPMENT PLAN

Technical Conference

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Manitoba Hydro

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Pages 261 to 501

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1 --- Upon commencing at 9:18 a.m.

2

3 MR. ED WOJCZYNSKI: I think everybody's

4 here now who's going to be here. I gather there are

5 going to be some additional people this afternoon, but

6 we're not waiting for them. We have one (1) new person

7 this morning already.

8 Joelle, would you like to introduce

9 yourself?

10 MS. JOELLE PASTORA SATA: Good morning,

11 everyone. My name is Joelle Pastora Sata. I'm with --

12 I'm an articling student at the Public Interest Law

13 Centre.

14 MR. ED WOJCZYNSKI: And thank you.

15 Welcome, Joelle. I wasn't going to go redo the

16 introductions again for everybody. Maybe just -- I was

17 asked to quickly re -- redo the housekeeping.

18 Bathrooms just on the other side of here. Fire escape,

19 the stairwell on that side of the building. If there's

20 a problem, which there won't be, but I won't guarantee

21 it, the Hydro staff will help you go there.

22 Please remember to put your cell phones

23 on mute. And I think we'll get started. A quick

24 question for our -- our PUB and Intervenors.

25 Are there any questions that have come

1 to mind from the other day's material that you didn't
2 think to ask then but have not -- come up now, but on -
3 - on that material, not everything under sun, but
4 anything that came later on as a question in your mind
5 before we get started on today's agenda?
6
7 (BRIEF PAUSE)
8
9 MR. ED WOJCZYNSKI: No. Okay, so...
10
11 PRESENTATION RE: PROJECT DESCRIPTION AND
12 INFRASTRUCTURE:
13 MR. ED WOJCZYNSKI: You have hard
14 copies of the presentation. There are no changes in
15 what I'm presenting from what you have. That's always
16 nice. I think it's still loading up. Okay, well, why
17 don't we go to full screen?
18
19 (MOVED TO SLIDE 2)
20
21 MR. ED WOJCZYNSKI: Okay. So the first
22 -- the -- this first presentation is project
23 description, and in that we're describing the projects
24 themselves that are the subject of the NFAT, and start
25 off with Keeyask and Conawapa, and then go into the

1 transmission options.

2 This afternoon there'll be some

3 discussion of the alternative options in the

4 presentation on development of the development plans,

5 but these are the ones that are in the preferred

6 development plan.

7 First of all, this is a map showing

8 Keeyask and Conawapa. A number of you would know the

9 locations. But just -- just for those who don't, we

10 have -- I think this -- yeah, this works -- we have the

11 Nelson River. We have -- you have in front of you -- I

12 know it's kind of hard for you to see from there. We

13 have Keeyask going in here as a -- as an option.

14 We have Stephens Lake here. Then we

15 have -- we have Gillam and we have the existing

16 stations Kettle, Long Spruce, Limestone, and then

17 downstream of Limestone there's the proposed Conawapa

18 site.

19 In terms of the local First Nations

20 which figure prominently in these projects -- probably

21 this little map on the side is a little bit easier to

22 see. We have Split Lake and -- and York upstream of

23 the river of Keeyask. And then we have War Lake just

24 off of the river. We have Fox Lake who are centred

25 around Gillam, and then we have Shamattawa who are not

1 right on the river. A fair distance actually, but they
2 do have some use in the area. And those -- so those
3 are the -- the main First Nations in the area.
4 Okay. So...
5
6 (MOVED TO SLIDE 3)
7
8 MR. ED WOJCZYNSKI: Okay. As I was --
9 it does go, okay. This is just a -- it's a -- so I'm
10 going to jump through this. There's -- just a
11 depiction to give you a sense of the size of -- of
12 other projects.
13 We have just completed Wuskwatim, which
14 just came into service in the last year. It's a 200
15 megawatt project. Then we've got Keeyask 695, Long
16 Spruce, Kettle, Limestone, Limestone being the largest
17 project to date at 1,330 megawatts. And these are what
18 we call gross numbers. The output of the project, not
19 net -- net of what they may have reduced something else
20 on.
21 Conawapa -- yeah, I'll -- I -- I tell
22 you what, I explain it on Conawapa. It's probably a
23 better place. Conawapa, we give it as 1,485 megawatts,
24 and that is when the station is at its maximum
25 production. This is what it can be putting out.

1 Dave explained to you the difference
2 between megawatts and gigawatt hours. So this is the
3 instataneo -- it's maximum output. But when we add
4 Conawapa, there will be some reduction on the output of
5 Limestone because they'll raise the water levels at
6 Limestone because we're putting in -- flooding the
7 forebay of -- of -- and -- of Conawapa and that will
8 reduce slightly the output of Limestone. So we're
9 giving the -- the gross numbers of the projects 'cause
10 that's what they will actually produce at peak.
11
12 (BRIEF PAUSE)
13
14 MR. ED WOJCZYNSKI: Okay, he didn't say
15 anything. That was why he didn't use the mic. This
16 takes a while for it to move forward, so apparently the
17 signal goes up to the satellite and comes back down.
18 Okay. Maybe I do have push again.
19
20 (MOVED TO SLIDE 4)
21
22 MR. ED WOJCZYNSKI: Okay. So moving on
23 to Keeyask itself, these are the -- just a depiction of
24 the -- the project. We have the river -- the Nelson
25 River flowing this way, so it's going from left to

1 right. And we have the power house itself here, where
2 the generators sit.
3 Then we have the -- what we call the
4 central dam, and then we have the -- what's called the
5 spillway over here. And in this depiction the spillway
6 is actually flowing water. Typically the spillway will
7 not flow water, only if we have too much water coming
8 down the river, more than we can use for our
9 generators, then we use the spillway. And then we have
10 the dyking around it.
11
12 (MOVED TO SLIDE 5)
13
14 MR. ED WOJCZYNSKI: Okay. I was told
15 not to be a happy clicker, but okay. This is -- that
16 was the generating station itself. This is what --
17 this is a depiction of what we call the generation
18 outlet lines. Generation outlet transmission is the
19 transmission that hooks up to the generation station
20 itself and hooks it up to the rest of the transmission
21 system.
22 So in a -- in effect what we're doing
23 here is taking the output of Keeyask and hooking it
24 into the collector system for the -- the three (3)
25 Bipoles that will be existent then. And so this yellow

1 depicts the route -- right-of-way that has been planned
2 for that and then it hooks into the Radisson converter
3 station. And the power from Keeyask will be shared
4 amongst the various Bipoles, including Bipole 3 going
5 down south.
6 This little blue line here is running of
7 the -- is picking up power from this existing line and
8 will be what we call construction power. During the
9 construction of the station we need power to operate
10 the equipment. It's in the order of something, I don't
11 know exactly, but something like 30 to 50 megawatts.
12 It's -- it's in the many tens of megawatts of -- of
13 power, so we need a significant line to do that. And
14 although initially we might have to use diesels if --
15 depending on when we get the construction power line
16 in.
17
18 (MOVED TO SLIDE 6)
19
20 MR. ED WOJCZYNSKI: Okay. This is a
21 little bit of the history of how Keeyask was developed.
22 Back decades ago, we'd been studying Keeyask. It used
23 to be called Gull. And -- and out of the request out
24 of the local Cree, we have adopted the Cree name for
25 Gull, which is -- which is Keeyask, meaning 'Gull'. So

1 -- and -- and we've been studying it not continuously,
2 but -- but intensely for various periods of time.
3 And this is showing the evolution of
4 what that design would be. Initially we were looking
5 at a large option of 1,150 megawatts. Remember, it's
6 now 695 megawatts. Initially we were looking at one
7 (1) that -- a -- a large project here at more or less
8 the same place which would have developed the head, or
9 the drop in elevation in this whole reach of the river,
10 back to Split Lake. And that's depicted in this little
11 drawing here.
12 The brown stuff is -- call it the rock
13 underneath the water. The light blue is under the
14 state of nature, what the river looks like today. And
15 then the dark blue is if we did build this option here,
16 and this is a depiction of what Keeyask would have been
17 then, that's what the -- the forebay would look like.
18 And you can see that there's a fair bit of increase in
19 elevation here.
20 And if you come back to this map here,
21 the same thing. The light blue is the existing river,
22 and the dark blue is the flooding that would have
23 occurred had we -- had -- had we decided to build this
24 project.
25 Obviously, a -- a disadvantage of this

1 project is there is so much flooding. And whereas I
2 think there was an era where we would have proceeded
3 with such an option, it's typically the lowest cost.
4 If you build a few big options, that's lower cost than
5 building a number of smaller options. But due to the
6 increasing concern on environmental issues, including
7 responsiveness to the local people, we have studied a
8 number of options.
9 We looked at one (1) that was -- didn't
10 increase the level of water on Split Lake. That was a
11 900 megawatt option. We looked at splitting the
12 development between two (2) options and -- where this
13 one (1) would be called Gull and that one (1) called
14 Birthday Rapids. It would still involve increasing the
15 level of Split Lake, which would affect the communities
16 of Tataskweyak and York, and -- and have other impacts
17 due to the flooding.
18 The option we have chosen to proceed
19 with is this one, which is now what is being proposed
20 and it is one (1) site at Keeyask, or which used to be
21 called Gull, and does not affect, in most conditions,
22 the Split Lake water level at all.
23 Theoretically, we could still develop a
24 -- a project here, but it would be high cost and
25 questionable for environmental reasons whether that

1 would ever happen. And we are not actively pursuing
2 that at this time.
3 Should I be pointing it at something?
4 Is that why I'm missing? Okay. Oh, sorry.
5
6 (MOVED TO SLIDE 7)
7
8 MR. BYRON WILLIAMS: Sorry. It's
9 Byron. I know you're going to come to come
10 environmental impacts a bit later --
11 MR. ED WOJCZYNSKI: Yes.
12 MR. BYRON WILLIAMS: The -- the lake
13 sturgeon spawning sites, Birthday -- where are they?
14 Where --
15 MR. ED WOJCZYNSKI: This --
16 MR. BYRON WILLIAMS: -- are the rapids
17 --
18 MR. ED WOJCZYNSKI: -- this would be
19 probably a better picture.
20 MR. BYRON WILLIAMS: Okay.
21 MR. ED WOJCZYNSKI: So how convenient
22 that you asked the question once I changed the slide.
23 What sturgeon like -- and so we're
24 jumping a little bit ahead. But what sturgeon like is
25 water that is turbulent and moving. This is for

1 spawning we're talking about. And typically that
2 happens at -- where there are rapids. They -- they
3 come and they find some boulders or something and some
4 substrates, smaller pebbles and things. And they go and
5 they lay their eggs downstream of the fast water, but
6 with some protection from boulders. That's -- that's
7 typically what they do. It doesn't have to be shallow
8 water, but it needs to be fast moving.
9 In the state of nature at Keeyask, one
10 (1) of the places that is popular for a sturgeon -- for
11 the few sturgeon that are on Stephens Lake is -- is
12 here. There are other rapids...
13
14 (BRIEF PAUSE)
15
16 MR. ED WOJCZYNSKI: There are other
17 places where there are rapids, including Birthday
18 Rapids. You can see right here there's some rapids,
19 this is a very popular site for spawning. There are
20 some other places, but those are the two (2) major
21 ones.
22 The Birthday Rapids one, there's very
23 little change happening at Birthday Rapids, and we
24 expect there won't be any impact on spawning. If there
25 is, I mean we'll be -- we're going to be monitoring and

1 we can do some things about that, but we don't expect
2 there will be. There definitely will be an impact on
3 the spawning ability here. And what we're going to be
4 doing is putting in -- in -- to replace the spawning
5 habitat that's lost, we're going to be putting in
6 replacement spawning habitat.
7 And I'm not going to go back to the
8 first drawing, but right over there where the GS is,
9 we're going to be building some spawning shoals next to
10 the outlet of the generation where the units are,
11 putting in those boulders. And we've done work in
12 Winnipeg River as an experimentation to demonstrate
13 that it works and successfully. And so we'll be
14 replacing the lost spawning habitat with enough habitat
15 for the lake sturgeon as part of the GS project, and
16 that's included in the costs.
17 Does that answer your question, Byron?
18 MR. BYRON WILLIAMS: Thank you.
19 MR. ED WOJCZYNSKI: So this is what
20 we're planning. You can see a bit better the flooding.
21 I think we've talked about this maybe enough.
22
23 (MOVED TO SLIDE 8)
24
25 MR. ED WOJCZYNSKI: So the -- the GS

1 itself, 695 megawatts is going to be composed of seven
2 (7) units. In the IFF we have a -- a budget of $6.2
3 billion for the project. As Vince Warden had testified
4 and -- and as I alluded to in the pre-hearing
5 conference, that's a number which is higher than our
6 best guess -- or I shouldn't use the word 'best guess'
7 -- best estimate, the most likely outcome for the
8 project.
9 We -- we put in a -- a margin of reserve
10 we -- that we call -- it's a -- a management reserve.
11 So to give a number in the IFF, that's -- that's proba
12 -- more likely to be higher than the actual cost than
13 lower so we have a bit of a buffer. In the NFAT
14 submission we'll be using a range of cost estimates in
15 the analysis to cover the uncertainties there.
16 The transmission we're referring here to
17 is just that generation outlet transmission that I
18 pointed out already. The -- the energy coming out will
19 be about 4 1/2 thousand gigawatt hours average. The
20 dependable -- that is, during drought -- will be around
21 3,000 gigawatt hours.
22 In terms of construction employment
23 person years in Manitoba, it'll be nine thousand seven
24 hundred (9,700) -- that's direct and indirect -- and
25 around twenty-five thousand (25,000) Canadian.

A -- an important point here -- and I showed you already those four (4) options for developing the reach of the Lower Nelson. An important point is that we have spent many years studying the options and optimizing, both from an engineering point of view but also from an environmental and local community point of view. And it's not just picking the -- that option that I just showed you, what we do in the reach, but optimizing many things: the number of units, the unit size, operating regime, spillway capacity, and a thousand other things.

So these things are the subject of -- let -- let's call it at least ten (10) years of intensive engineering.

(MOVED TO SLIDE 9)

MR. ED WOJCZYNSKI: That's interesting. Environmental impacts, I just finished talking about, to ru -- oh, sorry.

DR. PETER MILLER: Just a question on your ten (10) years --

MR. ED WOJCZYNSKI: You don't mind if I -- I'm going to jacket off. It's kind of warm in here and I feel like I'm --

1 DR. PETER MILLER: Go right ahead. Ten
2 (10) years of optimization --
3 MR. ED WOJCZYNSKI: Oops. Sorry, hang
4 on. Hang on. I forgot something. I can't just take
5 the jacket off.
6 DR. PETER MILLER: Byron says, Take off
7 your tie, as well.
8 MR. ED WOJCZYNSKI: Okay, sorry. You
9 were saying?
10 DR. PETER MILLER: Okay, you talk about
11 optimizing. Does optimizing include considerations of
12 market changes and, for instance, maximizing the -- or
13 optimizing the potential for firming of wind?
14 MR. ED WOJCZYNSKI: Absolutely, in the
15 sense that when we decided on the number of units and
16 the total amount of capacity, you could -- for that
17 same place in the river with the same amount of head
18 and the same amount of flooding and the same amount of
19 average water coming in, you could put in more or less
20 units and increase or decrease the amount of megawatts,
21 peak megawatts, you can get out from the station.
22 And what we consider are a number of
23 factors in there. One (1) of them obviously being the
24 difference between on-peak energy values and off-peak.
25 And in that we account, for example, the fact that wind

1 will be blowing daytime, nighttime. And -- and it'd be
2 one (1) of the number of parameters that, for instance,
3 at night we could be picking up energy, whether it's
4 wind or other generators in the US system, when that
5 energy is not needed or it's low valued.
6 Or Dave talked about negative dispatch
7 values, where we'd be picking up energy, including from
8 wind, and then -- and then shifting it into the day.
9 And that -- that amount of peak capacity is -- is what
10 allows us to do it.
11 The other thing is we recognize that
12 within the on-peak there's ability to move energy
13 around, including dealing with things like wind. And
14 we -- we take tha -- that's one (1) of the parameters
15 when we decide how much capacity to put in. There is -
16 - there are some other parameters, as well. But just
17 to answer your question, that's one (1) of the factors
18 we consider.
19
20 (MOVED TO SLIDE 10)
21
22 MR. ED WOJCZYNSKI: So the other thing
23 is we don't just -- we didn't just reduce the size. We
24 have a much-constrained operating regime for Keeyask
25 than we would have at an earlier time planned on. By

1 that, what I mean, we're going to stick to the forebay
2 level, to about 1 metre range of operation.
3 So when we cycle the plant, the idea is
4 we stay within 1 metre. For a large plant, that's very
5 minimal. If you go to most projects, and -- well,
6 let's use Quebec or BC as -- as an example; they have
7 ten (10), twenty (20), fifty (50) times that kind of
8 range, so... And if you -- and because of
9 environmental re -- reasons, we have kept it pretty
10 minimal.
11 Secondly, fish are probably one (1) of
12 the biggest concerns, obviously, when -- when doing a
13 hydro project. The -- we've chosen as fish-friendly as
14 possible turbines to minimize impact on the fish when
15 they go through. You've got turbines in a lot of
16 places that are small cups or lots of blades, so fast
17 water moving. Fish get chopped up in those.
18 What we have is a small number of big
19 blades with big spaces between them, and the fish can
20 go between the blades without being harmed. And 90
21 percent of the small fish survive nicely when they go
22 through it. There's been experiments to demonstrate
23 that. Larger fish could get damaged by going through
24 those blades. But what we have is at the front of the
25 project, we have racks, bar racks, which stop the big

1 fish from coming through, for instance, like mature
2 sturgeon, and so they don't go through the units.
3 Re -- reservoir clearing in -- in the
4 old days and -- and us, just like others, clearing in
5 the forebay was not a common thing to do. And we now
6 are doing that in the forebay. So most of the trees
7 and shrubs will be cleared in the forebay so you don't
8 have some of the problems that there have been
9 historically.
10 Like a lot of other elements of
11 designing the hydro projects, what we did forty (40)
12 years and fifty (50) years ago today is not acceptable,
13 both from an environmental/biophysical point of view
14 and from a social impact point -- point of view of
15 people.
16 So we've redesigned our projects,
17 including Wuskwatim, Keeyask, in a number of ways; I've
18 just talked about some of them. But lots of other ways
19 to reduce the environmental impacts, reduce the social
20 negative impacts. And what we've done is -- the term
21 is 'internalize the externalities' and increased the
22 cost of the project compared to the amount of energy
23 coming out. So we've internalized the externality
24 values. We've got more expensive projects than what
25 had developed forty (40) years ago on a per-unit basis,

1 everything else being equal, but much reduced
2 environmental impacts.
3 So tha -- this -- these are examples of
4 them. Things we do, working with the local
5 communities, looking at caribou and everything else,
6 making sure our access roads don't affect them. We
7 talked a little bit about sturgeon already. But aside
8 from dealing with habitat, not just at Gull Rapids, but
9 in a whole bunch of other elements of the habitat,
10 replacing habitat, improving habitat, not just in the
11 footprint of Keeyask but elsewhere in the system, and
12 also stocking.
13 And so the plan is that the overall
14 population of sturgeon in the reach, not just at
15 Keeyask, but in the -- in the reach of the -- of the
16 Nelson River, the upper Lower Nelson River, would be
17 enhanced through the activities of the project and the
18 partnership rather than -- than harmed. And we'll have
19 an adaptive management plan to do that, including
20 working with the First Nations.
21 We've established a sturgeon stewardship
22 committee with the local First Nations, have guaranteed
23 twenty (20) year funding is chaired by the First
24 Nations. There's -- and with the expressed purpose of
25 ensuring that this happens.

1 Byron...?

2 MR. BYRON WILLIAMS: Just and -- and

3 Dr. Miller would know a lot more about greenhouse gases

4 than -- than I would. But in terms of the flooding,

5 presumably there's -- there's methane that -- that is

6 generated by that.

7 And -- and what's kind of the duration

8 of those methane effects in the environment?

9 MR. ED WOJCZYNSKI: Well, there's --

10 I'll make two (2) comments on that. And there's a very

11 detailed report on greenhouse gas emissions from

12 Keeyask in the Keeyask environmental assessment. It's

13 a life-cycle analysis done on Keeyask. It's also done

14 on wind and other options for comparative purposes.

15 And so the two (2) points are going to

16 be that there -- there will be some methane production

17 from the reservoir from the initial flooding. Taking

18 out biomass, as I just talked about, is helpful in

19 reducing that. But the amount of -- of increased

20 methane compared to what we -- there in the state of

21 nature would be -- I don't know the exact number of

22 years. And if you want, I -- we'd have to get back to

23 you.

24 But we're talking about in -- in

25 multiple years for that to happen, but not sixty-seven

1 (67) years. And if you look on -- on a life-cycle
2 basis, the amount of greenhouse gas emissions from
3 Keeyask compared to natural gas -- well, the coal
4 generation is like a thousand times less, or something
5 like that, many hundreds. From gas generation, it's
6 still hundreds of times less in that order and it's
7 equivalent roughly to wind.
8 And that analysis, by the way, is done
9 by something called the Pembina Institute, an
10 environmental organization and -- who also do
11 consulting. And so we don't do it just ourselves, to
12 give it more -- to give you more assurance that we have
13 addressed that properly.
14 There are concerns in some places in the
15 world where you -- particularly like Brazil, where you
16 have shallow reservoirs, widespread flooding, lots of
17 biomass, hot, where there are -- are large emissions.
18 But that is specific to a few kinds of generators in
19 the world. The Canadian generators don't have that
20 kind of a problem.
21
22 (MOVED TO SLIDE 11)
23
24 MR. ED WOJCZYNSKI: Caribou are one of
25 the particular specific concerns of Keeyask and

1 Conawapa and Bipole 3 and generation outlet
2 transmission. A lot of effort has gone into that.
3 Caribou are an (INDISCERNIBLE) the -- there are
4 different kinds of caribou. And the caribou typically
5 in the area of the projects are not the ones that are
6 in danger, although some are hybrid, and there's some
7 concern.
8 This requires a regional approach. You
9 don't just do it on a project-by-project basis.
10 Caribou traverse large areas, and do a lot of
11 migration. So we are engaging in a regional approach
12 to deal with the caribou, not just one (1) project but
13 across the -- the set of projects.
14 The loss of the calving habitat itself
15 is -- is quite small. With Keeyask there will be some,
16 and Environment Canada has done a lot of work over --
17 over many, many years. And the benchmark for what can
18 be done is -- is well within the acceptable limits from
19 the Environmental Canada benchmarks.
20 Cumulative effects are important
21 because, again, these caribou are affected by many
22 projects, including the existing ones. And that's
23 being considered and, from a regional point of view, is
24 acceptable. But we're working with the First Nations
25 and provincial government to manage the caribou issue.

1 (MOVED TO SLIDE 12)

2

3 MR. ED WOJCZYNSKI: Socioeconomic.
4 I'll -- I'll be getting into some other issues that are
5 common of Keeyask later, as well -- with Conawapa.
6 Socioeconomic issues, just briefly 'cause I'm going to
7 run out of time. I'm getting some signals here that
8 I'm taking too long.
9 First Nations are very involved in the
10 projects. We had AIP signed with two (2) of the First
11 Nations over ten (10) years ago, then two (2) other
12 First Nations came in on Keeyask. We had -- in
13 addition to votes on those AIPs, we had referendums a
14 few years ago where you got the -- the positive vote
15 for those who -- who did vote in favour of the projects
16 and participating in them.
17 That is not to say there aren't -- there
18 isn't opposition and that there aren't many people who
19 have concerns, a) about is the project acceptable?
20 From the point of view of some people would prefer not
21 to have any project. Another area of concern is they'd
22 like to have had a better deal, more returns or -- or
23 whatever element. Another area of dispute is the
24 sharing between the First Nations, which has caused me
25 and many others many sleepless nights.

1 Training, pre-project training for the
2 project even before the project got started.
3 Employment preferences. We have a commitment in the
4 JKDA, the Joint Keeyask Development Agreement, that
5 they are assured of getting at least six hundred and
6 thirty (630) person years of employment from the
7 project development to their set of members, the four
8 (4) Cree Nations. If we don't, we have to pay
9 penalties and under -- and engage in activities. We
10 expect that's going to be exceeded.
11 Business contracts, including for the
12 infrastructure, to not just give them direct benefits,
13 but capacity building. And we have extensive adverse
14 effects agreements.
15
16 (MOVED TO SLIDE 13)
17
18 MR. ED WOJCZYNSKI: They have -- we
19 have, I think, unprecedented for a major hydro project
20 in Canada, if not in the world -- and I -- I do have
21 some familiarity what's going on in the rest of the
22 world through the -- our involvement with the
23 International Hydro Power Association -- is we've --
24 the Cree -- the Cree have been involved not just in
25 looking at all the studies that Manitoba Hydro has

1 done, but they've had full access to that information,
2 and they've done their own studies and -- and had their
3 own reports included as part of the Keeyask
4 environmental impact assessment. And those here who
5 are involved in that are aware of that.
6 Are they totally happy with everything?
7 No. But has -- have their concerns been addressed to
8 the degree that we think is possible? I would say so.
9 Is it perfect? No, but I think it's -- it's pretty
10 good. Very good, as a matter of fact.
11 I think employment, I've talked about a
12 bit. It's not just the four (4) Cree Nations who are
13 going to benefit from the projects. The employment
14 preference covers Aboriginal people throughout the
15 North, and other Northerners as well. We have a
16 hierarchy of preference, and -- and in the operations.
17 It's not just in the construction phase.
18 There will be ongoing jobs in the
19 company and at Keeyask. As a matter of fact, we have a
20 commitment flowing from the Keeyask agreement where a
21 hundred and eighty-two (182) jobs -- we're talking
22 about permanent jobs -- for the KCN members throughout
23 Manitoba Hydro. And that's ongoing and already moving.
24
25 (MOVED TO SLIDE 14)

1 MR. ED WOJCZYNSKI: Okay. I've talked
2 about the contracts. Resource -- there -- there will
3 be impacts on usage of the resource by the local Cree,
4 particularly for Tataskweyak, but also the others.
5 So we have -- we're -- we've moved away
6 as a company from -- like what there -- it was very
7 common. There's a lot of cash compensation. What
8 we've moved to the degree at all possible is, first of
9 all, preventing impacts, like reducing flooding,
10 reducing flow regime; secondly mitigating; and thirdly
11 offsetting; and lastly, compensation -- financial
12 compensation.
13 By offset we're talking about if there
14 are some people who trap in the area where there's
15 going to be some flooding or who might have fished in
16 that area, we provide alternate opportunities, in
17 effect, subsidized opportunities so they can, say, go
18 to another lake and do their fishing there, or hunting
19 moose, or whatever, rather than in the area that --
20 that is affected by Keeyask.
21 An important point of view from the
22 Cree, and the Cree have expressed that themself (sic),
23 that one of the problems they've had previously with
24 projects is that things happen to them and they have no
25 influence, no control, over the things in their area.

1 Very much what we have moved to with Keeyask is that
2 they have direct involvement in the governance and in -
3 - in the design and -- and all the elements of the
4 project, and they're -- there's -- they're co-owners in
5 the project, so they -- they have -- there is a
6 different sense than having it imposed upon them. That
7 -- that's not to say everybody shares that, but -- but
8 the -- but definitely that's a major difference from
9 other projects.
10 There will be still some negative
11 effects and some people not supportive. I'm afraid we
12 -- that hasn't been eliminated.
13
14 (MOVED TO SLIDE 15)
15
16 MR. ED WOJCZYNSKI: Our objective is
17 that the project be a net benefit to the people and
18 accept it as being that, but you're not going to have
19 everybody agree with that.
20 Non-KCN people, I mentioned that they're
21 going to also benefit from employment and business
22 opportunities. You take as an example, at Wuskwatim at
23 large number of the Aboriginal employees of -- of the
24 project are not from Wuskwatim, or they're not even --
25 they're -- they're included from Cross Lake and/or PCN

1 and Norway House, or others. So this isn't just the
2 partner communities who get benefits.
3 MS. MARILYN KAPITANY: What is CBN?
4 MR. ED WOJCZYNSKI: Oh, I'm sorry.
5 MS. MARILYN KAPITANY: CBN?
6 MR. ED WOJCZYNSKI: Oh. It's the
7 northern area from the Cree the -- the four (4) -- the
8 partner communities. We shouldn't use lingo like that.
9 Yeah. It's the -- it's -- it's the --
10 the area in the north close to the projects. I can't
11 remember what it exactly stands for.
12 Ryan, do you remember?
13 MR. RYAN KUSTRA:
14 Churchill/Burntwood/Nelson.
15 MR. ED WOJCZYNSKI: Pardon?
16 MR. RYAN KUSTRA:
17 Churchill/Burntwood/Nelson.
18 MR. ED WOJCZYNSKI: Churchrill --
19 Churchill/Burntwood/Nelson. Yes. So, for instance,
20 Cross Lake and Norway House.
21
22 (MOVED TO SLIDE 16)
23
24 MR. ED WOJCZYNSKI: Again, Aboriginal
25 re -- Aboriginal residents who are not KCN members --

1 "KCN" being the four (4) Cree Nations -- we've had
2 extensive consultation outside from the -- the partner
3 communities. We're -- we're not -- based on the
4 information we have, we're not aware of anything
5 specific that will be particularly problematic with the
6 MMF. We have -- although we haven't reached full
7 resolution of the issues -- I'll just finish the MMF
8 one -- but we do have an agreement with them for a land
9 use and knowledge study which would provide additional
10 information on the Metis in the area.
11 Byron...?
12 MR. BYRON WILLIAMS: Yeah. And I
13 should have asked this question sooner. Just in terms
14 of with the -- the -- the partner First Nations,
15 certainly with Wuskwatim, we -- we saw last winter that
16 there was a risk for the -- the Nisichawayasihk Cree
17 Nation being on the hook, at least in part, for -- for
18 losses. And if there are losses under this -- in the -
19 - some of the years related to Keeyask, what risk is
20 there for the First Nations if there's -- things don't
21 go quite as projected?
22 MR. ED WOJCZYNSKI: A few things.
23 First of all, including in Wuskwatim, we don't have a
24 typical commercial deal. In both Keeyask and
25 Wuskwatim, they have a very favourable set of financing

1 arrangements and a lot of downside protection that no
2 normal commercial investor would have had an
3 opportunity. So I don't actually refer to the
4 arrangements as a commercial partnership; it's a quasi-
5 commercial, a much better deal than -- and deliberately
6 so.
7 So -- and in Keeyask, one (1) of the
8 things is we finalized the Keeyask commercial
9 arrangement after we finalized the Wuskwatim one, and
10 we actually -- we -- we continually learn lessons from
11 the pre -- what we've been doing. And in Keeyask we
12 have a second alternative for the partners, which is
13 like a preferred option which has less downside risk.
14 It's also designed so that even when the
15 project is losing money in the first years, which
16 typically does happen in a -- in a hydro project,
17 you've got -- frequently happens -- you've got over
18 time very typical, normal -- expect with a hydro
19 project you have the most difficulty meeting your
20 financial requirements in the first few years, and then
21 over time it becomes more and more profitable.
22 Even in a -- in a period of time when
23 the -- the cour -- the partnership is not making a
24 profit, the arrangements in the Keeyask deal there's
25 still a dividend paid out, but not a full dividend.

