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MANITOBA PUBLIC UTILITIES BOARD

Re: MANITOBA HYDRO'S APPLICATION  
FOR APPROVAL OF NEW ELECTRICITY RATES  
FOR 2010/11 AND 2011/12

Before Board Panel:

- Graham Lane - Board Chairman
- Robert Mayer, Q.C. - Board Member
- Len Evans - Board Member

HELD AT:

Public Utilities Board  
400, 330 Portage Avenue  
Winnipeg, Manitoba  
February 23, 2011  
Pages 2693 to 2918

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EXHIBITS

No.	Description	Page No.
MH-49	Response to Undertaking 41	2700
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	UNDERTAKINGS		
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3	56	ICF to extend the natural gas forecast,	
4		page 15 of Exhibit 55, 10 to 15 years	2721
5	57	UNDER ADVISEMENT - ICF to indicate as to	
6		the MISO natural gas generation in 2008,	
7		2009, 2010, as well as forecast for the	
8		next few years, as to what was the amount	
9		generated by way of gigawatt hours, and	
10		then as well as what percent of capacity	
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13		looked at at the time of preparing the	
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16		costs were included in the present value	
17		study, with respect to Conawapa, Keeyask,	
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19	60	ICF to provide the quantification of the	
20		risks Manitoba Hydro faces in situations	
21		where the drought is worse than historical	
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25		historical records	2888

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3	61	ICF to indicate if they were provided	
4		with a report by Dr. Bhattacharyya	2896
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7		confidentiality concerns that Manitoba	
8		Hydro may raise	2917
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1 --- Upon commencing at 9:35 a.m.

2

3 THE CHAIRPERSON: Okay. Good morning,  
4 everyone. Mr. Peters, do you want to just give us a  
5 quick introduction to the day?

6 MR. BOB PETERS: Yes, thank you, Mr.  
7 Chairman. I'm always reluctant to forecast the day. As  
8 we've seen in these proceedings forecasts are, at best,  
9 tricky, but I think I'm going to turn it over to Ms.  
10 Ramage. She has three undertakings by way of one (1)  
11 exhibit.

12 And then I have some further questions of  
13 Mr. Rose this morning and into the afternoon. And all  
14 things considered, Mr. Williams may be on the microphone  
15 later this afternoon.

16 THE CHAIRPERSON: I'm sure he looks  
17 forward with eager anticipation.

18 Ms. Ramage...?

19 MS. PATTI RAMAGE: Thank you, Mr.  
20 Chairman, and good morning. Manitoba Hydro has  
21 distributed an undertaking -- actually three (3)  
22 responses to three (3) undertakings this morning.

23 But before I get to that I should point  
24 out that in my haste to try to get the package of  
25 undertakings on the record yesterday I -- while it was

1 included in your package, I skipped referring to Manitoba  
2 Hydro Undertaking number 41, which is Manitoba Hydro  
3 Exhibit 49, and right now the record doesn't have a -- an  
4 Exhibit 49, so I'll get that just on the record.

5 That Undertaking 41 is Exhibit 49, and  
6 that deals with Manitoba Hydro's response to Mr. Art  
7 Derry's presentation. And --

8 THE CHAIRPERSON: And I -- I apologize  
9 because I did -- I did note it and I should have said  
10 something.

11 MS. PATTI RAMAGE: Yeah. I was just  
12 moving too fast because it's not the most interesting  
13 part of the day.

14

15 --- EXHIBIT NO. MH-49: Response to Undertaking 41

16

17 MS. PATTI RAMAGE: In any event, this  
18 morning we'll put for the record Manitoba Hydro's  
19 responses to Undertakings number 44, 45, and 46, which we  
20 have included in one (1) exhibit, Manitoba Hydro 57.

21 These deal with Manitoba Hydro reconciling  
22 the two (2) line items of domestic energy sales and  
23 domestic losses in the assumptions to IFF-10 and what is  
24 shown in the assumptions to IFF-09.

25

And then Undertaking 45 is Manitoba Hydro



1 reconciling the line items for the dollars of revenue of  
2 domestic energy sales in IFF-10, with that of IFF-09, and  
3 also -- Manitoba Hydro was also to define the energy  
4 industry intensive rate revenues and specific to other  
5 revenue items in that reconciliation.

6 And finally in forty-six (46), that dealt  
7 with restating the total Manitoba domestic sales average  
8 price line item in IFF-09 so that it's comparable to IFF-  
9 10.

10

11 --- EXHIBIT NO. MH-57: Response to Undertakings 44,  
12 45, and 46

13

14 THE CHAIRPERSON: Thank you very much.

15

16 ICF INTERNATIONAL PANEL:

17 JUDAH ROSE, Resumed

18

19 CONTINUED CROSS-EXAMINATION BY MR. BOB PETERS:

20 MR. BOB PETERS: Thank you, and good  
21 morning, Mr. Rose, and good morning to Ms. Surana.  
22 Welcome --

23 MR. JUDAH ROSE: Good morning.

24 MR. BOB PETERS: -- welcome back. I -- I  
25 take from Ms. Ramage's comments that the most exciting

1 part of the day will be you and me because she doesn't  
2 think it was her's, so let's see if we can entertain her  
3 for that, Mr. Rose. Are you up for that?

4 MR. JUDAH ROSE: I'm up for entertaining  
5 her, yes.

6 MR. BOB PETERS: All right. Mr. Rose,  
7 yesterday you were gracious enough to provide an  
8 indication that you would undertake to research some  
9 materials and provide responses through to Ms. Ramage,  
10 and those haven't been provided this morning.

11 Did you have any undertakings prepared  
12 orally that you want to put on the record at this time or  
13 is that not ready yet?

14 MR. JUDAH ROSE: We're working on them.  
15 We're trying to be as complete as possible, and we're not  
16 quite ready yet.

17 MR. BOB PETERS: All right. Thank you,  
18 sir. When we left off yesterday, you were telling the  
19 Board that the off-peak prices in MISO are 43 percent of  
20 the on-peak prices over the 1997 to 2009 period.  
21 Correct?

22 MR. JUDAH ROSE: Yes --

23 MR. BOB PETERS: You --

24 MR. JUDAH ROSE: -- that's the  
25 calculation I have.

1 MR. BOB PETERS: Yes, and you've also  
2 told the Board that there's a strong cor -- a strong  
3 correlation as between the MISO on-peak prices and the  
4 price of natural gas.

5 MR. JUDAH ROSE: Yes, I think that's  
6 fair.

7 MR. BOB PETERS: And in your -- in your  
8 presentation marked as Manitoba Hydro Exhibit 55 that was  
9 distributed yesterday, on page 15 of your document you  
10 basically tell the Board that between 2009 and 2010 ICF  
11 made a major downgrade in the price forecast for natural  
12 gas?

13 MR. JUDAH ROSE: Yes, between February  
14 2009 and October 2010 our natural gas price forecast did  
15 go down in a significant way.

16 MR. BOB PETERS: And on average you  
17 calculated, or one (1) of your colleagues calculated, it  
18 to be 38 percent downward?

19 MR. JUDAH ROSE: Yes, for the Henry Hub  
20 real natural gas price, yes.

21 MR. BOB PETERS: And that Henry Hub real  
22 natural gas price is indicative of the natural gas prices  
23 at other -- at other hubs?

24 MR. JUDAH ROSE: Yes, there's a high  
25 correlation between the Henry Hub price and prices in

1 other areas.

2 MR. BOB PETERS: The only distinction  
3 would be the basis differential as between the two (2) --  
4 the two (2) markets?

5 MR. JUDAH ROSE: Yes, that's correct.

6 MR. BOB PETERS: And you graphically show  
7 on page 16 of Manitoba Hydro Exhibit 55, you show a graph  
8 that indicates that shale gas, in blue on my copy, is --  
9 while it's just starting to be discovered, shale gas is  
10 thought to be plentiful going forward into the  
11 foreseeable future and it will nothing but increase in  
12 terms of its being plentiful?

13 MR. JUDAH ROSE: Well, I think the best  
14 way to characterize our assessment of the shale gas, as  
15 indicated, we do have a lot of information about that, is  
16 -- is that relative to current prices, the prices are not  
17 high enough to support development. So gas prices do  
18 have to go up from current levels.

19 And it depends on the particular resource  
20 and location and that is embodied in our forecast, which  
21 shows by 2017 our gas price in nominal dollars will be  
22 seven dollars (\$7) a million BTU. So -- but it is the  
23 case that the shale gas is a significant development on  
24 the supply side as -- as we believe properly incorporated  
25 in our forecast.

1                   Now, our forecast is of average expected  
2 prices. It doesn't take into account the fact that  
3 there's volatility related to commodity cycles and  
4 weather. It's taking into account as if each one (1) of  
5 these years was repeated ten (10) times or twenty (20)  
6 times, what would be the average price, assuming again,  
7 no commodity cycles and no things like unusual weather.

8                   MR. BOB PETERS: But your prices are  
9 average prices, correct? That's -- that's what you're  
10 showing the Board on page 40 -- or sorry, on page 15 of  
11 your -- of your handout, Manitoba Hydro Exhibit 55?

12                   MR. JUDAH ROSE: Yes, those are the --  
13 what we think on average would occur in that year and --  
14 with the caveats I just mentioned.

15                   MR. BOB PETERS: Well, just not to  
16 belabour the point, but you do show in 2014 the -- an  
17 increase in the forecast and in the following year a  
18 decrease in the forecast. Do you know why you would have  
19 come up with a forecast that instead of being -- rising  
20 steadily, it's got some ups and downs in it on average?

21                   MR. JUDAH ROSE: That's a good question.  
22 I -- I have to double-check on that. One (1) of the  
23 things we talked about yesterday is the fact that the US  
24 Environmental Protection Agency regulations are assumed  
25 to -- well, they currently -- the Hazardous Air Pollutant

1 Regulations require that they be implemented in 2014.

2                   And as I indicated, that there's a -- this  
3 modelling exercise may include the fact that there's a  
4 large amount of coal power plant retirements which  
5 increase the gas demand. And it takes a while for the  
6 gas supply to respond. So I'd have to double-check that,  
7 but I think that that's what's going on.

8                   So there is some non-smoothness associated  
9 with the environmental regulations.

10                   MR. BOB PETERS: Now, you also told the  
11 Board this morning that the price of natural gas  
12 currently doesn't support the production of shale gas.  
13 Is that what you were saying?

14                   MR. JUDAH ROSE: That in order to balance  
15 supply and demand, the current prices, which are -- are  
16 low, have to rise in the five (5) or six dollar (\$6) real  
17 range per million BTU in order to get the supply out,  
18 even among the sh -- shale gas.

19                   The shale gas is an important positive  
20 development from supply from the perspective of  
21 consumers, but the gas wells decline very quickly and the  
22 current prices are not enough to support continued  
23 development. And it takes a while for the market to  
24 equilibrate, but that's how we see it.

25                   MR. BOB PETERS: Have you reviewed the

1 Canadian Gas Association report on shale gas and gas  
2 supplies in western Canada?

3 MR. JUDAH ROSE: I personally have not.  
4 I -- I work with a fairly large number of people that  
5 specialize in gas. As I indicated, we've done work for  
6 INGAA and the North American Gas Association, and we have  
7 access to private assessments of actual drilling  
8 conditions. That particular one, my colleagues I -- I  
9 presume have reviewed; I haven't.

10 MR. BOB PETERS: And you're not  
11 disagreeing that even at three (3) and four dollar (\$4) a  
12 gigajoule or three (3) or four dollars (\$4) for MMBTU  
13 there is gas discovery going on and production coming out  
14 of shale -- shale resources?

15 MR. JUDAH ROSE: Well, I mean, there are  
16 two (2) issues: one (1) is that there's number different  
17 shale and other gas deposits, so there's a whole series  
18 of gas supply curves that are in our gas model. We  
19 talked about the fact that the modelling is sufficiently  
20 detailed so we keep separate models on natural gas, so  
21 it's a very detailed characterization.

22 And so there may be -- there's -- there's  
23 some gas that is basically zero cost because it's jointly  
24 produced with liquids, be they oil or sort of ga -- NGLs,  
25 natural gas liquids. And then there's stuff that has to

1 be produced on its own, et cetera, and it -- it varies by  
2 depth and various different per -- parameters, like  
3 porosity of the rocks, et cetera, et cetera.

4                   It's also the case that you have  
5 production that's ongoing from wells that have already  
6 been drilled and fracked. So, again, we talked about the  
7 fact yesterday that since 2003 approximately the  
8 horizontal well technology was combined with the multi-  
9 fracking technology, and so you have stuff that's already  
10 been fracked, and so that is -- the variable cost of  
11 producing that is low. It's just that that declines  
12 quickly and so you have to sort of replenish that.

13                   So it's a complicated gas situation, and  
14 I'm referring what's necessary to equilibrate supply and  
15 demand, and that's underlying our forecast.

16                   MR. BOB PETERS: All right. Thank you  
17 for that. The Board will take then from what you're  
18 saying, your conclusion that the expectation from ICF is  
19 that the MISO electricity prices would track the natural  
20 gas prices going forward?

21                   MR. JUDAH ROSE: Yes, but I do think it's  
22 important for the Board to recognize the different ways  
23 in which the prices would be moving. And I think the --  
24 and it's an important one, the one you're pointing out,  
25 which is there's a correlation between gas and power



1 prices.

2                   But what's happening also is is that the  
3 number of hours in which coals and the margin is  
4 decreasing because demand is growing. As we indi -- as I  
5 indicated, demand grew last year at 5 percent, and that  
6 means it doubles every fourteen (14) years in MISO.

7                   We don't expect that level growth to be  
8 sustained, but there is demand growth. So you're  
9 marching up a supply curve that's got -- it -- it's the  
10 lowest cost areas of various different types of coal  
11 plants, and then eventually get to gas plants. So the  
12 demand is growing and price is being set on the marginal  
13 units costs, so that's one (1) process.

14                   As you retire the coal plants, it's less  
15 likely you're going to have coal on the margin. Now,  
16 that is somewhat offset by having wind, but the  
17 retirement of coal plants is -- can be significant in  
18 terms of pushing essentially the number of hours up that  
19 gas is on the margin.

20                   And so -- and then, of course, there's the  
21 correlation with -- with gas. And then the last one,  
22 which I think we talked about yesterday also, is as you  
23 get closer and closer to the edge of the stack as demand  
24 grows during your peak hour, you need to -- the prices  
25 have to rise to support new power plant construction.

1 And we see that that is something that kicks in around  
2 the time when you have this large set of retirements of  
3 the legacy assets of the coal fleet, in particular, in  
4 MISO, and it cascades throughout the eastern  
5 interconnect.

6 So there's a number of processes involved,  
7 and -- and so that's -- those are the main processes  
8 separate from the cap and trade type of pro -- programs  
9 that we discussed as well.

10 MR. BOB PETERS: Well, can you help the  
11 Board and quantify that a bit further? That ICF is  
12 forecasting over to 2017 a 38 percent reduction in the  
13 price of natural gas. Does that translate almost  
14 proportionately to a 38 percent reduction in forecast  
15 future electricity prices in MISO?

16 MR. JUDAH ROSE: No, I -- I don't believe  
17 so because there's other developments that are occurring.  
18 Between -- so February 2009, the forecast that was  
19 developed then was based on assumptions and analysis done  
20 in December/January 2009. So one of the things that was  
21 happening is is that the Obama -- the current  
22 administration in the United States was coming to power  
23 and there was a whole slew of regulations that were  
24 issued after 2009.

25 And the administration took a very -- has

1 taken a very tough view. There's a -- a moratorium on  
2 new coal power plant construction in the United States,  
3 and the -- the de facto -- not de jure, but de facto --  
4 and these new regulations are coming into place. So  
5 they're increasing the demand for capacity because of the  
6 retirements that we weren't originally projecting.

7           One thing I did check with my colleagues  
8 is is that we are undertaking a new forecast for the  
9 Company, and I think if we were going to compare the  
10 February 2009 power forecast with our most recent  
11 forecast, that's something that should -- we'd have to  
12 take a look at. I -- I don't have access to that as we  
13 sit here.

14           So I don't think it's a one (1) for one  
15 (1) forecast, and I think -- but it is the case that  
16 lower gas prices do lower the wholesale power prices to  
17 some degree.

18           MR. BOB PETERS: You'd expect, then, that  
19 Manitoba Hydro would reflect the lower prices expected in  
20 the MISO market in their forward planning as well,  
21 wouldn't you?

22           MR. JUDAH ROSE: To the extent that the  
23 power prices are going down, I -- I would expect  
24 ultimately that it would be incorporated in their  
25 forecast. You know, again, there are factors that make

1 it less -- you know, less than one (1) for one (1), and  
2 we'll see what the numbers look like.

3 MR. BOB PETERS: Did you check to see  
4 whether Manitoba Hydro had done that?

5 MR. JUDAH ROSE: We have not delivered  
6 our forecast for 2011, so I assume that they haven't done  
7 that.

8 MR. BOB PETERS: Well, did they do it for  
9 -- for 2010?

10 MR. JUDAH ROSE: I didn't check to -- to  
11 see that.

12 THE CHAIRPERSON: As Mr. Peters goes on,  
13 just a couple of questions before I -- I lose them in my  
14 memory.

15 On page 15, when you're talking about  
16 Henry Hub, those are US dollar prices, correct?

17 MR. JUDAH ROSE: Yes, Sir.

18 THE CHAIRPERSON: And AECO prices tend to  
19 be lower than NYMEX, that's correct, too, isn't it?

20 MR. JUDAH ROSE: Yes. Generally the --  
21 the AECO prices are -- not always, but generally are --  
22 are lower, yeah -- yes.

23 THE CHAIRPERSON: The NYMEX futures  
24 market, as it gets out in time -- like, the last time I  
25 looked, I think it went to 2023. How liquid is it?