1 And let's just say that Wuskwatim isn't the topic here,
2 and my lawyers are going to kick me if they could, but
3 we are working with the NCN to rearrange things, so
4 they're -- they're not exposed to the kind of loss that
5 has -- that was not anticipated at an earlier time.
6
7 (MOVED TO SLIDE 17)
8
9 MR. ED WOJCZYNSKI: Residual -- oh,
10 sorry.
11 MR. REGIS GOSSELIN: In respect of the
12 Metis community, you mentioned the land use study and
13 so on, that would be the first step towards future
14 arrangements with addressing the Metis needs, I guess.
15 Could you -- could you tell me what
16 those next steps would normally be after you've done
17 the study?
18 MR. ED WOJCZYNSKI: Okay. I think -- I
19 -- I'm not going to be able to go into much detail
20 here, because I'm -- I used to be in charge of that
21 file, but actually two (2) years ago when the NFAT was
22 getting rolling and we realized how it -- that I was
23 going to have to dedicate most of my time to it, I left
24 that file, so I'm not as familiar with it as I used to
25 be. But I do know that first of all, with the Metis,

1 even though we had not reached agreement early with
2 them on the studies, we had used extensive information
3 that's already available on Metis land use and such.
4 So it's not that we're going into this
5 in a vacuum. I would expect that when we do that study
6 if there are surprises that -- that are different than
7 from what had been available from the existing
8 information, then we would work to reach a mutual
9 agreement with the Metis. But that's about as far as I
10 can go.
11 Ryan, do you have a better sense of that
12 than I do?
13 MR. RYAN KUSTRA: Hi, Ed. The -- yeah,
14 I wouldn't want to pre-judge what the results of the
15 MMS study will be. And so it would be getting those
16 results and -- and sitting down with the MMF and -- and
17 having a -- an understanding as to what those results
18 were.
19 As Ed said, the -- for the environmental
20 impact process, we were required to produce information
21 based on existing literature and -- and so that was
22 done. And the results of that were as -- as Ed had
23 said. But, again, I don't want to pre-judge what the
24 results of the MMF study would be and we'll have that
25 discussion when -- when those results come in.

1 MR. ED WOJCZYNSKI: And maybe a last
2 comment, just -- wasn't just existing information, but
3 we did multiple rounds of what's called PIP, Public
4 Involvement Program, with all the local communities and
5 a lot of Metis that to -- the local Metis people would
6 have been part and parcel of those. MMF per se may not
7 have been involved as much, but certainly local Metis
8 people were and were expressing their views.
9 But the degree of that, I -- I -- you
10 know, we're -- we're beyond what I can comment on and
11 it would have to be part of either the submission, or
12 more information later on in the process. I think I've
13 probably gone as far on this topic as I -- as I
14 legitimately can.
15 But it is a real issue and we're quite
16 aware of it. And let me just say we tried for years to
17 move faster on that file.
18
19 (BACK TO SLIDE 17)
20
21 MR. ED WOJCZYNSKI: For socioeconomic
22 impacts on people, community health, undesirable
23 interactions between workers and local residents, we
24 had planned on a -- on a number of initiatives des --
25 designed locally with the Cree Nations, but also with

1 others including the officials and -- and community
2 members in -- in the various communities. We mentioned
3 here, the Regional Health Authority, RCMP, and others.
4 Even since we've prepared initially the EIS, we've --
5 we've extended that somewhat further. That's being
6 discussed in the Keeyask process, the CEC process.
7 Unfortunately, even though there'll be
8 all kinds of programs and policing and cultural
9 awareness programs and -- and efforts to not -- to
10 encourage workers to stay in the construction camp
11 rather than come into Fox Lake or Gillam or wherever,
12 to try and provide as many opportunities to -- to
13 incent them to stay there. We -- it's inevitable when
14 you have construction, lar -- large construction
15 forces, there will be some negative and unfortunate
16 interactions due to whatever, drunkenness or whatever.
17 We can't guarantee that none of those will happen.
18 But we're also going -- we're doing as
19 much as we can, and the -- and the -- working with the
20 Cree communities and the others, and also to put in
21 programs, like counselling programs, recognizing there
22 will be other kinds of effects, so counselling programs
23 for workers and others tied into the project, so...
24 But there will be some residual adverse affect in that
25 area. We -- we don't think it's avoidable.

1

2

3 (MOVED TO SLIDE 18)

4

5 MR. ED WOJCZYNSKI: Worker interaction
6 is just what I talked about. I should have waited for
7 this overhead. Something that is a positive thing for
8 -- is -- is doing things like providing a shuttle. I
9 mentioned encouraging people to stay in the camp, camp
10 rules about drinking, cultural training for every
11 worker.
12 We learn -- we -- we undertook a lot of
13 these measures at Wuskwatim for -- for the project
14 there. We have learnt that there are things we could
15 do better. Even while we were doing Wuskwatim, we
16 adapted, we learnt. We're -- we've learnt from that
17 and done mo -- doing more to Keeyask. And presumably,
18 at Conawapa we'll do even more, and including certainly
19 working with the local on-site providers and regional
20 providers. And they've learnt, as well.
21

22 (MOVED TO SLIDE 19)

23

24 MR. ED WOJCZYNSKI: Keeyask
25 infrastructure project just very briefly. The Keeyask

1 infrastructure project is already underway. And I'll
2 show you a schedule on that right away. It boils down
3 to an access road from the existing highway to the site
4 and building the first stage of a camp. I don't think
5 we need to go through the details of it here; you have
6 it there.
7
8 (MOVED TO SLIDE 20)
9
10 MR. ED WOJCZYNSKI: This is the
11 schedule for it. Work started in 2012. You can see
12 the various elements and some of the costs. And the
13 idea is this project is separate from Keeyask project,
14 in a sense, has been before it. It was licensed and
15 approved separately. And it will be scheduled to be
16 complete by next June, when a decision is made one (1)
17 way or the other whether to start construction.
18 Can you actually advance this over there
19 more reliably than I can?
20
21 (MOVED TO SLIDE 21)
22
23 MR. ED WOJCZYNSKI: Okay, why are we
24 doing -- why did we do the Keeyask infrastructure. Why
25 didn't we wait to have Keeyask GS envi -- approved

1 through the environmental process and through the NFAT
2 process? It was a lessons learned from Wuskwatim
3 because that is what we did at Wuskwatim.
4 And we had a whole host of problems by
5 doing it that way. If we -- if we -- we design
6 typically in a project a certain amount of time to do
7 the infrastructure, the road, and the camp. You're
8 talking about many kilometres, tens of kilometres of
9 road through a territory where there is no road,
10 building a small city or a small town.
11 And an experienced, normal contractor
12 can do things in -- in fairly accelerated, compressed
13 schedules. Wan -- one (1) of the benefits the First
14 Nations were looking for and that we were looking to
15 provide is the employment benefits, the business
16 opportunity benefits, the capacity building. And so
17 the infrastructure project was very much one (1) of the
18 things that we -- we could allocate to them. We're not
19 going to be able to allocate building a dam or the
20 power house to a First Nation joint venture that
21 doesn't have any experience at it, but building roads
22 is sort of in the realm.
23 Unfortunately, at Wuskwatim there were a
24 lot of problems, delays. Cost overruns created
25 problems for the project. And the First Nation didn't

1 benefit as much as they could have because they just
2 couldn't work with that schedule.
3 So we took the infrastructure for
4 Keeyask, advanced it mainly to get benefits for the
5 Cree in a number of areas, but also to benefit the
6 project by reducing the risks from having that part of
7 the project on the -- on the critical path, and also
8 some shortening of the front end of the schedule.
9
10 (MOVED TO SLIDE 22)
11
12 MR. ED WOJCZYNSKI: So I'm being told
13 I'm way behind, and so I think I don't need to go
14 through that in more detail unless someone asks me.
15
16 (MOVED TO SLIDE 23)
17
18 MR. ED WOJCZYNSKI: An important
19 question: Doesn't this mean that the project is a
20 given? That you're -- and from an environmental point
21 of view, costs are -- will be incurred. All the --
22 some of the equipment, if -- if Keeyask didn't proceed,
23 some of those costs would be salvaged. You could re --
24 still use the trailers and things like that.
25 The road would be available for a long

1 time if Keeyask is delayed. But if for some reason it
2 was decided that Keeyask will -- will never be
3 developed in the foreseeable future, then we are
4 committed that we would go in and decommission the road
5 and remediate the disturbed sites.
6 Yes...?
7 MR. ROGER CATHCART: Just a very quick
8 question. How much have you spent to date on the
9 project, and what would the remediation costs be?
10 MR. ED WOJCZYNSKI: Well, we have to
11 back up to -- I -- I actually don't have that at the
12 top of my head. If you take a look at the schedule --
13 excuse me.
14
15 (MOVED BACK TO SLIDE 20)
16
17 MR. ED WOJCZYNSKI: The access road is
18 largely complete. Looking back -- or the bridge is
19 complete. The start up camp is more or less complete.
20 So there you're talking about 36 -- 50 million. The
21 main camp we have started work on that, and we've made
22 commitments to things like the trailers. So I can't
23 tell you exactly.
24 But, I don't know, Dave or Ralph, can
25 you -- can you give an off-the-cuff indication of how

1 much is spent and committed?
2 MR. DAVE BOWEN: In terms of -- in
3 terms of spent to date for the project, it's a little
4 less than $700 million.
5 MR. ED WOJCZYNSKI: But on the -- on
6 the infrastructure.
7 MR. DAVE BOWEN: On -- on the --
8 MR. ED WOJCZYNSKI: Are you asking
9 about the infrastructure or on the whole project?
10 Sorry. I was -- I was answering for the --
11 MR. ROGER CATHCART: I was trying to
12 reconcile between numbers that I've seen previously in
13 filings with much smaller numbers, which are on this
14 page.
15 MR. ED WOJCZYNSKI: These would be base
16 dollars for the infrastructure. But we're spending
17 dollars in other parts of the project, like the
18 engineering and whatnot. Do you want us to give more
19 information right now, or is it okay?
20 MR. ROGER CATHCART: No.
21 MR. ED WOJCZYNSKI: Okay. Okay. So
22 let's advance a couple here. Oh, sorry.
23 MR. REGIS GOSSELIN: In terms of those
24 specific projects, are they on time and on budget?
25 MR. ED WOJCZYNSKI: Ralph...? Dave...?

1 You're talking about the infrastructure project? Yeah.
2 On time, on budget, can you comment?
3 MR. DAVE BOWEN: Yes.
4 MR. ED WOJCZYNSKI: That's -- that's
5 the answer I like. Another question?
6 MR. ROGER CATHCART: Just on the
7 remediation costs.
8 MR. ED WOJCZYNSKI: Yeah.
9 MR. ROGER CATHCART: Maybe that --
10 that's going to be covered later?
11 MR. ED WOJCZYNSKI: I don't think --
12 not -- not in my presentation. I doubt that Dave's
13 going to cover it. Dave, you're not going to have
14 available remediation -- and to -- if we have to
15 remediate, what they'd be?
16 I don't -- I don't -- we haven't done a
17 specific study on that. We have a general idea, but I
18 -- we don't have a specific number we can share with
19 you. We have some idea of what we have to do but --
20 no.
21 And I don't -- we haven't specifically
22 included it in -- where we have a non-Keeyask plan,
23 like the all-gas plan, we haven't specifically included
24 a number for decommissioning in -- in that, at least
25 not that I'm aware of.

1 But when we do the sunk cost date, it's
2 somewhat a judgment -- like if we -- if Keeyask was not
3 going to get approved, we'd probably ramp down some of
4 our expenditures. On the other hand, we have some
5 expenditures that aren't in the cash flow. So it --
6 it's an approximation with the sunk costs.
7
8 (MOVED TO SLIDE 24)
9
10 MR. ED WOJCZYNSKI: Oops, I'm jumping
11 ahead when I shouldn't have, but, sorry. The
12 partnership we've talked about a bit already. I don't
13 know that I need to go through this. The Cree would
14 own up to -- up to 25 percent. I think I've talked
15 about that enough.
16
17 (MOVED TO SLIDE 25)
18
19 MR. ED WOJCZYNSKI: We talked a little
20 bit about the -- receiving the distributions. They
21 have the two (2) modes, the preferred and the common
22 mode. And I -- that's talked about in the -- in the
23 last bullet down there. Less return ultimately for --
24 on the upside, but lower risk.
25

1 (MOVED TO SLIDE 26)

2

3 MR. ED WOJCZYNSKI: And the regulatory
4 schedule for Keeyask. We started the work in 1990s on
5 the environmental studies and consultations. The
6 engineering had been happening before that. We brought
7 in the other three (3) First Nations later. And we
8 just talked about the infrastructure project.

9

10 (MOVED TO SLIDE 27)

11

12 MR. ED WOJCZYNSKI: The EIS was -- we
13 did the application for Keeyask provincial, federal, in
14 '11. Filed the EIS im -- impact statement last year.
15 We just filed on Monday and Fri -- Friday last week and
16 Monday this week the last of the Round One
17 Interrogatories in the process. Round Two will be
18 coming. There was over a thousand pages of
19 interrogatory response. Hearings for later on this
20 year. Yes.
21 Byron's involved in that so, maybe he
22 can tell me if I missed something.
23 MR. BYRON WILLIAMS: I -- I think it
24 was only one thousand three hundred and forty-nine
25 (1,349) pages, so...

1 The -- no, I just wanted to ask -- and
2 it may be premature, but the -- obviously the Clean
3 Environment Commission has recommended a -- a regional
4 cumulative effects assessment relating to the
5 infrastructure on the Nelson River.
6 Any sense of how that -- if -- if the
7 government accepts that recommendation, how that would
8 affect the schedule?
9 MR. ED WOJCZYNSKI: I -- I'm not
10 directly involved on that issue, but what I'm aware of
11 is that the government and Hydro have not resolved, and
12 we don't know yet what the provinces really intend to
13 do. Although I imagine there -- there's been some
14 preliminary discussions. But I -- I can't say anything
15 more to that.
16 Maybe what I can say though is that we
17 are certainly aware of the cumulative effects
18 assessment done for Bipole 3 was an area of concern for
19 CAC and others like the Intervenors. And from a
20 lessons-learned point of view for Keeyask we -- we went
21 to a -- a greater effort and -- and did more work and
22 modified some of what we were doing.
23 And even since the CAC has written that
24 Bipole 3 recommendation, we have provided, not new
25 evidence, but a -- a significant new explanation of the

1 cumulative effects to address -- in this filing over
2 the -- over the last week, to address some of the
3 concerns CAC had about the cumulative effects
4 assessment and the understandability and the flow
5 through of it.
6 So from our -- our point of view, we
7 think that the project licensing process with CAC
8 should proceed and expect it will, but don't know for
9 sure. And there will be some sort of arrangements made
10 presumably on cumulative effects, but I can't say what
11 they would be.
12 MS. NICOLE FITKOWSKI: Ed, Dave Lamont
13 has a question.
14 MR. ED WOJCZYNSKI: Oh, sorry. Yeah?
15 MR. DAVID LAMONT (VIA CHAT): Should
16 the other partners acquire part of the project, will
17 that affect its dependable out...
18 MS. NICOLE FITKOWSKI: I'm guessing
19 it's output; he put "putput".
20 MR. DAVID LAMONT (VIA CHAT):
21 ...Hydro's planning perspective?
22 MR. ED WOJCZYNSKI: Sorry, could you
23 repeat the question?
24 MR. DAVID LAMONT (VIA CHAT): Should
25 the other partners acquire part of the project, will

1 that affect the dependable output from Manitoba Hydro's
2 planning perspective?
3 MR. ED WOJCZYNSKI: Should other
4 partners -- I -- I -- I'm sorry, I don't understand the
5 question. Should other partners acquire...
6 MS. NICOLE FITKOWSKI: He said the
7 Cree.
8 MR. ED WOJCZYNSKI: Should they acquire
9 -- well --
10 MR. DAVID LAMONT (VIA CHAT): Should
11 the other partners --
12 MR. ED WOJCZYNSKI: Yes, acquire --
13 MR. DAVID LAMONT (VIA CHAT): -- Cree,
14 acquire part of the project, will that affect its
15 dependable output from --
16 MR. ED WOJCZYNSKI: No. No.
17 MR. DAVID LAMONT (VIA CHAT): --
18 Hydro's planning --
19 MR. ERIC DENHOLM: As a -- as a matter
20 of fact, we are expecting the Cree will go maybe not to
21 25 percent, but at least to 17 or 17 1/2 percent. And
22 -- and whether they go to seventeen and a half (17
23 1/2), twenty-five (25), or do nothing, or go preferred
24 option, should not in any way affect the dependable
25 energy output in the -- of the project.

1 There would still -- even if they did
2 not go to the higher level of involvement, they would
3 stay involved in the governance of the project,. But
4 that doesn't affect the day-to-day operation or, under
5 the JKDA, the -- the day-to-day operation, the peak
6 capacity, the operating regime. They're all spelled
7 out in the agreement, and that won't -- wouldn't be
8 affected.
9 I -- I hope I've answered the question.
10
11 (MOVED TO SLIDE 28)
12
13 MR. ED WOJCZYNSKI: Going back to
14 schedule, this just portrays that schedule. And
15 without going into too much detail, assuming that
16 construction start happens in June -- pardon me, July -
17 - June/July of '14, the -- we would start right away
18 the coffer dam. That's the critical component, and
19 it's critical that that start that summer, because you
20 have to have the coffer dam built up to a certain level
21 so that if you've got high water lev -- levels, high
22 ice levels that winter that you don't overtop the
23 coffer dam and endanger site, or even have a failure of
24 the coffer dam and affect the people working there.
25 So we have to start that coffer dam that

1 summer, and that'll be the first major activity. And -
2 - and then the first unit would come in, in 2019.
3
4 (MOVED TO SLIDE 29)
5
6 MR. ED WOJCZYNSKI: Conawapa, that's
7 the picture of what it would look at from the top. The
8 -- so you would have the water flowing down. Hang on.
9 Well, now I'm mixed up. No, it's going up. Sorry.
10 The water flow is going up. Hm? Now I'm -- now I'm
11 confused. Yeah. Okay. There's -- there's the --
12 okay, it's going down, yeah. You can tell better this
13 one, right?
14
15 (MOVED TO SLIDE 30)
16
17 MR. ED WOJCZYNSKI: Again we have --
18 it's a different layout than Keeyask; it's all in the
19 continuous connection: powerhouse, spillway.
20
21 (MOVED TO SLIDE 31)
22
23 MR. ED WOJCZYNSKI: And this is -- you
24 get a little bit of a picture of what the turbines look
25 like. You can see they're quite big; there's a lot of

1 room between the blades for the fish to go.

2

3 (MOVED TO SLIDE 32)

4

5 MR. ED WOJCZYNSKI: This shows the

6 infrastructure, the -- for the project. And I'm

7 speeding up because I'm going to run out of time.

8

9 (MOVED TO SLIDE 33)

10

11 MR. ED WOJCZYNSKI: 1,485 megawatts I

12 mentioned. $10 billion in the IFF budget, but that is

13 a number that's greater than what we expect will be the

14 most likely cost, but it could -- could reach this. Or

15 there's even a chance it would be exceeded, but all

16 those -- those -- the range of costs will be addressed.

17

18 Maybe it's worth mentioning, the

19 construction access road is already built. We built it

20 back thirty (30) years ago or something when Conawapa

21 was committed back in 1990 and then de-committed.

22 The construction power for Conawapa will

23 have been built for Bipole 3; we'll be using it for --

24 for Conawapa. And the camp built for Bipole 3 will be

25 used as a starter camp for Conawapa.

(MOVED TO SLIDE 34)

MR. ED WOJCZYNSKI: This is showing the flooding at Keeyask -- I mean, at Conawapa. You can see it's pretty minimal here; a very small amount. Less than Keeyask, I should add. And -- and very low for the amount of output.

(MOVED TO SLIDE 35)

MR. ED WOJCZYNSKI: Outlet transmission from Conawapa to the converter station relatively short and relatively inexpensive.

(MOVED TO SLIDE 36)

MR. ED WOJCZYNSKI: Effects. You're going to see a lot of similarity to Keeyask but -- but less effects, both certainly from a biophysical point of view where certain issues like lake sturgeon will also be an issue there. And we're dealing with lake sturgeon like we are caribou in a broad regional area, not just at one (1) little locale.

Yes...?

DR. PETER MILLER: On Keeyask, you said

1 there was just 1 metre variation; I -- I don't see the
2 comparable figure here for Conawapa. Conawapa is in a
3 narrower canyon and offers more opportunity for
4 controlling the power output. Are you going to
5 exploit that capacity?
6 MR. ED WOJCZYNSKI: We certainly are.
7 And this comes back to your question earlier about
8 cycling the projects to provide, amongst other things,
9 backstopping for wind or backing up wind. One (1) of
10 the nice things about Conawapa is that it's a project
11 that's downstream of the three (3) of the existing
12 projects.
13 And so when we want to cycle Conawapa,
14 we'll be cycling the other projects as well. So as we
15 increase the output out of Conawapa to get more
16 capacity in the peak time in the day, we're also going
17 to be increasing the output of the projects upstream.
18 So actually the forebay level won't vary as much as you
19 would think. Downstream there will be some
20 fluctuation, though. And that is assessed in the
21 environmental impact statement.
22 DR. PETER MILLER: Okay. You've got
23 the firming when. What about the -- the -- the winter
24 peak load? Is there any capacity -- additional
25 capacity you can create to address the coldest night of

1 the year?

2 MR. ED WOJCZYNSKI: Yes. When we

3 optimize the projects, including Conawapa, we take into

4 account the fact that we need peak capacity to meet the

5 Manitoba load, yes. That -- that is part of the

6 optimization process.

7

8 (MOVED TO SLIDE 37)

9

10 MR. ED WOJCZYNSKI: Worker interaction,

11 I -- I mentioned -- focussed on that a bit for Keeyask.

12 It'll be similar to Keeyask, but we will undertake --

13 there will be even more workers at Conawapa, and we

14 will be dealing with that as well.

15

16 (MOVED TO SLIDE 38)

17

18 MR. ED WOJCZYNSKI: Firs Nation

19 participation. We're not as advanced on Conawapa in

20 arranging something with the local First Nations as we

21 are Keeyask. Shamattawa will be a part of that as

22 well. And we are in the -- we have process agreements

23 where we're underta -- working with them on the

24 environmental studies for Keeyask -- I mean for

25 Conawapa. And also they're privy to the planning

1 design engineering. And we are in discussions with
2 them on the participation agreements, including the
3 things like income sharing, business opportunities,
4 employment, all of those kind of things.
5
6 (MOVED TO SLIDE 39)
7
8 MR. ED WOJCZYNSKI: And it's -- what
9 we're thinking of is not just the local First Nations
10 before they're involved in Keeyask, plus Shamattawa,
11 but also is to have a form of income sharing with other
12 communities in the broader region. It would be a
13 separate arrangement, but also provide a form of income
14 sharing. But hasn't been finalized with -- with -- how
15 that will be -- happen or what the details of it are.
16 Yes?
17 MR. BYRON WILLIAMS: It's Byron. Just
18 two (2) final questions. One (1) is: In terms of
19 what's been spent to date on Conawapa, if you can give
20 some sort of indication. And then, well, may --
21 MR. ED WOJCZYNSKI: Spent today on
22 Conawapa. Does anybody have that information right
23 now? Sorry? Around 300 million 'til -- 'til June of
24 '14.
25 MR. BYRON WILLIAMS: And --

1 MR. ED WOJCZYNSKI: But -- so not just
2 to date, but to the --
3 MR. BYRON WILLIAMS: Yeah.
4 MR. ED WOJCZYNSKI: -- completion of
5 this process.
6 MR. BYRON WILLIAMS: And just in terms
7 of -- at least at first glance, Conawapa looks more
8 environmentally benign than -- than Keeyask.
9 MR. ED WOJCZYNSKI: Yeah, I nodded,
10 yes.
11 MR. BYRON WILLIAMS: Is -- is the
12 reason Keeyask is proceeding first the -- you're more
13 advanced with the First Nations, it's easier to get on
14 -- online quicker? It's always a question that's
15 puzzled our client.
16 MR. ED WOJCZYNSKI: All of the above.
17 And also, at an earlier time, and that's this
18 afternoon's presentation, when we did studies on
19 Keeyask versus Conawapa ten (10) years, or whatever
20 ago, at that time, Keeyask looked somewhat more
21 favourable to Conawapa, partly just based on the raw
22 economics, and part of that is that it's a smaller
23 project.
24 But fundamentally, if you look where we
25 are today, Keeyask is much more advanced, both in terms

1 of its studies, and also has about a three (3) year
2 shorter construction schedule. So we can't -- you
3 know, 2026 is the earliest we can get Conawapa in
4 today, and -- whereas Keeyask can get it into '19.
5 So you -- we, right now, with the 2013
6 load forecast and the other assumptions, we need
7 something around 2023. So even without any new sales
8 of any kind, our -- our best information, we would need
9 something in 2023, and Conawapa would be three (3) or
10 four (4) years after that, so we'd have to do some
11 bridging, but we do assess that as a possibility.
12
13 (MOVED TO SLIDE 40)
14
15 MR. ED WOJCZYNSKI: That was the
16 schedule for
17
18 (MOVED TO SLIDE 41)
19
20 MR. ED WOJCZYNSKI: I'm nearly out of
21 time. Fundamentally, we're still -- we haven't filed
22 the IS. We do that in around a year, and I just talked
23 about the duration of the schedule. Another project
24 is: If we do both Keeyask and Conawapa, the amount of
25 megawatts, peak megawatts, that we would get is more

1 than Bipole 3 would be able to handle reliably meeting
2 all our criteria.
3 So when -- if we do both projects when
4 we're doing the last units of Conawapa, to be able to
5 get its output firm to do the kind of things that we
6 talked about earlier, meeting winter peak load, or
7 firming wind, or selling on the export market, all of
8 those things, we would need to have some additional
9 north/south transmission. Not Bipole 4.
10 We're talking about some AC enhancements
11 on our system going from the north down to the southern
12 system, you know Winnipeg and whatnot. It'd be 230 --
13 various 230 kV stations and lines on existing right-of-
14 ways or enhancement to existing stations or some new
15 lines.
16 The -- the design for that hasn't been
17 finalized. We have the -- the plan we have right now,
18 an in-service cost for around 2027 or so would be
19 around $500 million. And that is in our studies and
20 evaluations. If you only do Keeyask or only doing
21 Conawapa you don't need this.
22
23 (MOVED TO SLIDE 42)
24
25 MR. ED WOJCZYNSKI: Lastly is the US

1 interconnection. The processes for that have started.
2 I -- these two (2) red lines are the existing lines
3 right now, a 500 kV and 230 kV line, that are already
4 in place, have been for many years, and they've been
5 very important to maintaining the reliability in our
6 system, and also providing major economic returns.
7 They've been very beneficial to Manitoba.
8 What we're looking at is this new -- is
9 a new line. There's no specific right-of-way right
10 now, so just a big, fat line -- arrow on here. It
11 would go to this -- this Duluth arrow area which would
12 get us close to the interface into Wisconsin and deal
13 with some of the issues we talked about, about
14 congestion, the other day.
15 And we're -- right now the plan is for -
16 - for a 500 kV line, similar to the existing D602F
17 (phonetic) that's here. And the Cana -- here's the
18 border. The Canadian portion, Mani -- Winne --
19 Manitoba Hydro would be the developer of that and would
20 fund it entirely. And the in-service cost for that is
21 about 350 million.
22 Actually the -- the -- that's the number
23 we've publically used. In the -- in the NFAT
24 submission, the exact number is $331 million in the
25 financial projections, and that's based on a base cost

1 of two hundred and sixty-seven (267), I think.
2 In the -- the Manitoba -- the Manitoba
3 Hydro -- we are going to be sharing in the US portion
4 of the line. We have -- have a preliminary number here
5 that we had invest -- that we were doing as a capital
6 investment, but the -- we're -- we're still negotiating
7 that. The studies are still going on for the capital
8 cost. And there is a capital cost, but all -- that
9 we're investing in the front-end, but there's also
10 we're picking up other costs through the funding that
11 are -- are larger than that. The total costs of the --
12 of the line is something like $700 million, and we'll
13 be picking up something in the order of 40 percent of
14 that with -- in the NFAT submission. But that's all
15 under negotiation and this is just the front-end
16 portion of that.
17 So this is very much under nego -- Dave
18 Cormie was mentioning that yesterday -- or not
19 yesterday, Monday, that we're in the middle of
20 negotiating the -- the final parts of that. And so
21 that is -- is a work in progress, and we'll have
22 obviously more information later on on that.
23 And if the seven-fifty (750) line
24 doesn't happen for whatever reason, for instance if
25 it's decided not to go ahead with it, but go with the -

1 - with the 230 kV line which gives us 250 megawatts,
2 then the Canadian portion is -- is all we cover -- we
3 have nothing to do with the US portion -- and that will
4 be $95 million in service costs.
5 MS. NICOLE FITKOWSKI: Ed --
6 MR. ED WOJCZYNSKI: A question?
7 MS. NICOLE FITKOWSKI: -- Bill Harper
8 has a question.
9 MR. BILL HARPER (VIA CHAT): Do the
10 capital cost values quoted for transmission also
11 include a management reserve?
12 MR. ED WOJCZYNSKI: There are conti --
13 there are contingencies built into that, and we don't
14 have all the same issues we do with the transmission as
15 we do with the generation. We don't have the northern
16 con -- labour issues, for example. We don't have the
17 same intensity of workforce.
18 So -- but I can't speak specifically to
19 what's in the contingency. But it -- it is -- it is --
20 there is a different set of issues involved with the
21 transmission line.
22 And that's it? Yes?
23 MR. REGIS GOSSELIN: In the previous
24 slide there are a couple of lines that appear, one (1)
25 is --

1 MR. ED WOJCZYNSKI: Okay.
2 MR. REGIS GOSSELIN: -- called
3 "Manitoba MISO" and there's another 230 kilovolt line -
4 -
5 MR. ED WOJCZYNSKI: Yes.
6 MR. REGIS GOSSELIN: -- showing up to
7 the -- just south of Winnipeg and another one just west
8 of Winnipeg.
9 What are those?
10 MR. ED WOJCZYNSKI: Okay. Let me
11 explain this chart a bit better. This is -- the first
12 thing you asked about was Manitoba and MISO. This is
13 the US/Canadian border here. I know it's hard to see
14 but -- and if you remember what Dave Cormie was talking
15 about the other day, that while we are -- we have a
16 relationship with MISO -- and what is it, we're an
17 associate member, Dave? What -- what is the term again
18 we have, or -- or Joanne?
19 MR. DAVID CORMIE: Coordinating
20 members.
21 MR. ED WOJCZYNSKI: Coordinating
22 member, sorry.
23 But we are not strictly a full member of
24 MISO, so we're drawing the distinction here that this
25 is MISO area and this is Manitoba area. So that's what

1 that's related to.

2 Secondly, this is -- these are -- red

3 lines here are depicting the interconnections from the

4 Manitoba area to the MISO area. So this is a two

5 thirty (230) line here that was put in around twelve

6 (12) years ago, or something, in that order. This is a

7 much older line that was put in.

8 And then here we have a -- a 230 kV line

9 -- no, hang on, this is the -- this is the five hundred

10 (500) line, and then we have a two-thirty (230) line

11 here that's existing. So tho -- those are one (1), two

12 (2), three (3) two-thirty (230) lines depicted here,

13 and the five hundred (500) line, and then there's the

14 new five hundred (500) line.

15 Does that help?

16 MS. ANITA SOUTHALL: Hi, Anita

17 Southall. I'm just going back to one of the early

18 slides which was called "Keeyask Generation Outlet

19 Lines." There was a technical --

20 MR. ED WOJCZYNSKI: Can you back me --

21 can you back us up to that easily? Do you have the

22 number on the bottom? Does that help?

23 MS. ANITA SOUTHALL: There is no number

24 on mine.

25 MR. ED WOJCZYNSKI: Oh, okay.

1 MS. ANITA SOUTHALL: It's --
2 MR. ED WOJCZYNSKI: Keeyask Outlet --
3 yeah.
4 MS. ANITA SOUTHALL: Yeah. No --
5 MR. ED WOJCZYNSKI: Yeah.
6 MS. ANITA SOUTHALL: -- that's not it.
7 MR. ED WOJCZYNSKI: Yeah. Okay. so
8 while they're finding it, if --
9 MS. ANITA SOUTHALL: Right. The -- the
10 question is there's reference to a term called 'black
11 start' --
12 MR. ED WOJCZYNSKI: Ah.
13 MS. ANITA SOUTHALL: -- and 'powerhouse
14 black start.' Could you just --
15 MR. ED WOJCZYNSKI: Yeah.
16 MS. ANITA SOUTHALL: -- briefly explain
17 what that means?
18 MR. ED WOJCZYNSKI: Yeah. One (1) of
19 the risks in any electrical system in the world, and,
20 fortunately, very infrequently in Manitoba and Canada,
21 more frequently in some other parts of the world, is
22 you get blackouts, right? The whole system collapses.
23 In that case there's no electricity anywhere except
24 from batteries or from emergency generators.
25 And in the electrical system -- let's

1 talk about the Manitoba system now. Like any system,
2 to start the generators in the rest of the system and
3 start the AC/DC converters and -- you need power to run
4 them. You have batteries operating some of the
5 equipment as emergency, but not enough to start all the
6 equipment. So you need to have one (1) or more major
7 stations that can, in a blackout, start up on their own
8 with no help from anybody.
9 So Keeyask would be in the north one of
10 those stations. It would be one of those stations that
11 would be in the north. And what it is, if there's a
12 total blackout then we have the batteries there to
13 maintain certain vital functions, but then we have some
14 diesel generators which would start up with the
15 batteries. And then once they're up and running they
16 provide the power to the station to operate the wicket
17 gates and governors and all the other equipment.
18 And then -- and then we would slowly
19 bring up a couple of units at Keeyask. And then once
20 they're running then you slowly bring up the system
21 around you and slowly put transmission lines back in.
22 And it's a very complicated process. But you need a
23 couple of generators that can start from -- from a
24 blackout, and that's what we're referring to. And it's
25 a valuable function and it's obviously part of the cost

1 of the project.

2 Dave, did you want to add anything to

3 that?

4 MR. DAVID CORMIE: Yes. The -- the

5 biggest risk at -- at Keeyask in a blackout is you've

6 got all this water still coming down the river, you

7 need to open the spillway. So it's essentially that --

8 that backup supply, if the DC goes down or the

9 transmission lines goes down the water still needs to

10 be managed otherwise the damn will be over top. So in

11 an -- you -- in an emergency basis you have to be able

12 to open the gates.

13 MR. ED WOJCZYNSKI: Any other questions

14 before we take a break? Oh, sorry.

15 MR. REGIS GOSSELIN: The partnership

16 agreement with KCN, I wasn't clear, has that been

17 finalized?

18 MR. ED WOJCZYNSKI: Yeah.

19 MR. REGIS GOSSELIN: So I -- you know,

20 the evidence at the most recent electricity GRA was

21 that you were renegotiating with the -- in the

22 Wuskwatim --

23 MR. ED WOJCZYNSKI: Yeah.

24 MR. REGIS GOSSELIN: -- situation.

25 MR. ED WOJCZYNSKI: Yes.

1 MR. REGIS GOSSELIN: Now, the
2 experience with Wuskwatim, has that been reflected in
3 the agreement with KCN?
4 You know, looking at -- looking at the
5 evidence or at least some of the announcements that
6 were made relating to Keeyask, there was an agreement
7 that was announced in 2009, that agreement would not
8 have been negotiated with the experience of the
9 Wuskwatim project in mind, obviously.
10 So I guess the question is: Is there an
11 agreement with KCN that is signed, seaned -- signed,
12 sealed, and delivered on the Keeyask project?
13 MR. ED WOJCZYNSKI: So, three (3)
14 answers to that. First of all, yes, it's a signed,
15 sealed, and delivered agreement. It's operational on -
16 - on both sides and it's proceeding.
17 Secondly, there was -- there were
18 learnings from the Wuskwatim negotiations to the
19 Keeyask negotiations on this issue. And we did build
20 into Keeyask, in negotiation with the four (4) KCN,
21 additional downside protections compared to the
22 Wuskwatim arrangement, even though we had not yet had
23 the recent experience. We already were beginning to
24 see things like capital cost increases happening, not
25 just on Wuskwatim, but around every infrastructure

1 project in North America. So we already built into
2 Keeyask some protections that were not in the Wuskwatim
3 deal.
4 Thirdly, the third answer, is the most
5 recent experience about how -- how Wuskwatim financial
6 returns are -- are worse than we had anticipated being
7 in the realm of a reasonable possibility. We -- that -
8 - that learning for us, which has translated into
9 higher capital cost estimates, by the way, for Keeyask
10 and Conawapa, which is why they went up, but that --
11 that particular learning has not translated into the
12 JKDA in terms of us modifying it now.
13 And -- but because we have the
14 additional protections we've built in, we're hoping we
15 won't have to do any modification on it. There's
16 certainly been no move to do any modification, but I
17 wouldn't say that that is something that could never
18 happen in the future. Any other questions before we
19 wrap up for a break?
20
21 (BRIEF PAUSE)
22
23 MR. ED WOJCZYNSKI: Okay. I don't have
24 the schedule. It's 10:33. Yeah, I'm amazed. So we
25 said we'd start at 10:45. Why don't we say ten (10)

1 'til 11:00. We'll get started with Dave Bowen on the
2 capital cost estimates for the two (2) projects. Okay.
3 Thank you.
4
5 --- Upon recessing at 10:33 a.m.
6 --- Upon resuming at 10:50 a.m.
7
8 MR. ED WOJCZYNSKI: So maybe we can get
9 started. It's ten (10) to. I believe there's a couple
10 of people out of the room, but maybe someone could go
11 outside and just let them know. Dawn or somebody,
12 could just let anybody out there know we're starting.
13 So we're going to move on to the
14 presentation on the capital cost estimating process.
15 Dave Bowen is the manager responsible for that, working
16 with others, including Ralph Wittebolle, our division
17 manager of construction.
18 But before Dave gets started, just a
19 quick comment, that I had a few questions on the
20 sidelines afterwards which were the -- various people
21 called them newbie questions. And I encourage the
22 people who have newbie questions to ask and don't be
23 shy about asking, because there are other people who
24 have the same question in mind, and so I think this is
25 the whole purpose of today. So no question is too

1 newbie to ask.

2 And let's proceed. Thank you.

3

4 PRESENTATION RE: CAPITAL COST ESTIMATES FOR KEEYASK AND

5 CONAWAPA GS:

6 MR. DAVE BOWEN: Thanks, Ed. Good

7 morning. My name is Dave Bowen. I manage the Project

8 Service Department with the New Generation

9 Construction. And today it's my privilege to come --

10 to -- to come to you today and talk about the capital

11 estimates for the Keeyask and Conawapa generating

12 stations.

13 Before we get going, just a

14 clarification of a question asked during the last

15 presentation on whether or not the KIP was on budget

16 and on schedule. So in terms of budget, yes, we have

17 used some contingency, but, generally speaking, we're

18 within the project budget.

19 And in terms of schedule, we have --

20 with the recent forest fires, they have caused us some

21 -- some grief with our schedule. But, generally

22 speaking, we're on track to be on track to proceed with

23 the next phase of work, which occurs next summer when

24 the general civil works contractor starts.

25

1 (MOVED TO SLIDE 2)

2

3 MR. DAVE BOWEN: The outline for this
4 morning, I'd like to cover four (4) topics. The -- the
5 main topic is really to -- to walk through the -- the
6 capital cost estimate process for -- that was used to
7 develop the -- the capital cost for the Keeyask and --
8 and Conawapa projects. I'll be explaining the terms
9 'base cost', a number of terminology we use, but to --
10 to really walk you through -- through the details of
11 that and give you a sense of -- of what we do.
12 The next -- next part is to look at the
13 -- the IFF CEF-12 budget numbers for the -- for the
14 Conawapa and Keeyask projects, talk a little bit of the
15 methodology we used to establish those last summer and
16 -- and the results.
17 And then finally, the last two (2)
18 topics is to -- to talk briefly about the application
19 of capital costs for Conawapa and Keeyask to the NFAT
20 analysis, and then also to -- to talk briefly on the
21 project execution and lessons learned from -- from our
22 -- from our past projects.

23

24 (BRIEF PAUSE)

25

1 MR. DAVE BOWEN: Okay, I've gone the
2 wrong way here. If you'd move back to slide 3. Yeah,
3 right here. Thank you.
4
5 (MOVED TO SLIDE 3)
6
7 MR. DAVE BOWEN: So in terms of our
8 estimate process it -- it involves two (2) basic steps.
9 The first step is the estimate development. This is
10 really the -- the kind of meat and potatoes of our
11 estimates.
12 We -- in -- in this -- in this part here
13 we -- the first step is to establish the -- the base
14 cost. The base cost consists of both the point
15 estimate and contingency and management reserve. We --
16 we then apply interest and escalation. We add money to
17 date with interest to get the in-service costs. And --
18 and really this -- again the majority of the work
19 occurs in -- in this part here.
20 Once -- once we've established the in-
21 service cost, the next thing we do is really take a
22 step back from our -- from our numbers for analysis and
23 we look at -- and we -- and we call this our -- our
24 budget scenario development.
25 This is where we look at applying

1 different management reserves to make sure that we've -
2 - we recognize and -- and know the risk and we've
3 properly allocated -- have reserves allocated and --
4 and -- and have -- the -- a number that we're
5 comfortable with to proceed with in terms of our -- our
6 capital costs.
7 I -- I should note that in -- in all
8 these -- in -- in the work here we follow the AACEI,
9 really industry practice for how we go about our
10 estimates, how we go about our contingency development.
11 And that's utilized by other utilities across Canada
12 and other major -- major companies throughout Canada,
13 as well.
14
15 (MOVED TO SLIDE 4)
16
17 MR. DAVE BOWEN: So the first step I'd
18 like to discuss is the -- again the -- the point
19 estimate.
20
21 (MOVED TO SLIDE 5)
22
23 MR. DAVE BOWEN: The point estimate.
24 It's the achievable project cost. It ignores the risk.
25 And it -- and it's an overnight cost. So it assumes

1 that basically the project is built overnight. It
2 ignores the impacts of interest and escalation.
3 So -- so when -- when we say 'risk
4 free', what does that mean? To provide an example, if
5 we look at the -- the construction of one of our -- one
6 of our earthen dams that requires clay.
7 So as Ed described in the -- in the past
8 slide that we do -- we do a whole pile of geotechnical
9 investigation over a number of years to determine,
10 number 1, where -- where these materials could come
11 from and what type of materials exists around the site.
12 So in the case for the -- the clay in
13 previous material, there'll be a -- there'll be a moist
14 -- a different -- different properties in the material,
15 but also there'll be a moisture content of that
16 material. So we'll -- we'll make assumptions based on
17 that, and those will go in our -- in our point
18 estimate.
19 In terms of risk as -- as to -- well, if
20 it's a really wet year and -- when we place that
21 material and we have to do a lot of drying of that clay
22 material to be able to properly compact it, those will
23 be items that'll be addressed in our contingency
24 analysis.
25 Other critical assumptions that we --

1 that we use is that we use a past exper -- past
2 learnings and experience from other projects. We have
3 the Limestone generation -- generating project.
4 Although that project was twenty (20) years ago,
5 there's similarities between size and scope to both
6 Keeyask and Conawapa.
7 We used Wuskwatim. So we just -- we
8 just completed Wuskwatim, so there's a number of cost
9 assumptions and -- and market data that we use from --
10 from Wuskwatim.
11 We also spend a lot of time working with
12 our colleagues in other utilities across the country to
13 make sure we're -- we're aware of the -- the different
14 market risks and -- and what's happening in the
15 marketplace for other projects across Canada.
16 And -- and the other part, finally, is
17 looking at the -- the upgrade projects that we
18 typically do for Manitoba Hydro to make sure that we
19 have the most current, up to date information for our
20 mechanical and hyd -- electrical work.
21 A question was asked about the
22 application of the -- specific asp -- application of
23 Limestone cost to -- to Keeyask and Conawapa.
24 Limestone costs were -- in-service cost were one (1)
25 point -- approximately $1.4 billion back in 1992. If

1 you escalate that forward, you have a little -- to
2 today's dollars, you have a little better than $3
3 billion.
4 And -- and I'll -- the results at the --
5 towards the end of the presentation will show that
6 that's -- that's much less than our costs that we have
7 to date. So what -- what we -- what we do know is that
8 those costs, the escalation doesn't pick up everything.
9 It -- it's just -- it's disjointed.
10 There's a number of new scope
11 requirements that we -- that are required to build a
12 generating station project that didn't exist twenty
13 (20) years ago. Different requirements for
14 stakeholders, environmental. And -- but -- but what we
15 do use from -- from Limestone is -- is that we have
16 scheduled data, we have production data, and we use --
17 do use those rates to -- to make assumptions within our
18 base estimates.
19 The -- the final thing about the point
20 estimate is that it's comprised of two (2) parts: the
21 direct costs and indirect costs. In the next slides
22 we'll -- we'll get into details.
23
24 (MOVED TO SLIDE 6)
25

1 MR. DAVE BOWEN: So before -- before we
2 start the point estimate, the first critical step is to
3 understand what -- what the project is; so what are we
4 building, what's the scope. In the case of Keeyask, we
5 have a seven (7) unit plant, a 7 -- 695 megawatt plant.
6 There's a -- there's a huge amount of
7 effort to -- to spend in the project definition, and
8 this -- this effort occurs over a number of years.
9 We're -- we're just embarking on our detailed design.
10 And -- and for -- for both Keeyask and Conawapa, to a
11 large degree, we've -- we've defined the majority of
12 the scope.
13 With the scope definition comes a level
14 of project definition, design. Ultimately, we're
15 interested in quantities of materials, so we -- we know
16 how much concrete there is. We know how mu -- how the
17 dams and dikes, how -- how -- what the cross sections
18 look like, material quantities, et cetera. That -- so
19 that's the first step.
20 In terms of the direct cost, the direct
21 cost are items that are directly attributable to the --
22 to the construction of the -- of the asset that's
23 there. So it's really the generating station, the --
24 the final assets that you can see and touch.
25 The key influence is -- to the direct

1 costs are -- are the -- include the -- the methodology
2 sequencing, so how -- how are we going to -- how -- how
3 is a constructor going to go about building the
4 project.
5 We spend a significant amount of time to
6 develop a detailed, comprehensive schedule so that we
7 can basically plan all the work, plan all the different
8 interfaces between the different contracts we -- we
9 have and -- and to -- to gain a great understanding of
10 this.
11 We also look at what's happening within
12 the marketplace: interest escalation, what's the
13 competition, what -- what is happening. Labour,
14 material, and equipment, they form the basis of -- of a
15 first principle estimate that we'll get into the next
16 slide. And -- and then there's the production factors,
17 so productivity.
18 So in terms of techniques used is that
19 for the direct cost we use three (3) techniques; two
20 (2) of them really dominate. There's a first principle
21 technique, which is used for the -- really the general
22 civil works and -- and the majority of costs.
23 We also use quotations from different
24 suppliers, and that's really specific to contracts like
25 the turbine and generating contract or specific

1 equipment supply contracts, where you have a limited
2 number of -- of contractors in the marketplace that do
3 that specific work. And then to a very less extent and
4 -- and for not large costs is we'll use factoring
5 estimates.
6
7 (MOVED TO SLIDE 7)
8
9 MR. DAVE BOWEN: So what does a -- what
10 does a first principle estimate look like? What does
11 it involve? In this example here I'm going to just
12 walk through the powerhouse intake. Well, it'll be the
13 powerhouse concrete. What -- what we do here is that
14 we break up the -- the structure into discrete
15 elements.
16
17 (MOVED TO SLIDE 8)
18
19 MR. DAVE BOWEN: And so just to provide
20 kind of a picture of context, so this is -- this is a
21 picture of the power house, actually, the scroll case
22 here. And there -- there's three (3) main components
23 in the first principle estimate which include the
24 labour and equipment material.
25 And -- and here you could see the --

1 there -- there's a different formwork. So this is the
2 materials that are used. So there's the -- the wood
3 and steel formwork that are used. There's the -- the
4 reinforcing steel and all the different embedments that
5 will go into the -- into the pour, into the concrete.
6 And then -- and the for materials there's also things
7 like the cement prices, et cetera.
8 For the labour there is assumed crew
9 sizes. So -- so say, for example, we have -- a forming
10 crew is going to -- is going to put up this wood
11 formwork. Well, there'll be typical crew sizes for a
12 number of co -- carpenters to -- to foremen who -- who
13 do this work, so we'll make those assumptions. And
14 we'll also assume productivity rates in those
15 assumptions.
16 Finally, there's equipment, and -- and
17 so we look at equipment costs. So -- so for the
18 concrete works, there's things like -- here you could
19 see this blue. This is a concrete pump. There'll be a
20 batch plant, concrete batch plant, that actually puts
21 together the -- the concrete. So those costs will be
22 covered there. For -- for the earthworks, you have
23 equipment -- you'll have equipment costs for your
24 different loaders and -- and bulldozers and -- and --
25 so those -- there's a cost for basically the rental

1 costs, the fuel costs, so they'll be included in your -
2 - in your equipment costs.
3 So all these put together combine to
4 form a -- a unit rate for costs. So, for example, for
5 concrete you'll have a dollars per cubic metre of
6 concrete, but it'll be broken down to this level of
7 detail. This is -- this -- this technique, this is
8 used by all our -- all the contractors that we -- that
9 we work with. It's a -- really an industry standard,
10 and -- and it gives you -- it's really a nuts and
11 brotes -- nuts and bolts approach.
12
13 (MOVED TO SLIDE 9)
14
15 MR. DAVE BOWEN: The -- the next part
16 of the point estimate is the indirect costs. Indirect
17 costs are made up of items that are indirectly related
18 to the work, commonly known as the owner costs. So
19 these are...
20 MS. MARILYN KAPITANY: You said --
21 MR. DAVE BOWEN: Indirect.
22 MS. MARILYN KAPITANY: Yeah, but when
23 you said "commonly known as"...?
24 MR. DAVE BOWEN: Oh -- owner costs.
25 MS. MARILYN KAPITANY: Owner?

1 MR. DAVE BOWEN: Yeah, the question was
2 --
3 MS. MARILYN KAPITANY: Sorry. So I
4 just wanted to clarify what you said. You said
5 indirect costs and then owner costs --
6 MR. DAVE BOWEN: Yes.
7 MS. MARILYN KAPITANY: -- are the
8 other?
9 MR. DAVE BOWEN: Yeah, they're --
10 they're known in the industry by -- as both. Owner
11 costs is just another -- another example of what --
12 what others may call it.
13 These -- these costs here, they comprise
14 approximately a third of our point estimate. These
15 costs have grown in size over -- when we look at past
16 jobs over -- historically over the past -- past twenty
17 (20) odd years. Indirect costs are increasing for
18 these type of projects.
19 Listed in -- in the boxes here is that
20 they include things from the pre-con -- pre-
21 construction costs. So all the different planning and
22 licensing requirements for the project, the site
23 infrastructure. So these -- these projects are all
24 remote camp jobs, so basically we have to build a -- a
25 townsite. We have to build an access road in to -- to

1 get to the site so that we have accommodations for the
2 workers to build the -- build the generating station.
3 They also include, during construction,
4 to -- to basically manage this townsite we have
5 contracts. A security contract. We have a catering
6 contract to -- to feed the workers, the staff.
7 Emergency medical services contract, et cetera.
8 The other costs include both our
9 engineering and project management. So our engineering
10 costs in -- in both the office here in Winnipeg and at
11 -- at site, on the construction site.
12 Other fact -- other costs include
13 environmental mitigation, so different adverse effects
14 costs. If we have to make some habitat for -- if we
15 have to -- to produce habitat for adverse effects. And
16 then there's a -- a bit of a catchall here for general
17 expenses.
18 In terms of techniques to -- to produce
19 indirect costs, these -- these costs, a lot of them are
20 derived by in-house by Manitoba Hydro based on past job
21 experience. We do use indirect first principle
22 approach for some of these costs, quotations for
23 others, and -- and again, to a smaller extent, the
24 factored costs.
25 Sorry.

1 MR. ANTOINE HACAULT: Antoine Hacault.
2 During the last GRA there was some
3 discussion with respect to the new accounting standards
4 and what type of indirect costs are properly
5 attributable to a particular project.
6 Do you know how your estimates match or
7 don't match with the new accounting standards? Do they
8 -- have they changed at all?
9 MS. PATTI RAMAGE: Yeah, Patti Ramage
10 here.
11 I don't think Mr. Bowen is in a position
12 to provide that information. No.
13 MR. DAVE BOWEN: Yeah. Okay.
14
15 (MOVED TO SLIDE 10)
16
17 MR. DAVE BOWEN: I'm going to move on
18 to the next slide. So we -- we basically covered the
19 point estimate. Just the next step is to look at
20 really a -- a risk exercise where we considered both
21 contingency and management reserve. The next slides
22 here are going to focus on what we do for a contingency
23 development.
24
25 (MOVED TO SLIDE 11)

1 So first thing: What -- what is meant
2 by 'contingency'? Well, the point estimate is produced
3 based on a -- a given set of assumptions. We know that
4 project risk and uncertainties make it certain that --
5 that not all our assumptions will be correct. It's --
6 it's a line item in our estimate to basically address
7 these risks and it's one (1) step of a larger risk
8 management process.
9 We develop our -- our contingency with
10 an expectation that it -- it will be spent. And -- and
11 also in the development it's -- it's developed as a --
12 as a range. It's a probabilistic analysis, it's
13 developed as a range of cost.
14 Manitoba Hydro's corporate policy has
15 been to use the -- the P50 estimate to establish the
16 project budgets on new generation projects. Yes?
17 MS. MARILYN KAPITANY: Can you just say
18 what the P50 cost is, or --
19 MR. DAVE BOWEN: I -- I'm -- I'm going
20 to get into that in the next few slides. If -- if I
21 haven't answered that adequately, ple -- please let me
22 know.
23
24 (MOVED TO SLIDE 12)
25

1 MR. DAVE BOWEN: So again, the -- the
2 contingency is based on a probabilistic curve. And we
3 look at two (2) different types of risk which we term
4 'systemic risk' and 'product-specific risk'. So
5 systemic risks are -- are things such as the level of
6 product, product definition. They could be things like
7 the -- the -- whether or not we have a new technology.
8 These type of risks are -- they're known
9 through past historical jobs on -- on larger -- larger
10 jobs. There's historical data that helps quantify the
11 level of -- of contingency required based on things
12 like the level of definition at the time you produce
13 your estimate.
14 Again, the -- these -- these risks are
15 empirically based, based on industry statistics. We --
16 we -- again, we follow the industry standard to -- to
17 go about this contingency analysis. And in the past we
18 used a -- we -- we bring in an expert consultant to --
19 to help work through this process. The other -- other
20 type of risk is a product-specific risk. And these are
21 things that you can more touch and feel, things like
22 geotechnical risk.
23 So if we're doing a -- a big rock
24 excavation, if -- if you've ever driven out to Kenora
25 and you -- and you drive on the highway and you see the

1 big rock-face walls. And some of them are very
2 straight and some are really blocky and big chunks
3 falling off. So -- so those will be risks for where
4 you'll put down a number of bore holes, but we do know
5 that the rock changes are very immediate. So if we put
6 a bore hole here, a few metres away the rock may be
7 very different.
8 So that -- those are some different
9 things where we'll -- in our excavation where we'll
10 have what we call 'over-break', some more rock falls
11 off. So we have to handle more materials and haul them
12 away. Those would be things that -- project-specific
13 risks. In -- in this type of risk we use a -- a
14 technique which is expected value. So we -- we --
15 basically in that rock we -- if we -- if we have more
16 quantity we know what that quantity will be and -- and
17 that's the expected value approach.
18 Both -- both these risks are combined in
19 a Monte Carlo analysis to produce this conting --
20 contingency curve.
21
22 (MOVED TO SLIDE 13)
23
24 MR. DAVE BOWEN: And this contingency
25 curv -- curve, again, is based on the point estimate.

1 So this is a sample of an S-curve. The two (2) axes,
2 the 'X' -- X-axis is the budget -- probability budget
3 overrun. And on the -- on the right is the -- the Y-
4 axis is the estimate amount.
5 This is -- this for illustrative
6 purposes. So in this example here our point estimate
7 is at a 30 percent level of confidence, which means
8 that we have a 30 percent confidence that -- that
9 there'll be a -- a budget under-run and a 70 percent
10 confidence that there'll be a -- an over-run. If we --
11 as we move up to the P50 mark the difference in cost
12 between the P50 value and the point estimate, that
13 would be what we would call our -- our P50 contingency
14 est -- estimate.
15
16 (BRIEF PAUSE)
17
18 MR. ROGER CATHCART: Just to what
19 extent do you take these contingency curves and map
20 them against experience on other projects, like, for
21 instance, Wuskwatim?
22 MR. DAVE BOWEN: The --
23 MR. ROGER CATHCART: How did it fit on
24 that contingency curve?
25 MR. DAVE BOWEN: I don't -- I don't

1 have an analysis. What -- what we do is that we look
2 at the specific risks that occur, because that's really
3 the basis and foundation for the curve. In terms of
4 percentages we do do a comparator as to what
5 contingency amounts we have at different times to
6 ensure that -- that we believe we're in the right range
7 of that amount.
8 MR. ROGER CATHCART: Okay. Thank you.
9
10 (MOVED TO SLIDE 14)
11
12 MR. DAVE BOWEN: The next step after
13 contingency is to look at management reserve.
14 Management reserves are the amount added to cover
15 uncertainty items that generally have high impacts and
16 low probability. The classic example of a management
17 reserve item is a fish ladder, which are currently out
18 of scope for both the Keeyask and Conawapa projects.
19 In this case here, we -- we believe there's a -- in
20 this cases here you -- you have an item that has a high
21 cost and a low probability of occurrence. So if you
22 took your probability times your cost, you'd get a very
23 small number within your estimate.
24 So -- and you know that if that risk
25 occurred, that you -- that you would be exposed to

1 higher costs. So that's an example of why you would
2 put an item like that into a management reserve.
3 MR. ROGER CATHCART: Yeah, in an
4 earlier presentation there was a slide that said that
5 there might be an upstream channel of some sort for the
6 fish. I can't remember what slide it was, but it was
7 earlier this morning.
8 Would that be a fish ladder, or
9 something of that nature? And if you did put a fosh --
10 fish ladder in, what would that cost?
11 MR. DAVE BOWEN: So -- so that would be
12 a fish out -- ladder. I'm getting a nod from Ed here.
13 I don't have the cost for that fish ladder on -- on
14 hand. Generally speaking, the cost would be in the one
15 (1) to $300 million range.
16 MR. ROGER CATHCART: Why haven't you
17 included that as a contingency or part of the costs of
18 these two (2) dams?
19 MR. DAVE BOWEN: It -- it really goes
20 down to the definition for -- for what we believe as to
21 the likelihood of probability. So if it -- if it was
22 an included contingency and -- and there was a low
23 probability, you're not going to see any costs. So if
24 it's a 5 percent probability, if it -- even if it's
25 times 5 percent times 100 million, you're still $5

1 million. That's why we wouldn't consider that item in
2 a management reserve.
3 MR. ED WOJCZYNSKI: Just to -- just to
4 supplement that. There are many different -- if we --
5 using the word 'fish ladder' or 'fish passage', many
6 different options. We have engineering going on to
7 assess the variety of options.
8 You could have -- do something simple
9 that's -- I don't know, if it's 20 or 40 million, or
10 you could do something that's 120 million. On Keeyask
11 our expectation is we won't have to do that. There's
12 intense discussions with DFO and others.
13 But it's -- it's a chance but, you know,
14 we're -- so we -- but it wouldn't even, in all
15 probability, come when we build Keeyask. It would be
16 after the fact, maybe ten (10) years later, based on
17 monitoring and adaptive management. But we -- so it's
18 -- but it's a big quantity -- low probability, and in
19 this case something that would probably happen later
20 rather than with the projects.
21 MR. DAVE BOWEN: The -- the other --
22 other item that we include in management reserve --
23 okay. The -- the other item we include in management
24 reserve are -- are basically items that are substantial
25 risk items that are not appropriate to cover in

1 contingency. And we'll get into more detail in the
2 next few slides.
3
4 (MOVED TO SLIDE 15)
5
6 MR. DAVE BOWEN: So what are the
7 characteristics of con -- of the management reserve?
8 Well, it's to -- it has a few difference -- is -- a few
9 differences from contingency.
10 It's -- it's only spent if that specific
11 identified event occurs, and much like the -- if -- so
12 if there was a fish ladder, then -- then we would call
13 upon that.
14 It requires Manitoba Hydro board
15 approval to be added into the project budget. So
16 there's controls there on the project management team
17 during -- during the construction work. And it may or
18 may not be recommended within the -- the IFF or the --
19 or CEF number. So the project budget.
20 Two (2) reserves for -- two (2) reserves
21 have been identified for both the Keeyask and Conawapa
22 budget -- budget, and I'll get into those in later
23 slides.
24 MR. BYRON WILLIAMS: I'm going to have
25 one (1) question about -- it's Byron -- about the

1 management reserve, and then I'll have another question
2 that you can put in your back pocket when you get to
3 your escalation risk.
4 MR. DAVE BOWEN: Okay.
5 MR. BYRON WILLIAMS: In terms of the
6 management reserve, I understand it's relatively new to
7 Manitoba Hydro that other utilities like BC Hydro have
8 been employing it.
9 Have you looked at the experience of BC
10 Hydro in terms of estimates as compared to the
11 management reserve? Like how the relationship between
12 them -- so in other words, has the management reserve
13 simply built in a extra cushion, or have -- have the
14 actual consequences come fairly close to the -- to the
15 upper limit of the management reserve?
16 MR. DAVE BOWEN: I -- I'm not aware of
17 BC Hydro's experience with management reserves.
18 MR. BYRON WILLIAMS: Is it right that
19 they're fairly recent at Manitoba Hydro?
20 MR. DAVE BOWEN: Yes.
21 MR. BYRON WILLIAMS: Have you looked at
22 the experience of other utilities with management
23 reserves, in terms of the -- the outcomes?
24 MR. DAVE BOWEN: We know that they're
25 used within the industry to -- to varying degrees. The

1 -- the management reserves that we're familiar with are
2 really based on discrete risk events.
3 MR. BYRON WILLIAMS: Okay.
4 MR. DAVE BOWEN: And so they're --
5 they're really -- based on the project and those
6 specific risks that you have for your project, those
7 risks may be common, but they may not be common. I'm
8 not sure if that answers your question.
9 MR. BYRON WILLIAMS: It's helpful.
10 Thank you. And just when you get to the escalation
11 risks a few slides down, it would be helpful if you
12 could tell us how -- how vulnerable the project is,
13 cost wise, to let's say the US economies growing at 3
14 percent or as compared to 2 percent, you know, how
15 volatile that is.
16 MR. ED WOJCZYNSKI: Before Dave answers
17 that question, if we can come back to that earlier
18 question. I think this precedes Dave's involvement as
19 manager of that department, but I can't quite remember
20 the timing when Manitoba Hydro, a number of years ago,
21 established the management reserve approach in addition
22 to the contingency. And we formalized that as a
23 corporate policy, our se -- the various groups involved
24 with the estimating of things like Keeyask and
25 Conawapa.