1 Like, is there -- what level of volume activity occurs in  
2 the -- the further out you go?

3 MR. JUDAH ROSE: There's a very large  
4 drop off in the liquidity in the NYMEX market beyond two  
5 (2) years, and these forecasts are coming from our  
6 supply-and-demand model, so they're reflecting that --  
7 that they're -- particularly in the -- the mid period of  
8 time here, 2013, '14, '15, '16, are independent of the  
9 NYMEX numbers, whatever they are. It's again a function  
10 of the cost of supply and the level of demand and how  
11 they interact, but it's generally the case that the  
12 liquidity goes down pretty dramatically past two (2)  
13 years.

14 THE CHAIRPERSON: Well, the -- the reason  
15 I -- I -- or one (1) of the reasons I mentioned the NYMEX  
16 is you had indicated before that the -- if I recall  
17 properly, the more forecasts you have, the -- the less  
18 divergence from actual you have. I'm just wondering  
19 whether your -- whether your own ICF forecasts take into  
20 account NYMEX futures at all?

21 MR. JUDAH ROSE: No. What I have  
22 observed is that our forecast tends to be a little bit  
23 lower than some of the other forecasts that are out there  
24 for natural gas prices. The EIA, the US Energy  
25 Information Administration, publishes a 2015 forecast

1 from several different organizations. Our numbers tend  
2 to be -- it's for a number. It's not for Henry Hub; it's  
3 for a related number. Our number tends to be a little  
4 bit lower than that forecast, so if you took an average  
5 of forecasts in gas, I think it would tend to raise it  
6 relative to what we have but not relative to February  
7 2009.

8 THE CHAIRPERSON: So do you expect the  
9 natural gas market to be segmented the way it is now,  
10 like North America as opposed to other regions of the  
11 globe?

12 MR. JUDAH ROSE: Other regions in the  
13 globe? Well, we have actually been doing projects on  
14 exports, and the -- the only export out of the United  
15 States has been through Alaska, through LNG, and there is  
16 a -- a pretty large gap between the gas prices in Europe  
17 and -- and Japan and the gas prices in the -- in North  
18 America. And therefore, we do -- I do expect that there  
19 be some additional export capability. That is, a lot of  
20 import capability was added, and I think that there's --  
21 there's some expectation of -- that their exports would  
22 increase.

23 That in fact is one of the big concerns  
24 that I have, which is, it's hard to gauge that level.  
25 One (1) of the things we talked about yesterday is -- and

1 I'm going to use one (1) more word here that is not as  
2 good as leptokurtosis, but it's the best I can do. It's  
3 already Wednesday, so.

4                   You know, if you have a lachrymose view,  
5 lachrymose is a tendency towards crying, that it --  
6 because things are negative. If you really think that  
7 things are really going to be -- it's not ten (10) to the  
8 minus sixteen (16) probability, it's going to be bad for  
9 a long period of time, one (1) thing you could do is is -  
10 - is you could sort of lock -- try to lock in prices by,  
11 for example, shorting the -- the NYMEX strip.

12                   And so this -- you could sort of say, Look  
13 I got some amount of surplus hydro. I don't know exactly  
14 what the quantity is, but what I'm concerned about is the  
15 price might, if anything, go down, because it can't go  
16 better. It can't -- can't get better because everything  
17 bad is already happening and it's going to continue to be  
18 bad.

19                   So you could -- you could implement that  
20 view, and I would not recommend that that be done because  
21 my concern is is -- is that we're sort of in the trough  
22 right now, and that sort of the bad news is out, and  
23 there's a little bit of a con -- you know, contrarian  
24 view, and one (1) of the things that could happen is, if  
25 you really take this view, then why wouldn't you be doing

1 exports of gas?

2                   If you really be -- or if people really  
3 believe that this is -- this level of gas price is going  
4 to continue, why not try to export it to -- to places  
5 like Europe.

6                   So -- you know, so it's -- we have our  
7 forecast, and there is the NYMEX, and I -- it is an issue  
8 that I am asking my -- my colleagues on. They indicate  
9 that there is some interest in that, and activity in  
10 that, but it's not enough to have us change our forecast,  
11 at least at this point.

12                   THE CHAIRPERSON:   So other than assuming  
13 that the LNG is going to be delivered to North America,  
14 the possibility is the reverse, the shipment out of North  
15 America.

16                   MR. JUDAH ROSE:   Right, and you know, I -  
17 - there's actually, you know, some email traffic that  
18 I've been sending to my colleagues on this issue, and  
19 again as I -- as I indicated, our structure is is that we  
20 have natural gas experts and coal experts and -- and  
21 various different experts, and so we take a -- a view  
22 that each of those entities are putting their forecasts  
23 in this -- into -- together to create a forecast.

24                   So I'm -- I'm deferential to my gas  
25 colleagues' expertise, and they're not -- not here right



1 now, but I have been reaching out to them and saying,  
2 Look if you're taking this view, doesn't that mean that  
3 we're going to have more exports, and their emails to me,  
4 No, is it -- it's just not economic at this time.

5                   And within ten (10) days they -- they told  
6 me they had been approached for two (2) engagements on  
7 that issue, so it's -- it's one (1) of these things  
8 that's hard to gauge. Generally we don't think that it's  
9 a major phenomenon, but it's -- it's one (1) of the  
10 uncertainties that everyone faces in gas.

11                   I mean, if you just look at the history,  
12 if you become a gas-oriented entity you have to live with  
13 the fact that, you know, three (3) years ago it was nine  
14 (9) -- nine dollars (\$9) -- you know, nine (9) -- nine  
15 (9), ten dollars (\$10) a million BTU at Henry Hub. Right  
16 now it's four (4). And that moves very quickly.

17                   And it's -- and it's very, very difficult  
18 to hedge out that position. To actually -- as I -- I  
19 talked about this collateral problem, it's just -- none  
20 of -- none of the utilities that I'm aware of are in a  
21 position that they could actually financially hedge gas  
22 price uncertainty.

23                   And you can do that in hydro because you  
24 guys are offering without collateral to make a sale. You  
25 can do that for coal. No one requires collateral for

1 coal for physical contracts, but if you want to make a  
2 contract for long-term gas, you do need to have the  
3 collateral laid out because it's so volatile.

4           So that's the problem with gas, and that's  
5 what your counterparties are looking at, they're sort of  
6 saying is, Look our coal plants are under attack, I can't  
7 build any new coal plants, I do have, you know, this  
8 demand issue that's -- that's continuing to be out there,  
9 and I'm going to have to build some gas plants eventually  
10 or I'm going to have to get gas power plants.

11           Do I really want only gas for my customers  
12 that historically relied on legacy coal plants. I think  
13 the answer is, No. You do see interest in that and it's  
14 because they're -- they're worried about excessive  
15 reliance on gas.

16           And I will say also that there -- one (1)  
17 other issue I wanted to bring to people's attention is is  
18 that the regulations in the United States are not  
19 sufficient to handle heavy reliance on natural gas.

20           And the reason for that is, it's  
21 complicated but it -- you saw in Texas, first of all,  
22 that there was a big problem during the freeze. They lo  
23 -- they had the ro -- rotating black outs two (2) weeks  
24 ago due to a lack of gas supply.

25           And the -- the costs of a firm gas are not

1 compensated in the market necessarily. That is, when you  
2 build a gas peaking unit in the United States, they don't  
3 require you to have firm gas supply, and they don't allow  
4 for compensation of that.

5 So there are complexities related to a  
6 large scale switch to gas supply that I don't think have  
7 been fully addressed either. But the utilities are --  
8 know that that's their main alternative and they just  
9 don't want to only do that if they can avoid it.

10 THE CHAIRPERSON: I'm just -- I'm going  
11 to stop in a minute, but the -- the geology is such, is  
12 it not, that they've discovered shale gas possibilities  
13 in Europe as well, is it not?

14 MR. JUDAH ROSE: Yes. There's been some  
15 success and -- and some failures, unfortunately. My  
16 brother-in-law is a CEO of a gas wildcat, or in addition  
17 to my thirty (30) people that do gas modelling I also  
18 talk to him, and so he was involved in some unsuccessful  
19 drilling in Hungary.

20 So there -- there are some developments  
21 there. They -- but it is the case right now that the gas  
22 prices are substantially higher still in Europe.

23 THE CHAIRPERSON: Why does your -- or --  
24 or is it just the nature of this particular chart that  
25 you stop in 2017? Do your forecasts go on -- go out

1 beyond 2017?

2 MR. JUDAH ROSE: Yes, they do. Generally  
3 what we have is a monotonically increasing gas price.  
4 It's sort of a -- a mild slope in real dollars and then  
5 it's continuing to grow in -- in gas.

6 What it is is that in 2018 we're assuming  
7 corporately that there will be some cap and trade program  
8 in the United States, albeit at a lower level, as you can  
9 see from the previous graphic. I think everyone is  
10 building into their expectations some possibility, albeit  
11 reduced, of some penalty for CO2.

12 And what happens is when we introduced the  
13 penalty in 2008 there's a -- an increase in the gas  
14 prices as gas demand goes up. CO2 is a pro-gas demand  
15 type of -- CO2 cap and trade programs increase demand for  
16 gas because gas has less CO2 per megawatt hour than a  
17 coal plant.

18 And so I didn't want to include that here  
19 just to -- to keep it brief, to main -- make the main --  
20 make the main point -- is that it is true that shale gas  
21 is out there and it's something to be looking at. It has  
22 affected our view. And I think if I extended it out,  
23 you'll -- you would see the effect of the CO2 program as  
24 well.

25 THE CHAIRPERSON: Could you extend it

1 out?

2 MR. JUDAH ROSE: Sure. We'll have that -  
3 -

4 THE CHAIRPERSON: Okay. We'll look for  
5 that as an undertaking, thank you. How far out would you  
6 go, or do you go?

7 MR. JUDAH ROSE: We go out pretty far. I  
8 think some of our forecasts go out too far, but I think  
9 we go out at least another, you know, ten (10) to fifteen  
10 (15) years easily.

11 THE CHAIRPERSON: That would be very  
12 good. Thank you.

13

14 --- UNDERTAKING NO. 56: ICF to extend the natural gas  
15 forecast, page 15 of Exhibit  
16 55, 10 to 15 years

17

18 THE CHAIRPERSON: Mr. Peters...?

19 MR. BOB PETERS: Yes, thank you.

20

21 CONTINUED BY MR. BOB PETERS:

22 MR. BOB PETERS: I think both yesterday  
23 and today, Mr. Rose, in answer to some questions, you've  
24 indicated that the US demand has picked up by -- it's  
25 grown 5 percent in the last year in 2010?

1                   MR. JUDAH ROSE:    The megawatt hour demand  
2   in the United States, the latest numbers I have,  
3   increased 4 percent last year, 4.1 percent, something on  
4   that order. MISO demand increased 5.1 percent according  
5   to the latest data that I have in megawatt hours.

6                   I think the increase in peak was even more  
7   pronounced, but those are the only two (2) that I can  
8   state here, and I believe they're both in the slides that  
9   I presented yesterday.

10                  MR. BOB PETERS:    Right, and do you have  
11   what the market decline was in 2008 as well as the  
12   decline in 2009?

13                  MR. JUDAH ROSE:    Well, the -- the decline  
14   between 2007 and 2009 was, for the US, almost --  
15   something on the order of 4.7 percent, almost 5 percent.  
16   And one (1) of the questions that our clients have been  
17   asking, and I think -- excuse me, the Board has been as -  
18   - sort of implicitly asking is does that -- and -- and in  
19   particular, because also many people have been saying,  
20   Well, we're not going to need high -- more electricity  
21   supply because we're not going to have demand growth.

22                  We've had a very significant rebound as  
23   the economy has recovered. It doesn't get us back to  
24   where we were yet, and so -- but it is a big step in that  
25   direction. So in one (1) year you recovered most of what

1 you lost in two (2) years.

2 MR. BOB PETERS: And what about in the  
3 MISO region? Did you have a chance to pull those numbers  
4 as well? What was the loss from '07 to '09?

5 MR. JUDAH ROSE: I -- I don't have those  
6 numbers with me that -- sitting here. There's some  
7 complexities in MISO because of the fact that the  
8 membership has been changing, so it's a little bit hard  
9 to follow.

10 MR. BOB PETERS: Is that something that  
11 you can -- can obtain, or is it something that's not  
12 obtainable from you when you go back to your office?

13 MR. JUDAH ROSE: We just have to make  
14 sure that we're doing apples to apples because the  
15 membership is changing. And so it is something that I  
16 think that we could do, but it doesn't mean that it's  
17 necessarily handy. I don't think there's any doubt that  
18 MISO electricity demand went down between seven (7) and  
19 nine (9), it's just making sure it's not being affected  
20 by the change in membership.

21 MR. BOB PETERS: Well, did the MISO  
22 decline in megawatt hours of consumption? Has that been  
23 made up in 2010, or is it still in a -- in a deficit  
24 position?

25 MR. JUDAH ROSE: I think it's likely, you

1 know, the United States average, but I would have to  
2 double-check. We're not back to the trajectory that we  
3 were. But, you know, in the past what we have found is  
4 is that within five (5) years you get ba -- back pretty  
5 much to the trajectory that you were on and that the --  
6 there's a pretty strong relationship between economic  
7 performance and the electricity demand.

8                   And we've looked at the most recent  
9 recessions, including the most -- the previously worst  
10 recession, which is the '80 to '82 recession. So there  
11 is the possibility that if the past is repeated, that  
12 we'll be back on the track that we were before.

13                   MR. BOB PETERS: Or it's possible that it  
14 won't recover fully.

15                   MR. JUDAH ROSE: Yes, I think that it's  
16 possible that it -- it wouldn't recover fully, but I  
17 don't think it's the situation that something happened in  
18 '07 to '09 that has indicated that there's not going to  
19 be electricity demand growth.

20                   Now, all the forecasts are that there'll  
21 be -- continue to be growth. And people could sort of  
22 ask, as -- as I think the Board's questions yesterday I  
23 took to ask is, Jeez, it's going to bad for a long time,  
24 and one (1) definition of bad is that it wouldn't be a  
25 recovery from the lows that we saw in '09. And, in fact,



1 we have seen a significant recovery, both in terms of  
2 MISO in the US and in terms of electricity demand.

3 MR. BOB PETERS: One (1) of the matters,  
4 Mr. Rose, you mentioned to the Chairman was on natural  
5 gas plants being built. There's now a requirement, I  
6 take it, for -- you called it collaterals to be posted.

7 MR. JUDAH ROSE: No, I think what I was  
8 really referring to, it's a related issue, is if you  
9 wanted to guarantee that you get gas at a certain price,  
10 say whatever, five dollars (\$5) a million BTU, and you  
11 wanted to guarantee that over a period of time, you would  
12 be subject to a collateral requirement that would change  
13 daily; we mark to market.

14 And depending on where the gas price was  
15 relative to five dollars (\$5), and -- and we have  
16 experience where gas prices have gone up to twelve  
17 dollars (\$12), the counterparties have to post  
18 collateral. And -- and the -- and the failure to post  
19 collateral is potentially a bankruptcy event.

20 And so that's why people don't lock in gas  
21 prices and why gas is fundamentally different than coal  
22 and hydro with respect to the implications of trying to  
23 control the volatility of the fuel price.

24 MR. BOB PETERS: It's a margin call for  
25 those who have some exposure on the -- on the natural gas

1 side.

2 MR. JUDAH ROSE: Hu -- right, it could be  
3 a huge essentially unlimited margin call on the  
4 Corporation.

5 MR. BOB PETERS: And when you say "huge,"  
6 are you able to quantify that in terms of a percentage of  
7 the -- of the cost of the natural gas or do you have a  
8 dollar amount?

9 MR. JUDAH ROSE: You know, potentially  
10 there's no limit depending on where you are vis-a-vis if  
11 gas prices go up. And if you're on the -- the side of  
12 the transaction as to post collateral when gas prices go  
13 up, then you're in a situation in which there's no po --  
14 you know, upside. As par -- you know, if you're in a  
15 short, there's no upside because the price could go to  
16 infinity. Obviously, that's unlikely to happen, but I --  
17 I can report I've been in bankruptcies that have been  
18 related to people underestimating the margin threat of  
19 trying to control the gas price for their -- for their --  
20 of their use.

21 MR. BOB PETERS: Shouldn't that premium  
22 or that margin or collateral command a corresponding  
23 premium on Manitoba Hydro's electricity export prices?

24 MR. JUDAH ROSE: Yes, I think that we --  
25 that's what we're observing. I think I indicated

1 yesterday, as you look at the MISO prices, the first --  
2 the spot prices, the first thing you need to do is make  
3 sure you're getting the right year dollars, taking into  
4 account inflation.

5                   The next thing is to look at the firmness  
6 premium for long-term contracts that people, therefore,  
7 can avoid having to make construction of power plants.  
8 And then I think the next thing is you -- that you're --  
9 when you get the hydro, you're getting a premium with  
10 respect to not being exposed to environmental regulations  
11 or that uncertainty, and also getting stability of  
12 pricing that cannot be obtained via fossil fuels, since  
13 coal has essentially been made -- new coal power plants  
14 have essentially been made illegal in the US, de facto,  
15 and the only other alternative for -- is the hydro. I'll  
16 set aside for right now the intermittent renewables.

17                   MR. BOB PETERS:     How does Manitoba Hydro  
18 quantify that?

19                   MR. JUDAH ROSE:     Well, there's -- I  
20 believe in their -- the four (4) price forecasts that  
21 they look at when they're gauging adequacy, those  
22 forecasts, for example, include some anticipation of the  
23 environmental premium directly in the power price.  
24 There's some premium that they add to their price  
25 forecasts, which may implicitly account for some of that,

1 and I just think -- I'm -- I'm just -- as I've mentioned  
2 a couple of times, I'm observing the fact that the  
3 Company has announced that its term sheet prices are  
4 greater than eighty-seven dollars (\$87) a megawatt hour,  
5 which is a substantial premium to the historical prices  
6 in the spot market, which is what you'd expect in the  
7 sense to be a premium, but it does look to me that one  
8 (1) of the things that's attractive there is -- that you  
9 can't really fully tease out is the fact that there's a  
10 stability that you don't get from their main alternative,  
11 which is natural gas.

12 MR. BOB PETERS: You're not prepared to  
13 put a percentage or a dollar amount on that premium?

14 MR. JUDAH ROSE: I don't think that we --  
15 we know for sure because different counterparties might  
16 have a different assessment of the -- how they feel about  
17 the gas, and -- and I just don't think there's a -- if  
18 you will, a closed-form solution where we can get a -- an  
19 estimate on that, but -- and there's not a lot of data.

20 There's not a lot of people that are  
21 offering alternatives that look like the Manitoba Hydro  
22 alternative. As I indicated yesterday, there's very few  
23 hydro projects for export to the United States that are  
24 in play, and even among the ones that I mentioned that  
25 were in play, I don't -- I don't think some of them will

1 come to fruition like the Newfoundland/Labrador. It's  
2 just -- you know, it's too remote. But -- so there's not  
3 a lot of good empirical data that you could even begin to  
4 tease a -- a specific quantitative estimate out of.

5 MR. BOB PETERS: In an answer that you  
6 gave the Chairman, you were talking about a situation --  
7 I think you used Texas as an example -- where ICF didn't  
8 -- doesn't like there to be a total reliance on -- on,  
9 say, natural gas as a fuel source.

10 MR. JUDAH ROSE: I -- I wouldn't say that  
11 ICF doesn't like there to be a total reliance. I think  
12 more what I was saying is is that there are aspects of  
13 relying on natural gas that are potentially problematic  
14 and it's because the power sector doesn't have the  
15 regulatory structure to convert itself from a -- from a  
16 primarily non-gas to an increasingly gas-oriented future.

17 The majority of power in the United States  
18 is non-gas. It's 80 percent; historically, it's been  
19 even a little bit more. And so the -- I'm just reporting  
20 that the -- the regulations are not adequate to ensure  
21 deliverability of natural gas, or to compensate people  
22 for undertaking to get the deliverability for natural  
23 gas. It's a problem. I've pointed it out in a number of  
24 forums, and -- and so it's a -- it's -- to me, it's a  
25 source of concern when I look at the reliability of the

1 US power system.

2                   Now, it's not only me that's saying this.  
3 There's a NERC, North American Electric Reliability,  
4 investigation ongoing right now with respect to natural  
5 gas supply in Texas. They've indicated that one (1) of  
6 the predicates to their own assessments is their previous  
7 concerns that there's -- that one of the threats to the  
8 reliability of the power system is -- is the reliance on  
9 natural gas, and FERC has not acted to require  
10 compensation or -- or to require firm gas supply for the  
11 gas plants.

12                   And so there are imperfections in the  
13 structure in the United States that would be a source of  
14 concern with respect to gas. I think that that's in the  
15 minds of the counterparties secondary to the fact that  
16 they -- an all gas future for them is very volatile.

17                   MR. BOB PETERS: Are -- when you said 80  
18 percent US supply, were you -- were you suggesting 80  
19 percent of the US total electric market is met through  
20 natural gas generation?

21                   MR. JUDAH ROSE: In the 20 percent.

22                   MR. BOB PETERS: Okay. So 80 percent is  
23 coal?

24                   MR. JUDAH ROSE: Eighty -- 80 percent is  
25 the non-gas. Fifty -- 48 percent is coal, 20 percent is

1 nuclear, hydro is 8 percent, renewables are like 2 to 3  
2 percent, and the -- the difference is primarily gas.  
3 There's maybe 1 percent oil generation in the US, some --  
4 something on that order.

5                   So gas has historically been a -- a  
6 relatively limited portion, and it's been concentrated in  
7 certain areas of the country, and the -- the regulations  
8 are -- unfortunately are still problematic with respect  
9 to the reliability of gas supply.

10                   MR. BOB PETERS:    In Manitoba Hydro's  
11 export market, being the northern MISO region, what  
12 percentage of coal plants are typically online?

13                   MR. JUDAH ROSE:    The average capacity of  
14 coal plants in the United States is around 71 percent, 72  
15 percent.  It's -- I'm not sure that's directly related to  
16 -- to what you're saying.

17                   Most coal plants tend to be online during  
18 the summer peak, and during the shoulder season a lower  
19 percentage are online, but I -- I would need more  
20 specificity to try to answer that, and there's the issue  
21 about units versus megawatts, as well, that I'd have to  
22 look at.

23                   MR. BOB PETERS:    Are you able to break it  
24 down in terms of the annual consumption in -- in the  
25 northern MISO region that is fuelled by coal plants?

1 Gigawatt hours, for example.

2 MR. JUDAH ROSE: Right. I would say that  
3 coal is somewhere between 80 and 90 percent of the  
4 generation. Maybe 80 percent of the generation. I --  
5 I'd have to look at -- I do have the numbers, and it's  
6 extreme -- it's a very high percentage.

7 This gets to the issue that we were  
8 talking about yesterday of the fact that while -- well,  
9 MISO also has the problem of it doesn't have a lot of com  
10 -- intermediate combined-cycle plants, so when it goes  
11 from coal it jumps to the most expensive gas plants.

12 So while on-peak is about roughly 50  
13 percent of the hours, a conversation we had yesterday,  
14 gas is important but there is the case that I think coal  
15 is in the margin in some hours in on-peak as well. And  
16 it's just that it's the most expensive coal units, and --  
17 and so -- but it -- it's very, very heavily coal-  
18 dependent in -- in -- particularly in the northern MISO.

19 MR. BOB PETERS: And when you say it  
20 could be between 80 and 90 percent coal-dependent, does  
21 the remaining 10 percent then is -- is gas? A little bit  
22 there maybe for wind?

23 MR. JUDAH ROSE: Yes, I think that's  
24 right. I actually looked at the data yesterday or the  
25 day before. This gets to the issue of some comments that



1 the K&M report had.

2 In the northern MISO, only 1 or 2 percent  
3 of the generation is -- is hydro. I did take a look at  
4 that. So there's no reason to think that a hydro event  
5 in Manitoba would affect the market prices in MISO, in my  
6 view.

7 Manitoba is too small, with all due  
8 respect, to the market to really move that market  
9 significantly, at least on an annual average basis.

10 So I -- I would say, Yes. I'd say of the  
11 non-coal portion you got some wind, an increasing amount  
12 of wind, and the -- and the rest is the gas, and -- and a  
13 lot of it's peaking gas creating pretty high prices.

14 MR. BOB PETERS: Mr. Rose, are you able  
15 to tell the Board, and I -- I'm not sure Mr. Surminski  
16 has told me that already, but what percentage of the coal  
17 plants in the northern MISO region are -- I'm sorry, what  
18 percent of the natural gas plants in the -- in the MISO  
19 region are combined-cycle as compared to the single-  
20 cycle?

21 MR. JUDAH ROSE: No, it -- it's just a,  
22 you know, established phenomenon in MISO that they have -  
23 - the gas plants tend to be more peaking si -- simple-  
24 cycle less efficient units than the US average.

25 There's not as many combined-cycles as

1 other regions. And that's sort of a historic phenomenon  
2 that -- that manifests itself in sudden jumps in the  
3 price when you go from coal up through into the natural  
4 gas part of the stack.

5 MR. BOB PETERS: That contributes to the  
6 volatility then that you mentioned yesterday in the MISO  
7 region?

8 MR. JUDAH ROSE: Right, and -- and -- and  
9 so what happens -- it also explains why that there's a  
10 chunk of hours on peak that are still coal-dependent.

11

12 (BRIEF PAUSE)

13

14 MR. BOB PETERS: Has ICF studied and  
15 analyzed Manitoba Hydro's importing energy for subsequent  
16 exports?

17 MR. JUDAH ROSE: Well, we have reviewed  
18 some material on imports. I think I actually had a table  
19 on that in my presentation during the drought. But I  
20 don't think we looked at the specific issue of how much  
21 of that was brought in to protect against the possibility  
22 of a -- an extreme drought once they were in a drought  
23 versus how much of it was then used to be re-exported.

24 MR. BOB PETERS: Would Manitoba Hydro's  
25 margin on export sales be greatest when only selling

1 hydraulic energy as compared to purchasing power and then  
2 exporting it?

3 MR. JUDAH ROSE: Yeah, that sounds right  
4 that you -- you -- that's the case. I think -- my -- my  
5 experience in reviewing the materials is is that when you  
6 get into a drought situation, not knowing whether it --  
7 how bad the drought's going to be, how prolonged it's  
8 going to be, the Company undertakes certain procedures to  
9 handle that. It does two (2) main things. One (1) is it  
10 tries to anticipate an extreme demand situation and the  
11 other is it tries to anticipate an extreme drought.

12 And so what's happening is is it's looking  
13 for thermal and import power to protect their energy  
14 supplies until they are comfortable that the drought has  
15 abated. And -- and as indicated yesterday, the -- the  
16 essence of the Black Swan event is -- is that they need  
17 to have import capability or some other source of power  
18 to withstand an extreme drought.

19 And it's a difficult factor to -- to  
20 access quantitatively, but in the event that they're not  
21 able to secure sufficient transmission, there needs to --  
22 there needs -- the consequences need to be that there's  
23 going to be additional costs that are imposed on the  
24 system either through the Black Swan event itself, which  
25 would be a -- a terrible situation, since the -- the

1 absence of power in the -- in the winter. I did go out  
2 very briefly, in spite of the admonition of the Board,  
3 when -- when I went to dinner. So the absence of power  
4 in the winter would be obviously catastrophic. And --  
5 and so the -- the essence of the Black Swan event is  
6 trying to make sure that the transmission is adequate in  
7 an extreme situation.

8 MR. ROBERT MAYER: One (1) has to inquire  
9 where you went to dinner?

10 MR. JUDAH ROSE: Well, you know, I --

11 MR. ROBERT MAYER: We didn't have any  
12 power outages in my hotel.

13 MR. JUDAH ROSE: Well, we went to the  
14 Affinity Vegetarian Restaurant. I'm not being paid for  
15 that. It was a brief foray.

16

17 CONTINUED BY MR. BOB PETERS:

18 MR. BOB PETERS: Mr. Rose, when we talked  
19 about the -- the margin, and you got into that discussion  
20 about the -- the drought, you would expect, and ICF would  
21 expect that if Manitoba Hydro's imports are from gas  
22 compared to coal, then the margin to contribute to the  
23 embedded costs of Manitoba Hydro would be reduced?

24 MR. JUDAH ROSE: Yes, I think that's a  
25 fair characterization.

1                   MR. BOB PETERS:    And when you talked  
2 about -- you'd analyzed Manitoba Hydro's imports in the  
3 last 2003/'04 drought I think what you -- is what you  
4 said, Manitoba Hydro's exports can range probably from  
5 the plus 15,000 gigawatt hours to the negative 10,000  
6 gigawatt hours. Does that sound reasonable to you?

7                   MR. JUDAH ROSE:    I actually have some  
8 statistics on that. Let me just -- I'm on page 58 of the  
9 PowerPoint presentation. So the -- you know, under the -  
10 - under drought conditions there's a drop of, you know,  
11 roughly 10/11 terawatt hours, or 10 to 11,000 gigawatt  
12 hours. The thermal generation increases substantially by  
13 about four (4) and the imports about three (3).

14                   So -- I mean, that's a -- I think a -- a  
15 useful way to think about the -- a drought, but again,  
16 it's a function of the drought and it's a function of the  
17 transmission capacity that's available and, you know,  
18 market conditions, et cetera.

19                   MR. BOB PETERS:    But in the -- but -- but  
20 in terms of Manitoba Hydro's maximum exports versus their  
21 maximum imports and the -- and the spread between those  
22 two (2) numbers, that's a significant -- a significant  
23 number of gigawatt hours, is it not?

24                   MR. JUDAH ROSE:    I'm not sure what you're  
25 referring to.

1                   MR. BOB PETERS:   Well, rather than talk  
2 about the -- the median or the -- the average conditions,  
3 under maybe Manitoba's high flow conditions they can  
4 export, I don't know, 13,000, 15,000 gigawatt hours of  
5 energy. And then in a drought year they'd have to -- and  
6 they've had to import as much as 10,000 gigawatt hours of  
7 energy?

8                   MR. JUDAH ROSE:   I -- I don't have those  
9 numbers sitting here. What I do have here is that  
10 they're -- in this particular case on page 58, the  
11 imports and exports are netting out to zero, roughly, it  
12 looks like, and --

13                   MR. BOB PETERS:   I was trying to get you  
14 off your sheet there to go to a high -- high flow year as  
15 opposed to a median flow year, but no --

16                   MR. JUDAH ROSE:   You know, I mean, I --  
17 in terms of a high flow year, it is certainly the case  
18 that you could have more exports. I just -- you know, I  
19 -- I'm a little hesitant to -- to go beyond the numbers I  
20 have handy.

21                   And I -- and my -- one (1) my main points  
22 is is that you want to be in a situation where you could  
23 in an extreme event import more power, and that you have  
24 the transmission access and the transmission capability  
25 to make that happen I think is a good way to protect

1 against an extreme event because you get the access to  
2 all those power plants in MISO, and the probability that  
3 they all will be out is low, so it's a good reliable  
4 thermal source of energy in an emergency, particularly  
5 during the winter when your peak is high and theirs is  
6 not.

7 MR. BOB PETERS: And that was met last  
8 time by Manitoba Hydro with their existing transmission  
9 resources?

10 MR. JUDAH ROSE: Yes, but I think -- I  
11 think the concern is is that in the event of a worse  
12 drought than the worst on a record, that, a) you want to  
13 make sure you have the transmission access, and, b) you  
14 want to have enough transmission, and I don't think that  
15 there's enough transmission right now that would allow  
16 them to withstand a very extreme prolonged drought, which  
17 we don't have a quantitative assessment of the  
18 probability for but should be on everyone's minds as they  
19 think through the relationship between the company's  
20 policies and its access to transmission or other  
21 protections.

22 MR. BOB PETERS: The Company has other  
23 protection built into the term sheets and the contracts,  
24 does it not, in terms of this Black Swan worst drought,  
25 worse than anything on historic record?

1                   MR. JUDAH ROSE:    Yes, there are  
2 provisions that are -- are relevant to the -- the main --  
3 main provision is is that in exchange for these --  
4 signing these term sheet related contracts, number 1 is  
5 is that there's going to be more transmission that's  
6 going to be built, and number 2, the Company would have  
7 access to that transmission to import power via the  
8 contract.

9                   So the contracts are an important  
10 mechanism to get the import capability. The Company does  
11 not control what happens in the United States. I don't  
12 control what happens in the United States. You've got to  
13 induce people in the United States to have an interest in  
14 building the lines to the US border, and the transmission  
15 access is critically dependent on getting the contracts  
16 in place, both physically and financially.

17                   MR. BOB PETERS:    Mr. Rose, did ICF  
18 analyze what would happen under the Black Swan event  
19 you've described in terms of Manitoba Hydro needing to  
20 import energy?

21                   MR. JUDAH ROSE:    Well, I -- I -- what  
22 happened was, and I -- I just mentioned it to the Board  
23 yesterday, we went out and spoke to the experts to ask  
24 them how bad could a bad event be and how likely would it  
25 be. I'm referring to Drs. Leavritts -- Leavitt and St.



1 George, and we reviewed material provided by Mr.  
2 McCullough which I didn't feel was adequate.

3           And I don't think there's a way to  
4 quantify it. But the only extreme that we -- we know is  
5 what -- it's possible that you wouldn't have any hydro.  
6 And the question is is then is there enough transmission  
7 import capability and access to protect against that  
8 event. And the answer today is, not.

9           You -- the firm import capability is  
10 something on the order of 40 percent of peak. And -- and  
11 that's a very worrisome fact because when you add that to  
12 the limited thermal you have and the possibility you  
13 could have thermal problems because you have so few  
14 units, Manitoba has made progress through the decades in  
15 solving the problem of being at the end of North America,  
16 but it hasn't finished the work. It needs to finish the  
17 work, and the strategy of the Company is designed to  
18 finish that work in a manner that provides access to a  
19 large thermal source of power.

20           MR. BOB PETERS: With the adverse water  
21 clauses in the term sheets and in the contracts that  
22 you've reviewed, or the summaries of which you have  
23 reviewed, Manitoba Hydro has protection against having to  
24 deliver on their export contracts under those adverse  
25 water conditions, does it not?

1                   MR. JUDAH ROSE:    Yes, and it has benefits  
2 in terms of the imports, so that it is able to -- under  
3 the term sheets, I realized their -- the physical  
4 transmission gets built. That is an undertaking that's  
5 part of that arrangement, and there's also the  
6 transmission access that is provided by the  
7 counterparties for payment.

8                   MR. BOB PETERS:    And so while you're  
9 saying Manitoba Hydro had sufficient US transmission for  
10 imports in '03/'04, under those circumstances, you're not  
11 sure if it would, under a Black Swan event, have enough  
12 capability to generate and source its own electricity.

13                   MR. JUDAH ROSE:    Right. The Board should  
14 sit and think, as the Company needs to sit and think, as  
15 to what would happen in a winter in Manitoba in a drought  
16 that goes beyond that seen in -- in the record. And that  
17 is the Company again and the -- and the province has made  
18 a lot of progress in that regard through the years, but  
19 more needs to be done in that regard.

20                   That is, I don't agree with Mr. McCullough  
21 in terms of his quantitative assessment. I think it's,  
22 you know, misplaced, but I think qualitatively -- and I  
23 also don't agree with his conclusions. I don't want to  
24 get into it. I don't know if he's or something like that  
25 or not, but there is -- there is the possibility that you

1 have this un -- unforeseen event and that the fact it was  
2 adequate in, or you were able to get by in '03 doesn't  
3 indicate that you can always get by.

4 MR. BOB PETERS: A few answers ago, you  
5 talked about Manitoba Hydro's drought. Can you tell the  
6 Board, from ICF's perspective, how does ICF understand  
7 Manitoba Hydro anticipates a drought situation?

8 MR. JUDAH ROSE: Well, as I indicated on  
9 -- I'll go to the page. On page 53, it's a schematic  
10 that indicates there's a lot of elements of the company  
11 that are involved in drought planning, and I think we've  
12 talked about some of the specifics that, when they're  
13 doing their stress tests, they look at the second-worst  
14 year -- second-worst drought. The -- there -- again,  
15 there was one (1) seven (7) year in the record, two (2)  
16 five (5) years, and they picked the 1980s event that was  
17 the worst of the two (2) five (5) year droughts.