1 There was new generation construction,
2 and then the Power -- Power Projects Development
3 Division, of which I used to be head. We worked with
4 other utilities across Canada. We worked with major
5 international consultants to assess what are the best
6 practices in the industry.
7 And we brought in people from BC Hydro.
8 And we had some joint discussions. We shared our
9 experiences with them. They shared their experiences
10 with us. And so when we moved to the management
11 reserve, it was very much in consideration of best
12 international practices and conscious consideration.
13 Another comment to add to that, explicit
14 in our adopted policy by our Corporation on this is
15 that when you had put in the management reserve at the
16 executive committee level, it's not done by Dave Bowen
17 or Ralph Wittebolle or myself. It's done at the
18 executive committee. They explicitly reserve the
19 ability to put in a management reserve that would take
20 you to a higher level or probability than let's call it
21 P50 for budgeting purposes in the IFF.
22 And we have the expressly as a policy,
23 which is what we have done for Keeyask and Conawapa,
24 so... I think that's just to round out the answer to
25 the question asked.

1 MR. DAVE BOWEN: Thanks, Ed. Yes.
2 MR. REGIS GOSSELIN: And the
3 quantification of that re -- management reserve is done
4 how? How do you quantify the management reserve?
5 MR. DAVE BOWEN: Oh, I -- I could speak
6 -- why don't I speak to how we've quantified our two
7 (2) reserves. And -- and if it's not clear after that,
8 we can... I'm going to get into that in the next few
9 slides here.
10
11 (MOVED TO SLIDE 16)
12
13 MR. DAVE BOWEN: So be -- before we get
14 into the actual reserves on the -- used on Conawapa and
15 Keeyask, I'm just going to finish off what -- how we --
16 we go about our -- our estimate development.
17 So once -- once we've established our --
18 our base cost, we then look at the interest and
19 escalation costs. And those costs are -- are really --
20 we have a schedule -- schedule for the work. We
21 generate cashflows based on the timing the work and
22 interest and escalations applied to those costs.
23 The -- the -- because of the -- the
24 nature of these projects, that they occur over multiple
25 years, interest and escalation are significant costs

1 for these projects. For Keeyask, it's approximately 30
2 percent. And for Conawapa, the interest and escalation
3 accounts for approximately 40 percent.
4
5 (MOVED TO SLIDE 17)
6
7 MR. DAVE BOWEN: So -- so in summary of
8 -- of our capital cost process, the base estimate
9 includes the -- the point estimate, which is developed
10 at a point in time, the overnight costs and, based on
11 the product definition and -- and market factors of
12 that time, continuously address the majority and
13 certainty associated with the point estimate.
14 The in-service costs include both
15 interest and escalation and interest on the money spent
16 to date. And then scenarios are used to establish
17 management reserves. These reserve amounts are added
18 to the -- the point estimate.
19 There are uncertainties with the capital
20 cost, and they include changes, things like change to
21 scope; major scope items, which we discussed the fish -
22 - fish ladder, for example; change to the in-service
23 dates. So if you -- if you did defer the in-service
24 date, you would incur an additional year of escalation
25 and interest. And -- and your -- and then if there was

1 market shifts where there was escalation greater than -
2 - than what we've calculated, there would be additional
3 costs for that.
4
5 (MOVED TO SLIDE 18)
6
7 MR. DAVE BOWEN: In terms of what we
8 did to establish the -- the IFF/CEF-12 budget numbers
9 for Conawapa and Keeyask, about a year ago this time,
10 we -- we were -- we were required to have a second look
11 at -- at our estimates. We know that in order to go
12 through a -- a process to basically come up with an
13 estimate, it's over than a -- it's greater than a six
14 (6) month process. It requires a thousand hours both
15 with Manitoba Hydro and external consultants.
16 And -- and the reason why you go about
17 carrying out a -- a re-estimate is that you have a
18 change in -- in project definition. And for both
19 Keeyask and Conawapa, although the Keeyask project
20 estimate was built in '09/'10 -- 2009/2010, and
21 Conawapa was built in '10/'11, there -- there hadn't
22 been a great deal of change to the project definition.
23 However, we've seen continued change within the
24 marketplace and we had a full, complete experience at
25 Wuskwatim. We -- we see -- we're aware of other owners

1 who are experiencing cost growth, different challenges,
2 productivity challenges, across the country.
3 So what we did here is that we -- we
4 basically stress-tested our estimated to -- to
5 determine whether or not, number 1, we had -- we had
6 accounted properly in the point estimate for the -- the
7 reality of the marketplace; and, number 2, to look at
8 our contingency to see if it was still valid and -- and
9 then look at the reserves that -- whether or not we
10 needed any management reserves to cover risks.
11 Ultimately, through this process we end
12 up with two (2) management reserves, which were the
13 escalation and labour reserve.
14
15 (MOVED TO SLIDE 19)
16
17 MR. DAVE BOWEN: So both the -- the
18 labour reserve is -- is productivity based. It -- it's
19 the -- the risk there is that it's modelled after the -
20 - the Wuskwatim scenario. So what we experience on
21 Wuskwatim. And -- and we're not unique across the
22 country. Owners who are carrying out large
23 infrastructure work are exposed to this risk.
24 And, really, the basis of that labour
25 risk is that we have a -- a busy mega-project

1 marketplace within Canada. There's a decrease -- an
2 overall decrease in craft labour supply, and -- and
3 there's -- and the continued challenge is labour
4 productivity. And there's a -- a number of studies, a
5 number of data on this. And that -- that's the driver
6 for the risk.
7 And in terms of how it impacts our costs
8 is that if we have -- if we have lower productivity
9 than planned, there's -- there's things like wage
10 issues and other things like that. But what where --
11 where it really hits our costs is that if we have
12 schedule elongation because of this risk, well, we have
13 -- we have all our infrastructure -- the indirect costs
14 that I -- that I talked about. So if we're on site for
15 another six (6) months, we're carrying the camp for
16 another six (6) months; we're carrying all our project
17 teams costs for another six (6) months; the contractor
18 is carrying all their costs for another six (6) months.
19 So the -- the cumulative effect of the scheduled costs
20 is -- is really what the -- the large concern here and
21 how it impacts the costs.
22
23 (MOVED TO SLIDE 20)
24
25 MR. DAVE BOWEN: The -- the other --

1 I'm sorry, I got ahead of my slides. I just covered
2 this.
3
4 (MOVED TO SLIDE 21)
5
6 MR. DAVE BOWEN: So in terms of the
7 other risk besides labour risk that -- that we put in a
8 reserve was the escalation risk. The -- the background
9 for this is that this -- this slide, it only starts in
10 2003. If you pulled this slide back twenty (20) years,
11 what we found is that escalation historically has
12 fallen closely to the Consumer Price Intrex (sic), to -
13 - to CPI. Back from the -- the past decade we've
14 noticed that, really, there's a break so that the CPI
15 in -- in escalation of our projects are no longer
16 following that -- that same rate.
17 This slide here has -- has three (3) --
18 three (3) items in it, which include the -- the copper,
19 diesel fuel, and rebar, reinforcing steel. And it
20 shows from -- it shows what happened from 2003. It
21 shows the start of Wuskwatim construction, the big
22 escalation that occurred. It shows the dip that
23 occurred during the recession back in 2008 and -- and
24 then looking today forward it shows that there's a
25 separation between CPI and these indices.

1 So why is this occurring? At least --
2 at least what's our opinion for why this is occurring?
3 Well, there's a huge wide demand for raw materials,
4 especially in large developing countries such as China,
5 India, and Brazil. We continue to have major
6 investments in oil and gas, and -- and really a busy
7 marketplace within in not only western Canada, the oil
8 sands, but right across the country. We compete with
9 all the different remote project sites across the
10 country for our labour and our contractors.
11 There is the federal and provincial
12 stimulus money which really went into the
13 infrastructure contracts and heavy civil work in --
14 involving the heavy construction industry. And then --
15 and then the demographic trends with -- with less craft
16 -- less craft labour being available.
17 We're concerned about this. That's why
18 we have an escalation reserve. And really we've --
19 we've basically established a reserved prudent amount
20 to -- to address -- address this risk in the I -- in
21 the CEF IFF number.
22
23 (MOVED TO SLIDE 22)
24
25 MR. DAVE BOWEN: So just to -- just

again a wrap up of -- of what we've gone through. So we've -- we've gone through the estimate and development process. The scenario development, really the reserves were established during the scenario analysis with the stress test results that occurred a year ago to form the -- to form the current budgets for Keeyask and Conawapa.

In terms of the results, where we're at today, these results are the public numbers that had been released. It's based on Conawapa twenty-five (25) early in service -- first in-service date for the unit, and Keeyask nineteen (19) first unit -- unit in-service date.

(MOVED TO SLIDE 23)

MR. DAVE BOWEN: So this -- this slide here shows the -- the breakdown of bra -- base costs spent to-date as of March 31st of last year, escalation at the CPI and in interest rates. And within the base costs, they're both the point estimate, contingency, and our reserve values.

These account for approximately 25 percent of the base costs. And -- and again you can see that the -- the values of both escalation/interest,

1 you can see that the -- as mentioned the -- the 30
2 percent and 40 percent costs for both Keeyask and
3 Conawapa. They -- they form a large portion of those
4 costs. The total in-service costs for Conawapa is
5 $10.2 billion and for Keeyask is $6.2 billion.
6
7 (MOVED TO SLIDE 24)
8
9 MR. DAVE BOWEN: So what's not
10 specifically included in the capital costs? We've
11 touched on this already. These include items of
12 changed in-service date -- date.
13 MS. NICOLE FITKOWSKI: Bill Harper
14 says:
15 MR. BILL HARPER (VIA CHAT): To
16 clarify, is the 6.2 billion for Keeyask the P50 value?
17 MR. DAVE BOWEN: So I'll just back up
18 there.
19
20 (BACK TO SLIDE 23)
21
22 MR. DAVE BOWEN: So -- so, yes, in the
23 -- it's based on the -- in the contingency, the
24 contingency line on here, that is the -- based on the
25 P50 contingency value.

1 MR. ED WOJCZYNSKI: Maybe we should
2 back up a little bit on that one. It's based on the
3 P50 contingency value, but then you can't take P50 and
4 apply it to the total in-service cost because we've got
5 that management reserve which, I can't remember what it
6 is but it's -- it's quite substantial.
7
8 So we don't have an exact probability
9 number for the in-service cost, but it would be more
10 than if you set -- tried to assign a probability to the
11 in-service cost it would be more than a P50. But if
12 you look at the -- the base cost amount without the
13 management reserve that gives you a P50.
14 I don't know if that -- Dave, do you
15 want to try to explain that better? I think I got
16 convoluted there.
17 MR. DAVE BOWEN: The -- in the
18 contingency item here, that is based on our P50
19 contingency. Management reserve is added to that
20 amount.
21 MS. MARILYN KAPITANY: So do you have a
22 chart that's similar to this that would have been used
23 at the beginning of Wuskwatim? I just think it would
24 be very interesting to see where Wuskwatim started in
25 terms of each of these categories at about the 900

1 million and then where it ended up, at about the 1.8
2 billion, just to see where was it that the cost got so
3 out of line with these, what I assume would have been
4 P50 or these point estimates that you would have
5 developed in this similar process?
6 MR. DAVE BOWEN: Yeah, I -- I don't
7 have a -- I don't have the data with me, but certainly
8 we could do that comparison.
9 MR. ROGER CATHCART: Just quickly.
10 Earlier you gave an estimate of 700 million when we
11 were talking in the context of Keeyask. Have I got it
12 wrong that it's not 700 million on Keeyask, but it's
13 700 million on Keeyask and Conawapa?
14 MR. DAVE BOWEN: The -- the $700
15 million referred to spent to-date --
16 MR. ROGER CATHCART: Yeah.
17 MR. DAVE BOWEN: -- so as of today
18 where we're at. This -- this spent -- spent to-date,
19 that's of March 31st of 2012.
20 MR. ROGER CATHCART: So that's both --
21 both projects, not --
22 MR. DAVE BOWEN: No, no, that's for --
23 that's for Keeyask.
24 MR. ROGER CATHCART: Okay, then point
25 five (.5) means point five (.5) of what?

1 MR. DAVE BOWEN: This -- this is in
2 millions of dollars, so it means --
3 MR. ROGER CATHCART: Okay.
4 MR. DAVE BOWEN: -- $500 million.
5 MR. ROGER CATHCART: Oh. And you've
6 spent 200 million above what is on this sheet?
7 MR. DAVE BOWEN: Yeah, from March 31st
8 of 2012 to today we've spent approximately an -- an
9 additional $200 million.
10 MR. ROGER CATHCART: Okay. Thank you.
11
12 (BRIEF PAUSE)
13
14 MR. BYRON WILLIAMS: Byron -- Byron
15 Williams. Just in terms of the billion dollars
16 associated with contingency and management reserve for
17 Keeyask, just ballpark, how much of it is the
18 contingency, and how much is the -- the labour
19 management reserve, and how much is the escalation
20 management reserve?
21 MR. DAVE BOWEN: Tho -- those details
22 will be provided in the NFAT. And ballpark number, I'm
23 -- I -- I think -- I think those numbers would be
24 released in the NFAT. And from what I -- what I'm
25 aware here is that, in terms of release of all those

1 different numbers, traditionally, we haven't released
2 that level of detail publically.
3
4 (RETURNED TO SLIDE 24)
5
6 MR. DAVE BOWEN: In terms of what's not
7 specifically included in the capital cost estimate,
8 there's change to in-service date, major scope change,
9 and also escalation/interest. So for in -- in-service
10 date, again, if we -- if we moved -- if we deferred the
11 project from 2019 to 2020 we would incur an additional
12 year of escalation on costs. We would also incur
13 additional year of moneys we would spend to -- to
14 continue to manage the project. And there would be an
15 additional year of interest on the money spent to date.
16 So that's what that means. Major scope change, we've
17 touched on that. And then changes to es -- in --
18 interest and escalation would be as discussed.
19 The -- these items here, these
20 uncertainties with these items, they're addressed in
21 the NFAT analysis. It wouldn't be appropriate for me
22 to -- on a capital cost discussion to -- to provide an
23 adequate answer as to how they impact the analysis.
24 That's -- that's -- so they're included in the NFAT
25 analysis.

1 MR. BYRON WILLIAMS: Just Byron again.
2 And I don't know if this your -- your department or
3 not, but in terms of these uncertainties and the risks
4 associated with them, are they all borne by -- by the
5 partnership or do the -- the contractors bear some of
6 these risks, as well?
7 MR. ED WOJCZYNSKI: Well, certainly
8 when we -- we put out a contract, if we -- if we had it
9 our way, we would push as many risks as we can onto the
10 contractor, so -- so when we develop each contract
11 we're -- we're aware; we look at the risk matrix; we
12 look at what the market can handle, will take; and we -
13 - we manage our -- we develop our contracts in -- in
14 that way and formulate them.
15 In terms of the -- the risk, I -- in the
16 partnership, I -- I can't comment. This -- these risks
17 are the overall project risk. As to what portion goes
18 to the partnership -- and I'll -- perhaps someone else
19 could comment on that.
20 MR. ED WOJCZYNSKI: The partnership
21 looks after the whole capital cost on a going forward
22 basis. If you -- there are two (2) options for the
23 partners I talked about earlier. This is Ed
24 Wojczynski. One (1) is the common share and one (1) is
25 the preferred.

1 The preferred is exposed to less of the
2 uncertainties than the common, as -- as you -- you
3 would expect with a lower risk option. But if you're
4 the common shareholder on a -- on a going-forward
5 basis, all those issues, whether it's in-service date,
6 change to scope, or changes in escalation and interest,
7 are -- are covered by the partnership, and -- and
8 uncertainties in the cost estimate are as well.
9 Does that answer the question?
10 MS. NICOLE FITKOWSKI: I have a
11 question online. Bill Harper says:
12 MR. BILL HARPER (VIA CHAT): Does the
13 management reserve capture potential change is
14 escalation?
15 MR. ED WOJCZYNSKI: Yes, to some
16 degree. If -- if there's escalation change beyond
17 what's in the escalation reserve it would not -- by
18 definition, it would not capture that change.
19 MR. BYRON WILLIAMS: This -- this is
20 proba -- MR. ED WOJCZYNSKI: And supplement that
21 as well, because this is where Dave said earlier that
22 there's some of the stuff is covered off in the NFAT
23 evaluations, the economic and financials. If there's
24 CPI -- if the CPI forecast is wrong and we get higher
25 or lower CPI, then that's accounted for in the

1 uncertainty analysis and the scenario planning and
2 analysis that is done in the NFAT evaluations.
3 If you have everything else being equal,
4 but CPI is higher, that increases the discount. Just
5 wait a second. The CPI -- pardon me, I've got it
6 backwards.
7 The CPI is higher, that reduces discount
8 rate. If it's lower that increases discount rate, so
9 that affects the economics. The financial analysis
10 directly accounts for CPI and interest directly, and
11 that's outside of the capital cost estimate. That's
12 dealt with in the economic and financial analysis.
13 MR. BYRON WILLIAMS: Just a last
14 question for Ed flowing from your discussion at a
15 partnership, Ed. Would all First Nations have to opt -
16 - opt into the preferred, or is -- is -- can -- can one
17 (1) opt in and others opt out?
18 MR. ED WOJCZYNSKI: You know, I
19 negotiated that out with a team. And you would -- if
20 you'd asked me that five (5) years ago I could answer
21 it. I don't recall right now the answer to that. And
22 if you want -- I guess that -- I guess we'll have to --
23 we'll have to let you know about that at a later date.
24
25 (MOVED TO SLIDE 25)

1 MR. DAVE BOWEN: How are the -- how are
2 the capital costs applied to the NFAT analysis? Well,
3 in order to consider the full range of risk, three (3)
4 cases have been defined in the NFAT analysis, which
5 include a low reference and high. The low represents a
6 low extreme that has a reasonable likelihood of
7 occurrence.
8 So if we -- if you remember back to the
9 S-curve that I showed you, and in terms of the -- the
10 extreme legs of that curve, so it's -- it's -- the low
11 extreme represents approximately the 10 percentile. So
12 it -- it doesn't represent that very bottom leg of the
13 curve. The same would go for the high. The reference
14 is the most likely, and the -- the high value
15 represents a high extreme.
16 Adjustments to the capital costs to
17 derive the -- the low reference in high for the purpose
18 of the NFAT analysis have been made to the contingency
19 amounts escalation and labour reserves. In terms of
20 low reference and high, as stated, there's a number
21 other -- besides the capital costs there's obviously a
22 -- a number of other factors that are -- are analysed
23 in the same way.
24
25 (MOVED TO SLIDE 26)

1 MR. DAVE BOWEN: In terms of project
2 execution, why do we believe we're set up for -- for
3 project success for the -- basically the execution
4 construction of these contracts. One (1) of the first
5 fundamental things that we do is to -- to establish the
6 project delivery methodology. This looks at factors
7 like: What are the crit -- critical success factors
8 for the -- for the project. What are our risks? What
9 are the risks that exist in the marketplace? What --
10 what capacities exist in the marketplace? And -- and
11 also our schedule.
12 So we -- we look at this. We -- we look
13 at how we're going to contract the various packages of
14 work out to the marketplace, so we have our general
15 civil contracts. So what -- what scope with that
16 actually include, our turb -- our turbine and
17 generating contract? So we believe that we have a
18 sound project delivery strategy.
19 I touched on the schedule earlier. We
20 spend a -- a large effort to put together our project
21 schedule, our comprehensive schedule. The project
22 involves multiple -- there's design contracts and
23 there's multiple construction contracts. These all
24 interface at various -- at various times and at various
25 locations.

1 So -- so we have a schedule that
2 basically -- it's a -- it's a solid plan to carry out
3 the work and recognizes the different risks and
4 interfaces that -- that we're going to experience and
5 work through during construction, because we know that
6 -- we know that we will be managing those risks.
7 In terms of project team, we've
8 leveraged the experience that we have from Wuskwatim
9 and -- and from Hydro staff. We've also combined that
10 with a -- with world-class consulting team. The -- the
11 -- I should -- should say that in terms of the Keeyask
12 project, it's -- it's more advanced. So when I speak
13 about product delivery it's -- it's -- we haven't --
14 we're not at the same state as we are with Conawapa,
15 just because it's a later in-service date.
16 But our project team, we have world-
17 class consultants. We're working with top tier
18 suppliers, for example, for the generator turbine and
19 contractor, different -- different contracts that we --
20 we have produced to -- to execute the work.
21 In terms of our mitigation strategy for
22 -- for labour, we have identified this risk. We're
23 aware of this risk; we're actively mitigating it. We
24 know that in terms of attracting -- attracting contract
25 staff, craft labour, one (1) of the big issues for them

1 is -- is a -- is a world-class camp, first quality
2 camp. So we're -- that -- that's in the estimate.
3 That's what we're building to -- to attract labour.
4 There's a number of other factors that we are
5 considering.
6 We're also bringing in the -- the
7 general civil contractor about a year or more earlier
8 than we normally would. So, typically, if -- if -- we
9 would bring the contractor on six (6) months prior to -
10 - to site; now they're more than a year and a half for
11 -- for the main work. And the reason for this is to --
12 to work with us to help formulate a strategy for -- for
13 craft labour to best manage that risk. Another reason
14 too is to -- to carry out the constructability review
15 of our design when we're not building. So -- so
16 instead of trying to figure things out on the fly we --
17 we've a lot of time to do that.
18 We're -- we're investigating modifying
19 work schedules for the work. So we may look at things
20 like the current schedule doesn't plan for -- for
21 concrete work over the wintertime. We'll investigate
22 whether or not there's advantages to that with our
23 contractor, the people who are actually going to build
24 the work. And then we're also looking at changes to
25 the Burntwood-Nelson agreement.

1 Yes...?

2 DR. PETER MILLER: Have you already

3 retained a -- a general contractor for Keeyask?

4 MR. DAVE BOWEN: The -- the general

5 civil contract bid is out for -- is out right now in

6 the marketplace. It closes in -- in late fall.

7 DR. PETER MILLER: So -- when, by

8 October you'll have someone or...?

9 MR. DAVE BOWEN: It -- I think -- well,

10 I'm going to let -- we -- we probably won't have that

11 contract signed off to -- maybe, Ralph, you know the

12 exact dates?

13 MR. RALPH WITTEBOLLE: The contract is

14 going to close in early December. Well, I shouldn't

15 say the contract is going to close. The proposals are

16 going to come in early September -- or December.

17 MR. DAVE BOWEN: The other -- the other

18 part key to our project execution is to incorporate

19 lessons learned from Wuskwatim. I mean, I'm touching

20 specifically on Wuskwatim here, but it's really lessons

21 learned from -- from all projects and what's happening

22 in the marketplace.

23

24 (MOVED TO SLIDE 27)

25

1 MR. DAVE BOWEN: This -- this slide
2 here touches on some of the key learnings that we do
3 have from Wuskwatim. The first one here is to -- to
4 start the -- the infrastructure works early. This --
5 this allows us to ensure it doesn't impact the critical
6 path for the remainder of work, so that we're ready for
7 the general civil contractor, who's the first
8 contractor onsite next summer, to -- to proceed with
9 their work.
10 It's also done early to ensure that any
11 lessons that we're learning, that we can apply them, we
12 have time to actually apply them to the rest of the
13 work. It gives us an advantage there.
14 Some of the -- the learnings from
15 engineering, we want to start early. We want to ensure
16 the engineering is complete. We're aware of -- there's
17 time and time proven, if your design is not complete,
18 you can experience a lot of -- a lot of troubles and
19 struggles during construction, so we're doing that to
20 mitigate that risk. We're also bringing in the -- as I
21 mentioned, we -- we have this early contractor
22 involvement, contract with a general civil contractor.
23 So that's part of the -- part of the mitigation. Part
24 of the lesson learned here was to bring them on early
25 to get those constructability inputs when we could take

1 advantage of them.

2 In terms of human resources, we know

3 that -- that people build these projects, and so we're

4 looking at what we can do to better attract and retain

5 not only project staff, but craft labour to our site.

6 So again, that -- we're looking at different things to

7 -- to basically engage -- supplement the Manitoba Hydro

8 team on site with -- with world-class consultants, and

9 also the -- again with the general civil contractors

10 starting early.

11 The -- having an appropriate project

12 delivery strategy, really recognizing what's --

13 continue to stay abreast of what's happening in the

14 marketplace. The marketplace is -- is -- it's dynamic.

15 It's very busy. It's very competitive. And -- and we

16 believe we -- we have a project -- appropriate project

17 delivery strategy but it -- it involves staying in tune

18 with what's happening with the marketplace.

19 And the other part is -- is sound

20 project management practices. So -- so we've been

21 working hard to -- to ensure that we have standards and

22 processes documented in a well-developed and a -- and a

23 well-trained team.

24 And that concludes my presentation.

25 Thank you.

1 MR. REGIS GOSSELIN: You mentioned that
2 there will be retaining a general civil contractor, and
3 you've made numerous references to contracted labour.
4 I'm having a tough time understanding the extent to
5 which you have -- you're contracting out the -- the
6 project work.
7 So this is clearly not a turnkey
8 project, and I'm trying to understand the extent to
9 which Manitoba Hydro is undertaking that work itself
10 and the extent to which it's using contractors to
11 construct the projects --
12 MR. DAVE BOWEN: Okay --
13 MR. REGIS GOSSELIN: -- specifically
14 Keeyask.
15 MR. DAVE BOWEN: Okay. I'll -- I'll
16 take a crack at that. So the -- the approach we --
17 we're following is similar to the approach that we've
18 used over past projects over the -- the number of
19 years.
20 So in terms of our role in the project,
21 so we act as both the project manager and the
22 construction manger at site. So what I mean by that is
23 that we'll hold contracts for -- they'll be the general
24 civil contract, and they're responsible to build the
25 generating station, all the concrete works, the

1 earthworks.

2 There'll be other contracts for the

3 supply -- design, supply, and installation of the

4 spilling gates, the inst -- the intake gates. There's

5 -- there's a contract to basically design and supply

6 the turbine generators. Those contracts are all held

7 separately, with Manitoba Hydro acting as the project

8 manager and the construction manager. We -- we do not

9 do the work at site, so we've basically packaged off

10 each part of the work to different contractors. But we

11 do hold that interface risk between the -- the various

12 contracts.

13 And when -- when we formulate our

14 project delivery strategy, we look closely at that, and

15 we look at -- closely at the different risks and

16 balances to -- to find out how best to -- to contract

17 that. So it's -- it's -- you're correct, it's not a

18 turnkey project.

19 MR. REGIS GOSSELIN: Now, the strategy

20 that you just described, has that changed since the

21 Wuskwatim project? In -- in other words, have you

22 modified the extent to which you use contract services

23 for -- for the Keeyask plan relative to what was done

24 for the Wuskwatim?

25 MR. DAVE BOWEN: There -- there's been

1 changes. There -- the -- certainly for Wuskwatim we
2 did not have an early contract or involvement contract.
3 That's a -- that's a fairly fundamental change. We
4 have packaged the work differently. So -- so again I
5 could allude to the general civil contract that the --
6 the electrical mechanical works are now part of that
7 contract to -- to help manage some interface risks.
8 I'm not sure, Ralph, if you care to
9 comment anything else on that.
10 MR. RALPH WITTEBOLLE: No. The -- the
11 major difference is the -- the general civil contractor
12 is also -- because we had a lot of interference issues
13 with the general civil contract and the people that are
14 actually doing electrical mechanical work, so now we've
15 put that under one (1) contract so they could organize
16 themselves within one (1) group. But the majority of
17 the contracts are in the -- in the same format as -- as
18 Wuskwatim.
19 MS. MARILYN KAPITANY: Would you
20 consider, in order to help share the -- the risk or
21 mitigate the risk, having an outside contractor, having
22 someone other than Manitoba Hydro be the -- the
23 construction contractor, manage all of those contracts
24 and try to shift the risk of any escalations to that
25 outside contractor?