18 They -- they -- they look at that. They -  
19 - they're looking at their equities that could withstand  
20 some unexpected event. They have plans and priority  
21 documents and histories that we've discussed as to what  
22 they do when they go into a drought. Given they don't  
23 know how bad it is, they adopt a higher demand forecast,  
24 they adopt a worst hydrological conditions, and they  
25 protect themselves by accumulating storage energy for

1 events that would be extreme until they feel the -- the  
2 drought has abated.

3           It's reflected in many of their documents,  
4 in their -- their risk documents, in their modelling and  
5 how they look at -- at events. And then I think one (1)  
6 of the main things is is they want transmission access to  
7 MISO. They want to be able to import more power, and  
8 they want to have the physical capability to do that.

9           And they want to reinforce their export  
10 capabilities, and I think that's one (1) of the key  
11 elements of what -- again, what Manitoba Hydro's done  
12 through the years. It added hydro, but, you know,  
13 because of the correlation within the hydro, you could  
14 have, in all four (4) river systems, a drought. We don't  
15 know what the probability is, and therefore either you're  
16 going to have to build out a new thermal system that has  
17 the ability to withstand thermal threats or you're going  
18 to have to have access to the MISO system.

19           MR. ROBERT MAYER:   Mr. -- Mr. Rose, the -  
20 - being at the end of North America did sort of strike  
21 some of us up here as being a little much. I mean, I  
22 live in Thompson, Manitoba, and we're 35 kilometres from  
23 the centre of the province of Manitoba, and as the Chair  
24 has pointed out, we're about 20 miles from the centre of  
25 North America as we sit here.

1                   So the end of -- and you mentioned  
2 actually having paddled the -- or I think paddled the  
3 Mackenzie River, which seems a little more remote than we  
4 are. I have canoed the Yukon River, which is not quite  
5 as remote as the Mackenzie but is certainly farther  
6 remote than that.

7                   But what's your comment on the -- the end  
8 of North America issue? And -- and the other issue, when  
9 you talk about a White Swan event -- a Black Swan event  
10 that gets us virtually no ability to generate power, and  
11 I would suggest that we have better history than the  
12 ninety-six (96) years of water flow that we can actually  
13 talk about because we do have traditional knowledge out  
14 there that tells us that the fur traders from the 1670s  
15 couldn't travel up the Nelson River because of the volume  
16 and -- and flow of the water on that river.

17                   We also have the rem -- remnants of forts  
18 upon a number of the tributaries to the Nelson River,  
19 which indicate that there was an active fur trade carried  
20 on by canoe and York boat for centuries.

21                   So the -- the Black Swan event sounds very  
22 scary to me, but it strikes me that we do have  
23 significantly more history to suggest that that is highly  
24 unlikely, at least in the province of Manitoba.

25                   MR. JUDAH ROSE: Well, first of all, I

1 was referring electrically rather than geographically,  
2 and you know, one (1) of my goals one (1) day is to visit  
3 Churchill, and so I'm really referring sort of  
4 electrically. That -- you know, you have a -- really  
5 only a handful of lines linking Manitoba to the United  
6 States. Subject to checking, there's a 500 kV line, and  
7 two (2) -- three (3) -- three (3) 230 kV lines.

8           If the five hundred (500) line goes, which  
9 would be a contingency that transmission planners would  
10 have to deal with, it affects your ability to import and  
11 export. Your ability to access that at reasonable rates  
12 is an issue, and just the -- the quantity. I think your  
13 -- your firm import capability is under 2,000 megawatts,  
14 and again your peak is five (5), and growing. So I think  
15 -- it's really just referring to electrically.

16           Now, what the probability of the Black  
17 Swan event is, I think everyone agrees that it's small  
18 because you haven't seen it in ninety-seven (97) years,  
19 and the -- the problem is is that getting into the  
20 literature, the reason why this -- this -- I'm sure now  
21 that I've mentioned it, and those that haven't heard it,  
22 you're going to run across the term Black Swan again in  
23 the future because it's very -- a very attractive idea in  
24 the sense that a lot of the major failures that you see  
25 in organizations is people didn't anticipate things that

1 are outside the historical record.

2                   So, you know, the housing crisis, or  
3 something like that. Now, it is true that, as my  
4 understanding, I'm not a paleoclimatologist, I'm not even  
5 a climatologist, is is that there are, you know,  
6 incidences -- there are -- is evidence of -- of drought  
7 conditions in various different records. And now, you  
8 know, Mr. McCullough sort of brought to my attention, you  
9 know, an event in one (1) river system, or -- or one (1)  
10 part of the watershed. I think the watershed had been  
11 divided into five (5) parts, and one (1) of them showed a  
12 major drought in 1700, or another one (1) had 1720.

13                   And what -- the reason I didn't feel that  
14 it was sufficient for quantification is that there was no  
15 four (4) season, four (4) river system, or four (4)  
16 season five (5) watershed, so we don't have a  
17 quantitative estimate, but I just -- it does seem to me  
18 that it's a legitimate concern because -- you know, I've  
19 -- I've been involved in Department of Homeland Security  
20 exercises in the United States in one (1) of the  
21 Midwestern states in MISO. And so the biggest threat,  
22 vis-a-vis the power system, is the loss of power during  
23 the winter. And in the event that you cannot solve that  
24 problem you end up -- and there are -- there is equipment  
25 that's difficult to replace.

1                   So the reason why you have rotating  
2 blackouts is because the alternative is worse. Any  
3 damage to major elements of the system, like due to  
4 overheating, cannot be tolerated because the equipment  
5 cannot necessarily be replaced quickly. And during the  
6 winter, you -- you know, in the extreme you would have to  
7 have an organized evacuation if you cannot provide  
8 heating on a prolonged basis.

9                   And that, you know, simply can't be done.  
10 The exercises that I -- that I was involved in in the  
11 States involved the Department of Transportation the --  
12 it was the National ar -- National Guard, all the various  
13 different elements of the State, and it did require a  
14 fair amount in that particular case to knock out a good  
15 por -- part of the State because it was an interconnected  
16 network.

17                   My concern is, and I want to elaborate on  
18 it, is is, you know, if you had low hy -- very, very low  
19 hydro outside the record, and if you had other problems,  
20 you -- you -- you'd want to have more transmission. Now,  
21 the transmission network itself is a outgrowth of that  
22 fundamental fact, which is you diversify your risk by  
23 having more transmission.

24                   By being part of an interconnected network  
25 you are -- necessarily have more access to power and less



1 exposure to weather and power plant outages. Power plant  
2 trips are not -- trips is the word they use for outages.  
3 I've been in control rooms at the gas plants. If the gas  
4 BTU content unexpectedly drops, plants trip offline and  
5 that's one (1) of the problems they had in -- in Texas, I  
6 believe, is that they -- the -- the BTU content per unit  
7 of time coming into the power plant from the gas pipeline  
8 wasn't adequate.

9                   So you have all of those concerns, and --  
10 and the question I think that I was trying to answer is  
11 how do I see that the company is sensitive to these  
12 issues, vis-a-vis drought planning, and I see that they  
13 are very sensitive to the transmission aspect and the  
14 ability to protect against a low probability, but  
15 incredibly horrible event because you'd never be able to  
16 get all the people out. That's just a fact.

17                   And -- and so you -- you know, you want --  
18 you -- you can't tolerate that if you can -- you know,  
19 avoid it, it's -- and being north again was just  
20 electrically re -- you know, there's no -- with the  
21 exception of the -- the high voltage lines that are  
22 coming down from the Nelson River, you know, it -- it's --  
23 - basically the transmission grid ends.

24                   And, you know, and it gets very sparse and  
25 that's the -- that's really what I'm referring to.

1 Whereas if you're further south in MISO you have power  
2 coming in from all directions.

3 MR. ROBERT MAYER: Thank you.

4

5 CONTINUED BY MR. BOB PETERS:

6 MR. BOB PETERS: Mr. Rose, I suppose in  
7 that answer you talk about maybe both sides of the  
8 argument, but there's also an argument in there that  
9 Manitoba Hydro should diversify and have more thermal  
10 resources available rather than being totally reliant on  
11 the import capability from other jurisdictions.

12 MR. JUDAH ROSE: I think that's true.  
13 You could make that argument. Here's the concern that I  
14 have, you have this huge thermal reservoir of hundreds of  
15 power plants that are diverse with respect to location,  
16 vintage, you know, type, how could you recreate that  
17 system.

18 Transmission outages are more -- more rare  
19 than power plant outages. The average forced outage rate  
20 in the United State for power plants is roughly 6, 7, 8  
21 percent, and transmission lines is, you know, it's --  
22 it's much less. So how could you recreate that. So if  
23 you go off and you build, say a bunch of gas plants but  
24 you have an unexpected gas problem, that is -- you have  
25 to then make sure you have enough units so that you are

1 able to withstand the outages of the unit due to  
2 equipment failure, then you have the fuel, which  
3 typically be -- turn -- tends to be a common source  
4 event.

5                   You want the power plants to be located  
6 not all at the same location so that there's a -- if  
7 there's a -- a problem on the transmission lines, a tower  
8 goes down, it's -- it may be knocking out all the  
9 circuits as a -- and so you want to make sure that that -  
10 - a common mode failure doesn't affect.

11                   So yes you can do that, but I think the  
12 alternative is you're 90 miles from the US border --  
13 actually, I really don't know. That's about right,  
14 right? We're about 60/90 miles from the US border and  
15 you're sitting on a system that's got 1 and 2 percent  
16 hydro, so -- and it's summer peaking, decidedly so.

17                   So it seems to me like -- plus you get the  
18 added benefits of the tra -- from the transmission of  
19 being able to avoid off-peak sales. You get the added --  
20 so you get the premium dollar for your -- for your  
21 energy, plus you prevent the possibility that you -- your  
22 system be -- your access to the United States be re-rated  
23 as -- as non-firm. And again, that's a concern,  
24 effectively non-firm, because of the consequences of the  
25 outage of one (1) of the lines that I just referred to.

1 THE CHAIRPERSON: Mr. Peters, what's your  
2 plans for taking a break?

3 MR. BOB PETERS: This would be an  
4 appropriate time, sir, yes.

5 THE CHAIRPERSON: Okay. Just before I  
6 lose track of three (3) things that came up. Mr. Rose,  
7 you were talking about in the American recovery from the  
8 recession, Manitoba Hydro just released their nine (9)  
9 month report to December 31st, and it indicates that the  
10 energy sold in the export market was 8.6 billion kilowatt  
11 hours compared to nine point one (9.1) sold in the same  
12 period of last year.

13 How does that equate with your comment  
14 about the recovery in the States?

15 MR. JUDAH ROSE: I'm not sure, you know,  
16 what's driving the -- maybe there was less hydro  
17 available or lo -- greater local demand. I -- I don't  
18 know. What I was referring to, Chairman, was the fact  
19 that in many of my presentations I've made in various  
20 different locations people have been sceptical, and I  
21 think reasonably so, to say, you know, why would -- why  
22 do you think electricity demand is going to recover,  
23 what's your basis for that belief.

24 As I indicated, part of the basis was the  
25 historical record, which I'm intimately familiar with,

1 which is during past recessions the demand tended to  
2 recover very significantly.

3           And so I wanted to point out that my view  
4 that demand recovers is being at least partially  
5 substantiated by the increase in demand in 2000. Now,  
6 how that manifested itself in price and/or in quantity I  
7 think is a different issue. It's -- it's just related to  
8 the issue of we -- because we had almost a 5 percent  
9 decrease in demand in two (2) thou -- between 2007 and  
10 2009. And as I indicated, it was unprecedented since the  
11 Great Depression.

12           So what I'm here to report is the latest  
13 data shows that there was an increase in demand, and  
14 that's consistent with a general trend of recovery. I  
15 can't comment though specifically on those numbers.

16           THE CHAIRPERSON: Okay, we'll leave that  
17 as a bit of a mystery, unexplored area for a second. The  
18 second one's also with respect to that same comment, and  
19 it's a little bit different. It relates to demand, the  
20 prospects for load increases into the future.

21           I don't know if you have any knowledge of  
22 the former chief economist of the CIBC here in Canada,  
23 Jeffrey Rubin, who is somewhat famous for making  
24 predictions on oil prices and things of that particular  
25 nature. In 2008, before the credit crisis ensued, oil

1 peaked out at one forty-seven (147), if I recall  
2 properly, and Mr. Rubin, just before his departure from  
3 the CIBC, predicted that oil could hit as high as two  
4 hundred dollars (\$200) a barrel.

5                   Since then, he hasn't actually dropped  
6 that particular line, but his suggestion as it relates to  
7 load is this. He suggests that as oil becomes  
8 increasingly expensive, the cost of shipping commodities,  
9 let's say to China, and then shipping the finish --  
10 finished goods back will become such that manufacturing,  
11 if you like, would revive in North America. Do you have  
12 any views on that?

13                   MR. JUDAH ROSE: I do, although I don't -  
14 - I'm not -- I don't know Mr. Rubin. I published two (2)  
15 articles in the last year with Ms. Surana, who's also Dr.  
16 Surana, and the articles were on -- on this: that the two  
17 (2) -- the way to predict the -- whether or not we're  
18 going to have a recession -- the best way to predict  
19 whether we're going to have a recession and the severity  
20 of the recession is a function of two (2) items. One (1)  
21 is the oil price.

22                   So I think of the three (3) things that  
23 mani -- caused the Great Recession that we've been in.  
24 Like you've said, the hundred and forty-five dollar  
25 (\$145) oil prices was a major phenomenon and to -- in my

1 view, it's not sufficiently appreciated.

2                   One (1) of the things that -- the other  
3 thing is the yield curve. And the yield curve is the  
4 relationship between sort of -- the horizontal axis is  
5 the term of your loan and the vertical axis is your --  
6 your interest rate, and normally that's an upward  
7 sloping, as you borrow longer you have to pay more. And  
8 that's the normal -- the normal condition is upward  
9 sloping. That's what it is today.

10                   It's like zero percent versus 3 or 4  
11 percent for a ten (10) year bond. As long as that stays  
12 positive we won't have a recession, but that the high oil  
13 prices constrain the federal reserve or the monetary  
14 authorities and eventually they have to then flip it to -  
15 - and when it inverts, within twelve (12) to eighteen  
16 (18) months you'll have a recession.

17                   All recessions are followed by an  
18 inversion. There's no recession that's -- there's no  
19 inversion that doesn't lead to a recession, and there's  
20 no recession that's not preceded by an inversion of the  
21 yield curve, where you actually have -- short-term  
22 interest rates are higher, and that the severity is a  
23 function of the increase in the oil price.

24                   So, you know, I'm here to say that you and  
25 I, looking at similar things -- and of course the news

1 from yesterday is not a happy thing, where oil prices  
2 went up. The yield curve is still extremely positive and  
3 I think the thing to be watching for is -- is whether or  
4 not the oil prices lead to an inversion of the yield  
5 curve and look at where the oil prices are at that time.

6           That's, I think, the total wisdom that is  
7 available on predicting recessions, and I don't think  
8 that there is a -- another set of metrics out there, in  
9 my experience, or a computer model that will give you a  
10 good sense of that, and -- now, that may be overly  
11 strong, but that's sort of the conclusion.

12           So in -- in -- in the main, I agree with  
13 you, with that -- with that caveat that we need to keep a  
14 clear eye on the yield curve.

15           And so, when you -- when you -- when you  
16 sort of ask the question of whether it's ten (10) to the  
17 minus sixteenth (-16th) of whether you'd have a  
18 repetition of these events, I think I was being perhaps  
19 unfairly whimsical and -- and/or maybe I was getting  
20 tired yesterday, but I still think that, you know, in  
21 those -- that you have cycles, there's a way to look at  
22 those, there's reasons to be concerned, but the idea that  
23 you would be -- you know, there's no evidence that I'm  
24 aware of that you have these, you know, ten (10) year  
25 events.



1                   The -- we only had one (1) ten (10) year  
2 event, and that was the Great Depression of the '30s, and  
3 I -- I don't see that that's where we're at right now,  
4 and I don't think it's a -- again, a -- a good planning  
5 metric to -- to assume that we'd be in that for a very  
6 prolonged period of time.

7                   THE CHAIRPERSON:    The -- the other part  
8 of that question in Rubin's hypothesis was that, assuming  
9 that you -- that the high oil prices didn't create a  
10 massive recession, that the high cost of transpor --  
11 transportation of the commodities overseas and then back  
12 in -- in manufactured goods would tend to put some life  
13 in the rebuilding of manufacturing in North America,  
14 which would be, of course, increased demand, industrial  
15 demand.

16                   MR. JUDAH ROSE:    You know, if I was the  
17 Platonic king, and President Obama and, you know, the  
18 Prime Minister of Canada came to my house and I asked  
19 them what -- and they asked me what I -- they should  
20 focus on, they should try to get lower oil prices and  
21 figure out how to do that. And whatever silver lining it  
22 is would be secondary to -- I think that it's -- it's a  
23 very important issue.

24                   THE CHAIRPERSON:    The -- the last  
25 question I wanted to ask in this series was, we've been

1 talking a lot about this Black Swan event, which this  
2 Board in various places have heard a lot about this  
3 lately, but -- and we were talking about the -- what --  
4 what drought should one focus on as being the -- if you  
5 want to call it the worst-case scenario.

6                   And it just hits me when I look at that  
7 graph that you produced that, between 1928 and 1941, you  
8 actually had a drought of twelve (12) of fourteen (14)  
9 years. That's -- so basically, you have a seven (7) year  
10 drought followed by two (2) years non-drought followed by  
11 five (5) years more of drought. That's a pretty  
12 significant event. Sort of reminds me of things that  
13 have gone on in Australia's hinterland.

14                   MR. JUDAH ROSE: Without getting into  
15 that -- the details of that, you know, and it is -- it is  
16 worrisome when you look at that because I think about the  
17 dust bowl and the fact that we're on the northern part of  
18 the great plains here.

19                   THE CHAIRPERSON: Yeah. You think of  
20 movies like The Grapes -- Grapes of Wrath.

21                   MR. JUDAH ROSE: Right. You know, in  
22 some sense, it's a -- a non-enviable responsibility that  
23 you would have as -- as -- as a regulator -- whatever  
24 exactly the regulatory authority is I'm not an expert on  
25 -- but also for the management of the Company to -- to --

1 to -- to deal with something that is generally not have  
2 to -- you don't have to deal with.

3           You know, there -- I -- I've -- this is my  
4 twenty-first commission that I've had to -- the pleasure  
5 to testify in front of. I don't think really that most  
6 of them are worried about, you know, extreme drought  
7 conditions.

8           So it's not like you can go to the NARUC  
9 meetings, you know, the Regulatory Commissioner's  
10 meetings, and -- in the States, and have people say, you  
11 know, I'm worried about a -- you know, a major prolonged  
12 drought in the Great Plains, and the fact that we have  
13 just four (4) trans -- major transmission lines, or  
14 whatever it is, and we're, you know, 98 percent hydro  
15 generation.

16           And you get together with your -- your  
17 comrades, and they all -- we all -- you all are able to  
18 provide a support group. You're sort of on your own, and  
19 it's not -- and -- and it's not an enviable position, I  
20 don't know, when they gave you the job description they  
21 sort of said, You'll be in this unenviable position of,  
22 you know, being in a decades-long chain of people making  
23 decisions that have consequences for many, many decades,  
24 if not, you know, a hundred years.

25           Some of these hydro pl -- I guess your

1 oldest hydro plant goes back to the -- hundred years. So  
2 -- and, you know, your transmission lines that you have  
3 right now, as I understand it, were built in the '70s or  
4 so and related to specific hydro arrangements.

5                   So -- so it's an unenviable position, but  
6 I am reporting to you that the Company does seem to be  
7 very sensitive to that, to transmission access, and it  
8 seems to me is part of the drought awareness, so that's a  
9 good thing.

10                   And the difficulty is we don't have a  
11 probability system, and Mr. McCullough was right to be  
12 concerned about that, but I just don't think -- I think  
13 he was wrong in his characterization of the -- of the --  
14 of the -- what we know and what -- the implications of  
15 that because the implications, I believe, are to strength  
16 the transmission grid and to do the -- take the steps  
17 that would allow that to happen.

18                   And in general, one (1) of the major  
19 phenomenons that we -- phenomena that we have in -- in  
20 North America is underinvestment in transmission, and in  
21 this case, you know, it's a theme again.

22                   THE CHAIRPERSON: Thank you, sir. We'll  
23 take the break now.

24

25 --- Upon recessing at 10:57 a.m.

1 --- Upon resuming at 11:23 a.m.

2

3 THE CHAIRPERSON: Okay, Mr. Peters.

4

5 CONTINUED BY MR. BOB PETERS:

6 MR. BOB PETERS: Thank you, Mr. Chairman.

7 I'd like to start with Mr. Rose on the second term of  
8 reference from his report taking about adequacy of price.

9 And, Mr. Rose, is it ICF's view that  
10 Manitoba Hydro's export prices should always exceed  
11 hydro's embedded generation costs?

12

13 (BRIEF PAUSE)

14

15 MR. JUDAH ROSE: No, I -- I think more  
16 useful would be a going forward cost-benefit analysis.  
17 So it would be looking at the incremental costs and the  
18 incremental benefits.

19 As I indicated, it should be important  
20 that those incremental benefits include the benefits of  
21 the transmission, it's availability, and the avoidance of  
22 having to pay for the US leg.

23 MR. BOB PETERS: All right. We'll --  
24 we'll come to that. And this transmission you're talking  
25 about, it's about 1,000 megawatts? Is that what you're

1 talking about?

2 MR. JUDAH ROSE: Yes. I may have  
3 misspoke earlier. The import capability right now is  
4 around a thousand into the -- versus the five thousand  
5 (5,000) at peak, so there's a gap of four thousand  
6 (4,000), which is driving the concern.

7 So that was vis-a-vis the import. There's  
8 more, I think, on the export side.

9 MR. BOB PETERS: Yes, and in terms of the  
10 term-sheeted import capabilities, you're talking 1,000  
11 megawatts?

12 MR. JUDAH ROSE: No, I mean today if you  
13 had to -- if you had a bad problem in Manitoba and you  
14 had to import, you can only import around 1,000 megawatts  
15 and a peak of five thousand (5,000).

16 MR. BOB PETERS: And if the term sheets  
17 come to fruition, what will be the import capability at  
18 that time?

19 MR. JUDAH ROSE: I -- I don't have that  
20 with me, but it goes up significantly, and also the  
21 export capability, of course, goes up as well, and the  
22 reliability of the transmission goes up.

23 It's something I believe more -- you know,  
24 more -- akin to more than doubling the import capability,  
25 and -- but I don't have the act -- actual numbers with

1 me.

2 MR. BOB PETERS: Well, I'll come to those  
3 with you, and maybe by then you'll have an opportunity to  
4 refresh your memory on that.

5 In your report -- in the ICF report it  
6 talks about:

7 "The proposed prices are on average  
8 above Manitoba Hydro costs and average  
9 expected spot prices."

10 I'm reading from the executive summary,  
11 page 4. Do you recall words to that effect?

12

13 (BRIEF PAUSE)

14

15 MR. JUDAH ROSE: I'm sorry, page 4 of the  
16 PowerPoint or page 4 of the -- of the September report?

17 MR. BOB PETERS: Yes, page 4 of the  
18 Appendix 12.2, September '09 report, the one with the  
19 blue cover that you have. And I'm looking just  
20 underneath the chart, probably the third sentence of that  
21 paragraph:

22 "The proposed prices are on average  
23 above MH costs and average expected  
24 spot prices."

25 MR. JUDAH ROSE: Yes, sir, I see that.

1                   MR. BOB PETERS: All right. And in that  
2 sentence you're talking about the proposed prices,  
3 meaning the proposed prices for the term-sheeted  
4 arrangements with NSP, Minnesota Power, and Wisconsin  
5 Public Service?

6                   MR. JUDAH ROSE: Yes.

7                   MR. BOB PETERS: And when you talk about  
8 the proposed prices are on average above Manitoba Hydro  
9 costs, I would like you to explain to the Board what  
10 Manitoba Hydro costs you have quantified or considered in  
11 giving that answer.

12                   MR. JUDAH ROSE: The next sentence  
13 explains that we're looking at a study that is --  
14 indicated there was, I -- I believe, \$153 million on a  
15 present value basis by 2041. It, I believe, is referring  
16 to the '08/'09 resource plan in footnote 2 on that page.

17                   MR. BOB PETERS: So that's a report that  
18 you could provide in these proceedings to the Board then,  
19 Mr. Rose?

20

21   (BRIEF PAUSE)

22

23                   MR. JUDAH ROSE: Yeah, I mean, we -- I  
24 believe that we have -- have that. We have a footnote  
25 here to that effect, and -- okay.



1                   MR. BOB PETERS:    Let's be clear, Mr.  
2 Rose.  The source of data for the statement made by ICF,  
3 and the statement was:

4                   "The proposed prices are on average  
5                   above Manitoba Hydro costs and average  
6                   expected spot prices."

7                   The source of that data is from a document  
8 that Manitoba Hydro provided to you?

9                   MR. JUDAH ROSE:    Well, one (1) of them  
10 is.  That is the issue on the net present value of  
11 savings to 2041, that is from a document that would be  
12 received.  The fact that it's above expected spot prices  
13 relates to the comparison that we conducted of the  
14 contract or the term-sheet prices vis-a-vis the forecasts  
15 that were available.

16                  MR. BOB PETERS:    All right.  Well, thank  
17 you for breaking it down.  I'm interested in your  
18 providing the Board with the basis of ICF's conclusion  
19 that the proposed prices are, on average, above Manitoba  
20 Hydro costs.

21                  MS. PATTI RAMAGE:   Mr. Peters, and I  
22 can't speak for Mr. Rose, but on -- on hearing his  
23 response and reading footnote number 2 in the report, and  
24 -- and to such extent, the materials in footnote number 2  
25 may or may not be the -- the basis.  That's the power

1 resource plan which has been file in a edited version,  
2 and the plan that can be reviewed is on the record and  
3 the remainder is confidential information.

4

5 CONTINUED BY MR. BOB PETERS:

6 MR. BOB PETERS: And, Mr. Rose, is it  
7 your understanding then from speaking to Manitoba Hydro's  
8 counsel that the numbers that lead to the conclusion that  
9 the proposed prices in the NSP, Wisconsin Public Service,  
10 and Minnesota Power contracts are on average above  
11 Hydro's costs, that's material that is being kept  
12 confidential by Manitoba Hydro and not put on the public  
13 record?

14 MR. JUDAH ROSE: I accept my counsel's  
15 description and her instructions.

16 MR. BOB PETERS: And what I was just  
17 trying to be clear on is that the portion of the document  
18 that gives rise to that statement is not on the public  
19 record, is that correct?

20 MS. PATTI RAMAGE: That is correct.

21

22 CONTINUED BY MR. BOB PETERS:

23 MR. BOB PETERS: And it's your  
24 understanding, Mr. Rose, that it's not on the public  
25 record, as Manitoba Hydro claims confidentiality of that

1 information?

2 MR. JUDAH ROSE: Yes, as described by  
3 counsel.

4 MR. BOB PETERS: And ICF understands  
5 Manitoba Hydro's strategy with respect to exports, is  
6 that under average flow conditions less than 50 percent  
7 of the sales will be pursuant to long-term contracts?

8 MR. JUDAH ROSE: Something on the order  
9 roughly of -- of 50 percent is the -- I think the way  
10 I've -- I've described it.

11 MR. BOB PETERS: Maybe more like 40/45  
12 percent would be under long-term contract?

13 MR. JUDAH ROSE: To get greater  
14 specificity, I'd have to look at, you know, each year's  
15 numbers. I think that the -- the higher the hydro, the  
16 more they -- there's surplus that's available that would  
17 be sold spot. You know, I -- I do have the graph on page  
18 31, and, you know, looking at it, I'm not disagreeing  
19 with you, but it seems like it varies from year to year,  
20 and -- and obviously it's a function of hydro conditions.

21

22 (BRIEF PAUSE)

23

24 MR. BOB PETERS: Well, since you turned  
25 to Exhibit 55, Manitoba Hydro Exhibit 55, on page 31,

1 that coloured chart, Mr. Rose, you're not disagreeing  
2 that -- I guess, under average conditions, it'll be less  
3 than 50 percent sold pursuant to long-term contracts?

4 MR. JUDAH ROSE: No, I'm not disagreeing  
5 with it. It's -- as I'm eyeballing it, I think what  
6 you're saying seems reasonable, and I just don't have the  
7 exact numbers.

8 It's -- it -- the main thing is -- is  
9 that, if I look at the previous graph, which is more  
10 historically oriented, it does -- it does support your  
11 view, but includes a -- a drought year and that it's --  
12 it's less than 50/50 on the firm, and -- but it's still  
13 at, you know, in my view, a mixed balance strategy.

14 MR. BOB PETERS: All right. And -- and  
15 we're not going to disagree over that or argue over that,  
16 Mr. Rose, but while we're looking at the chart on page  
17 31, as colourful as it is, is it not correct that some of  
18 the exportable, dependable surplus, which is probably  
19 gold, if that's the colour that I see in the chart, some  
20 of that exportable dependable surplus is sold at other  
21 than fixed prices. It would be sold at market prices, or  
22 would it not?

23 MR. JUDAH ROSE: Yes, that's my  
24 understanding, unless there would be a -- a contract  
25 signed at some point in the future.

1                   MR. BOB PETERS:    Okay.  All right.  And  
2  it's those market prices that are subject to the  
3  variability that you've already spoken about, correct?

4                   MR. JUDAH ROSE:    Short-term prices are  
5  subject to the short-term volatility we've been  
6  discussing.  That would be my expectation.

7                   MR. BOB PETERS:    And whether it's 50/50,  
8  45/55, in terms of the split between long-term contracts  
9  and the -- and the spot sales, as a general rule, the  
10 spot sales or opportunity sales would be lower priced  
11 than the long-term contracts, correct?

12                  MR. JUDAH ROSE:    Well, that certainly has  
13 been the case as you look at the '97 and 2010 record,  
14 vis-a-vis the term sheet prices.  I think if you look at  
15 the historical prices the difference is smaller.  There's  
16 the historical contract prices.

17                  I think, as we discussed yesterday, if,  
18 for example, there was a view that bad things are going  
19 to happen continually in terms of low prices, and there  
20 wasn't really an upside that you wanted to take advantage  
21 of there, it might argue then you would -- you would try  
22 to contract or hedge out your position more than the --  
23 the current proposed strategy.  And so that gold area  
24 could be hedged if you thought really the only -- there  
25 isn't an upside; it's really just downside or status quo

1 that you're looking at.

2 MR. BOB PETERS: Manitoba Hydro's  
3 opportunity or spot sales average prices for the last two  
4 (2) years are about two point three (2.3) cents a  
5 kilowatt hour?

6 MR. JUDAH ROSE: I don't have those  
7 numbers. I have the --

8 MR. BOB PETERS: Would you take that  
9 subject to check, or subject to confirmation from  
10 Manitoba Hydro, specifically Mr. Warden?

11 MR. JUDAH ROSE: Yeah, if he's -- yes, if  
12 he's -- has that data, I'll -- think I'll take them as  
13 subject to check.

14 MR. BOB PETERS: And you'd also accept  
15 that some of Manitoba Hydro's opportunity sales have been  
16 for less than one (1) cent a kilowatt hour?

17 MR. JUDAH ROSE: Again, I don't have that  
18 data in front of me.

19 MR. BOB PETERS: Would that surprise you,  
20 if they had been selling less than a penny a kilowatt  
21 hour?

22 MR. JUDAH ROSE: No, I mean as -- look at  
23 page 99 of the PowerPoint, the off-peak price in 2009,  
24 the -- the depth of the recession, was thirteen point  
25 seven (\$13.7) dollars a megawatt hour. That's the

1 average for the off-peak, so you would expect some  
2 perturbation around that.

3 And that -- you know, I'm sure that's  
4 heavily affected by the demand situation and -- and other  
5 -- other factors that caused 2009/2010 to be depressed,  
6 and the lack of transmission capability to move even more  
7 on-peak rather than off-peak.

8 MR. BOB PETERS: And it's also compounded  
9 by the operational factors as to whether Manitoba Hydro  
10 has to consider whether they will spill it, or run it  
11 through the generator and sell it, correct?

12 MR. JUDAH ROSE: Correct.

13

14 (BRIEF PAUSE)

15

16 MR. BOB PETERS: If we turn the Board's  
17 attention to page 42 of your presentation yesterday,  
18 Manitoba Hydro Exhibit 55, on page 42 is the chart of the  
19 MISO On-Peak, and you disclosed the contract on-peak  
20 power price under the potential contract for Manitoba  
21 Hydro is greater than eighty-seven dollars (\$87). Are  
22 you on that page?

23 MR. JUDAH ROSE: Yes, sir. I disclosed  
24 it because the Company disclosed it, was my  
25 understanding.

1                   MR. BOB PETERS:    Let's tread carefully  
2 here, just so that we're not stepping on ground that  
3 ought not to be tread, but underneath that red bar you  
4 call a -- a potential contract, singular. Is that meant  
5 to be contracts, plural? Contracts, or are you at  
6 liberty to say?

7                   MR. JUDAH ROSE:    Yeah. I think that  
8 would be best to be plural.

9                   MR. BOB PETERS:    And if it's plural, are  
10 you prepared and able to say that it is -- it represents  
11 the new NSP arrangement, the proposed term-sheeted  
12 Wisconsin Public Service arrangement and the proposed  
13 Minnesota Power arrangement?

14

15                                   (BRIEF PAUSE)

16

17                   MR. JUDAH ROSE:    Yes, I think that that's  
18 a disclosed and fair characterization.

19                   MR. BOB PETERS:    And so when you're  
20 telling the Board that the opportunity sales that will  
21 comprise Manitoba Hydro's sales portfolio on export  
22 compared to that red bar, Manitoba Hydro can expect those  
23 off-peak sales to be at least -- or to be less than half  
24 of the eighty-seven dollars (\$87) a megawatt hour that  
25 you're showing.



1                   That would be on average an expectation  
2 that would be reasonable?

3                   MR. JUDAH ROSE:    No, I mean I think we  
4 should take a look at whatever the going-forward forecast  
5 is, and you know, is the historical -- it is the  
6 historical case that the -- in many of the -- many of the  
7 years, the on-peak prices were lower, and the off-peak  
8 prices were lower than that, but we'd have to take a look  
9 at the -- the best thing to do would be to take a look at  
10 the forecasts.

11                   As a general matter, the forecasts were  
12 lower, and that was one (1) of the things that lead us to  
13 conclude that the price was adequate.  And so, overall,  
14 I'm, you know, in agreement that they should expect to  
15 get less for non-firm sales than for firm sales.

16                   MR. BOB PETERS:    The forecasts that were  
17 lower, Mr. Rose, were for on-peak sales, correct?

18

19   (BRIEF PAUSE)

20

21                   MR. JUDAH ROSE:    Yes, I think that's  
22 correct.

23                   MR. BOB PETERS:    And so my simple point,  
24 and let's be -- be careful, in terms of that red bar  
25 graph on page 42 of Manitoba Hydro Exhibit 55, the

1 opportunity sales expected from Manitoba Hydro won't  
2 return on average as much as the on-peak power price.  
3 You'll agree with that?

4 MR. JUDAH ROSE: Yes, that -- that's what  
5 the forecasts indicate, that the non -- that the non-  
6 contracted prices would be lower than the contract price,  
7 which is the reason why the contract price is adequate.  
8 Now, with respect to the off-peak price, again, it would  
9 expect to be lower, but we shouldn't necessarily  
10 extrapolate from current or historical conditions since  
11 the demand is growing and no coal is being added.

12 And so I want to just be careful that  
13 while we think off-peak will be lower, it may not be  
14 coal-based or as low as it has been historically.