1 MR. DAVE BOWEN: Yeah, yeah, we -- when
2 we -- when we formulated our project delivery strategy
3 we looked at that. But, essentially -- essentially,
4 you're transferring that owner risk on to a third
5 party, and that third party is not going to take that
6 risk.
7 So even if you -- even if you asked them
8 to take it, you're either going to spend a whole -- a
9 whole pile of money upfront because they'll give you a
10 high price, or they'll -- in their terms and conditions
11 they'll just refuse it. So that's -- we did look at
12 that option. We didn't find it favourable.
13 MR. RALPH WITTEBOLLE: I should note
14 for the Wuskwatim, when we first went for the general
15 civil contract, one (1) of the delays we experienced
16 was that we modelled the proposal after the limestone
17 contract, which was basically a contract where we had
18 unit prices to do everything and that -- which
19 transfers the majority of the risk over to the
20 contractor.
21 The -- the actual estimate that -- that
22 we got, we only got one (1) bidder that would actually
23 bid on that type of contract, and the estimate was over
24 double what we had estimated for the work. So we had
25 to start from scratch and go back and -- and go to a

1 contract, a target price contract that's more in the
2 line with what's happening in the Canadian industry
3 right now.
4 MR. ED WOJCZYNSKI: Are there any more
5 questions? I notice it's four (4) minutes to noon. We
6 actually have four (4) more minutes to ask Dave
7 questions, or Ralph.
8
9 (BRIEF PAUSE)
10
11 MS. ANITA SOUTHALL: Oh, sorry. Hi.
12 Anita Southall. I'm assuming in the NFAT submission
13 there's going to be something associated with the risks
14 and opportunities of the sequencing of the build for
15 Keeyask and Conawapa. There's -- there -- well, I went
16 back here now just a few minutes ago and looked at the
17 timelines. And obviously there's preparatory work
18 going on for Conawapa before Keeyask is in service?
19 MR. DAVE BOWEN: Ed, do you want to
20 take that?
21 MR. ED WOJCZYNSKI: If I understood
22 your question, you're asking, in the NFAT submission
23 are we looking at different possibilities for timing
24 of, say, Conawapa ver -- vis-a-vis Keeyask, and the --
25 the fact that because there's some overlap in the work,

1 there may be risks associated with that. There's also
2 a compression of the investments because you're
3 spending at the same time.
4 So we do -- do we deal with -- with
5 those kind of issues and qualitatively and/or
6 quantitatively? Was that your question?
7 MS. ANITA SOUTHALL: Yes.
8 MR. ED WOJCZYNSKI: Yes.
9 MR. BYRON WILLIAMS: Just in terms of -
10 - there are commitments to hire people from -- from the
11 affected -- or the partner First Nations, as well as
12 other commitments. Is that -- at the end of the day,
13 is that the responsibility of the general contractor
14 and the individual contractors, or Hydro, or -- or who
15 oversees to ensure that those targets and commitments
16 are met?
17 MR. DAVE BOWEN: That's a -- that's a
18 Hydro responsibility, Manitoba Hydro. So we'll --
19 we'll work with our contractors to -- to ensure
20 employment. But over -- at the end of the day,
21 Manitoba Hydro is responsible.
22 MR. ED WOJCZYNSKI: There -- there will
23 be like the job referral system that helps too with
24 that, right?
25 MR. DAVE BOWEN: Yeah, yeah. So all

1 the work happens under the Burntwood-Nelson agreement.
2 And it's a tiered hiring agreement so that if you're a
3 First Nation within the -- the communities closer to
4 the -- to the project site you have -- if you're
5 qualified and you want to work, you're -- you're first
6 in line. So -- so through the -- through the -- the
7 labour agreement yourself you're actually -- you're
8 provided that opportunity.
9 MR. ED WOJCZYNSKI: And is that -- that
10 a provincial-run job referral system?
11 MR. DAVE BOWEN: Well, that's -- that's
12 changing now. I --
13 MR. ED WOJCZYNSKI: Okay.
14 MR. DAVE BOWEN: Yeah, the -- I don't
15 think the province is no longer running that.
16
17 (BRIEF PAUSE)
18
19 MR. RALPH WITTEBOLLE: I -- I'd just
20 like to add a couple points for clarification. The --
21 the contractor -- we don't tell the contractor who to
22 hire. We tell him to go through the job referral
23 system, and it is -- there's tiers, so they go to First
24 Nations up north. And -- and in fact, the -- I would
25 consider it to be a success in Wuskwatim. 70 percent

1 of the people -- or the person hours on site were
2 Manitobans and half of that approximately was
3 Aboriginal people.
4 So -- but we don't -- like, the people
5 that are hired, we will not hire somebody for a job if
6 they're not qualified for it just to meet, you know,
7 just because the person is a First Nations member or
8 something.
9 MR. ED WOJCZYNSKI: Maybe I'll add to
10 that. You might remember this morning I had explained
11 that in the JKDA we had a -- an assurance contractually
12 built in about KCN, members of the four (4) Cree
13 Nations. I don't remember the number; it was in the
14 slide. And we negotiated that to give them the
15 assurance that their members would have at least those
16 numbers of person years employment throughout the whole
17 development sequence -- the development of Keeyask, I
18 mean -- and we're confident that that number will be
19 met.
20 But if by -- but as Ralph said, we're
21 not telling the contractor, You have to hire this
22 person and that person. It goes through that system.
23 And if by chance, unlikely as it is that we didn't meet
24 that, then we have a contractual obligation to make --
25 make it up. But we expect actually that we will exceed

1 that and not have to deal with that contractual
2 arrangement.
3 Is there -- sorry, Barb? Oh, lunch is
4 here. I thought it was another question. I -- so no
5 more questions? Oh, sorry, there is one (1).
6 MR. REGIS GOSSELIN: I'm looking at the
7 Keeyask 2019 schedule, which we examined earlier, and -
8 - and the Keeyask infrastructure project, or the
9 infrastructure construction, begins about the same time
10 that the -- this NFAT panel will be expected to deliver
11 its report. So I guess the -- the obvious question is:
12 Will there be an ability to pause the infrastructure
13 construction if the NFAT panel was to recommend a
14 different alternative than the one that's being
15 proposed by Manitoba Hydro?
16 MR. DAVE BOWEN: I think that's a
17 question for Ed.
18 MR. ED WOJCZYNSKI: Yeah, I think
19 that's my question. The way we have structured our
20 arrangements on Keeyask is that the -- effectively, the
21 infrastructure project that we presented this morning,
22 effectively, it's finished, call it the end of June. I
23 mean, there may be some small things, but -- but the --
24 that project essentially should be finished around the
25 same time the NFAT report comes out, assuming it's June

1 of '14.

2 Whether we go and operationalize the

3 construction camp and add the rest of the construction

4 camp or undertake other work like the cofferdam, that

5 will wait for the NFAT report and the government

6 decisions. And so while we're doing preliminary work,

7 whether it's the infrastructure, or what Ralph was

8 talking about in terms of with the contractors and --

9 and preparing ahead of time the plans and everything

10 else, the actual construction of the rest of the

11 infrastructure of the cofferdam and of the GS itself

12 will wait for the NFAT report and the government

13 decisions that fall from that.

14 Are there any other questions? Maybe

15 just a -- a small comment to your earlier question.

16 This afternoon when we talk about the development

17 plans, I think you'll get a little bit better sense of

18 how we're going to deal with uncertainties and manage

19 not just the risk in the project that Dave was talking

20 about, but also how we are at a more global level going

21 to manage the risks of the overall sequence and making

22 the decisions and the flexibility inherent in that.

23 And that'll be a -- a good portion of this afternoon's

24 presentation.

25 So it's lunch break. I think we

1 scheduled an hour. Is that right? So it's three (3)
2 after 12:00. Let's restart at one o'clock, please.
3 Thank you.
4
5 --- Upon recessing at 12:03 p.m.
6 --- Upon resuming at 1:00 p.m.
7
8 MR. ED WOJCZYNSKI: I don't know if
9 there are any other new players here. I was told there
10 would be some new people this afternoon, but are there
11 any on the external or...? Who was on the external by
12 the way? It might -- I think it might be nice for the
13 rest of us to know.
14 MS. NICOLE FITKOWSKI: On the external
15 we have Bill Harper, Dave Lamont, Erick Matheson --
16 Matthiesen, Paul Chernick. And that's all we got.
17 MR. ED WOJCZYNSKI: Okay. Thanks. So
18 we'll get started. I'll ask the same question again:
19 Are there any questions that over lunchtime have
20 arisen, based on this morning's presentations, that
21 someone would like to ask before we move on to this
22 afternoon? Okay. Oh, sorry.
23
24 (BRIEF PAUSE)
25

1 MR. ED WOJCZYNSKI: While they're
2 dealing with that, there was a question that came up
3 that I -- I couldn't -- I wasn't sure of the answer so
4 I didn't answer this morning. And that was whether --
5 with the KCN, the Keeyask Cree Nations in Keeyask, when
6 they have the two (2) options of a common unit or a
7 preferred unit, which are significantly different, the
8 question was could -- do they all have to -- can one
9 (1) go into one (1) option and the other go into
10 another option. And the answer is yes, they can be a
11 mixture of choices. So you could have one (1) First
12 Nation go with preferred and three (3) go with common
13 or whatever. They don't all have to be the same.
14 So -- and -- and I'm happy to be able to
15 say that because it would not be fair to, you know,
16 each of the First Nations to have to do what everybody
17 else did if they didn't feel comfortable with that.
18 And I might add that if a First Nation
19 decides not to invest, and others do, they still are
20 entitled to be on the Board and be on the committees
21 and share in the information and all of that. We
22 didn't tie their involvement in the project in that
23 manner to having to put money in. So again, it's not a
24 truly commercial arrangement, it's a quasi-commercial.
25

1 (MOVED TO SLIDE 2)

2

3 PRESENTATION RE: SELECTION OF DEVELOPMENT PLANS FOR

4 NFAT:

5 MR. ED WOJCZYNSKI: Okay. So while

6 they're setting that up, you have it in front of you.

7 The first overhead on there is divided by a red line

8 into two (2) pieces. And what these are at the highest

9 level, in our future development what are the -- the

10 goals in general terms that we pursue and guide us.

11 And there are many things that guide us. There's the

12 Manitoba Hydro Act. There are corporate operating

13 principles. There's the Sustainable Development Act.

14 There's all kinds of things. And some of that will be

15 laid out in Chapter 1 of the submission when you get

16 it.

17 What this is talking about is we have --

18 the Corporation has a corporate strategic plan where we

19 lay out the corporate goals. And what I've pulled out

20 are the -- the goals that are very specific and have a

21 lot of impact on resource development. Every year I do

22 a presentation to the Natural Resource Institute

23 master's students, I think I've done that for eighteen

24 (18) years or some such thing, and this is how I always

25 start with them. So I thought actually given that this

1 is like a master's course in resource planning I would
2 start the same way.
3 And so what the -- the top five (5)
4 points are -- are summaries of what our strategic plan
5 has as the corporate priorities. And, I mean, there's
6 things like safety and whatever that are very generic
7 that I'm not referring here. It's very specific to
8 resource development.
9 Exceptional customer service translates,
10 in this context, we have to have good reliability for
11 our customers. Obviously there's the criteria that
12 Joanne talked about. And there's all kinds of other
13 elements of the reliability of the customer. So
14 reliability. Preventing outages. Providing good
15 quality service. All those things. Protect the
16 environment. I think that's pretty clear.
17 Strengthen working relationship with
18 Aboriginal people. Most major companies in North
19 America, and I daresay worldwide, have some form of
20 strategic plan with some sort of goals. We're a little
21 bit unusual to pro -- provide as one (1) of our top
22 ones focussing on strengthening the Aboriginal
23 relationships and -- and dealing with historical issues
24 and whatever.
25 Profitable exports. I don't think

1 you'll find the word 'profitable' in the -- in the
2 Hydro Act. In the Hydro Act any -- you know, the --
3 the -- in effect the reve -- the net revenues we make
4 from exports go into reducing our cost to the customer
5 base and reducing rates. But, in effect, in
6 layperson's terms, in my terms, we make profits off the
7 exports. We roll them back into the reduced rates for
8 the customers in Manitoba.
9 And cost effective energy conservation
10 and innovation, which speaks to for instance Power
11 Smart or -- or other related measures.
12 So those are the highest level. But
13 what does it mean when you operationalize that with our
14 development plans and our projects?
15 Sustainability principles. We integrate
16 those in. We make sure we cover those.
17 In the First Nations side, very
18 specifically we -- we don't just want to strengthen the
19 work -- the relationships. We actually want our -- the
20 local communities ultimately not just to be consulted
21 and all the legal things, but actually we want the
22 local communities to support the project as a net
23 benefit to them.
24 Now, in any community in any democracy
25 you're never going to get 100 percent agreement on

1 something like that. But we're looking as -- overall
2 that the community sees their concerns have been
3 addressed, see that there's going to be overall
4 benefits, some negative things, yes, probably but --
5 but that overall it's positive. And that's -- that's a
6 target or an objective, no guarantee.
7 Question? Yes?
8 MR. BYRON WILLIAMS: Do they -- does
9 Hydro have a turnout or voter participation target when
10 it looks at support for the project?
11 MR. ED WOJCZYNSKI: No.
12 MR. BYRON WILLIAMS: So what -- just --
13 just for --
14 MR. ED WOJCZYNSKI: There's no generic
15 -- there -- it would be done on a case-specific basis.
16 And -- and actually I -- I would have to say if there
17 was the rule, and there's no written rule on this, it
18 would be we look that First Nation and say, What are
19 their -- what -- what are their approaches, what are
20 their rules?
21 The -- the -- what -- anything we're
22 doing here goes above and beyond what the Indian Act
23 requires. And so we look at -- for each First Nation
24 what is it that that First Nation would want to have as
25 their -- their approach. So we don't have any hard and

1 fast rules for that, no. And it would be on a project
2 -- case-specific basis.
3 The -- the last point on here is that
4 hydro projects particularly have a long lead time.
5 You've heard about that already. Much longer than gas
6 turbines or -- or coal plants even. And our
7 counterparties in the States are -- are looking -- have
8 shorter lead time options than we do.
9 So -- plus, if you look at Manitoba load
10 you've got quite a lot of variability in load in the
11 short term. You can have a few -- you could all of a
12 sudden have a major industrial load want to come in,
13 and all of a sudden have a jump in the load growth and
14 it -- you can always resort to short-term lead times
15 like combustion turbines, but the idea is if we get
16 some increase in load growth we have options available
17 to meet them.
18 So in here the -- the -- we have a
19 deliberate strategy to have options available for
20 Manitoba load, or -- and/or for export earlier than the
21 absolute next requirement. So, for instance, if --
22 right now we're saying with the 2013 load forecast 2023
23 our preference is to have options that would be
24 available earlier than that in case load growth comes
25 up, or in case there's export opportunities, or both.

1 And that's a policy we've had for over a decade.
2 So -- okay, I only hit it once.
3
4 (MOVED TO SLIDE 3)
5
6 MR. ED WOJCZYNSKI: Very quickly, the
7 resource planning process. It's fairly intuitive,
8 actually. The first thing is you develop a menu of
9 options. What are all the possibilities you could --
10 you could develop? And we -- and you get their
11 characteristics, their costs, and -- and you get all
12 that information. And then you develop the inputs that
13 you're going to use in your analysis. Obviously, the
14 number 1 is load forecast. That's our raison d'etre,
15 meeting them at load in Manitoba, but all of the other
16 factors that you would think are obvious ones and
17 others. We just have a few examples here.
18 And then we do evaluations. We compare
19 those options. We -- we have criteria for making
20 decisions. And make the decision. And we do this
21 iteratively. It isn't you go through this whole
22 process one (1) time and then you have an answer.
23 Every year, we have a resource planning
24 process. Joanne and her di -- division have a report
25 they take. You know about it. It's called the 'Power

1 Resource Plan'. The -- and we evolve our options. We
2 take some forward, we advance them, other ones we drop.
3 I'll be talking about that at the end of this
4 presentation and give you some history on that.
5 And there's stages of development. Our
6 projects -- you take the hydro projects. We haven't
7 talked about this yet. And we know that -- at the
8 break Dave and -- Bowen and I were talking about this.
9 If you look at our hydro projects, we start off wi --
10 there's actually five (5) or six (6) stages of
11 development.
12 We do so much work. We finalize the
13 cost plan. We say, Is this worth -- worth taking
14 forward to do more investigation, to do more
15 engineering, to do more field studies, do more
16 environmental. And each time we get -- spend more
17 money, spend more time, get more details, refine it, or
18 we drop it and stop working on it.
19 So this is all an iterative process.
20 And the NFAT is superimposed on that, that you got this
21 annual process but then, because we're coming to a big
22 decision, it takes more then one (1) year and -- and is
23 the culmination of this process.
24
25 (MOVED TO SLIDE 4)

1 MR. ED WOJCZYNSKI: This is what Joanne
2 more or less presented at the pre-hearing conference.
3 Actually, it is. And it just shows the stages we go
4 through and the steps why when we're taking a plan and
5 evaluating it, and coming up with the economics and
6 then the rates and then the debt-equity and all that,
7 this is a multi-week and even multi-month process
8 depending on what you're starting with and how
9 different it is from what you've done before. And
10 there are many stages to it.
11 And we don't have time to go through it.
12 This is just emphasized. There's -- there's modelling
13 involved. There's various techniques for evaluating.
14 And then we transfer to the financial people. And it's
15 not an automated process, one (1) big proce -- computer
16 program and you push a button and it does everything.
17 There's various stages. You have to check the results,
18 make sense, redo. There's human interface in --
19 involved. This is not a quick and easy process.
20 If there's a minor change to a plan,
21 that's faster. If you got a brand new big plan with
22 lots of difference, that takes months. A question from
23 outside.
24 MS. NICOLE FITKOWSKI: I have Dave
25 Lamont.

1 MR. DAVID LAMONT (VIA CHAT): Where
2 does energy efficiency fit into this process?
3 MR. ED WOJCZYNSKI: Energy, sorry?
4 MS. NICOLE FITKOWSKI: Energy
5 efficiency.
6 MR. ED WOJCZYNSKI: Like DSM Power
7 Smart. It is one (1) of the options we consider. When
8 I said we do -- we -- we have a menu of options, DSM is
9 one (1) of the menus and one (1) -- one (1) of the
10 options in the menu.
11
12 (MOVED TO SLIDE 5)
13
14 MR. ED WOJCZYNSKI: Screening: I -- I
15 talked about an iterative process. The first thing we
16 -- we do is dev -- is look at all the various options
17 available in industry generally, and we look at
18 industry information across North America and the world
19 as well as local information.
20 And -- and then we -- we take options
21 that make some initial sense and do a screening at that
22 level. And we use these kind of criteria at -- to
23 screen out a large number to a small short list of
24 options.
25 You -- you can have technologies. I'll

1 give an extreme example: fusion. In the long run, it
2 could very well be an energy option. It's not very
3 mature. It's not on the commercial development side.
4 We don't look at it for Manitoba.
5 Wind: Obviously it's a mature
6 technology. There's a lot of confidence in it as a
7 technology. We know it pretty well. It's mature. So
8 those two (2) kind of extremes. And so we don't have
9 detailed information at this screening level. For a
10 lot of the resources, it's a very preliminary
11 information but enough to do screening.
12
13 (MOVED TO SLIDE 6)
14
15 MR. ED WOJCZYNSKI: Similarly, on the
16 environmental and socioeconomic, at the screening level
17 you only have a limited amount of information for most
18 of the options, okay. External question.
19 MS. NICOLE FITKOWSKI: He said you just
20 answered it.
21 MR. ED WOJCZYNSKI: Okay. The same on
22 the socioeconomic side. Yes, on -- on Keeyask or let's
23 say on wind generation we've got some pretty specific
24 information on the impacts on people or something like
25 that, or on transmission lines. But some of the other

1 options, there's very little specific information. You
2 have to use very generic, industry-wide information
3 that's available to do that screening.
4
5 (MOVED TO SLIDE 7)
6
7 MR. ED WOJCZYNSKI: We have access to
8 hundreds of kinds of technology options that are out in
9 the world. And we have references in the appendices to
10 a fairly long list of possibilities. In the main
11 submission, not in the appendices, these are the
12 resource technologies that we -- we looked at for
13 screening. And I'm not going to spend a lot of time on
14 -- on this, because we could spend the whole afternoon.
15 Additional DSM is obviously one (1) of
16 the options. Someone just asked that. Hydro, with
17 storage, or run-of-river hydro. Wind on shore, which
18 is what you typically think of like we do at Letellier
19 or whatever. In lake wind, there's a lot of wind
20 internationally is done on the water for a number of
21 water. One (1) is the wind tends to be unimpeded.
22 Solar, at a utility scale we're talking
23 here, meaning like 100 megawatt plants, not on top of
24 houses. That would fit in more with almost like DSM.
25 Solar thermal, where you collect the -- the solar with

1 mirrors, focus them on some collector that heats up a
2 liquid, typically water or something, and you use that
3 to run a tradi -- a traditional boiler, electricity
4 generator.
5 Enhan -- shoot -- enhanced geothermal --
6 yeah, I knew that's -- enhanced geothermal, where you
7 drill deep holes. You collect the hot water from 10
8 kilometres or some such distance below the Earth's
9 surface, you bring it up into a boiler, produce
10 electricity. Gas turbines; conventional pulverized
11 coal; integrated gasification, where you take coal, you
12 -- you build a chemical plant, you take the coal, you
13 do a chemical conversion process where fundamentally
14 you create a synthetic gas and then you burn that gas
15 in a combined cycle operation.
16 Nuclear biomass; for instance,
17 agricultural crop residue, flax, or something else.
18 Wood-based fuels, biomass again, and imports. And when
19 you talk about imports it could be many, many different
20 technologies on the other end.
21
22 (MOVED TO SLIDE 8)
23
24 MR. ED WOJCZYNSKI: What we did is we
25 screened those and ended up with a short list of

1 technologies that we put into our development plans for
2 more analysis. And I think the -- the list speaks for
3 itself on there.
4
5 (MOVED TO SLIDE 9)
6
7 MR. ED WOJCZYNSKI: And then we
8 developed development plans. What is a development
9 plan? At the pre-hearing conference we talked about
10 this briefly. So what we do with the development plan
11 is say we have column, technology options, and we have
12 transmission options, and we have import/export
13 options. And we development a -- a plan, which is a
14 combination of those things specifying the order of the
15 resources and their in-service dates and the
16 quantities, if it's -- if it's wind or if it's an
17 import or something, how many megawatts. And -- and
18 then that's a plan.
19 And that plan -- if you have a different
20 load forecast, that plan could have different in-
21 service dates depending on the load forecast. But
22 that's what we call a plan. And it's like a -- a
23 thirty-five (35), fifty (50) year sequence of -- of
24 projects and events that are happening and you specify
25 that. That's a plan.

1 And in our submission, we're going to
2 have four (4) groups of plans. The first one is no new
3 interconnection/no new export sales. And -- and we're
4 going to go into that in more detail right away.
5 Second is you develop the 250 megawatt transmission
6 option -- interconnection option that we already have
7 signed agreement with MP for. Minnesota Power, that's
8 MP. And -- and with it comes a 250 megawatt sale from
9 Minnesota Power. We'll have enough power that we have
10 an existing sale with Northern States Power that --
11 that we have the option to exercise 125 megawatt
12 addition.
13 I believe Dave talked about that the
14 other day. And that's already an approved plan. And
15 our option, we can bump another 125 megawatts. It is
16 enough power -- if you develop Keeyask to get this
17 interconnection, there's enough power to also meet this
18 NSP extension.
19 And then the fourth option -- thir --
20 third option, sorry, is to build a 750 megawatt tie-
21 line with MP again. But you don't have a Wisconsin
22 Public Service sale. And that -- that is a
23 possibility.
24 The last one is the -- the full
25 enchilada, the full plan, where you have the big tie-

1 line and both a Minnesota Power 250 megawatt sale and
2 Wisconsin Public Service 300 megawatt sale. And this
3 last grouping has the preferred development plan in it
4 as one (1) of the plans.
5
6 (MOVED TO SLIDE 10)
7
8 MR. ED WOJCZYNSKI: So this is the no-
9 new-interconnection plan, but -- okay, there's a
10 question.
11 MR. BYRON WILLIAMS: Just for the --
12 the new seven-fifty (750) inter -- interconnection with
13 the WPS sale, why the 300 megawatts instead of the --
14 the hundred megawatts? At least as I understand it,
15 the --
16 MR. ED WOJCZYNSKI: Okay --
17 MR. BYRON WILLIAMS: -- hundred's in --
18 signed now?
19 MR. ED WOJCZYNSKI: Okay. There --
20 there -- we have a hundred. If we need to get into
21 more detail, I'll ask Dave to step in here. And by the
22 way, Joanne is quite involved in this development plan
23 and development. And I've asked her to jump in if I
24 miss something or she thinks it's good to add
25 something, or if I make a mistake, which I'm obviously

1 going to do at some point.

2 On the hundred megawatt WPS, we have a

3 hundred megawatt WPS sale that is already signed and

4 will go ahead regardless of these options. So I'm not

5 specifying it in here because it's common. The 300

6 megawatt sale is a larger, longer sale that is in

7 addition to that.

8 Dave, can you elaborate on that or maybe

9 there's no need to, but...

10 MR. DAVID CORMIE: Yes, if the -- the

11 new interconnection of -- goes in at 750 megawatts,

12 then there's now transmission capacity to reach into

13 Wisconsin. And under that scenario, WPS is considering

14 an additional 200 megawatts beyond the hundred that

15 they already have, so that starting in 2020 going to

16 2040 there would be a total of three hundred (300), of

17 which already a hundred for seven (7) years has been

18 sold. The balance would fill in around that for a --

19 for a total of three hundred (300). And that -- that's

20 the -- that would -- that would use up 3 -- 200

21 megawatts of the additional 750 megawatts of

22 interconnection capability.

23 The existing hundred goes over existing

24 transmission paths and it doesn't require the new tra -

25 - new transmission line.

1 MR. ED WOJCZYNSKI: And this will be
2 all spelled out in the submission. So that's why we
3 don't bother mentioning it in all of these, because
4 that's -- that's underlying every one of these. It's
5 common. Just like the NSP 375 megawatt sale is common
6 to all of them, so we don't mention it.
7
8 (RETURNED TO SLIDE 10)
9
10 MR. ED WOJCZYNSKI: So in this group of
11 plans -- and you see there's seven (7) of them, and all
12 seven (7) of these have been evaluated using the
13 twenty-seven (27) scenarios that you heard about in the
14 pre-hearing conference and alluded to earlier this
15 week.
16 A reminder to you, we look at three (3)
17 sets of capital costs: low, reference, and high. Three
18 (3) sets of energy prices: low, reference, and high.
19 Energy prices being export prices, import prices,
20 natural gas. And then three (3) sets of in -- economic
21 indicators. And in economics it's low discount rate,
22 reference discount rate, high discount rate. In the
23 financials it's broken down into interest and -- and
24 escalation and other el -- elements as well, like...
25 So is there another question?

1 MR. BYRON WILLIAMS: Yes, and then I'm
2 going to --
3 MR. ED WOJCZYNSKI: I have a feeling
4 this time isn't -- we don't have enough time allotted
5 for this presentation.
6 MR. BYRON WILLIAMS: Just in terms of
7 your DSM expectations --
8 MR. ED WOJCZYNSKI: Yes.
9 MR. BYRON WILLIAMS: -- for each of --
10 of the thirteen (13) plans, are those standard for all
11 thirteen (13) or are -- are there variations in terms
12 of the --
13 MR. ED WOJCZYNSKI: I -- I was going to
14 talk about that, but seeing as you asked the question
15 now. In all of these plans that I'm going to present
16 right now, the DSM level is constant. But if you'll
17 recall from the pre-hearing conference, what we -- two
18 (2) things. Unfortunately, because the external
19 consultant work has taken over a year longer or a year
20 and a half longer, I believe, than was projected or
21 asked for, we don't have detailed analysis going to be
22 available that we could put together the plan.
23 Although as Lois said, that we're working towards and
24 think we're going to have that in the submission, but
25 it will be the consultant's report, not all the work we

1 have to do afterwards to get the program.
2 So we are not going to have, for the
3 submission itself, alternate levels of DSM with
4 alternate program characteristics and costs and utility
5 costs and customer costs. We won't have that available
6 for the submission.
7 So what we've done is kept a common
8 level of DSM in -- in the plans I'm showing you here,
9 and then with the 2013 load forecast update we're doing
10 some analysis. And in that we are going to do it --
11 we're going to have with the DSM level in the current
12 power resource plan, we're going to have a DSM level
13 which is 50 percent higher. And then we're going to
14 have a DSM plan which is 400 percent of what's in the
15 plan now. And when we talk about 50 percent or 400
16 percent, what I'm referring to is the amount of
17 megawatts and gigawatt hours in each year.
18 We don't have utility costs or customer
19 cost for those. What we're doing is saying, If you
20 have these levels of DSM, it changes effectively what
21 our load is and how does that affect -- if you go to
22 four (4) times DSM which is, in our view, pretty
23 extreme, and you look at the preferred plan compared to
24 not doing an interconnection, how -- how does that
25 affect the economics of -- of that. So we've used the

1 sensitivity to assess whether the -- the evaluation of
2 these plans is affected by having more or not DSM.
3 So -- so we don't have a plan that -- in
4 -- inside of here where we say, Well, let's put in more
5 DSM and mix up with the other stuff. We're saying, If
6 you increase the DSM level and then say, Look at the
7 sale versus no sale, what happens to the economics of
8 that.
9 And that will be in the submission.
10 That is not an evaluation that says, Is it a good idea
11 to do more DSM. We're not saying it's good or bad.
12 That analysis is -- will not give that answer, and
13 we're not trying to. And we're not saying, Going to
14 four (4) -- four (4) times DSM is bad in that, or good.
15 We have no information on that.
16 What we're saying, If you go to four (4)
17 times DSM does that change the outcome of what the NFAT
18 terms of reference asks for. And then at a later date,
19 there is the issue of what is the right level of DSM.
20 Should we go to 50 percent more DSM? Should we go to
21 two (2) times? Should we go to four (4) times? That's
22 a different process, and one that this process doesn't
23 answer.
24 But we are answering: Does the
25 recommendation coming out of this get affected by the

level of DSM? Now, I know that's going to be a huge discussion later on. I don't -- I don't par -- think for one (1) second that's the end of the story. I know that that is going to be an issue of much discussion. Yes...?

DR. PETER MILLER: But wouldn't it affect, say, in-service date requirements for -- for the dams, for --

MR. ED WOJCZYNSKI: Absolutely.

DR. PETER MILLER: Yeah, okay.

MR. ED WOJCZYNSKI: Okay. The question was, If we have a different level of DSM, doesn't that affect the in-service date for the dams? Absolutely. And maybe we could park that question to one of the last overheads 'cause I -- we do deal with that.

And -- yeah, I -- I'll just leave it. Okay. We'll...