15 MR. BOB PETERS: Well, we know  
16 historically for the '97 to 2010 period that you've  
17 provided on page 42 that the off-peak price is 43 percent  
18 of the on-peak price on average, correct?

19 MR. JUDAH ROSE: Yes. And as -- also, as  
20 we discussed, it was -- it was because the coal was on  
21 the margin. You know, extremely high percentage of the  
22 off-peak hours, there's a de facto moratorium on coal  
23 power plant construction, and therefore, as demand grows,  
24 we -- we want to be careful not to extrapolate, and  
25 that's -- too much from the past.

1                   It is the case that off-peak is lower  
2 demand. You're going to have lower prices on average.  
3 And just the question is is whether some of those hours  
4 begin to be gas-driven over time like it is in other  
5 markets.

6                   MR. BOB PETERS:    So how much lower --  
7 whether it's 50 percent of the red bar graph, whether  
8 it's 43 percent of the red bar graph, whether it's 60  
9 percent of the red bar graph, you're not prepared to sit  
10 here and provide any explicit number to the Board; would  
11 that be correct?

12                  MR. JUDAH ROSE:    Yes, I believe that's  
13 correct, we would not pre -- reveal the forecast at this  
14 point.

15                  MR. BOB PETERS:    And when you talk about  
16 the coal being on the margin and the US states that are  
17 heavily reliant on coal, there are those states in the  
18 MISO region, correct, that's at least -- I think you  
19 said, 48/50 percent of the electricity in MISO is coal?

20                  MR. JUDAH ROSE:    No, that was for the --  
21 for the US. For MISO, I said 80 to 90 percent's coal.

22                  MR. BOB PETERS:    Sorry, the 80 to 90  
23 percent coal in MISO, when you talk about those plants  
24 having to be replaced, wouldn't it be reasonable to have  
25 the expectation that those coal plants will be replaced

1 by coal plants?

2 MR. JUDAH ROSE: No.

3 MR. BOB PETERS: You think that they're  
4 going to go all, en masse, to gas?

5 MR. JUDAH ROSE: I think it'll -- it'll  
6 be much less coal power plant construction. And, I mean,  
7 if you take a look at the coal on -- online in the United  
8 States of 325,000 megawatts, I would say about three  
9 hundred thousand (300,000) of the three hundred and  
10 twenty-five (325) have been online for more than twenty  
11 (20) years. That means there has been very little added  
12 over the last twenty (20) years, so -- or more.

13 So that's 92 percent, you know, are twenty  
14 (20) years -- or thirty (30) years or older. Some of  
15 them are fifty (50) or -- fifty (50) years plus. As I  
16 indicated, also there's a de facto moratorium. Now,  
17 that's a function of the -- you know, the political  
18 situation in the Unites States, in part. In part, it's a  
19 function of the fact that the coal power plant costs have  
20 greatly increased.

21 I've been testifying in Indiana. The coal  
22 power plant in Indiana that's under construction, I  
23 think, is in the order of four (4) or five thousand  
24 dollars (\$5,000) a kilowatt, and that's a integrated  
25 gasification combined-cycle plan. It was unex -- it's

1 unexpectedly expensive, but even for more conventional  
2 units the cost of coal power plants had gone up a lot,  
3 and it's in part because of the tightened environmental  
4 regulations. And there's a -- and the current  
5 administration is very loathe to permit new coal power  
6 plants.

7                   So there's a -- a number of reasons why,  
8 as demand is growing, you know, and even if United States  
9 demand grows at 2 percent a year, you know, you're  
10 doubling your demand every thirty-six (36) years, and  
11 we're talking about term sheets that go out to twenty  
12 (20), you know, thirty-five (35), twenty (20), you know,  
13 forty (40), where you're going to be -- and the power  
14 plants themselves, the hydro power plants, are going to  
15 go out to 2100 or something.

16                   You're going to have a -- I don't think --  
17 you're going to have a lot of trouble building coal  
18 plants, so I don't think the replacement of -- of the  
19 power plants that we're talking about, which could happen  
20 suddenly -- according to court order it could happen as  
21 early as 2014 -- a good chunk of that could -- could be  
22 replaced. I don't think it's a good assumption to think  
23 that you're going to replace your current fleet in MISO  
24 and -- with coal. It's -- it's going to be more gas.

25                   MR. BOB PETERS: Can you provide this

1 Board with a little historical snapshot, Mr. Rose, as to  
2 what was MISO's natural gas generation back in 2008, and  
3 then carry it into 2009 and maybe update it for 2010 in  
4 terms of gigawatt hours as well as a percentage of the  
5 generation in the -- in the MISO region?

6 MR. JUDAH ROSE: No, I can't doing that -  
7 - do that sitting here, and, you know, again it's --  
8 coal's 80, 90 percent of the generation, and the amount  
9 of gas is going to be a function of electricity demand as  
10 well, just, you know, likely disproportionately. I -- I  
11 can't sit here on -- on that.

12 What I can say is the amount of gas in the  
13 US has gone up. The share of gas has gone up compared to  
14 coal, and the share of coal is going down, and that's  
15 even with the -- the 2009 recession.

16 MR. BOB PETERS: Can you provide that  
17 information by way of an undertaking to the Board,  
18 recognizing that it's -- it's not something readily  
19 available to you as you are here today?

20 MR. JUDAH ROSE: If -- if my counsel  
21 authorizes it, you know.

22 MR. BOB PETERS: Just so that Ms. Ramage  
23 is clear and Ms. Fernandes, the undertaking that I would  
24 like Mr. Rose to provide to the Board was the indication  
25 as to the MISO natural gas generation in 2008, in 2009,

1 in 2010, as well as forecast for the next few years if he  
2 has that, as to what was the amount generated by way of  
3 gigawatt hours, and then as well as what percent of  
4 capacity that represents in the MISO region, so we can  
5 follow his -- his understanding.

6

7 (BRIEF PAUSE)

8

9 MS. PATTI RAMAGE: Mr. Peters, I'm going  
10 to suggest we take the undertaking under advisement, just  
11 to determine -- Mr. Rose has expressed a -- a concern  
12 that he provides you with good quality information and  
13 that he's going to be comparing apples to apples, and  
14 what it would take to -- to pull together that forecast  
15 information. So it's -- it's definitely not a no, it's  
16 just let us go look and see what the -- what's involved  
17 in putting that together for you.

18 MR. BOB PETERS: Thank you, Ms. Ramage.  
19 I appreciate that.

20

21 --- UNDERTAKING NO. 57: UNDER ADVISEMENT - ICF to  
22 indicate as to the MISO  
23 natural gas generation in  
24 2008, 2009, 2010, as well as  
25 forecast for the next few

1 years, as to what was the  
2 amount generated by way of  
3 gigawatt hours, and then as  
4 well as what percent of  
5 capacity that represents in  
6 the MISO region  
7

8 CONTINUED BY MR. BOB PETERS:

9 MR. BOB PETERS: Let's turn back to our -  
10 - our pricing, Mr. Rose. If Manitoba Hydro's opportunity  
11 or spot exports are less than the embedded costs of  
12 Manitoba Hydro's generation, is that a possibility in  
13 terms of what exists under the term sheets and the  
14 prospective contracts?

15 MR. JUDAH ROSE: Just to be clear on the  
16 question, you're asking me about the spot prices for  
17 opportunity sales, vis-a-vis the embedded costs?

18 MR. BOB PETERS: Okay, let me -- no, let  
19 me -- let me start over. You've provided on page 42 an  
20 indication that the contract on-peak power price for the  
21 NSP, WPS, and MP contracts, will be greater than eighty-  
22 seven dollars (\$87) a megawatt, correct?

23 MR. JUDAH ROSE: A megawatt hour, yes.

24 MR. BOB PETERS: And --

25 MR. JUDAH ROSE: In 2010 dollars, yes.





1 indication as to what's going to go forward, then I  
2 suggest that those non-contract on -- on-peak sales would  
3 be probably 50 percent of what you show as the on-peak  
4 price. That would be a reasonable expectation, as well?

5 MR. JUDAH ROSE: No, I -- I -- I can't --  
6 I can't agree to that. First -- first of all, we -- we  
7 do have forecasts, and I don't want to get into the  
8 details of what those forecasts are because we're not  
9 releasing that publically, so those forecasts are of  
10 future conditions that take into account future  
11 developments.

12 And so I -- I don't think that that's a  
13 fair characterization. The other is that we did not look  
14 at the percentage that would be exported, firm versus  
15 non-firm. That's a function of the trans -- transmission  
16 capability that's available as well as the other  
17 operational characteristics.

18 I think it is fair to say that on average  
19 it's expected that the contract prices will be at a  
20 premium to the spot prices, but the exact relationship is  
21 quantitative and some of it's confidential information.

22 MR. BOB PETERS: Some of it ICF claims is  
23 proprietary.

24 MR. JUDAH ROSE: Yes, that's true, and I  
25 think it's also confidential because people -- the

1 company doesn't want people to back out the term-sheet  
2 prices.

3

4

(BRIEF PAUSE)

5

6 MR. BOB PETERS: When ICF makes the  
7 statement that the proposed prices are on average above  
8 Manitoba Hydro's costs, you're talking in those cases the  
9 incremental costs of the -- servicing the new contracts  
10 against the incremental benefits provided by the new  
11 contracts?

12 MR. JUDAH ROSE: Well, I think we have to  
13 be specific because I've -- I've used a number of  
14 definitions of costs, and the one that we were looking at  
15 earlier, that was -- I think it was something on the  
16 order of \$153 million of MPV through 2041.

17 That was looking at a situation in which  
18 you're projecting your costs with and without the  
19 contracts, not taking into account the benefits past  
20 2041, and not taking into account the benefits in terms  
21 of not having to build a transmission in the United  
22 States, having access to the transmission for reliability  
23 purposes, so it's a -- a partial calculus.

24 So in that particular case, it was increm  
25 -- an incremental but-for analysis. In other cases as

1 we've discussed, I've -- I've compared it to different  
2 parameters. And also as we've discussed, in terms of  
3 decision making I think the cost and benefits on a going  
4 forward basis are the -- are the paramount concern. And  
5 the historical data, or some of the other information is  
6 secondary, perhaps confirmatory, of -- of the -- or  
7 supportive, but what you ultimately want -- are  
8 interested in the -- is the incremental costs and  
9 benefits.

10 MR. BOB PETERS: All right. Let's talk  
11 specific numbers rather than -- that general. You're  
12 aware that Manitoba Hydro is building a new generating  
13 station called Wuskwatim as we speak?

14 MR. JUDAH ROSE: I am aware of the Wus --  
15 Wuskwatim project. It's 200 megawatts in my table on  
16 page 50 -- I'm sorry, 33. In-service date is 2011. This  
17 is from the September report.

18

19 (BRIEF PAUSE)

20

21 MR. BOB PETERS: You're not aware that  
22 Manitoba Hydro has pushed it back a further year in terms  
23 of an in-service date?

24 MR. JUDAH ROSE: No, I -- I know that  
25 there was some development that was pushed back a year.

1 I don't -- I just don't re -- sitting here remember  
2 whether it was Wuskwatim. I -- I mean, I think I saw  
3 something about it in the annual report as well, so it's  
4 something, I think, that's ongoing but...

5 MR. BOB PETERS: And you were told that  
6 the cost of Wuskwatim was \$1.6 billion?

7 MR. JUDAH ROSE: Where do you see that?

8 MR. BOB PETERS: I don't see it in your  
9 report. I'm asking if you're aware of that.

10 MR. JUDAH ROSE: I don't remember that  
11 specific number, and on page 31 there is an estimate of  
12 the expenditures of 2009 to 2018, but it's not broken out  
13 by plant.

14 MR. ROBERT MAYER: Mr. Peters, you have  
15 me confused now. I thought I heard Mr. Warden say fairly  
16 early that we're expecting Wuskwatim online with --  
17 either in fiscal '10 or fiscal '11, but rather  
18 momentarily, and the two (2) that have been pushed back -  
19 - or the in-service dates have been pushed back are  
20 Keeyask and Conawapa. I -- I think we should clarify  
21 that because I don't think Wuskwatim has been pushed  
22 back, and I do see Mr. Warden nodding.

23 MR. BOB PETERS: Thank you, Mr. Vice  
24 Chair. My understanding from the evidence, sir, and  
25 it'll be subject to Mr. Warden confirming through his

1 counsel that Wuskwatim is to come online in fiscal --  
2 Manitoba Hydro's fiscal 2012. And that would mean --  
3 that would mean, Mr. Vice Chair, that for fiscal 2012,  
4 that would include coming online in the fall of 2011,  
5 and it would -- all three (3) units would be up and  
6 running on or before March 31 of 2012. That is my  
7 understanding of the evidence, but if I'm incorrect, I'll  
8 certainly apologize to the witness and correct that.

9 MR. ROBERT MAYER: Well, okay, but what  
10 do you mean by "online"?

11 MR. BOB PETERS: Producing energy.

12 MR. ROBERT MAYER: I got to believe that  
13 when the generators are running we're producing energy,  
14 which I understand to be, at the latest, 2012.

15 MR. BOB PETERS: I think we're saying the  
16 same thing. I -- I think -- I think I'm understanding  
17 that the generation is going to start in  
18 November/December of 2011, possibly into January/February  
19 of 2012, and the plant will be fully online producing  
20 energy on or before March 31 of 2012. And I'll look to  
21 Ms. Ramage to either indicate whether her recollection of  
22 the record is the same as mine.

23 MS. PATTI RAMAGE: I don't want to wade  
24 into the debate, but I can clarify that the 2011 date  
25 under in-service date refers to fiscal '11/'12, and I

1 think that may help.

2 MR. BOB PETERS: So I think we've chased  
3 our own tails and we -- I think we're both agreeing to  
4 the same thing at this point in time, and...

5

6 CONTINUED BY MR. BOB PETERS:

7 MR. BOB PETERS: Mr. Rose, to get back to  
8 you, in terms of the in-service date, as your counsel has  
9 indicated, the 2011 isn't meant to be a fiscal year, it  
10 would be a calendar year for the first -- first  
11 generating -- generators to come online in calendar 2011,  
12 which would coincide with Manitoba Hydro's fiscal 2012?

13 MR. JUDAH ROSE: I'm not sure that it's  
14 right. Well, I -- I think what I'm taking is -- is that  
15 the -- the plants are all going to be online soon, the  
16 Wusk -- Wusk -- Wuskwatim, and maybe we can -- the exact  
17 dates and whether it's the fiscal year -- I mean, I have  
18 a footnote in page 33, but without looking and to just --  
19 I'm -- I'm not sure that -- that what you said is exactly  
20 right, but what I'm hearing is, is that, you know, that  
21 we're looking at an in-service date that's soon.

22 MR. BOB PETERS: Thank you, Mr. Rose.

23 Mr. Chairman, maybe this would be a good  
24 time to take the lunch recess, and we'll sort that out as  
25 between counsel and make sure we're all speaking on the

1 same page.

2 THE CHAIRPERSON: Fuel will help, for  
3 sure. So we'll see you all back at 1:15.

4

5 --- Upon recessing at 12:01 p.m.

6 --- Upon resuming at 1:20 p.m.

7

8 THE CHAIRPERSON: Okay, Mr. Peters.

9

10 CONTINUED BY MR. BOB PETERS:

11 MR. BOB PETERS: Thank you, Mr. Chairman.  
12 Good afternoon. Good afternoon, Mr. Rose.

13 MR. JUDAH ROSE: Good afternoon.

14 MR. BOB PETERS: Mr. Rose, on page 73 of  
15 your report filed at Appendix 12.2 in these proceedings,  
16 I'd like to draw your attention to a couple of statements  
17 made by ICF, please. Let me know when you're there.

18 MR. JUDAH ROSE: Page 73, I'm there.

19 MR. BOB PETERS: Thank you, sir. And I'm  
20 looking under heading 5.7, "Proposed Manitoba Hydro Sales  
21 Contracts," second sentence reads as follows:

22 "Over the next ten (10) years, these  
23 new contracts in conjunction with the  
24 existing contracts are expected to  
25 result in 45 percent of export volume



1 sales from dependable and new proposed  
2 sales, and 55 percent from opportunity  
3 sales."

4 Correct?

5 MR. JUDAH ROSE: I see that, yes.

6 MR. BOB PETERS: And do you agree with  
7 that?

8

9 (BRIEF PAUSE)

10

11 MR. JUDAH ROSE: You know, it's similar  
12 to what we discussed, and that -- I have no reason to  
13 disagree with it.

14 MR. BOB PETERS: Which means you agree  
15 with it.

16 MR. JUDAH ROSE: I'll -- I'll -- you  
17 know, it -- yeah, I think that looks right to me.

18 MR. BOB PETERS: And it goes onto say,  
19 quote:

20 "On the revenue side --"

21 MS. PATTI RAMAGE: Mr. Peters, if I could  
22 just interject. So to be clear, these were, I believe,  
23 numbers provided to Mr. Rose, so I don't think it's fair  
24 to say he has no reason to -- when he says he has no  
25 reason to disagree that he necessarily does agree. I

1 think he accepts for the purposes of discussion.

2

3 CONTINUED BY MR. BOB PETERS:

4 MR. BOB PETERS: Well, just a second. Mr.  
5 Rose, look at Exhibit 5.5. Did you calculate that or did  
6 Manitoba Hydro calculate that?

7 MR. JUDAH ROSE: You know, as indicated  
8 in the source, it's information provided by Manitoba  
9 Hydro.

10 MR. BOB PETERS: And in those charts that  
11 they provided to you, it indicated that 45 percent of  
12 sales were from dependable and new proposed sales? Is  
13 that correct?

14 MR. JUDAH ROSE: Yes.

15 MR. BOB PETERS: And you didn't disagree  
16 when Manitoba Hydro suggested it, and you don't disagree  
17 when I suggest it to you, do you?

18 MR. JUDAH ROSE: No.

19 MR. BOB PETERS: All right. And then the  
20 next part is that 55 percent will be from opportunity  
21 sales. And that's also contained in the unredacted  
22 Exhibit 5.5.

23

24 (BRIEF PAUSE)

25

1 MR. JUDAH ROSE: Ye -- yes.

2 MR. BOB PETERS: And on the revenue side,  
3 sir:

4 "Dependable and new proposed sales are  
5 expected to provide 30 percent of the  
6 revenues, with the rest coming from  
7 opportunity sales. See Exhibit 5.5."

8 I read that correctly?

9

10 (BRIEF PAUSE)

11

12 MR. JUDAH ROSE: Yes, that's what it  
13 says.

14 MR. BOB PETERS: And you agree with that?

15 MR. JUDAH ROSE: As I answered earlier,  
16 yes, I do.

17 MR. BOB PETERS: So what we see then,  
18 would it be fair to say that when we go back to page 42  
19 of Manitoba Hydro Exhibit 55, which is your presentation  
20 from yesterday, what you're telling the Board and wanting  
21 the Board to understand is that 45 percent of Manitoba  
22 Hydro's forward sales on export will be from these new  
23 proposed sales tha -- that you've been talking about?

24 MR. JUDAH ROSE: One (1) sec, please.

25 MR. BOB PETERS: Yes, sir.

1 (BRIEF PAUSE)

2

3 MR. JUDAH ROSE: I'm just not seeing the  
4 connection with forty-two (42) in the PowerPoint. Is it  
5 --

6 MR. BOB PETERS: I haven't asked my  
7 question yet.

8 MR. JUDAH ROSE: Okay. So is there a  
9 question pending?

10 MR. BOB PETERS: Yes, sir.

11 MR. JUDAH ROSE: Okay, what -- what's  
12 that question?

13 MR. BOB PETERS: And what you're telling  
14 the Board is that 45 percent of the export sales from  
15 these new proposed contracts will be of the kind that  
16 return to the Corporation the kind of price shown in red  
17 on page 42?

18 MR. JUDAH ROSE: I -- I don't believe  
19 that that's correct. I think it's close but not quite  
20 because I think it's referring to the -- the -- in the  
21 red is greater than eighty-seven dollars (\$87) a megawatt  
22 hour in real dollars refers to, as we discussed, three  
23 (3) contracts, and I believe the other numbers refer to  
24 the combination of existing contracts and is for a  
25 different time period.

1 MR. BOB PETERS: Those existing  
2 contracts, virtually all are gone by the time the NSP  
3 2015 contract comes into being; isn't that correct?

4 MR. JUDAH ROSE: Yes, and -- and my  
5 concern is because the table refers to 2009 to 2019.

6 MR. BOB PETERS: So most, if not all, of  
7 those new contract sales will be coming in for the on-  
8 peak power price greater than eighty-seven dollars (\$87)  
9 a megawatt hour?

10 MR. JUDAH ROSE: The average of the three  
11 (3) contracts we discussed or -- which includes term  
12 sheets, is greater than eighty-seven dollars (\$87) a  
13 megawatt hour. And --

14 MR. BOB PETERS: And then -- sorry, do  
15 you have something else you wanted to add?

16 MR. JUDAH ROSE: Yeah, and, you know,  
17 some of those contracts don't start until after or, you  
18 know, around 2018 or -- or later, so I just want to make  
19 sure we're not comparing apples to oranges.

20 MR. BOB PETERS: And 55 percent then of  
21 the exports forecast by Manitoba Hydro will come from  
22 opportunity sales?

23 MR. JUDAH ROSE: Of the volume in the  
24 2009/2019 period of time, yes.

25 MR. BOB PETERS: And do you know how, if

1 at all, that volume changes going past 2019?

2 MR. JUDAH ROSE: Yes, I -- it's -- latest  
3 projections -- this is the projections from the 2009  
4 report. The latest projections are on page 31 of the  
5 PowerPoint document. And I think as we discussed  
6 earlier, the -- because there's that gold section, if  
7 there's not new contracts signed, the -- the portion  
8 that's not under export contract increases.

9 MR. BOB PETERS: And that would be sold  
10 as opportunity sales, a greater proportion would be sold  
11 for opportunity?

12 MR. JUDAH ROSE: That's -- that's a dis -  
13 - distinct possibility unless some additional contracts  
14 are assigned to secure that revenue.

15 MR. BOB PETERS: Now, Mr. Rose, when ICF  
16 says that 45 percent of export volume will be from these  
17 dependable and new proposed contracts but only 30 percent  
18 of the revenue is coming from those contracts, what are  
19 the -- what are the possible reasons that dichotomy would  
20 exist?

21

22 (BRIEF PAUSE)

23

24 MR. JUDAH ROSE: Well, it's a function of  
25 the -- the possibilities or the function of the volume

1 and the revenue, which are redacted information.

2 MR. BOB PETERS: Well, what are the  
3 possibilities, without getting into specific numbers --  
4 and I don't want you to disclose what's been redacted,  
5 sir. I think -- I hope I've made that clear. Is one (1)  
6 of the possibilities that some of that 45 percent of  
7 export volume sales from dependable and new proposed  
8 sales will be sold at lower than eighty-seven dollars  
9 (\$87) a megawatt hour? Isn't that a conclusion that can  
10 be reached?

11 MR. JUDAH ROSE: It is -- it is a  
12 possibility that the -- the period of time that we're  
13 looking at covers a period of time that is -- only one  
14 (1) of the contracts is in place, primarily, and so that  
15 -- it could be that that contract has a lower than  
16 average price. So the eighty-seven (87) is covering all  
17 three (3) contracts, and we're looking at something that  
18 really is essentially covering only one (1).

19 MR. BOB PETERS: But your words in the  
20 paragraph talk about the three (3) contracts, do they  
21 not?

22 MR. JUDAH ROSE: Yes, but it still  
23 doesn't change the fact that the contracts two (2) and  
24 three (3) may be contributing very little to the average  
25 relative to one (1) --

1 MR. BOB PETERS: All right.

2 MR. JUDAH ROSE: -- because of the period  
3 of time that we're looking at.

4 MR. BOB PETERS: Let's talk about the 70  
5 percent of the revenues. That's coming from opportunity  
6 sales under ICF's report, isn't that correct?

7 MR. JUDAH ROSE: Yes, I -- I see that.

8 MR. BOB PETERS: And 70 percent of the  
9 sales coming from opportunity would be at prices that the  
10 Board could reasonably conclude will be lower than  
11 eighty-seven dollars (\$87) per megawatt hour?

12 MR. ROBERT MAYER: That -- we talked  
13 about sales. It's 70 percent of the revenue; it's 45 --  
14 55 percent of the sales, as I see it.

15

16 CONTINUED BY MR. BOB PETERS:

17 MR. BOB PETERS: I apologize if I  
18 misspoke. Let me rephrase the question, Mr. Rose.  
19 Fifty-five (55) percent of the -- of the sales will be  
20 opportunity sales, correct?

21 MR. JUDAH ROSE: In terms of volumes in  
22 this period of time, yes.

23 MR. BOB PETERS: And from that 55  
24 percent, that's expected to generate approximately 70  
25 percent of the revenues in that time period, correct?



1 MR. JUDAH ROSE: Yes.

2 MR. BOB PETERS: And I'm suggesting to  
3 you that -- that the revenues expected 70 percent of the  
4 time will be coming at prices less than eighty-seven  
5 dollars (\$87) per megawatt hour. You'd agree with that,  
6 sir?

7 MR. JUDAH ROSE: That's -- I think that's  
8 what's happening.

9 MR. BOB PETERS: And you're not prepared  
10 to say how much lower than eighty-seven dollars (\$87),  
11 but it's going to be something lower than eighty-seven  
12 dollars (\$87), on average?

13 MR. JUDAH ROSE: I think that's fair --

14 MR. BOB PETERS: And if --

15 MR. JUDAH ROSE: -- that -- we're looking  
16 at a period of time essentially in which really one (1)  
17 of the -- only one (1) of the contracts is in place.

18 MR. BOB PETERS: And if history repeats  
19 itself, 43 percent of the MISO on-peak power prices would  
20 be what would be expected to be as the off-peak prices in  
21 MISO.

22 MR. JUDAH ROSE: That -- that's what we  
23 discussed, and so it leads to the -- it -- if you're --  
24 that's the historical record. But here we have a case in  
25 which the opportunity sales are returning more revenue

1 than the volume would indicate, so I don't think that  
2 it's assuming a similar historical relationship.

3 MR. BOB PETERS: Let's talk specific  
4 prices, then, if we can, Mr. Rose, and let's put some --  
5 some more numbers to the page here. The annual costs  
6 that Manitoba Hydro will seek to recover from -- put onto  
7 its income statement related to Wuskwatim will be in the  
8 range of \$150 million a year.

9 Will you accept that, sir?

10 MR. JUDAH ROSE: So -- hold on one (1)  
11 sec. You're asking me to accept, again, please?

12 MR. BOB PETERS: I want you to accept  
13 that there will be costs that have to come and be charged  
14 through to Manitoba Hydro's income statement as soon as  
15 Wuskwatim comes on -- online, which, I think Ms. Ramage  
16 and I are friendly on that point, is fiscal 2012, of the  
17 Corporation, and as early as the fall of 2011 to be  
18 calendar correct?

19 MR. JUDAH ROSE: Sometime soon Wuskwatim  
20 is coming on line.

21 MR. BOB PETERS: All right. And how much  
22 is it going to be on the income statement when it comes  
23 on? For a full year, I'm suggesting it's going to be  
24 \$150 million a year. Are you prepared to accept that for  
25 the purposes of our discussion?

1 MR. JUDAH ROSE: Sure. As a  
2 hypothetical, sure.

3 MR. BOB PETERS: Well, do you have a  
4 different number? Have you calculated a different  
5 number?

6 MR. JUDAH ROSE: No, I haven't.

7 MR. BOB PETERS: All right. And the  
8 output, you told the Board this morning that according to  
9 your chart there was 200 megawatts, can reasonably expect  
10 under average conditions to push out 1,500 gigawatt  
11 hours. Will you accept that, sir?

12

13 (BRIEF PAUSE)

14

15 MR. JUDAH ROSE: What was -- what was the  
16 number that you had, sir?

17 MR. BOB PETERS: Fifteen hundred (1,500).

18 MR. JUDAH ROSE: I'll -- 1,500 gigawatt  
19 hours?

20 MR. BOB PETERS: Yes, sir.

21

22 (BRIEF PAUSE)

23

24 MR. JUDAH ROSE: That's -- I just -- I  
25 don't have in front of me the capacity background. I'm

1 just -- it's a -- it's a very high capacity factor.

2 MR. BOB PETERS: So you'll accept that  
3 again for the purposes of our discussion?

4 MR. JUDAH ROSE: Sure.

5 MR. BOB PETERS: And if you do that, sir,  
6 then what is the per unit cost of a kilowatt hour of  
7 energy that comes off on the first day that Wuskwatim is  
8 fully operational?

9 MR. JUDAH ROSE: I believe I'm getting  
10 something on the order of a hundred dollars (\$100) a  
11 megawatt hour.

12 MR. BOB PETERS: Right. I maybe don't  
13 think in as big a terms as you, sir. I -- I take that  
14 down to ten (10) cents a kilowatt hour. Same thing?

15 MR. JUDAH ROSE: Same thing.

16 MR. BOB PETERS: If we look back to page  
17 42 of your PowerPoint presentation, Manitoba Hydro  
18 Exhibit 55, we see that of the hundred dollars (\$100) a  
19 megawatt hour, that the eighty-seven dollars (\$87), as an  
20 absolute number, doesn't -- doesn't cover the -- the  
21 hundred dollars (\$100), correct? There's a shortfall.

22 MR. JUDAH ROSE: Well first of all, the -  
23 - the number is actually greater than eighty-seven (87).

24 MR. BOB PETERS: Yeah, and I -- I accept  
25 that qualification, and I accept that you're not prepared

1 to put on the record how much greater than it is, but  
2 you're also prepared to accept that there is a shortfall?

3 MR. JUDAH ROSE: Well, I mean, again, you  
4 asked me to do a math exercise. You know, I think the --  
5 the proper exercise to look at Wuskwatim is to look at  
6 the future costs and benefits of Wuskwatim on an  
7 integrated basis over, you know, all the years of its  
8 life, taking in the net present value of the investment.

9 So, you know, I can't agree that it's a  
10 bad investment. All I can say is, if you ask me to do  
11 the math, I get ten dollars (\$10) a megawatt hour in one  
12 (1) case and greater than eight-seven (87) in another.

13 MR. BOB PETERS: I didn't say it was a  
14 bad investment, but that -- that'd be your -- your words,  
15 I think, sir, but let me continue.

16 If you did say ten dollars (\$10) a  
17 megawatt hour you meant to say a hundred dollars (\$100) a  
18 megawatt hour, comparing it to the eighty-seven dollars  
19 (\$87) a megawatt hour?

20 MR. JUDAH ROSE: A hundred dollars (\$100)  
21 a megawatt hour, or ten (10) cents a kilowatt hour,  
22 that's right.

23 MR. BOB PETERS: Thank you, sir. Now, in  
24 terms of the opportunity sales that are going to come off  
25 of Wuskwatim, you've conceded that they're not going to

1 come off at eighty-seven dollars (\$87) a megawatt hour,  
2 or eight point seven (8.7) cents a kilowatt hour. They  
3 will be less than that, correct?

4 MR. JUDAH ROSE: They will be less than  
5 the contract price, which is greater than eighty-seven  
6 dollars (\$87) a megawatt hour, according to the forecasts  
7 that are available.

8 MR. BOB PETERS: And there will be a  
9 shortfall then between the revenue received and the cost  
10 to produce that revenue, correct?

11 MR. JUDAH ROSE: Again, you -- you need  
12 to really look at sort of the full cost and benefits. I  
13 don't know what other -- the other consequences of having  
14 Wuskwatim on, as well.

15 MR. BOB PETERS: All right. But with my  
16 math, you'll agree that I'm correct?

17 MR. JUDAH ROSE: You're looking at one  
18 (1) year's costs, and you're looking at some numbers that  
19 are greater than eighty-seven (87), some numbers that are  
20 less than the greater than eighty-seven (87), but we --  
21 what we need to look -- is at the full cost and benefits  
22 over the lifetime of the asset to see whether or not it  
23 makes sense.

24 MR. BOB PETERS: And -- but you've told  
25 the Board you're not prepared to put those on the record



1 MR. BOB PETERS: Yes.

2 MR. JUDAH ROSE: With that caveat it's  
3 correct, yes.

4 MR. BOB PETERS: Thank you. And the  
5 difference that exists then is a difference that has to  
6 be paid by other Manitoba Hydro customers or come out of  
7 Manitoba Hydro's retained earnings, I think you told us  
8 yesterday?

9 MR. JUDAH ROSE: Again, I don't know the  
10 specifics of your -- the full specifics of your  
11 hypothetical. There may be other benefits of having the  
12 facility on. And -- but if you're saying that there are  
13 no -- that this is the complete statement of the costs  
14 and benefits, if the -- if you're -- and then you're  
15 asking me to -- to assume that the costs are greater than  
16 the benefits then it's either going to come out of the  
17 Corporation or the ratepayers.

18 I mean, I think that's just a logical  
19 requirement. It doesn't mean that the investment doesn't  
20 make sense.

21 MR. BOB PETERS: Before -- before we  
22 leave NSP contract that I was talking about earlier,  
23 would the Board's understanding be correct that ICF's  
24 evidence relied on the October 31, 2006 term sheet as  
25 between Manitoba Hydro and NSP?



1                   MR. JUDAH ROSE:    Do you have -- a  
2 reference?  It -- it's a -- a term sheet that we had as  
3 of when we did the report, but I don't remember the exact  
4 reference to it.

5                   MR. BOB PETERS:    I can assure you I don't  
6 have it.  But in terms of the -- the date on it, sir, I'm  
7 relying on a document Mr. Cormie directed the Board's  
8 attention to.  And I'm suggesting to you that the term  
9 sheet was dated October 31 of 2006.  And I'm asking if  
10 that's the term sheet that you reviewed or do you have  
11 any knowledge of -- of the date of the term sheet that  
12 you reviewed?

13                   MR. JUDAH ROSE:    Sitting here I could  
14 check it to see what the date of the term sheet is.  I  
15 just -- I just don't remember sitting here.

16                   MR. BOB PETERS:    Then let's proceed on  
17 the basis that it was dated October 31, 2006.  And if it  
18 changes you can let Ms. Ramage or one (1) of the Manitoba  
19 Hydro lawyers know and she can certainly inform the  
20 Board, but let's start with that premise.

21                   And that October 31, 2006 term sheet is  
22 what underpinned NSP's November 1, 2006 petition to the  
23 Minniso -- Minnesota Public Utilities Commission for  
24 approval.  Would you agree with that, sir?

25                   MR. JUDAH ROSE:    I -- I don't -- I don't

1 have knowledge of that either.

2 MR. BOB PETERS: All right.

3 MR. JUDAH ROSE: Even with the premise  
4 that the October 31st, 2006 term sheet date is the date--

5 MR. BOB PETERS: And --

6 MR. JUDAH ROSE: -- that I was reviewing.

7 MR. BOB PETERS: -- what you will be able  
8 to tell the Board is that the parent company of NSP is  
9 Xcel Energy, correct?

10 MR. JUDAH ROSE: Yes, that's correct.

11 MR. BOB PETERS: And are you aware that  
12 the November 1, 2006 petition filed by NSP and Xcel  
13 Energy to the Minnesota Public Utilities Commission was  
14 opposed and contested?

15 MR. JUDAH ROSE: No, I'm not aware of  
16 that. What I am aware of is I believe the contract's  
17 currently in place.

18 MR. BOB PETERS: All right. Are you  
19 aware that on July 30th -- no, I'm sorry, July 20th,  
20 2007, NSP and Xcel asked the Minnesota Public Utilities  
21 Commission to suspend its proceeding on the Manitoba  
22 Hydro term sheet of October 31, 2006?

23 MR. JUDAH ROSE: I can't remember with  
24 that level of specificity. There was some delays in  
25 regulatory review, but I -- I don't remember the details.

1 What I remember is the contracts in place today.

2 MR. BOB PETERS: I'm not suggesting a  
3 delay in regulatory reviews. I'm suggesting that the  
4 proponent, NSP, and its parent, Xcel, pulled the  
5 application and asked Mani -- the Minnesota Public  
6 Utilities Commission to suspend its proceeding on that  
7 case. Are you aware of that, sir?