(RETURNED TO SLIDE 10)

MS. NICOLE FITKOWSKI: Coming back to this, we were asked to explain how did we come up with the plans that we evaluated, why did you chose these ones.

So I'm going to go through one (1) by

one (1) how -- why we chose to evaluate these particular plans. Sorry...?

MS. NICOLE FITKOWSKI: Bill Harper asks...

MR. BILL HARPER (VIA CHAT): Will the status of the 750 megawatt interconnection be known before the end of the NFAT proceeding?

MS. NICOLE FITKOWSKI: That doesn't make any sense. Or is it --

MR. ED WOJCZYNSKI: Well, it sort of does actually, yeah.

MS. NICOLE FITKOWSKI: -- in the uncertainty in the overall --

MR. ED WOJCZYNSKI: Yeah. We --

MS. NICOLE FITKOWSKI: -- analysis?

MR. ED WOJCZYNSKI: -- we -- if we need to get into more detail in this we can. Dave is here. But we are working on finalizing our negotiations. We will have progress on them. I -- I this morning alluded to the fact that -- that we are still negotiating and so we will have more information before the hearing starts, we -- before we do interrogatories.

We will not have the 750 megawatt line approved before the end of the hearings. It'll take a few years. But in our plan that I'm going to talk

about at the end we do address that and -- and deal with that uncertainty.

In terms of when will the WPS negotiation itself be fully finished, I don't -- I -- Dave, do you want to comment on that? It's in progress.

MR. DAVID CORMIE: I -- I think, Ed, the answer to the two fifty (250) or the 750 megawatt transmission line, whether the 750 megawatt interconnection is an option will be known within the next couple of months.

And -- and so it's either on -- it'll either be taken off the table in the next couple of months or -- or it'll be on -- it'll be on the table and it'll form part of our -- our plan. So we'll -- we'll go through the NFAT process knowing whether that is an option or not.

MR. ED WOJCZYNSKI: Byron has a question. Well, at least we got to slide 10.

MR. BYRON WILLIAMS: Sorry. And just -- just to be clear, when you use the words, "Is an option," does that mean that it's -- it's a go, pending regulatory approval in Manitoba?

MR. ED WOJCZYNSKI: No, I think what he means is is an option that Hydro would continue to put

1 forward in the NFAT process and other places. If it's
2 not an option we'll withdraw it and it will no longer
3 be in the NFAT process in that extreme situation, right
4 Dave?
5 MR. DAVID CORMIE: Yes. If -- if
6 Manitoba Hydro doesn't think it's an option we're not
7 going to pursue it. But it will still then be subject
8 to the Minnesota regulatory process, to the National
9 Energy Board process, to Manitoba Hydro Board approval,
10 to the recommendations of this committee, and -- and
11 the decision by government.
12 So all those regulatory steps have to be
13 -- have to be achieved. But firstly, Manitoba Hydro
14 has to be convinced that there is a case for building
15 this 750 line. And we've got partners in the United
16 States that will -- will partner with us. If -- if we
17 don't have that, there's -- you know, it's -- it's --
18 it would be a pipe dream. And then we would go back to
19 the 230 kV line as -- as the only interconnection that
20 we're talking about here, not a bigger interconnection,
21 yeah.
22 MR. ED WOJCZYNSKI: Like we're - we're
23 not wedded to doing the 750 line and the -- and the
24 sales with it absolutely no matter what happens. We're
25 continually evaluating all the information, including

1 the progress on the export negotiations, including the
2 load growth, including gas prices, everything.
3 And -- and again, at the very end of the
4 presentation I'm going to come back to what we call
5 'pathways' and how we're dealing with the uncertainty.
6 Yes.
7 MR. DAVID CORMIE: One (1) more -- one
8 (1) more point. I -- I think when we talk about the
9 750-megawatt interconnection we think about it as an ec
10 -- an export pathway, but it also gives us that 750
11 megawatt of import capability which -- which is a
12 supply option that is relatively low cost.
13 And so that's why, you know, even if we
14 weren't to build a generating associated with it, it's
15 always -- it gives us capacity and energy and it -- it
16 forms part of -- of the option because of its import
17 capability. And it -- it fits nicely into a lot of the
18 -- a lot of the plans, as it provides the -- the
19 drought backstop to any hydro option that we have.
20 MR. ED WOJCZYNSKI: Yeah. When I
21 mentioned earlier that imports is one (1) of the
22 options, there are two (2) ways imports can be an
23 option over the existing transmission system, which is
24 fairly loaded up. And we already are counting on
25 maximizing the energy imports in a drought. We're

1 already doing that.

2 So an option is to expand that import

3 capability from the US so that we have that available

4 to meet Manitoba load. But the way to do that is a

5 combined package of export/import and expand the

6 transmission line. So it's -- it's a double-barrelled

7 option. But we'll come back to that. Yeah, I'll say a

8 little more about that right away.

9

10 (RETURNED TO SLIDE 10)

11

12 MR. ED WOJCZYNSKI: If you assume no

13 new interconnection, just the existing system, we

14 already are counting on imports to the maximum in -- in

15 the off-peak. That -- that's already in there. We

16 would look at -- we're going to look first of all at --

17 at an all-gas sequence, where we start with natural

18 gas.

19 Now, thi -- this overhead is taught

20 using the 2012 load forecast because that's what most

21 of our analysis had to be based on. We will -- in the

22 final NFAT and recommendations we'll be dealing with

23 the 2013 load forecast, so some of these dates will

24 slip a bit.

25 And somebody asked the question: Well,

1 if you change the DSM, well, doesn't that change the
2 dates? Yes, absolutely. And -- and if the load
3 forecast changes, it changes the dates. So in here
4 we're analyzing 2022 as the -- as the date we need next
5 new generation because that's what the 2012 load
6 forecast says. 2013 says 2023. And so -- but this
7 analysis, we couldn't redo it all and still meet an
8 August submission.
9 So in 2022 we need something. We'd
10 start building natural gas in this sequence. And then
11 we'd optimize, whether it's combined cycle or simple
12 cycle, depending on the economics, to -- to maximize
13 the economics for the gas option here.
14 And this is gas forever, so this is an
15 extreme thing. But that is your -- your pure natural
16 gas option. And recognize you can always do so --
17 there's always, underneath, some sub-options you can
18 add or subtract, but we're saying dominated by gas.
19 Similarly, the next one is saying --
20 it's -- it's our wind sequence. Maximize wind so all
21 your dependable energy requirements effectively are
22 being met by wind. But as we talked about yesterday a
23 bit, once our system is short of capacity, not energy,
24 then you need some capacity support for the wind to
25 meet the winter peak. And let me reiterate what was

said yesterday.

In winter peak, January typically, it's typically cold weather. It might not be -- it might not be thirty (30) below; it might be twenty-five (25) below. But frequently the winds are very low at that time. There are other years where the wind condit -- where -- that you have more than minus thirty (30) and the wind turbines have -- there in Manitoba have had Arctic packages put in to operate down to minus thirty (30). Most places they don't operate that cold. But below minus thirty (30) they have to be shut down.

But many years that doesn't happen, but they're still relatively on the -- frequently when you're doing your winter peak tends to be not very strong wind. So because of those two (2) things, we can't count on wind capacity in the winter for our winter peak. So you need something to meet that capacity requirement.

And in the first few years, 2022 to around '25, we're short of energy, not capacity. So we can add wind without capacity. Starting when we hit our capacity requirement, we need to add simple-cycle turbine to provide the capacity, very expensive, and the combination of the wind and the gas is that Sequence 2, or Plan 2.

1 Plan 3 is Conawapa in 2026 for domestic
2 load, not exports. But the first three (3) years,
3 between 20 -- four (4) years, '22 to '26, we have wind
4 generation. Because we're short only of -- of energy,
5 not capacity, we don't need any capacity support and we
6 just put in pure wind there. So this is a case where
7 you've got pure wind, and you've got Conawapa.
8 Then Plans 4 and 5, instead of putting
9 in wind before Conawapa, you put in gas turbines,
10 either simple cycle or combined cycle. So there's two
11 (2) sets of plans there. And if one wants to look at
12 the economics of wind versus natural gas, then one can
13 compare 4 and 5 and you get that comparison.
14 Number 6, instead of -- we put in
15 Keeyask for 2022, followed by gas.
16 And number 7, we put Keeyask followed by
17 Conawapa. So -- and that way we test under no new
18 interconnection a number of options.
19
20 (MOVED TO SLIDE 11)
21
22 MR. ED WOJCZYNSKI: Okay. The next
23 group of plans says that put in the -- the 250 megawatt
24 transmission option. You need Keeyask in '19 to -- to
25 be able to do that. And you have the Minnesota Power

1 two fifty (250) deal that we talked about, plus this
2 NSP ex -- expansion. And we have -- you have to have
3 Keeyask for this option. There's no other way to get
4 that transmission line built, or justified and built by
5 MP -- Minnesota Power.
6 But after Keeyask, you could go with
7 other options. Two (2) of the options, the obvious
8 ones are gas and Conawapa. So we've evaluated a plan
9 with Keeyask/gas and another plan Keeyask/Conawapa. So
10 you get to evaluate the trans -- the interconnection
11 group or pla -- plan versus a no interconnection. Plus
12 with the interconnection you can evaluate Conawapa
13 versus gas after Keeyask.
14
15 (MOVED TO SLIDE 12)
16
17 The third grouping is the 750 megawatt
18 interconnection. Again, you have to have the Minnesota
19 Power 250 megawatt sale. You have the NSP ext --
20 expansion. No WPS sale. And in this one, again, you
21 go Keeyask/ gas or Keeyask/Conawapa. Those are the
22 obvious choices.
23 And -- and what you get with this is you
24 get all the benefits of a seven fifty (750) line, but
25 by not having the WPS sale in it there is less pressure

1 on Manitoba to, after Keeyask, put in some major new
2 resources. You still do need something eventually, but
3 not as much, because you don't have that WPS sale
4 anymore. Question?
5 MR. BYRON WILLIAMS: Ed? Ed, does no
6 WPS sale mean no 100 megawatt?
7 MR. ED WOJCZYNSKI: I'm sorry, when we
8 say no WPS, we could have clarified. We mean no WPS
9 three hundred (300). One hundred (100) is in every
10 single plan. We -- we could have explained that
11 better. Sorry. One (1) thing -- we ran out of time,
12 and in retrospect we wished we'd had more time, because
13 what's missing here is we don't have a plan where you
14 build Keeyask '19 and then follow up with Conawapa
15 '20/'25, because that would be a more direct comparison
16 with the next set of groups. And we -- we just
17 literally didn't have time to evaluate it. So it's a -
18 - it's just an unfortunate thing because it -- it
19 limits our ability to compare all the possibilities.
20 But there's nothing we can do about that.
21
22 (MOVED TO SLIDE 13)
23
24 MR. ED WOJCZYNSKI: Okay. Try again.
25 The last grouping includes the preferred development

1 plan, which is this first one here: Keeyask '19;
2 Conawapa '25, and after that there's some gas turbines
3 eventually.
4 And -- but there's an alternate
5 possibility. You don't have to build Keeyask to meet
6 this -- this situation. You could build Keeyask for
7 2019 and follow up with gas and never build Conawapa.
8 You do need to put in a whole bunch of natural gas
9 generation starting in 2025 though, because Keeyask
10 alone isn't enough.
11 And someone asked the question
12 yesterday: Well, can't you go and do these sales and -
13 - with MP, for example, and with Wisconsin, and don't -
14 - don't build a new hydro, do it -- use the existing
15 system?
16 You need to have Keeyask to do this, but
17 you don't need Conawapa. Keeyask by itself provides
18 enough new hydro energy that it would meet both the
19 Minnesota Power 250 deal and the Wisconsin 300 deal.
20 And then later on when you have additional load growth
21 in Manitoba and you need to meet it, you can build gas
22 turbines.
23 So in a sense you're selling the hydro
24 electrons to Wisconsin and Minnesota, and -- and then
25 in droughts you're using gas electrons for a Manitoba

1 load. I mean, that's about as -- it's -- I'm -- it's
2 an oversimplification. And that is a possibility. Why
3 would you do such a thing? Well, if you're worried
4 about the -- about the huge borrowing, you can get
5 around the borrowing, but you're losing some other
6 benefits, so... And -- but I'm getting to the results
7 now.
8 So those are the thirteen (13) plans we
9 have studied intensely. We did look at other plans but
10 not in this whole twenty-seven (27) scenario
11 evaluation.
12 (MOVED TO SLIDE 14)
13
14 MR. ED WOJCZYNSKI: So this is -- I --
15 I don't believe I've used the word 'pathway' in the
16 pre-hearing conference. It was probably premature
17 because we already were intro -- having trouble -- not
18 trouble -- having a lot of time to introduce the plan
19 concept.
20 Obviously, we're not making decisions in
21 the next year or two (2) that says, For the next forty
22 (40) years this is what we're going to do and it's not
23 going to change. Obviously, as things evolve, our
24 plans change. At the front end we have some decisions
25 to make in Manitoba, and that's what the NFAT is really

about. What are the -- what are the choices we make for the next couple of years? What do we commit right now?

In the very long term, we can plan on doing something, but as circumstances evolve, we'll change them; it always happens. So let me give some examples, starting with number 1, the natural gas pathway.

The -- the natural gas plan has natural gas forever. Well, that is a possibility. It's a pretty extreme possibility. There are other possibilities where you build natural gas at the front end to meet the -- the first requirement, but later on build hydro.

So a pathway in this case is if you choose to go natural gas at the front end for the next requirement after that you have different choices. You can continue with gas or you can go with hydro or you can go with nuclear. Well, maybe not nuclear, because that's not allowed in Manitoba. But other options. And I'll go through the whole thing. But what are the choices we have in Manitoba to make at -- flowing from the end of this process that Manitoba Hydro -- or I should say the government -- has to prove or disapprove?

1 Do you build at the front end for 2023,
2 which is the 2013 in-service date requirement? Do you
3 approve for our Manitoba load going hydro or going gas?
4 We have to make a choice. If you want to go with
5 hydro, you've got to commit that now in the next few
6 years; you can't wait ten (10) years.
7 Secondly, do you want to go with a new
8 interconnection or -- of two hundred and fifty (250) or
9 not? We have an opportunity right now; if we say no to
10 it now, it's not coming back tomorrow. MP are going to
11 move on and do other things. So we have to make a
12 choice now -- 'now' meaning in the next two (2) years -
13 - whether we go ahead with that or not.
14 Or instead of a 250 megawatt
15 interconnection go with a 750 megawatt interconnection.
16 That's -- that's a third choice. Lastly -- it's a bit
17 of a sub-option, do you do a WPS or not if you do the
18 seven hundred and fifty (750)? That's a bit of a sub-
19 option. It's not really a -- it's a decision that has
20 to be made but it's not a project decision.
21 Those are the choices, really, that are
22 going to flow from this NFAT process, and what the
23 government has to approve or not approve. There are
24 all kinds of other things that are going to flow from
25 resource development. What is the level of DSM? What

1 should we do with biomass? What should -- you know,
2 there's -- and what happens with rate structures? So
3 all kinds of other decisions.
4 But in terms of the NFAT process, what
5 we see as -- these are the -- the choices that need to
6 be made. And in each plan -- each pathway there are
7 multiple plans possible. Let me jump down to the
8 bottom. The -- number 5, and I already started talking
9 about this.
10 In this plan that has the large tie-
11 line, you could start with Keeyask in 2019 and plan to
12 build Conawapa for 2026. But let's say the WPS
13 negotiations didn't go as well as we want, and we don't
14 like what's happening. Let's say natural gas prices
15 are -- are going to -- are -- start being lower than we
16 were forecast and export prices are lower.
17 What happens with this world-wide
18 recession, and the load growth drops off in Manitoba?
19 What if it turns out as we start building Keeyask we
20 find out the capital costs that Dave Bowen are talking
21 about are on the high side, and that Conawapa is going
22 to experience the same thing?
23 Let's say a whole bunch of bad things
24 happen in terms of the economics or the financial
25 acceptability of Conawapa. You have the choice up to

1 2018 to stop work on Conawapa, and either delay it into
2 the future, or to stop and do something different. And
3 what we've assumed here in the analysis, the
4 alternative is you could go to natural gas. And so
5 we evaluate both of those options in this pathway.
6 The other -- you -- you have off-ramps
7 from this stuff. If the 750-megawatt line, it's
8 approval process is -- is already started in the States
9 and now in Canada. And the schedule is for it to be
10 approved in 2017. Receive all the approvals for
11 construction: environmental, NEB, US presidential
12 permit, all those things.
13 Let's say we don't -- everything else
14 happens okay and export prices are good but let's say
15 the US presidential permit is a 'no' for the seven
16 fifty (750) line. We have not started Conawapa, so
17 we're okay there. We can stop Conawapa. And at that
18 point you -- you have started Keeyask. You can't stop
19 anymore. You're too far down the road.
20 But at that point, you have an off-ramp
21 and you can leave this pathway and you can either go to
22 the two fifty (250) pathway or you just go to number 2.
23 So there are many risks that we -- we have to manage,
24 and opportunities. Dave talked about the construction
25 risk. We're going to have an implementation plan, or

1 what did you call it, an execution plan, where we've
2 got all kinds of risks and we're going to manage those
3 in the project.
4 But outside the project, as the world
5 evolves we're going to adapt the plan to suit it and --
6 and we're going to have a discussion of that in the --
7 in the NFAT submission. It's called 'Chapter 14',
8 where we wrap up all these plans, talk about these
9 uncertainties and say, We have flexibility. We're not
10 stuck, for instance going Keeyask, Conawapa, no matter
11 what.
12 The note at the bottom refers to what
13 Dave said yesterday and we talked about this morning.
14 The WPS negotiations are still under negotiation.
15 There's studies going on. I talked about it as well.
16 And what is in pathway in 4 and 5 may evolve slightly
17 based on what we have right now, and we will bring that
18 information into the NFAT submission -- into the NFAT
19 process, pardon me.
20 Okay. Were -- were there any questions
21 before I move on? How much time do I have?
22 Okay. I thought I had less time.
23
24 (BRIEF PAUSE)
25

1 MS. JOANNE FLYNN: There's -- there's
2 just --
3 MR. ED WOJCZYNSKI: Joanne...?
4 MS. JOANNE FLYNN: Yeah. There's just
5 one (1) additional point that I'd like to make on the
6 development plans, and that is, you know, all these
7 places that you see natural gas towards the end of the
8 plan.
9 As we get out in time, what we do is we
10 put in the lowest capital cost resources to fill out
11 the plan in time. But when we get out into those later
12 time frames, as those time frames would be approached,
13 there will be an optimization of resources at that
14 time.
15 So if at that time it's economic to put
16 wind in or other forms of renewables or if there's an
17 opportunity for additional DSM, what -- whatever is on
18 the table at that time will be evaluated then. So for
19 simplicity and to fill out the plans, that's what we
20 do. We use the lowest capital cost resources.
21 MR. ED WOJCZYNSKI: You know --
22 actually, thanks for interceding there, Joanne, because
23 I -- that actually gave the opportunity -- remember, I
24 was going to -- supposed to talk about something here
25 that I forgot.

1 I talked about things changing, about
2 the WPS negotiations, export prices or whatever. What
3 happens if our load growth drops due to a recession in
4 Manitoba? Or let's say immigration stops in Manitoba.
5 Remember Lois -- the conversation with Lois yesterday.
6 Or more interestingly, what happens if down the road,
7 once we are able to go through the full cycle of
8 evaluating the DSM information, rather than the one (1)
9 times DSM that's in the plan right now, let's say it's
10 one point nine-five (1.95) times some number.
11 Keeyask -- and let's say that happened a
12 year from now. Keeyask -- we would still want to do
13 Keeyask '19 because it ties into this interconnection.
14 But if you've got more DSM, whether it's gas or whether
15 it's Conawapa we'd follow up, we'd just defer Conawapa.
16 We'd just defer the gas. We would adapt to that.
17 And then when we evaluate DSM under this
18 scenario we would account for the fact we have the tie-
19 line and all of that. Similarly, in any of the other
20 plans, if -- if we -- we see the -- the economics of
21 DSM and the rate impacts and whatever, there will be
22 some variation between the plans in terms of the
23 economics but -- but not so much dramatic.
24 The -- any impacts will be more related
25 probably and -- and this is -- no one knows this for

1 sure, but to the new information and technologies and
2 marketing and whatever. And there are others who can
3 speak better to that than I can. And so whichever plan
4 we go with we will adapt it to suit that level of DSM.
5 Just like if the load growth changes we're going to
6 change the in-service dates.
7 So that's -- I was trying to answer your
8 earlier question. No questions on this part before we
9 move on? Okay.
10
11 (MOVED TO SLIDE 15)
12
13 MR. ED WOJCZYNSKI: And this, by the
14 way, is a very important element for us, flexibility in
15 what we're doing. We're managing our risks. And we're
16 going to have a chapter 15 that talks if you go with a
17 development plan, our execution plan for how to
18 implement it and a little bit more detail on what we do
19 under various circumstances.
20 Okay. In the -- in the submission,
21 we're going to be -- if you go back to the terms of
22 reference and looking for the overall best
23 socioeconomic benefits to Manitoba. Those aren't the
24 exact words but close to it. That part of the terms of
25 the reference -- socioeconomic is more than just the

1 environmental impact definition of socioeconomic.
2 Clearly from that context it's referring
3 to all the benefits and impacts to Manitobans overall.
4 And we are going to have a chapter that pulls together
5 all the -- the various parameters into one (1) place to
6 -- to do the comparison of the plans. And we can't
7 look at all the plans. We're -- we're picking out the
8 main plans to -- to get a sense of them, to get a sense
9 of the comparison.
10 And -- and, well, market valuation
11 refers to what happens in the competitive market using
12 the corporate economics, but then the traditional
13 economic evaluation, ratepayer, obviously, rates and
14 customer bills. Manitoba government, important player.
15 If we go with one (1) plan versus
16 another there is hundreds and millions and billions of
17 dollars difference in revenues or transfers, taxes,
18 water rentals, debt guarantee, fee that flows to the
19 provincial government. It's not a benefit to Manitoba
20 Hydro or directly to the ratepayers. But it is a
21 benefit to Manitoba and to taxpayers, and is something,
22 when you look at the provincial, socioeconomic
23 perspective needs to be considered.
24 Manitoba economy. Growth in the
25 economy. Employment in Manitoba. Obviously

1 environment. Social impacts. Risk analysis. And then
2 back to the reason Manitoba Hydro exists, reliability
3 of supply and energy security for Manitoba electricity
4 con -- users.
5 So we'll have a chapter that pulls
6 together and summarizes for the main plans, and then
7 that is used in our final chapter that -- that pulls
8 together the pathways and this information to draw a
9 conclusion and recommendations.
10
11 (MOVED TO SLIDE 16)
12
13 MR. ED WOJCZYNSKI: So -- oh, were
14 there any questions on that? I'm going to finish off -
15 - we were asked to provide a bit of a history of the
16 development plans and how they evolved. So I'll just
17 give a very brief -- what I hope is brief, explanation.
18 And I chose to go back -- we talked
19 about this in our team, and we chose to go back to 1990
20 because in 1990, most of you would be familiar, that we
21 had a huge sale negotiated with Ontario. We were
22 building a 1 1/2 thousand megawatt -- would have built
23 a one thous -- 1/2 thousand megawatt interconnection
24 and pre-built Conawapa.
25 And we had -- actually the Public

1 Utilities Board had a very major capital development
2 review where this was the main focus. It went on -- it
3 was quite an extensive all-consuming exercise that took
4 over Manitoba Hydro for two (2) or three (3) years, and
5 -- and had public hearings and everything else.
6 And PUB recommended proceeding. And we
7 were moving forward and we were in the environmental
8 review process for Conawapa but then the -- the -- one
9 (1) of the most major recessions ever to hit Ontario
10 happened and they cancelled the deal. And they
11 cancelled all their other stuff they were doing. And
12 that happened in 1993.
13 But at that point we had committed
14 Conawapa and were proceeding, and then stopped it. So
15 given that Conawapa is a major part of our plan it
16 seemed like a good place to start. And also that PUB
17 was heavily involved.
18 So by the way, when Ontario cancelled it
19 we had contractual provisions and recovered our
20 incremental costs that we would not have spent
21 otherwise. It was in the order of 100 million or some
22 such thing.
23 In 1990, with that sale, we were looking
24 at developing Conawapa for 2 -- the year 2000. And
25 you'll see there's a different rating than we're

1 talking about today. In those days we used the -- the
2 net rating, not the gross rating. So this is including
3 the negative impacts on Limestone.
4 But today we've moved to gross ratings.
5 We've found that more useful. So it's just -- it's
6 really the same Conawapa although today's Conawapa is
7 slightly bigger than that Conawapa was. Wuskwatim --
8 followed by Wuskwatim and then Birthday, or Gull. We
9 had two (2) choices, Manasan and First Rapids.
10 Then in '90 -- three (3) years later
11 when the sale was cancelled we cancelled Conawapa, and
12 the most economic thing to do because we had lower load
13 growth -- or pardon me, not lower load growth -- lower
14 sup -- supply requirement. Lower load to meet.
15 Instead of Conawapa, Wuskwatim was the
16 economic choice in the study, so we -- we put in it as
17 first planned. Gas turbines were the next options, and
18 then we followed with hydro.
19
20 (MOVED TO SLIDE 17)
21
22 MR. ED WOJCZYNSKI: I'm not going to
23 show every year cause it would take too long, '95 we
24 still had Wuskwatim, 340 megawatts was the next option.
25 But is that around that era that Manitoba Hydro said,

1 We need to change more dramatically what we have done
2 on our projects compared to the past.
3 So we decided to -- to do three (3)
4 things. One (1) is redesign our projects where we
5 could to reduce the environmental impact. I talked
6 about that briefly this morning.
7 Secondly, with the local First Nation
8 communities we concluded that we needed to do a better
9 job of going back and dealing with the legacy impacts,
10 the -- the impacts of the past projects. So we made a
11 more concerted effort to go back again and -- and try
12 and clean those up. And we were successful, I would
13 say, in most of the cases. I'd say we're still arguing
14 with one (1) community. But we made a lot of progress
15 in the '90s 'cause -- in that -- and the early 2000s.
16 The third thing we did is say that we
17 want the First Nations and other communities, but real
18 -- to be in favour of the projects and support them,
19 not opponents. We didn't want to just -- we didn't
20 want to just offset the negative impacts on the
21 community, which was the tradition up 'til then. If
22 there's an adverse impact, there used to be you'd do
23 something so that they're made up for the made up for
24 the adverse impact and they were like they were before.
25 Now the intent and our policy is that the community

1 should overall be better off with the project, not
2 worse.
3 So it used to be you take them from a
4 negative to a zero. Now we want to take them to a
5 positive overall, recognizing there's many things going
6 on. So that was a philosophy change in the mid-'90s,
7 and we did a lot of work to redesign our projects. I
8 talked about that today, particularly on Keeyask.
9 And then in '97 you'll see that
10 Wuskwatim went from three forty (340) to two eighty
11 (280). And then in '99 you'll see it went to two
12 hundred and six (206). And today it's about -- well,
13 it's around there. And just like on Keeyask, we
14 reduced the head, reduced the flooding, reduced the
15 cycling. And frankly, in my somewhat knowledgeable
16 opinion, it is one (1) of the cleanest energy proj --
17 electrical energy projects in the world, Wuskwatim is.
18 It's world class.
19 You -- you -- I challenge you to find
20 anything of a major project that's better in the world.
21 Okay, well, I know that that's a person's opinion, but
22 I feel very comfortable saying that. It's very hard to
23 beat that kind of a project. But that's history.
24 Moving on -- the lawyers are probably
25 saying, What is he talking about. Okay. I'm talking

too much. Okay. Moving on. Then we put in Wuskwatim as the next project in our plans. In -- around 2000 we did agreements in principle for both Wuskwatim and Keeyask. We talked a bit about that.

(MOVED TO SLIDE 18)

MR. ED WOJCZYNSKI: As load growth was changing we changed in-service dates. And in 2003 -- in the early 2000 there was a lot of attention to wind generation. Ourselves were first and then also private developers did a lot of work in the field measuring wind, getting wind atlases, looking at the capital cost of different locations, studying the integration costs. There was a lot of effort at that time, because it was relatively new for Manitoba. And -- and not just Manitoba; this was out -- throughout Canada.

And we -- in our plans we put in wind in 2003 for the first time. So we had 100 megawatts in '05 in the plan and 50 megawatts over a number of years each, for a total of 250 megawatts, and Wuskwatim following in 2009, and then eventually Gull. In '04 something similar, although Conawapa comes back into the picture. What happened from between '03 and '04, in '03 and for a few years Gull was more attractive

1 than Conawapa when you looked at the economics. But as
2 we did new cost estimates and everything evolved, that
3 flipped Conawapa being more attractive.
4 The question was asked earlier today,
5 why is it -- I think it was Byron asked: Why is it
6 that we have Gull more advanced than Conawapa? Well,
7 this is part of the answer, that in the economics in
8 those earlier 2000s, Gull was a more economic
9 alternative, a more attractive -- partly because it was
10 smaller, but partly just because of the raw economics.
11 We kept on doing more studies, more
12 engineering, more cost estimates. And eventually
13 Conawapa became a more attractive operation. So in our
14 -- in that plan we put in, instead of Gull. And then
15 2006, we -- we started committing more wind. We
16 ultimately have put in, what, 253 megawatts of wind is
17 in our system now, and you can see that in that plan.
18
19 (MOVED TO SLIDE 19)
20
21 MR. ED WOJCZYNSKI: And after that, if
22 you look at the 2008 Power Resource Plan, you don't see
23 wind in there anymore. We have the 253 megawatts in.
24 And when we were getting the information from private
25 developers and looking at the -- at the benefits and

1 doing the evaluations, thos -- they weren't economic,
2 so we didn't put them in the plan anymore. Byron...?
3 MR. BYRON WILLIAMS: In terms of the
4 AIP for Conawapa, I see that you've got the Keeyask and
5 the --
6 MR. ED WOJCZYNSKI: No, no, no, did I -
7 - I didn't say there was an AIP in Conawapa.
8 MR. BYRON WILLIAMS: No, I -- I was
9 going to ask. So I'm taking it there -- there isn't
10 one (1).
11 And secondly, I guess my question would
12 be: For 2025, what's the drop-dead date to have an AIP
13 in place?
14 MS. MARILYN KAPITANY: Excuse me, what
15 is an AIP?
16 MR. ED WOJCZYNSKI: AIP is -- is an
17 agreement in principle. And first of all, what was the
18 purpose of the AIPs back in 2000? Remember, that was
19 an era where the local communities were dead seat
20 against hydro development -- well, a little bit early.
21 I'll talk about the ninety-fi -- 1995, that era. And
22 so we wanted to engage -- we wanted to engage with them
23 and say: Look, we want to partner with you. We want
24 to work with you on these projects.
25 And -- and we felt and the First Nations

1 felt -- both NCN and, ultimately, the four (4) KCN, or
2 particularly TCN, Tataskweyak Cree Nation -- that we --
3 they -- that there should be some legitimacy to the
4 process from their members.
5 So because we had not developed a new
6 hydro project in the new era, we -- we felt we needed
7 the members to signify and indicate, Yes, we do want
8 our leadership to work with Manitoba Hydro on this. So
9 both NCN and TCN, and then War, there -- there were ra
10 -- referenda, and then an AIP, as the basis for having
11 those discussion.
12 Today, with Conawapa, we don't feel the
13 need, and neither do the communities, for such an
14 agreement in principle because we've already gone
15 through this twice. The communities are familiar with
16 the issues. And this isn't a foreign concept. And --
17 and we -- we have process agreements with each of those
18 five (5) communities that lay out something like what
19 was in the AIPs in terms of how we work together,
20 funding for their processes, consultation, joint
21 environmental work, those kind of things. And that's
22 already happening.
23 And we're now -- it also laid out a
24 framework for us talking with them on the income
25 arrangements and governance and direct negotiate on all

1 those things. So neither we nor they feel the need for
2 the AIPs. We -- we actually did have that discussion
3 with them. And we're going -- we're proceeding with
4 the process agreements.
5 MR. BYRON WILLIAMS: So just for
6 Conawapa then --
7 MR. ED WOJCZYNSKI: That is Conawapa
8 I'm referring to.
9 MR. BYRON WILLIAMS: Yeah, I
10 understand. To proceed with the project itself, you'll
11 need, I guess --
12 MR. ED WOJCZYNSKI: Oh, we'll want a
13 referenda, but that's -- that would be a development
14 agreement or participation agreement, not an AIP.
15 MR. BYRON WILLIAMS: Right. And when
16 we -- where are you on the development agreement or par
17 -- participation agreement? Whe --
18 MR. ED WOJCZYNSKI: I -- I can't give
19 you a detailed answer to that. I can say that --
20 because I'm -- I'm not involved in that anymore. I
21 haven't for about nearly two (2) years. And Ryan is
22 closer, but he's not here either.
23 And the people who were doing that, by
24 the way, they were working sixteen (16) hours a day,
25 seven (7) days a week, answering interrogatories - one

1 thousand two hundred and fifty (1,250) pages or
2 something. And a lot of those people are sleeping
3 today and trying to catch up on their sleep, literally.
4 They're taking a few days off. So they're -- some of
5 them might have been here.
6 The -- we are in discussions with them
7 on income already and some of the related aspects. And
8 we are looking for -- in a year or two (2) to have
9 agreements. That would be the basis of going forward,
10 but there isn't a hard date set for that. But, you
11 know, to have a more precise answer, we'd have to --
12 have to get other people to answer it.
13 MR. BYRON WILLIAMS: And just to finish
14 the thought, is there an uncertainty associated with --
15 with the consummation of that agreement in the sense
16 that it may or may not take place, or is this a dead
17 certainty that -- that that will be -- be completed?
18 MR. ED WOJCZYNSKI: Well, I think
19 everybody in the -- in this room can answer that
20 question. That there --
21 MR. BYRON WILLIAMS: How -- how much
22 uncertainty?
23 MR. ED WOJCZYNSKI: I'll answer it
24 though. Okay, Byron, you're -- you're asking a decent
25 question, and I -- I'm being a bit... Absolutely

1 there's no certainty. There can be no guarantee. Are
2 we optimistic? Are we confident? Yes.
3 And you will re -- you may have noted,
4 and I haven't talked about it here, we're assuming that
5 Conawapa follows Keeyask in this work here, most of it
6 anyways. And in part, it's the same four (4)
7 communities. They -- the -- the issues on how to do
8 the mutual -- a lot of those had been resolved through
9 the Keeyask arrangement.
10 Conawapa will be different and will have
11 learned from Keeyask. So a lot of the stuff we had to
12 go through on Keeyask, we don't have to go through
13 again. There'll be some new issues, and -- and they
14 won't be easy. Like how much benefit will there be is
15 obviously always an issue. But we are confident there
16 will be arrangements.
17 What if they take longer than we thought
18 and the Conawapa schedule gets extended? You come back
19 to the pathway discussion, and we can -- we can
20 accommodate that. If Conawapa gets delayed by a year
21 from -- it's not '25 anymore, it's '26 -- gets deferred
22 from '26 to '27 and our -- and we need to have some
23 resources, we -- we can bridge that. Okay. Remember
24 the 2012 forecast says '25 with -- if you go to the
25 2013 forecast, it will be '26. I think I talked about

1 it at the pre-hearing conference but not too much
2 today. So we have flexibility on that.
3 Are there any more questions on that?
4 MR. PATRICK BOWMAN: It's Patrick
5 Bowman. Two (2) quick questions. One is -- and it's -
6 - and it's going back to your slide 15, I believe, but
7 you listed the criteria for the cost -- benefit cost
8 analysis and the different things that were tested for
9 each plan. And one (1) of the things that isn't listed
10 there, and I just wanted to check whether you expected
11 to comment on it each, is in the terms of reference
12 there is a need to assess the alignment of the plan and
13 alternatives against certain pieces of policy like the
14 Clean Energy Strategy and the Climate Change Act and
15 the -- Sustainable Development.
16 Will that be commented on for each plan
17 as to how it aligns with those pieces of the puzzle?
18 MR. ED WOJCZYNSKI: There -- there will
19 be such a discussion, yes. And we'll be focussing more
20 on some of the high-priority possibilities, not --
21 like, we won't be doing a detailed comparison for every
22 one (1) of the thirteen (13) plans, but we will be
23 looking -- if you've got a plan that's got mostly gas
24 versus one that has mostly hydro or imports. So we
25 will be doing that, yes.

1 MR. PATRICK BOWMAN: And I guess the
2 other question, and it may just be that I'm a bit thick
3 on this and I need to see the material. But you said
4 that each of the major plans will be run through the
5 twenty-seven (27) scenarios I believe was the --
6 MR. ED WOJCZYNSKI: Yeah.
7 MR. PATRICK BOWMAN: -- the language
8 you used for, you know, high and low capital cost and
9 the like.
10 MR. ED WOJCZYNSKI: Yes.
11 MR. PATRICK BOWMAN: But when we
12 actually get to the piece where you assess them -- that
13 twenty-seven (27) scenarios all works on the same load
14 forecast and the same DSM scenario?
15 MR. ED WOJCZYNSKI: Yes.
16 MR. PATRICK BOWMAN: And didn't --
17 MR. ED WOJCZYNSKI: Wait a sec -- wait
18 a second. All twenty-seven (27) here do. We do some
19 other analysis separate from this that I'm going to
20 talk about briefly right away.
21 MR. PATRICK BOWMAN: Oh, okay. I --
22 MR. ED WOJCZYNSKI: But no, just --
23 just --
24 MR. PATRICK BOWMAN: we're going to get
25 --

1 MR. ED WOJCZYNSKI: -- verbally.
2 MR. PATRICK BOWMAN: I hadn't seen you
3 get to it yet. That's why I was not sure --
4 MR. ED WOJCZYNSKI: Yeah. I -- I --
5 MR. PATRICK BOWMAN: -- if it got
6 missed.
7 MR. ED WOJCZYNSKI: Well, maybe I
8 should have talked about it already. I did talk about
9 -- okay, I'll come back to that. I -- I probably
10 should have touched on it earlier, but...
11 I -- I talked about we're going to --
12 with the 2013 load forecast where -- see, here, we're
13 in 2012, so I was going to -- it's actually following
14 2012, it's 2013. 2013 -- well, have I finished -- let
15 me finish this and I'll go to '13. That's the
16 progression I was planning on.
17 We were talking about the AIPs and I'm
18 trying to remember where I was on this. Okay.
19 In 2008, Manitoba Hydro signed MOUs with
20 Minnesota Power and Wisconsin, and that's the basis of
21 the -- the arrangements we are now talking about. And
22 in 2012 we -- that's when we signed with NSP the ten
23 (10) year extension where that's 375 megawatts. Dave,
24 that's the winter or summer? I can't -- I forget.
25 MR. DAVID CORMIE: It's lower in the

1 winter.

2 MR. ED WOJCZYNSKI: Okay. That's --

3 that's the summer obligation, yes. Yeah, that's the

4 summer obligation. And if we have enough new hydro, we

5 can bump that up to another hundred and twenty-five

6 (125) to make it 500 megawatts. So that was signed in

7 2008.

8 And then we started bringing in the MP

9 and WPS arrangements. Then in 2010 we carried on with

10 that. You'll notice Conawapa got deferred here, as did

11 Keeyask, in part because of load growth and partly

12 because we didn't finish the negotiations and the

13 projects were still moving alone.

14 Similarly, in 2011 we deferred Conawapa

15 a year and we signed the -- the Minnesota Power PPA.

16 So it's been approved in the United States by their

17 regulator and we've signed it here as well.

18 And then in the next year, meaning last

19 year, which is what the basis of most of the submission

20 is on, Conawapa moved back to 2025. And also, WPS had

21 chosen to reduce their maximum amount, the -- from five

22 hundred (500) down to three hundred (300), which is the

23 basis of what we're talking about today. So that's

24 sort of the progression.

25 Coming to thi -- 2013, which is beyond

1 this, in 2013 the load forecast has dropped somewhat,
2 so our next in-service date requirement without any new
3 export slips from twenty-two (22) to twenty-three (23),
4 still needs -- it's still needed for energy, not
5 capacity.
6 We have the diversity exchange with GRE
7 extended from the end of -- from 2025 to 2030. And
8 we've moved back the earliest in-service date for
9 Conawapa from 2025 to 2026. And there was a fourth
10 change which I can't remember now. Well, I -- oh,
11 that's right, I guess export prices and econo --
12 discount rates and things have all modified somewhat
13 compared to 2012. So those have happened.
14 The DSM plan is fundamentally similar in
15 2013 from '12, but it does not yet have the benefit of
16 the thorough market potential study. And that's
17 something that our Lois Morrison and -- and the various
18 divisions in the customer service end will be taking
19 that and a whole bunch of other information and
20 developing new DSM program options over the course of
21 the year. I -- I can't say what the timing of that
22 would be.
23 And then for the next year, '14, the
24 power resource plan for that year would have the
25 benefit of the new information on DSM, and everything

else that happens as well.

Now, I'm trying to remember the question you were asking about 2013. Did I cover that? I can't remember your question now. Oh, sorry, here's the mic.

(BRIEF PAUSE)

MR. ED WOJCZYNSKI: Oh, yeah, the load forecast in the twent -- ah, okay. Yes, thank you. The question was: I -- that this was all based on 2012, yes. So with the 2013, and we did present this at the pre-hearing conference, we're going to do the preferred development plan and the -- and a plan without the new interconnection with the 2013 load forecast and economic indicators and all the changes I just talked about. And we're going to have that ava -- available as part of the submission.

We are also going to have, as I already said, the one and a half (1 1/2) and four (4) times DSM for those same scenario -- same situations, including the 2013 load forecast.

We're also going to have evaluation -- that's economic evaluation, what I just talked about. We're also going to have impa -- assessments of

1 drought, what is the impact of drought. And we're
2 going to do both economics and financial.
3 What happens in the preferred plan or
4 some of the other plans if you have a drought, the
5 worst drought on record? That five (5) year worst
6 drought that PUB has heard about before and is our sort
7 downside scenario even without any new generation.
8 Even in the natural gas plant it's -- it's a risk.
9 We take that worst case drought and put
10 it in the front end of the sequence. And then we put
11 it in later on as well. What is the impact of it on
12 this and some -- some of the other plans? Not all
13 thirteen (13) plans, just a couple of representative
14 ones. And we're going to also do some financial on
15 that.
16 We are going to do a little bit of work,
17 more qualitative, on what happens with climate change
18 and the impacts on our flows and things.
19 Joanne, is there anything else I'm
20 missing in there that -- in -- in the submission that
21 we should talk about, aside from the -- you know, the
22 thirteen (13) plans? Yeah.
23 Maybe there's one (1) other thing I
24 should comment on. No, I -- I guess that covers it.
25 Yes. Sorry. Yes.

1 MR. PATRICK BOWMAN: Just to touch on
2 the question I had earlier, in your twenty-seven (27)
3 scenarios, for each of the plans there's going to be
4 what you called the full analysis, economic, financial,
5 all those pieces of it. So something like a high
6 capital cost versus a low capital cost will be fully
7 run through --
8 MR. ED WOJCZYNSKI: Yes.
9 MR. PATRICK BOWMAN: -- all aspects of
10 the analysis?
11 MR. ED WOJCZYNSKI: Yes.
12 MR. PATRICK BOWMAN: Then you went on
13 to say you'll look at three (3) different load
14 forecasts or load forecast DSM combinations,
15 effectively.
16 MR. ED WOJCZYNSKI: See, that's on --
17 that's only with the 2013 load forecast and not run
18 through everything.
19 MR. PATRICK BOWMAN: Yeah. What -- how
20 will it look different? What parts of the analysis
21 will be completed at different load levels and which
22 parts won't be complete. How will --
23 MR. ED WOJCZYNSKI: That'll be the
24 economic evaluations. And I don't believe we're going
25 to be able to have any financials on that. I think we

are hoping to have, but they can't get them done in time. Yeah.

One (1) small comment is we originally weren't going to do the full twenty-seven (27) scenarios for the all -- for that wind plan, but based on feedback we received from some very important people in this province, we did do the full twenty-seven (27) scenarios in the economic evaluation for that. And that's why you saw it earlier in our list of -- of plans.

I think that's it. I think that's the end of -- oh, I went backwards. Sorry.

Yes?

MR. BYRON WILLIAMS: Is the WPS -- I had thought it was four hundred (400) potentially. But is it now only three hundred (300)?

MR. ED WOJCZYNSKI: Dave...?

MR. DAVID CORMIE: The -- the amount -- the maximum amount now is three hundred (300), including the hundred that's already sold: one hundred (100) on the existing transmission system and two hundred (200) on the new transmission.

MR. BYRON WILLIAMS: Dave, I'm just trying to recall from the GRA -- the previous GRA, and I -- I thought -- when we were looking at the 2024/'25

1 period that at that point in time we -- you were
2 contemplating potentially an additional three hundred
3 (300) meg -- megawatts. But I may have mis -- misread
4 that or misunderstood that.
5 MR. DAVID CORMIE: Remembering that the
6 100 megawatts signed transaction ends in 2027, so in --
7 as part of the three hundred (300) it would continue,
8 right. So imagine just a block of energy starting in
9 2020 of 300 megawatts, a hundred of which was sold for
10 seven (7) years; they would then fill in the balance.
11 So that's -- that's how it -- it appeared to be three
12 hundred (300) new in, say, '28, '29, '30, you know,
13 onwards.
14 MR. ED WOJCZYNSKI: Are there any more
15 questions at this point? I see two (2).
16 MR. REGIS GOSSELIN: Could you please
17 talk about the decision criteria that you're going to
18 be using to evaluate the various plans, please?
19
20 (RETURNED TO SLIDE 15)
21
22 MR. ED WOJCZYNSKI: The easiest way for
23 me to talk about them right now is -- is using this as
24 an outline. We don't have a formula that says, you
25 know, you take this, multiply by this, add this, give

1 this much weight to this. What we have is we're going
2 to start with the economics, we're going to deal with
3 the net present values, and we're going to look at the
4 full range of scenarios and -- and then discuss, you
5 know, the risks that are associated with the upsides
6 and the downsides. That in itself will be a major
7 parameter.
8 But we'll be looking in that analysis
9 what did you expect to be the benefit, whether it's the
10 reference or whether you look at the -- the expected
11 over the twenty-seven (27) scenarios, because we're
12 going to apply probabilities to those and we're going
13 to look at those and see -- compare the plans across
14 that.
15 But we're also going to look at there's
16 a risk that for each plan that there's a -- a downside.
17 And Dave Bowen talked about P50 -- 'P' -- so in that
18 case, we're going to look at the P10. The 10 percent
19 probability that things go bad. How bad is it? You
20 may have a great upside, great expected value but a
21 really negative large downside, so we don't want to
22 have something that's unacceptable there, and there's a
23 tradeoff.
24 Also we're going to look at the P90.
25 What's the upside? What if things go really well? So

1 -- and there's a bit of judgment involved in there,
2 because you're trading off better long-term upside
3 benefit, but is there a big downside risk. Maybe you
4 want to have something that's less upside but less
5 downside so we're going to be looking at that right in
6 the economics.
7 But we're going to do the same on the
8 financials, and there's different things we're going to
9 look at there. The -- the -- in the long-run what is
10 the long-term rate projection for -- for Manitoba
11 electricity users under each one (1) of those twenty-
12 seven (27) and -- but then on the financials, because
13 you look at over time, you've got an inter-generational
14 issue. And in the long term -- and I'm -- I have to be
15 careful not to be getting into results. But in the
16 long term, the rates are the lowest with the deferred
17 kind of plan. But in the meantime you're going to have
18 -- it doesn't look as good as some of the others at
19 some point in time, in terms of rate increases.
20 Well, how much is the -- is the medium-
21 term impact compared to the long-term benefit? And
22 there's a judgment call there. There's no formula for
23 it. But we're going to explicitly talk about that.
24 We're going to also look at the
25 borrowing. So when we talk about ratepayer and

1 government, it's -- it's in there. How much borrowing
2 will there be -- maximum borrowing in every plan under
3 every scenario. And in simple terms, obviously if
4 you're building the interconnection and Keeyask and
5 Conawapa, and there -- and the -- given the in-service
6 dates we're talking about, a lot of borrowing overlaps.
7 And you've got, you know, many billions of dollars.
8 Well, what is the maximum there? What
9 does that mean for Manitoba Hydro's borrowing? What
10 does it mean for the provincial borrowing? Is that an
11 issue? Does it -- is it going to increase our interest
12 rate? What is the risk of that? So that's another
13 very important criteria. And obviously you come back
14 to debt/equity ratios and interest coverage, and the
15 other ones, but those are some of the biggies.
16 Not -- not as important, I would say,
17 and I don't think we'll be giving as much weight -- oh,
18 I should finish on Manitoba government. I already
19 referred to the fact there's revenues to the province,
20 billions of dollars, that are in some -- in some cases
21 equal to the -- the benefits to the ratepayers. That
22 can't be ignored. It's -- it's a benefit to Manitoba
23 as a whole.
24 Is it given as much weight as what
25 happens to the ratepayer? Probably not. But there --

1 Manitoba economy, employment in the province, economic
2 development, they are important parameters. I wouldn't
3 say they override these other ones. They don't.
4 They're -- these others are probably more important but
5 they're also still a consideration to the overall
6 picture. And obviously environment, socio -- all those
7 have to be considered. Risk is covering all of these.
8 If we've got something with a really good upside but
9 it's got an unacceptable risk, we wouldn't want to go
10 down that road.
11 And then ultimately we will -- it has to
12 meet min -- all the plans have to meet the minimum
13 energy and capacity criteria. That's a must. But
14 above that, there -- it's more general than that. You
15 can have droughts worse than on record, particularly
16 with climate change and volatility. So out of these
17 plans, which ones deal with that the best? You know,
18 that'll be kind of a consideration. Or higher or lower
19 load growth.
20 So -- so when you say a criteria, there
21 isn't like just three (3) or four (4) things and that's
22 it. We're -- we're going to look at the collection of
23 those things. I don't know if that helps you, or -- or
24 -- okay.
25 MR. REGIS GOSSELIN: Yes, it does.

1 MR. ED WOJCZYNSKI: Yes. Oh -- oh,
2 yes, you had -- were asking earlier.
3 MS. ANITA SOUTHALL: Anita Southall
4 again. Just not -- I'm not asking this in any detail,
5 but in terms of the historical resources plans and the
6 -- and the change over time, and then including the
7 current considerations, what kind of outside, third-
8 party evaluation has been used, or has any been used,
9 as those various resource plans have been considered
10 over time in terms of -- you know, in -- in terms of
11 analyzing the -- the internal decision-makers or any
12 kind of third-party evaluation?
13 And -- and is that -- the second part of
14 that: Is that planned, or has that been ongoing as
15 part of the current process?
16 MR. ED WOJCZYNSKI: So there's two (2)
17 questions there. The first one, as I understand it, is
18 have we had a third-party entity looking at our
19 resources plans and our resource planning process, and
20 confirmed that that makes sense, and -- and commented
21 and given feedback?
22 The Crown corporation's counsel has a
23 role in this, and they review our plans. And that's --
24 that is third party in a sense. It is, although it's
25 government, but it's still separate from us. But we

1 haven't had any other formal review by another entity.
2 If you come to the -- the NFAT itself,
3 which is -- it's not the annual resource planning
4 process. It's superimposed on top of it. And in that
5 one we have brought in consultants who have expertise,
6 nationally and internationally, to help us enhance our
7 pro -- planning process, to advise us on it, to
8 participate in it, to review our results with us, to --
9 and our methodology. Give some general commentary on
10 the -- on the results.
11 But they're -- but it's not like a
12 formal review where they give a formal report. That's
13 more of a -- a resource, a third-party resource to help
14 us make sure we don't miss anything and that we use the
15 -- the best methodologies available and also bring in
16 their judgment and advice and information on things
17 like probabilities and whatnot.
18 Joanne, could you just finish that one?
19 Joanne, do you want to comment any more on that one?
20 Does that sort of cover it? Okay.
21 MR. ROGER CATHCART: Just quickly one
22 (1) more --
23 MR. ED WOJCZYNSKI: Yes.
24 MR. ROGER CATHCART: -- question. On
25 each of these parameters that you've listed here, and

1 you're going to run twenty-seven (27) scenarios through
2 that, are we going to get quantified numbers on the
3 benefit to the Manitoba government --
4 MR. ED WOJCZYNSKI: Yep.
5 MR. ROGER CATHCART: -- the economy, on
6 each of them?
7 MR. ED WOJCZYNSKI: Well, okay, on each
8 of them --
9 MR. ROGER CATHCART: Yeah, because --
10 MR. ED WOJCZYNSKI: Yeah, okay.
11 MR. ROGER CATHCART: -- that's the only
12 way really you can compare.
13 MR. ED WOJCZYNSKI: Okay. What we will
14 --
15 MR. ROGER CATHCART: At least -- I'm --
16 I'm just trying to understand how you get to compare
17 twenty-seven (27) scenarios without running the
18 criteria on each of those.
19 MR. ED WOJCZYNSKI: Okay.
20 MR. ROGER CATHCART: Maybe if that's --
21 MR. ED WOJCZYNSKI: Let me back up a
22 little --
23 MR. ROGER CATHCART: -- general.
24 MR. ED WOJCZYNSKI: -- bit then.
25 Yeah.

1 MR. ROGER CATHCART: Or do you do it
2 just at the top level?
3 MR. ED WOJCZYNSKI: The -- the economic
4 and financial evaluations are going to be run on the
5 thirteen (13) plans for the twenty-seven (27)
6 scenarios. We are not going to run everything else
7 through that. On environment, it doesn't make sense,
8 because on those the environmental issues and -- and
9 mostly the social issues won't vary for those.
10 Economic stimulus, we're having economic
11 impact assessments done by the Bureau of Statistics for
12 the Manitoba government. That's -- with -- with help
13 from others. And they evaluate, you know, given this
14 much for Conawapa, or this much for Keeyask, or this
15 much on interconnection. I'm trying to remember; I
16 think we're asking them to do wind or gas, but I -- I
17 can't remember exactly now. But -- so it's not the
18 plan per se there so much as if you do these projects
19 what will the stimulus in the Manitoba or Canadian
20 economy be? So -- be -- because as we move them around
21 and different plans, we -- it's too much to -- to get
22 those nuances, and it's really broad brush jobs in the
23 economy. And if you do Keeyask, you do Conawapa, we'll
24 have that information.
25 The transfers to the province

1 automatically flow from the economic analysis. So we
2 will have it -- we will have that spelled out for
3 everybody, the twenty-seven (27) scenarios.
4 The borrowing will be on every one (1)
5 of the twenty-seven (27) scenarios, plus also on the
6 drought analysis, because when you start with the hydro
7 existing, or whatever future system, we're always going
8 to be exposed to drought. And that affects rates and
9 borrowing and debt-equity. So we -- we have done a
10 quantitative on that.
11 Risk, well, there will be a lot of risk
12 -- there will be quantitative risk analysis like we
13 talked about. We'll also have some qualitative risk
14 analysis. And on the reliability, we're going to have
15 quantitative reliability analysis comparing the -- a
16 few of the main plans. Not every one (1) and not --
17 well, it doesn't make sense for all the scenarios,
18 because it's -- that's not really a scenario, it's not
19 an economic issue.
20 Energy security, we're really going to
21 do a little bit of comparison between a few of the main
22 plans. It's really with the interconnection versus --
23 a big one (1) versus a small one (1) versus no
24 interconnection and gas. It's -- it's sort of along
25 that line, not every plan.

1 And, Joanne, I think that pretty well
2 covers it, or...? Yeah. There was another -- someone
3 else had their hand up. I -- no? Who did? Oh,
4 Patrick did. Okay.
5 MR. PATRICK BOWMAN: Just since we're
6 on this slide, one (1) of the things that was noted
7 about the terms of reference, and I'm curious where it
8 fits in here, is options like wind that can involve
9 fairly substantial payments to landowners and taxes
10 paid to local governments, does that get picked up in
11 your comparison of scenarios, or is that in the
12 Manitoba government or Manitoba economy criteria?
13 MR. ED WOJCZYNSKI: We -- we will be
14 discussing that as part of the impacts on local
15 communities. We don't have anything specific in the
16 sense of we don't have, you know, a 200 mega -- wind
17 project over here with those people, with those
18 contracts. But based on the information from previous
19 projects there were environmental impact assessments
20 done for the two (2) projects, including Pattern's
21 project. So we're drawing from those EISs and the
22 socioeconomic information in there, but only at a -- at
23 a -- what I call a screening or macro level, not at the
24 detailed level we would have for Keeyask or Conawapa,
25 yeah.

1 MS. NICOLE FITKOWSKI: Ed, we have an
2 external one. Dave Lamont says:
3 MR. DAVE LAMONT (VIA CHAT): Does the
4 economic analysis reflect both the different and pa --
5 [sorry] the direct impact of a construction as well as
6 the economic impacts of different electric costs?
7 MR. ED WOJCZYNSKI: The -- whe -- the
8 question was: Do the economic evaluations -- was it
9 economic evaluations?
10 MS. NICOLE FITKOWSKI: Analysis.
11 MR. ED WOJCZYNSKI: Okay, an economic
12 ana --
13 MS. NICOLE FITKOWSKI: Does the
14 economic analysis --
15 MR. ED WOJCZYNSKI: Okay.
16 MS. NICOLE FITKOWSKI: -- reflect both
17 the direct impacts of the construction --
18 MR. ED WOJCZYNSKI: Oh, oh, the
19 economic --
20 MS. NICOLE FITKOWSKI: -- as well as --
21 MR. ED WOJCZYNSKI: -- impact
22 assessment. Ah, yes. The one that does employment and
23 GDP impacts in the province, that analysis, sorry,
24 which is sort of inside of here. Does it deal with the
25 fact there will be different rates between the

1 different plans? That's how I interpret the question.
2 I think it's right.
3 And -- and, no, that economic impact
4 assessment doesn't. And you -- what you would get into
5 there is a temporal issue in that, over time, different
6 plans have the lowest rates. Ultimately -- and -- and
7 I -- I may be getting into the area of giving evidence
8 here. And if I do, Patti, come and kick me.
9 But what we will be saying to you in the
10 submissions, so you don't have to take -- is that, in
11 the long run, the preferred development plan has the
12 lowest rates, and the 250 plan also looks pretty good.
13 There will be a period of time where they're higher
14 than, say, the gas plan. But then in the earlier years
15 the gas plan is higher than them.
16 So at what point in time do you look at
17 the economic impacts in the province of the -- of the
18 rates because that changes over time? So I -- we
19 didn't do that because, a) you needed to know what all
20 the rate impacts were for all the scenarios, then run
21 the analysis. And then it changes over time. And I'm
22 expecting that what we would be saying is -- is that
23 it's overwhelmed by the direct impacts as opposed to as
24 indirect.
25 But that is -- I'm now going beyond what

1 I should really be saying because that -- in
2 retrospect, that's a judgment call by somebody who
3 knows a little bit about it, but we haven't done the
4 study.
5 Patti hasn't thrown anything at me yet.
6 You know, I -- what I just said is my thinking and
7 probably what we would be saying if we had to deal with
8 it, but no one has done a study to say what I just
9 said. Let's -- let's be clear.
10 MS. MARILYN KAPITANY: And I know you
11 said you're not going to be using really a formula.
12 But what I think I heard you say is that the last two
13 (2) things on there, the risk and the reliability in
14 energy security, are really musts, and the other
15 aspects are wants, and you'll be putting various
16 weightings on them depending on --
17 MR. ED WOJCZYNSKI: Qualitative
18 weightings, not numerical weightings.
19 MS. MARILYN KAPITANY: Okay.
20 MR. ED WOJCZYNSKI: But let me be
21 careful on the musts. What I said is a must is that we
22 have to meet the two (2) criteria Joanne talked about:
23 that we meet our capacity criteria and our energy
24 criteria and, as a third criteria, our energy import
25 criteria, which is a maximum on imports. Those are

1 absolute musts.

2 So we -- the -- the rest are -- call

3 them wants, if you like. But what I was saying on the

4 risk, we -- 'we' meaning -- and you, as the PUB, and

5 the Intervenors and the government, inevitably there's

6 a situation where Plan Z -- so I won't even talk about

7 which one here -- has the -- the most benefits, let's

8 say, in the long run on the expected value, and -- and

9 it may be better than any of the others. But what if

10 it has a much huger risk than any of the others?

11 What if we want to do that? That's a

12 consideration. So we would have to consider that, but

13 there's no quantitative number to say what the tradeoff

14 would be.

15 No, there was... Yeah. Maybe -- and

16 just while you're getting that, I'm not saying, by the

17 way, that that's what we're facing here, but that would

18 be an obvious example.

19 MS. MARILYN KAPITANY: So then it

20 sounds like then risk is really a lens that you're

21 going to be looking at everything else through and

22 these others --

23 MR. ED WOJCZYNSKI: Yeah, because

24 there's tradeoffs.

25 MS. MARILYN KAPITANY: -- are really

1 the evaluation factors?

2 MR. ED WOJCZYNSKI: Yeah, yeah.

3 MS. MARILYN KAPITANY: Okay, thank you.

4 MR. ED WOJCZYNSKI: Let me give another

5 example that ties into what I said on the borrowing.

6 If we looked at the borrowing requirement and we had a

7 plan where we judged -- and that's not just 'we' being

8 Manitoba Hydro but obviously a government who know more

9 about their borrowing than their treasury people, that

10 the level of borrowing that we might be looking at in -

11 - in some of the scenarios with, let's say, the

12 preferred plan which has the highest level of

13 borrowing.

14 That -- if that was -- had a high risk

15 of creating a credit burden for the province, a

16 significant one, that could very well be -- say, No, we

17 don't want to do that. But now you have to say --

18 there has to be a judgment on -- on that. So the

19 borrowing is one (1) of the issues on the financial

20 side that we are going to pay a lot of attention to,

21 and we are paying a lot of attention to, and will be

22 brought out in the submission.

23 MR. REGIS GOSSELIN: If you look at

24 slide 14, which -- the one before this one, I'm just

25 wanting to make sure I understand the role that wind

1 and DSM will play in these pathways that you've
2 described. You know, the optimal pathways. And so
3 could you -- could you run how wind, for example, will
4 tie into these five (5) alternatives?
5
6 (MOVED BACK TO SLIDE 14)
7
8 MR. ED WOJCZYNSKI: Okay, in two (2)
9 ways. First of all, I'm not sure this -- the first --
10 the first is that the wind -- the wind plan isn't
11 explicitly -- an -- an all-wind plan where you maximize
12 wind is not in these pathways because when we have the
13 economic evaluation of -- under the twenty-seven (27)
14 scenarios with the wind plan, which I showed you
15 earlier in here, it is so clearly uneconomic that we
16 didn't bring it into the pathways.
17 So that's the first part of the answer.
18 The second part of the answer is that in each one of
19 these we could put in, if it's economic or for whatever
20 other reason, that we were told to put it in let's just
21 say, we could put in some wind in any one (1) of these
22 sequences, or any one (1) of these plans or pathways.
23 And if it was -- let's just say this
24 plan here. The number fi -- the development plan,
25 preferred development plan. If all of a sudden it was

1 economic to put in 400 megawatts of wind, I -- I just
2 picked that number out of the air, after Keeyask or
3 even before Keeyask but before Conawapa, and it might
4 be enough to push Conawapa back a year, so the pathway
5 could accommodate that.
6 As -- as we do say in the submission,
7 any one (1) of these pathways, we -- we can't pick all
8 the possible options. There's thousands of plans you
9 could look at. So we're not getting into the fact that
10 you might find 20 megawatts of self-generation in
11 Manitoba from biomass somewhere that might be economic.
12 It can go into any one (1) of these. It won't
13 substantially change it.
14 If you had DSM that was 50 percent
15 bigger, it wouldn't substantially change the -- the
16 relative benefits of any one (1) of these plans. Any
17 one (1) of them could take it, and -- and would -- and
18 we would put them in if it was economic.
19 So if you call it the sub-options we
20 haven't included them in there because they can be in
21 any one (1) of these and we don't see it changing them.
22 So that's the two (2) parts to my answer. I don't know
23 if that answers your question.
24 MR. REGIS GOSSELIN: It does. I guess
25 it doesn't -- what it doesn't answer though is -- I

1 think I heard you correctly though. Having excluded
2 wind as a sig -- as one of the major alternatives --
3 MR. ED WOJCZYNSKI: Yes.
4 MR. REGIS GOSSELIN: -- you will then
5 be focussing on, say for example, the preferred
6 development plan but as part of that -- part of your
7 analysis -- risk analysis and so on, you will not have
8 addressed, or you will not be addressing wind as a sub-
9 alternative to that plan?
10 MR. ED WOJCZYNSKI: Not in a
11 quantitative sense. We'd just qualitatively be
12 explaining that anywhere in the preferred plan, if
13 that's the one we're talking about, we could put in a
14 hundred and fifty (150) or whatever megawatts of wind
15 or more DSM or biomass or something, and it would not
16 substantially change the conclusions.
17 And if we -- all we're seeking approval
18 for on the preferred plan is a commitment -- that we
19 are able to commit to start -- starting construction to
20 Keeyask, commit to the line, the seven fifty (750)
21 line, and -- and the -- associated with the sales, and
22 down the road we will put in what makes sense.
23 We'll be thinking right now it's
24 Conawapa for '26. If 200 megawatts of DSM or 500
25 megawatts of DSM makes sense, we'll put that in and

1 push back Conawapa, or if it's wind, or whatever.
2 Yeah, I -- I just want to see that that
3 -- oh, Joanne...?
4 MS. JOANNE FLYNN: Yeah, just a point
5 of clarification though on the analysis. For the wind
6 gas plan, it will be run through all twenty-seven (27)
7 scenarios. So you will see the -- the risk analysis
8 associated with those variables for the wind gas plan
9 compared to the other plans. It's just not carried
10 through to the pathways.
11 MR. ED WOJCZYNSKI: And there's also --
12 as I explained earlier, we have the one (1) where wind
13 is acting as a bridge before Conawapa instead of gas.
14 And we're not here to talk about results today, but
15 what you'll see is that the gas was more economic.
16 Yes...?
17 MR. BYRON WILLIAMS: I'm just trying to
18 -- to follow the logic of your -- your answer to the --
19 the chairman. And I may have misunder -- under --
20 understood -- if I tried to follow it through a bit
21 farther, but -- but let's say that through energy
22 efficiency expenditures we're able to put off the need
23 for new -- new construction 'til 2024/2025. Are you
24 saying that that -- that reality wouldn't change --
25 MR. ED WOJCZYNSKI: M-hm.

1 MR. BYRON WILLIAMS: -- the -- the
2 relative relationship between any of these?
3 MR. ED WOJCZYNSKI: And we will
4 demonstrate that with the two (2) -- with the
5 sensitivities that we told you we were going to give.
6 I'm -- I'm sort of getting on the edge of telling you
7 results now, aren't I. And -- but that is what our
8 results are saying. And that -- that -- the economics,
9 the preferred plan compared to not putting in
10 interconnections actually improves with more DSM.
11 But you don't have to take my word for
12 it. You'll get the submission and then you can test
13 it. Time is up I'm told. Are there -- but -- but...
14 I think for the PUB any questions they want there is
15 time for.
16
17 (BRIEF PAUSE)
18
19 MR. ED WOJCZYNSKI: And if others want
20 to ask more questions we'll extend.
21 MR. REGIS GOSSELIN: So in -- in terms
22 of risk -- risk -- the risk mitigation strategies will
23 be encompassed as part of the preferred development
24 plan? In other words, you will have assessed risk
25 related to the plan, but will also explain how you

1 intend to mitigate the risk for each of the major risk
2 elements?
3 MR. ED WOJCZYNSKI: Yes. We're going
4 to have a chapter, chapter 15 -- and there's no
5 guarantee that at the last minute we don't change
6 numbers, but that's going to be a pre -- preferred plan
7 implementation and risk management plan. What we're
8 going to have in it is the kind of thing Dave Bowen was
9 talking about a bit for each of the projects,
10 particularly Keeyask, because it's the one (1) that
11 we're seeking front end approval. How -- what's the
12 execution plan for building the project and how are we
13 managing the risk, like labour, or whatever, you know,
14 some of the same things you heard this morning.
15 We're going to be talking about -- on
16 the interconnection, what is the approval date or
17 dates, and -- and what is the risk if it doesn't get
18 approval, what do we do. What if Conawapa takes longer
19 to get approved and we've counted on it, some of those
20 kinds of things.
21 On -- so we will -- we will -- what if
22 export prices go up or down, or what if we are more
23 concerned down the road about the borrowing
24 requirements and we haven't committed Conawapa yet.
25 We'll -- we'll be talking about that in qualitative

1 terms. So when we talk about the pathways that's the
2 kind of thing we'll be talking about here and saying,
3 When can you stop working on Conawapa, or when can you
4 shift from this plan to that plan. So we'll have that
5 kind of discussion.
6 And that includes whether it's higher ex
7 -- higher -- lower export prices or higher. If
8 interest rates skyrocket high what do we do, some of
9 that. So we'll try and address those things.
10 MR. REGIS GOSSELIN: Now, you also
11 mention that the perspective on these scenarios changes
12 given the time frame that you use to evaluate the
13 merits of a project. In other words, the longer out
14 you go the more viable the project becomes because you
15 get a high return longer term on these hydro projects.
16 The time frame you'll be using to assess
17 the merits of the various scenarios is what kind of a
18 time frame?
19 MR. ED WOJCZYNSKI: Well, there's
20 really two (2) time frames in there, but, Joanne, I
21 think you -- why don't you -- did you hear the
22 question?
23
24 (BRIEF PAUSE)
25

1 MS. JOANNE FLYNN: So in terms of time
2 frames, the full detailed study time frame is thirty-
3 five (35) years, so it will go out to, I think, it's
4 2047/'48. And then when we do our full economic
5 analysis, we carry it out to -- to 2090, so it's going
6 out some seventy-eight (78) years to get the full --
7 full value of the long-life assets.
8 And what happens at the end of the
9 thirty-five (35) year time horizon is basically the
10 costs and revenues are carried forward without any --
11 without any real escalation built into them. So it's
12 just as if they're frozen in time and carried forward,
13 and any need for capital replacements is -- is included
14 in those future calculations.
15 So that allows us to capture both the
16 benefits and costs out in the future for the long-life
17 assets, but it's -- it's done across all development
18 plans, so they're all treated the same.
19 MR. ED WOJCZYNSKI: Does that answer
20 your question? Byron, I thought you had another
21 question. Oh.
22 MR. BYRON WILLIAMS: I'll ask Dave
23 offline.
24 MR. ED WOJCZYNSKI: Okay. Are there
25 any more questions? Okay. We'll take a break and

1 we're going to next deal -- Joanne is going to deal
2 with the issue of what's confidential or not at a
3 fairly high level. And -- and then that would wrap up.
4 And what we also left, if there's some last questions
5 that people have, so one (1) more opportunity at the
6 end of the afternoon for that. Okay. Thank you.
7 What is it now? It's 2:51. We're
8 running a little bit late, so what if we said 3:10 for
9 coming back. Okay. Thank you.
10
11 --- Upon recessing at 2:51 p.m.
12 --- Upon resuming at 3:11 p.m.
13
14 MS. PATTI RAMAGE: Okay. Our last
15 session for this afternoon is the overview of
16 confidential versus non-confidential information. This
17 particular topic was added in response to a number of
18 parties' concerns about the level of detail that's
19 going to be kept confidential in these proceedings.
20 And in speaking with parties, something that came to
21 Manitoba Hydro's attention at least, is that there
22 seemed to be perhaps a misunderstanding or not a good
23 understanding of what Manitoba Hydro actually intends
24 to keep confidential. So we thought we might resolve
25 that by putting on a session here about what is

1 confidential and what is not confidential.
2 But the lawyer now comes to front of the
3 room and says the lawyers haven't seen the filing yet,
4 we haven't reviewed it, we haven't reviewed it for our
5 agreements with other parties to see what is
6 confidential and what isn't. So while we certainly
7 want this session to go on we're just putting a large
8 caveat on it to say that if, when we actually review
9 the filing and see what's in and what's out, we might
10 say, Hold on, we can't release that, that's got to come
11 out of the filing. And so this is what the actual
12 people who are drafting the filing have put together.
13 And so we just wanted that caveat over the whole thing
14 that we're asking for your understanding if -- when you
15 get the filing.
16 This is the best information we have
17 available today. We wanted to get it out there so
18 people understand where we think the line is because we
19 think that once you hear that line -- certainly in
20 speaking to people they were surprised when we said,
21 Oh, you're going to get that, or that sort of thing,
22 that they weren't expecting they were getting some
23 things that we are thinking they will.
24 So that's my caveat at the beginning of
25 this, and with that I'll turn it over to Joanne.

1

2 PRESENTATION RE: OVERVIEW OF CONFIDENTIAL vs. NON-

3 CONFIDENTIAL INFORMATION:

4 MS. JOANNE FLYNN: Okay. Thank you,

5 Patti. You can see that this presentation isn't a very

6 long one, and structured it to explain first what we're

7 identifying as confidential, then why we're treating it

8 as confidential, and then go through some examples of

9 what isn't confidential and will be provided -- or at

10 least until the lawyers see it, will be provided.

11

12 (MOVED TO SLIDE 2)

13

14 MS. JOANNE FLYNN: So what is

15 confidential? First of all -- and -- and this is one

16 (1) that's come -- that came up in the pre-hearing

17 conference, is Manitoba load customer-specific

18 information would be considered confidential.

19 And still on the -- on the customer side

20 of things, but this time from the export customer side,

21 if there is clauses and ter -- terms and conditions in

22 the export contracts that they have identified for

23 their purposes as being commercially sensitive, then

24 we're respecting that. And those will be treated as --

25 as confidential information or commercially sensitive

1 information and, therefore, confidential.
2 In terms of the export contracts and
3 term sheets themselves, examples of the type of
4 information that's confidential, price, specifics
5 around curtailment provisions, the treatment of
6 generation attributes, those are the environmental
7 attributes that Dave described on Monday.
8 And also, when it comes to the contracts
9 and term sheets, anything that's still in the
10 negotiations, where the negotiations are in progress,
11 we will be making assumptions in the NFAT submission.
12 And -- and those assumptions will be shared at a -- at
13 an aggregate level but the details won't be disclosed
14 if they're still under negotiation.
15 As well, the natural gas for -- price
16 forecast and the electricity export price forecasts
17 that we use in our analysis will be kept confidential,
18 including the information that can be used to back-
19 calculate the -- the forecasted prices or the contract
20 prices, will be kept confidential.
21 So that's what we've been referring to
22 as our consensus price forecast for natural gas and
23 electricity. And then portions of the power resource
24 plans that contain confidential information will be --
25 will be kept confidential. And -- okay, so that's --

1 that's the list of what.

2

3 (MOVED TO SLIDE 3)

4

5 MS. JOANNE FLYNN: And then when we --

6 when I took a look at why we were keeping things

7 confidential it seemed to come down to two (2) sort of

8 categories. Either it was customer-specific,

9 commercially sensitive information either from our

10 domestic customers or from our export customers.

11 So from the domestic side, future

12 business plans for Manitoba companies where they've

13 been helpful in sharing information with us in order to

14 put a more accurate load forecast together, that's the

15 type of information that we're talking about. That's

16 why it's sensitive and why it's confidential.

17 And then from the export customer

18 perspective, they're investor-owned utilities. They're

19 engaged in competitive markets. So if they've

20 identified something as being confidential from their

21 perspective in -- in their business, then that's the

22 reason that we are respecting that confidentiality.

23 And sometimes for them it is a matter of timing. After

24 a period of time it may become less sensitive and --

25 but that is what is driving the -- the confidentiality

1 aspect of it.

2 And then, from Manitoba Hydro's

3 perspective, where we're engaged in negotiations and

4 price forecast information or other arrangements, for

5 example around the -- the transmission interconnection,

6 while those negotiations are in progress we'll be

7 keeping that information confidential.

8 And the other thing about the -- the

9 power resource plans is that we do have negotiating

10 positions reflected in the power resource plans. And

11 that's the part of the power resource plans that we

12 would consider to be confidential. Oh, flip.

13

14 (MOVED TO SLIDE 4)

15

16 MS. JOANNE FLYNN: Okay, so moving on

17 to what isn't confidential. And this is not a

18 comprehensive list, but some examples of the type of

19 information that you will be getting in the submission.

20

21 So I talked about the generation

22 planning criteria. That will be supplied. I mentioned

23 on Monday that you would get the supply and demand

24 tables for all thirteen (13) of the development plans.

25 We'll be providing the incremental net present values

1 for those thirteen (13) plans and comparing them to --
2 amongst themselves.
3 And Ed was just talking about the risk
4 and uncertainty analysis, the twenty-seven (27)
5 scenarios. And we will be doing -- applying those
6 twenty-seven (27) scenarios to ten (10) of the
7 development plans. So you will see two hundred and
8 seventy (270) different cases from the economic
9 perspective.
10 From the financial perspective, they
11 will be doing pro formas. So for their -- their
12 reference case and the other scenarios on eight (8)
13 development plans, so you'll see two hundred and
14 sixteen (216) sets of pro formas. We will also supply
15 the backup in terms of cash flows for revenues, capital
16 costs, and operating costs for each of those
17 development plans.
18 There will be redacted export contracts
19 and summary information on the export contracts, cost
20 estimates for Keeyask and Conawapa, and there is a
21 publicly available natural gas price forecast that we
22 will supply.
23 In addition to that, we've -- we've made
24 arrangements -- or we think we've made arrangements to
25 supply one (1) of the export price forecasts from one

1 (1) of our price forecasters.

2

3 (MOVED TO SLIDE 5)

4

5 MS. JOANNE FLYNN: In addition to that,
6 if I go on to the next slide, there will be submitted a
7 climate change sensitivity analysis, as well as a
8 drought analysis. Ed mentioned these. And the system
9 reliability evaluation he also mentioned. And then
10 there will be summaries or reports. So the range of
11 resource options, so there will be more detail on the
12 resource options that Ed had in his slide package
13 earlier this afternoon.
14 In addition, there will be an emerging
15 technologies report that will cover some of the ones
16 that aren't at the stage for consideration in -- as a
17 resource option. There will be a climate change report
18 which explains our climate change program at Manitoba
19 Hydro. You'll get the load forecasts, the external
20 power resource plans, and the economic outlooks.
21 And that is all I was going to cover on
22 this topic. Yeah.
23 MR. BYRON WILLIAMS: Thank you, Joanne.
24 It's Byron. I have three (3) -- three (3) questions.
25 MS. JOANNE FLYNN: M-hm.

1 MR. BYRON WILLIAMS: It's interesting
2 to see. It looks like you have an export price
3 forecast that may be included in the -- the public
4 package.
5 Would that -- would you expect it would
6 include the assumptions underlying that forecast then
7 in terms of expectations, in terms of -- the gross --
8 you know, the growth of the American economy, carbon
9 taxes, things like that?
10 MS. JOANNE FLYNN: What it is our
11 intention to supply is a -- I'll call it a report, but
12 it's really in presentation style of the context behind
13 it, supplied by the price forecaster. So it will
14 include not just the forecast, but the explanation of
15 the price forecast that comes with it.
16 MR. BYRON WILLIAMS: And will there be
17 some indication of whether that forecaster is at the
18 low end, the medium, or the high? Will -- will there
19 be some sort of context so we know where this
20 forecaster fits into the pack amongst the other
21 forecasters?
22 MS. JOANNE FLYNN: No, there would not.
23 MR. BYRON WILLIAMS: In terms of
24 existing export contracts, I saw some of the things
25 that you said were -- were not -- would not be provided

1 publicly.
2 Escalators, in terms of those contracts,
3 for example, if -- if part of it's natural gas, part of
4 it's CPI or some version, would that be public or
5 private?
6 MS. JOANNE FLYNN: That would be kept
7 confidential.
8 MR. BYRON WILLIAMS: Okay. And in
9 terms of the power resource plan, just let's take
10 2010/'11 for an example, the -- the thirty-nine (39)
11 page public document would be made available but the
12 ninety-eight (98) pages of supporting documentation
13 would be your intention to keep confidential? Or would
14 you provide an excerpt -- excerpted version of the --
15 the internal plan
16 MS. JOANNE FLYNN: We -- we are in the
17 process of going through a redaction exercise on the
18 hundred and whatever page plans. But, unfortunately,
19 we don't think we can have it ready to be a part of the
20 submission, but shortly thereafter.
21 Any other questions?
22
23 (BRIEF PAUSE)
24
25 MS. PATTI RAMAGE: Didn't get to raise a

1 single objection.

2

3 (BRIEF PAUSE)

4

5 DR. PETER MILLER: What about -- I -- I

6 think Dave had said there were no provisions for

7 renewal in these contracts. But, you know, what

8 happens after the expiration date?

9 Is -- is there any understanding that's

10 involved?

11 MS. JOANNE FLYNN: Well, what I can

12 tell you is that what we assume in the development

13 plans is that once the contract term is over, we don't

14 carry it forward for renewal.

15 Dave, do you want to add anything?

16 MR. DAVID CORMIE: No, I -- I think

17 Peter -- Peter is correct. Every one of our customers

18 realizes that the nature of our hydro system is that

19 there will be surplus energy available.

20 Even though we may not have any surplus

21 dependable energy, so we couldn't enter into a capacity

22 -- a dependable energy contract the nature of the

23 system is that there will be large quantities of

24 surplus energy available. And a lot of the incentive

25 to build transmission to connect Manitoba to these

1 utilities is to gain access to that because the surplus
2 energy is sold into the spot market. It's one of the
3 lowest-cost supplies that's available. And -- and they
4 will have access to that market of renewable in
5 perpetuity.
6 So although they -- there may not be a
7 capacity product available for Manitoba Hydro after the
8 -- the sale is over, there will be surplus energy. And
9 -- and it's making investments in transmission --
10 transmission will -- the link will be there in
11 perpetuity. The capacity may disappear because we need
12 the capacity to serve Manitoba load, but the energy --
13 the surplus energy of the hydro system will always need
14 to go to market, and they want to be at the end of that
15 -- of that pipeline.
16 So no provisions for renewal, but the
17 expectation that Manitoba Hydro will have surplus
18 energy in perpetuity.
19 MR. BYRON WILLIAMS: This, Patti might
20 want to keep her finger on the button for -- no. No,
21 just -- just teasing. Just teasing, Patti.
22 In terms of the -- and I realize there's
23 a question of scope relating to the agreements with the
24 partners, but presumably we'd want to explore the risks
25 related to those agreements for -- for Hydro as a

1 whole.

2 So we didn't see the -- are you planning

3 to file the agreements?

4 MR. ED WOJCZYNSKI: The -- the

5 agreements are all public and on the public websites.

6 MR. BYRON WILLIAMS: Okay. Is it part

7 of the filing, or is it --

8 MR. ED WOJCZYNSKI: No, it's not part

9 of the filing. In terms of the risks that the

10 agreements have for Manitoba Hydro in terms of

11 proceeding with the project, there will be some

12 discussion on that, but not extensive.

13 So I guess we'll have to go from there,

14 and I -- I -- we didn't see the need for including the

15 agreements in the filing, given that they are publicly

16 available and have been for a long time. And I think

17 we can discuss to the degree there's a need to discuss,

18 you know, the risk for them for -- for our -- for

19 Manitoba Hydro with -- without having them explicitly

20 referenced.

21 I suppose if -- in the follow-up there's

22 a need to, I suppose we could include it. We're

23 talking about a few thousand pages. So I'm not sure if

24 I'm answering your question but...

25 MR. BYRON WILLIAMS: Usually the -- I

1 don't -- we'd usually ask for an electronic copy just
2 to have it kind of on the record, but we'll worry about
3 that at a later time.
4 MR. ED WOJCZYNSKI: So I -- I am
5 comfortable with that, that we will worry about it at a
6 later time. I like your suggestion.
7 DR. PETER MILLER: Since the -- after
8 the expiration of the contracts the expectation is you
9 would just have energy, no capacity, to sell, how
10 reasonable is the assumption that revenues and -- and
11 costs will be kind of frozen in time for net present
12 value?
13 Did -- did you say something like that,
14 Joanne?
15 MS. JOANNE FLYNN: Yeah. Generally
16 there is an assumption that the energy will be sold in
17 the market. So it may not be to a particular customer,
18 but there is the expectation that -- that that is
19 actually what we use the long-term export price
20 forecast for, as well, is to -- to have that as an
21 assumption in -- in the modelling that we do.
22 So it's -- it's not like it just drops
23 off to nothing. The energy -- the surplus energy is
24 still sold in the market.
25 MR. ED WOJCZYNSKI: And maybe to

1 supplement that, once you get out to that period of
2 time where we're extending, we're already putting gas
3 turbines in.
4 MS. JOANNE FLYNN: M-hm.
5 MR. ED WOJCZYNSKI: And so it's not
6 like you got a huge amount of hydro surplus that's
7 sitting there that we're counting on to be a firm
8 surplus. It's the unfirm surplus that will always be
9 there. And when you add -- in these plans, if you
10 continue with gas turbines you're not changing the
11 amount of hydro surplus.
12 MS. JOANNE FLYNN: But by the end of
13 the planning horizon, by the end of the thirty-five
14 (35) year planning horizon, we're putting in natural
15 gas for capacity. So it's not like there's a whole lot
16 of hydro capacity left, surplus hydro capacity left to
17 sell. And dependable energy is from hydro associated
18 with it. That's -- that's just what Ed is saying. So
19 it's -- it's really selling the surplus energy.
20 MR. ED WOJCZYNSKI: Well, one (1) of
21 the things -- one (1) -- one (1) of the things that
22 that captures is if you put a new transmission line in
23 with new export and import capacity, forgetting putting
24 in the hydro, it, in and of itself, gives a lot of
25 benefit. By putting in a new tie-line with 750

1 megawatts -- even if you didn't put a new hydro plant
2 in, the existing hydro surplus gets extra value because
3 you get a better price. Plus we get benefits from the
4 import.
5 So by extending the time frame you --
6 you capture that benefit even though you're not selling
7 firm hydro surplus. And that is a benefit of putting
8 in a transmission line, so that you -- you do capture
9 that.
10 Are there any more questions on
11 confidentiality or on anything else we covered the last
12 two (2) days? Oh, there's a question over there.
13 MR. ANTOINE HACAULT: Antoine Hacault.
14 In some of the hearings that we've had in the past
15 there's been some questions with respect to the details
16 of the calculations or underlying assumptions. And
17 some of those come out in IRs. You're going to be
18 doing a lot of calculations for -- at present values
19 and stuff like that.
20 To what extent will we be able to know
21 what the specific underlying assumptions are and -- in
22 the formulas? In the submission itself or is that
23 something that's just going to come out through IRs?
24 MS. JOANNE FLYNN: I think you're going
25 to be seeing a lot of the components of that. So I --

1 I think that will be addressed more than you've seen in
2 the past in this hearing.
3 MR. ED WOJCZYNSKI: Joanne, maybe it'd
4 be useful to comment. What we're intending to do,
5 subject to our lawyers reviewing this, is from the
6 financials, those pro formas that you used to see in --
7 you're used to seeing in the GRAs, and then on the
8 economics, that unit energy --
9 MS. JOANNE FLYNN: Oh, yeah, the
10 average unit energy table that you've seen in the -- in
11 the GRAs, as well. But in terms of assumptions,
12 there'll be an appendix with substantial amounts of
13 information.
14 MR. ED WOJCZYNSKI: And -- and we
15 weren't planning on doing paper copies of everything
16 we're doing because we would need truckloads going out.
17 So there'll be a lot of electronics. And that's just
18 something we're still finalizing.
19 But particularly when you're talking
20 about all the -- the volumes, if you got twenty-seven
21 (27) plans -- pardon me, twenty-seven (27) scenarios
22 and how many of the financials now, ten (10) plans?
23 I'm losing track.
24 MS. JOANNE FLYNN: Eight (8). Eight
25 (8). Eight (8). There's two hundred (200) --

1 MR. ED WOJCZYNSKI: Eight (8).
2 MS. JOANNE FLYNN: -- two hundred and
3 sixteen (216) --
4 MR. ED WOJCZYNSKI: So two hundred and
5 sixty (260) (sic) odd cases, and then each one of them
6 has so much paper. It's -- we didn't think doing paper
7 copies of all of this made sense, so there would be a
8 lot of electronic copies.
9 Okay, it looks like there's another --
10 MR. ANTOINE HACAULT: So, Ed, a very
11 specific thing, for example, is, in previous filings,
12 when you say you're going to do electronic sharing, we
13 would get Excel spreadsheets in a PDF format, which
14 doesn't allow us to see, just like if I would click on
15 an Excel spreadsheet, I'd be able to see exactly what
16 formula you used, whether there's an -- and just like
17 from our perspective, you know, some kind of formula
18 that is incorrect or per -- perhaps could be changed or
19 questioned on.
20 Is there going to be some way of having
21 some of that key information short of having the Excel
22 spreadsheet? That's kind of a very specific question
23 that I was trying to get at, maybe not so eloquently.
24 MS. JOANNE FLYNN: We are not planning
25 to provide the formulas but the assumptions.

(BRIEF PAUSE)

MR. ROGER CATHCART: How about just a map with one (1) Excel -- just how the whole thing go -- how -- how one (1) example of all of the scenarios works?

MS. JOANNE FLYNN: Well, we are --

MR. ROGER CATHCART: A formula map so -- so to speak, so that if you take that you can trace through and figure out Schedule 1 to Schedule 3 and --

MS. JOANNE FLYNN: We --

MR. ROGER CATHCART: -- formula 'X', 'Y', et cetera.

MS. JOANNE FLYNN: We are using standard economic evaluation, but we are also trying to walk you through the steps. But it's not -- not at the formula level but at the concept level.

MR. ED WOJCZYNSKI: Other questions...? Well, it looks like we're going to finish early. I'm quite astounded based on how many questions we started off with this afternoon. One (1) last chance. Going once, going twice, gone. Well, I guess, have a good evening. And speaking on behalf of -- oh, oh, oh.

MS. NICOLE FITKOWSKI: Erick Matthiesen said...

1 MR. ERICK MATTHIESEN (VIA CHAT): The
2 capital cost estimate for Keeyask and Conawapa by Dave
3 Bowen today was excellent. Will there be similar
4 estimates in the submission for the operating life of
5 these projects?
6 MR. ED WOJCZYNSKI: Sorry. The
7 operating life? You mean the -- the --
8 MR. NICOLE FITKOWSKI: That's what he
9 put, "for the operating life of these projects."
10 MR. ED WOJCZYNSKI: If -- if you mean
11 the -- the duration, or the operating and maintenance
12 expenses, we will be providing -- using standard
13 durations of lives for the projects that we've talked
14 about in the past.
15 MS. NICOLE FITKOWSKI: Operating and
16 maintenance.
17 MR. ED WOJCZYNSKI: Oh, operating and
18 maintenance costs. We will provide information on
19 that. I -- but we won't -- we don't have a
20 sophisticated multi-tiered estimating approach for
21 those, though. I mean, it's -- the -- those dollar
22 values are much smaller. And we'll provide the
23 information but it's not like there's a huge estimating
24 process required or appropriate for those because
25 they're smaller and -- and we're experiencing costs

1 from project to project already. We're -- we're
2 maintaining and operating projects as right -- right
3 now already today. They're not as subject to
4 uncertainties like building a new project.
5 Any other questions? One (1), two (2),
6 three (3), thank you. On behalf of Hydro, thank you
7 for your good questions and we are hopeful this will
8 help provide some basic understanding so we can have a
9 more thorough discussion when the rest of the process
10 comes in. Hopefully, one (1) or two (2) less
11 interrogatories.
12
13 --- Upon adjourning at 3:38 p.m.
14
15
16
17 Certified correct,
18
19
20 _____
21 Wendy Warnock, Ms.
22
23
24
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