8 MR. JUDAH ROSE: I -- I said I wasn't  
9 aware. And that sounds to me like a -- when you suspend  
10 proceedings, that's a regulatory delay.

11 MR. BOB PETERS: The Corporation's delay  
12 is a regulatory delay?

13 MR. JUDAH ROSE: A suspension of  
14 proceedings is a regulatory delay.

15 MR. BOB PETERS: All right. And the  
16 reason that the NSP wanted to delay the matter was there  
17 were some changed circumstances that they cited in their  
18 -- in their territory; are you aware of that?

19 MR. JUDAH ROSE: No, I'm not.

20 MR. BOB PETERS: Are you aware that that  
21 sent NSP back to the drawing board, in my words, so to  
22 speak, in its negotiations with Manitoba Hydro?

23 MR. JUDAH ROSE: I'm not aware of that  
24 either.

25 MR. BOB PETERS: Are you aware that on

1 October 30 -- that the October 31, 2006 term sheet --

2 MS. PATTI RAMAGE: Mr. Peters, are you  
3 giving evidence at this point, or --

4 MR. BOB PETERS: No, I'm asking your  
5 witness some questions related to the NSP contract.

6 MS. PATTI RAMAGE: Could you direct where  
7 in the report this is -- where this is dealt with in the  
8 report perhaps?

9 MR. BOB PETERS: You won't find it, Ms.  
10 Ramage, in his report. It's related in a document that  
11 Mr. Cormie directed to the Board's attention.

12 MS. PATTI RAMAGE: Could we have a  
13 reference to the document?

14 MR. BOB PETERS: Certainly. I provided  
15 it to you by email prior to these proceedings beginning,  
16 and it is the Xcel Energy petition for approval of power  
17 purchase and diversity exchange agreements with Manitoba  
18 Hydro. It is, dated June 10th of 2010.

19 MS. PATTI RAMAGE: And while that  
20 document may have been brought to Manitoba Hydro's  
21 attention for the purpose of Manitoba Hydro's -- the  
22 panel answering questions, this witness has indicated  
23 that they don't have knowledge of it, so...

24 MR. BOB PETERS: And he's fine to answer  
25 those questions, Ms. Ramage.

1 CONTINUED BY MR. BOB PETERS:

2 MR. BOB PETERS: Am I correct, Mr. Rose,  
3 that in September 2009, when you prepared Appendix 12.2  
4 of these proceedings, there was no valid and subsisting  
5 term sheet as between Manitoba Hydro and NSP?

6 MS. PATTI RAMAGE: Mr. Peters, well, I'm  
7 not sure where you're getting your information from, but  
8 your -- your question -- if you could perhaps quote  
9 something that you're relying on to make that statement.

10

11 (BRIEF PAUSE)

12

13 MR. BOB PETERS: Page 26 of the petition,  
14 the last half.

15 MS. PATTI RAMAGE: I don't have that  
16 document.

17 MR. BOB PETERS: I'm sorry.

18 MS. PATTI RAMAGE: It's -- it's not --  
19 it's not tendered here and I don't have a copy of it.

20 MR. BOB PETERS: I'll read -- I'll read a  
21 couple of sentences. There's a fair bit more, Ms.  
22 Ramage. You're welcome to look at it. I'll quote --  
23 I'll quote the June 10th, 2010 Xcel Energy petition  
24 document that Mr. Cormie referred the Board to starting  
25 on the bottom of page 26:

1 "Beginning in late 2009, the parties  
2 met multiple times and exchanged  
3 numerous draft agreements leading  
4 towards internal management approvals  
5 and execution of the agreements on May  
6 27, 2010."

7 Against that quote that I've given you,  
8 Mr. Rose, am I correct that in September of 2009 there  
9 was not a binding term sheet as between Manitoba Hydro  
10 and NSP?

11 MS. PATTI RAMAGE: Mr. Peters, I think  
12 now we're down to the legal language. Manitoba Hydro's  
13 position has been there's never been a binding term  
14 sheet. If the question is there's not a binding  
15 contract, I think we'd have agreement. There was a  
16 binding contract after the contract was signed, and so I  
17 -- I think there's confusion here is what I'm saying is -  
18 - between term sheet and --

19 MR. BOB PETERS: Let me rephrase the  
20 question then, Mr. Ramage.

21  
22 CONTINUED BY MR. BOB PETERS:

23 MR. BOB PETERS: Am I correct, Mr. Rose,  
24 that there was no contract as between Manitoba Hydro and  
25 NSP that was proceeding before the Minnesota regulator at

1 the time you did your report to Manitoba Hydro?

2 MR. JUDAH ROSE: In my report -- and we  
3 just went through page 73 -- I said Manitoba Hydro is  
4 proposing to enter into new contracts. So it wasn't my  
5 understanding that it was a binding contract. I'm not a  
6 lawyer, but the premise of my analysis is that they were  
7 proposing to enter in.

8 With respect to the specifics of what was  
9 going on in Minnesota, I've already testified I -- I'm  
10 not aware of that, and it's also after my report was  
11 filed. But there was no sense, you know, in the report  
12 that was intended that the contracts were legally binding  
13 and -- but I am saying here that it's my understanding  
14 right now that there is a -- a legally binding contract.

15 MR. BOB PETERS: After you finished your  
16 report, is it your understanding that Manitoba Hydro and  
17 NSP changed any terms as between them that ended up in  
18 the final contract?

19 MR. JUDAH ROSE: I -- I don't know.

20 MR. BOB PETERS: You were given  
21 information, were you not, from Manitoba Hydro, prior to  
22 preparation of your report, related to the NSP agreement?

23 MR. JUDAH ROSE: Yes, or term sheets. I  
24 don't want to quibble about it, but I was given a  
25 description of a -- of an arrangement that was proposed.

1                   MR. BOB PETERS:    Well, and I'm not going  
2 to quibble either, but yesterday you told the Board that  
3 you couldn't recall if you reviewed the contract or just  
4 the term sheets or a summary of the arrangements.  Isn't  
5 that more accurate?

6                   MR. JUDAH ROSE:    Yes, but I -- I -- if I  
7 left the impression that I -- I felt that there was a --  
8 a binding -- legally binding contract -- you know, I'm  
9 not a lawyer, and I didn't -- wasn't under the impression  
10 that the contracts were in place at that point.

11                  MR. BOB PETERS:    To prepare your report,  
12 Mr. Rose, did you have to assume what contract prices  
13 were as between Manitoba Hydro and NSP?

14                  MR. JUDAH ROSE:    Yes, what they would be  
15 under the proposed contract.

16                  MR. BOB PETERS:    And that information was  
17 provided to you in summary form by Manitoba Hydro or did  
18 you review the contracts in detail and come to your own  
19 conclusions -- ICF's own conclusions?

20                  MR. JUDAH ROSE:    I -- I don't remember  
21 what documents were reviewed, whether it was a summary of  
22 the term sheet, the term sheet, but it wasn't a binding  
23 contract.

24                  MR. BOB PETERS:    And so you're saying to  
25 the Board you didn't see the draft contract, to the best



1 of your recollection?

2 MR. JUDAH ROSE: I said that I'd have to  
3 check. I can't do that sitting right here.

4 MR. BOB PETERS: All right. And could  
5 you please undertake to check and advise through counsel  
6 as to whether ICF had a contract as between NSP and  
7 Manitoba Hydro when it calculated the prices and the  
8 information included in Appendix 12.2?

9 MR. JUDAH ROSE: I mean, I can confirm I  
10 didn't have a binding contract. I thought the issue we  
11 were discussing was related to whether it was a term  
12 sheet, summary, or some other document, but there was no  
13 sense I had that it -- it was a binding, finalized  
14 contract.

15 MS. PATTI RAMAGE: It might help the  
16 discussion -- and Mr. Cormie can confirm this on the  
17 record when he's back on the stand, but it's my  
18 understanding that the term sheets were extended during a  
19 period of time, and that the ultimate contract was  
20 entered into in May of 2010. However, there was no time  
21 at which the term sheets were not in play. And I don't  
22 know if that helps, and I'm not trying to give evidence,  
23 and Mr. Cormie can confirm that, but if that helps move  
24 things along...

25

1 CONTINUED BY MR. BOB PETERS:

2 MR. BOB PETERS: So your understanding,  
3 Mr. Rose, is that Manitoba Hydro and NSP had a contract  
4 for approval before the Minnesota regulator that was  
5 withdrawn. Do you -- would you understand that, sir, to  
6 be the case?

7 MR. JUDAH ROSE: No, that was -- I think  
8 I testified that I was not aware of -- of that.

9 MR. BOB PETERS: All right. And so the  
10 proceeding -- the proceeding before the Minnesota  
11 regulator that dealt with the contract from the October  
12 31, 2006 term sheet is not a document that you recall  
13 seeing?

14 MR. JUDAH ROSE: I said that I would have  
15 to check to -- to make sure you're -- since you don't --  
16 not pointing me to a reference in my report, there is  
17 material that I reviewed, and I -- I, just sitting here  
18 right now, I don't know that it was like you're claiming.

19 MR. BOB PETERS: All right. We'll wait  
20 for that by way of the undertaking. And you say that's  
21 an undertaking you've already given to provide through  
22 your counsel to the Board, sir?

23 MR. JUDAH ROSE: I asked my counsel, and  
24 it wasn't something we had undertaken earlier.

25 MS. PATTI RAMAGE: Mr. Rose will confirm

1 what document he looked at at the time he wrote his  
2 report. Is that the undertaking you're looking at?

3 MR. BOB PETERS: That'll be satisfactory,  
4 thank you.

5  
6 --- UNDERTAKING NO. 58: ICF to confirm what document  
7 Mr. Rose looked at at the  
8 time of preparing the report  
9

10 MR. BOB PETERS: And I -- I should  
11 indicate on the record, Mr. Chairman, in fairness to Ms.  
12 Ramage, there is ample suggestion in the petition that  
13 Manitoba Hydro and NSP originally had a one (1) year term  
14 sheet. It was extended for sev -- several times, and  
15 then the parties took a hiatus from negotiations.

16 All of those things are discussed, but  
17 where I'm going with respect to that is the culmination  
18 of a new contract of May 27th of 2010.

19 MS. PATTI RAMAGE: And -- and Mr. Peters,  
20 and that's the -- the point I'm just trying to make,  
21 leaving the witnesses aside, the legal. A new contract  
22 suggests there was an old contract. We have term sheets,  
23 and then we have a contract, and that's the -- the nicety  
24 I'm -- I'm trying to get at to avoid confusion.

25 MR. BOB PETERS: Thank you, Ms. Ramage.

1

2 CONTINUED BY MR. BOB PETERS:

3 MR. BOB PETERS: MR. Rose, has ICF seen  
4 and analyzed what I'm referring to as the new May 27th,  
5 2010, contract as between NSP and Manitoba Hydro?

6 MR. JUDAH ROSE: I don't believe so.

7 MR. BOB PETERS: All right.

8

9 (BRIEF PAUSE)

10

11 MR. BOB PETERS: Has ICF been made aware  
12 as to what changed between the October 31, 2006 term  
13 sheet and the May 27th, 2010 contract?

14 MR. JUDAH ROSE: I haven't seen the --  
15 the latter finalized contract, so I can't comment whether  
16 it changed relative to October 30th or any other  
17 document.

18 MR. BOB PETERS: My -- my question was  
19 whether you've been informed of any changes as between  
20 the two (2), sir.

21 MR. JUDAH ROSE: Not that I recall.

22 MR. BOB PETERS: All right. Thank you.  
23 Are you aware that, as part of the arrangement with NSP  
24 and the American regulator, one (1) of the considerations  
25 is the alternatives that NSP would have to consider and

1 value as against their purchase from Manitoba Hydro?

2 MR. JUDAH ROSE: Again, I didn't review  
3 the proceedings. It's not surprising to me that they --  
4 that would be a criterion --

5 MR. BOB PETERS: And -- and --

6 MR. JUDAH ROSE: -- but I didn't review  
7 that.

8 MR. BOB PETERS: -- no, and -- and it's  
9 not surprising because one (1) of the requirements of the  
10 regulator is to say, Look it, before we necessarily  
11 approve a certain agreement we want to see what your  
12 alternatives were, and how they stack up against your  
13 preferred choice.

14 MR. JUDAH ROSE: I mean, it sounds like  
15 it's a logical thing for the commission to be doing.

16 MR. BOB PETERS: And the US regulators  
17 probably do that in many jurisdictions that you're aware  
18 of.

19 MR. JUDAH ROSE: In my experience, yes.

20 MR. BOB PETERS: And would it -- would  
21 you be surprised if NSP was identifying as alternatives  
22 purchase from the market or, alternatively, building or  
23 con -- or contracting with a developer to build the  
24 natural gas plant? Those would be the two (2)  
25 alternatives that they would have looked at.

1                   MR. JUDAH ROSE:    Again, I'm not  
2 surprised, and of course it's consistent with our  
3 discussion, or our testimony earlier this morning, that  
4 the main option for utilities is nat -- new natural gas  
5 plants.

6                   MR. BOB PETERS:    Would it surprise you,  
7 sir, if NSP's competing resources of either the market or  
8 building a natural gas plant, if the costs of those  
9 competing resources had declined in the three and a half  
10 (3 1/2) years between the October 31, 2006, term sheet,  
11 and the May 27, 2010, contract?

12

13                                   (BRIEF PAUSE)

14

15                   MR. JUDAH ROSE:    I -- you know, I -- I  
16 don't know. I mean, I -- I just -- I'd have -- I -- I  
17 just don't know. I -- I -- it depends on what would  
18 surprise me and I just -- I just can't answer that.

19                   MR. BOB PETERS:    Would it surprise you if  
20 NSP was able to negotiate with Manitoba Hydro a lower  
21 price for the energy in the May 2010 contract as compared  
22 to the October 31, 2006 document?

23                   MR. JUDAH ROSE:    Same answer as the  
24 previous question. There are things that have gone up in  
25 cost since 2006 and there's those that have gone down.

1 And depending on what they were assuming, et cetera, I  
2 think that that's what you're ask -- it requires me -- in  
3 order to determine my level of surprise.

4 MR. BOB PETERS: Well, let me -- let me  
5 do what Ms. Ramage has asked and put to you a quote from  
6 page 12 of the petition. And I'll quote -- I'll quote  
7 NSP or Xcel:

8 "On recognition of the decline in  
9 market energy prices, we were able to  
10 obtain a decrease in the energy price  
11 from what was included in the original  
12 term sheet."

13 End of quote. Does that surprise you that  
14 NSP would be able to obtain a lower energy price from  
15 what was included in the original term sheet from  
16 Manitoba Hydro?

17 MR. JUDAH ROSE: I don't know. You know,  
18 I don't like answering questions about documents I  
19 haven't seen, that's not being presented in front of me.  
20 You know, I -- I discussed earlier certain trends in the  
21 marketplace, but they weren't vis-a-vis 2006, and I -- I  
22 -- I'm just uncomfortable with this whole line of  
23 questioning.

24 MR. BOB PETERS: All right. Well, let's  
25 assume what I read to you is factually correct. What

1 factors can you tell this Board would have resulted in  
2 NSP being able to perhaps have a bargaining position  
3 where they could extract a decrease in the energy price  
4 from what was included in the original term sheet? What  
5 would be some possible factors?

6 MR. JUDAH ROSE: Well, I mean, it may be  
7 that the terms and conditions are less favourable to NSP  
8 and so there was some changes in the terms and conditions  
9 rela -- over non-price relative to price. There could  
10 have been other -- other factors, but I -- I don't have  
11 the document. I haven't reviewed that issue and, you  
12 know, there's a lot of things that could have happened.

13 MS. PATTI RAMAGE: It may be helpful, Mr.  
14 Peters, to -- to such extent this is relevant, that we  
15 put this line of questioning to Mr. Cormie, as Mr. Cormie  
16 was in fact involved, whereas Mr. Rose, it's quite clear,  
17 has not been involved in these negotiations.

18 MR. BOB PETERS: Not a bad suggestion Ms.  
19 Ramage, but I ran out of time with Mr. Cormie last time,  
20 and I'll look forward to talking to him soon. Thank you.

21

22 (BRIEF PAUSE)

23

24 CONTINUED BY MR. BOB PETERS:

25 MR. BOB PETERS: I'd forgotten, Mr. Rose,



1 was ICF providing MISO market electricity price forecasts  
2 to Manitoba Hydro back in 2006?

3

4

(BRIEF PAUSE)

5

6 MR. JUDAH ROSE: You know, I -- I believe  
7 we might have been engaged in '06 and delivered in '07, I  
8 -- I don't know.

9 MS. PATTI RAMAGE: I actually got on this  
10 time with both. Who provides Manitoba Hydro with the  
11 identities of the parties who have provided forecasts has  
12 been considered confidential in these proceedings. So  
13 while it's public that ICF certainly provided forecasts  
14 for the purpose of its report, the parties of Mani -- the  
15 -- the parties providing forecasts has always been  
16 maintained as confidential.

17

18 CONTINUED BY MR. BOB PETERS:

19 MR. BOB PETERS: In the time period, Mr.  
20 Rose, from the last half of 2006 into 2010, the market  
21 price for electricity dropped according to some of the  
22 evidence you filed in Appendix 12.2 report?

23 MR. JUDAH ROSE: Are you referring to my  
24 PowerPoint?

25 MR. BOB PETERS: Yes. Well, I was ref --

1 actually referring to Manitoba Hydro Exhibit 55, which is  
2 -- now you're calling your -- your PowerPoint  
3 presentation.

4 MR. JUDAH ROSE: Right. I think what I  
5 showed was that there was changes in ICF forecasts, and  
6 the dates were 2009 to 2010, February 2009 to...

7 MR. BOB PETERS: Right. And over the  
8 time period it even expanded. The market began to soften  
9 on electricity prices for various reasons; would that be  
10 true?

11 MR. JUDAH ROSE: I mean, the -- the  
12 actual market in real dollars peaked in '07, was high in  
13 '08, and was down in '09 and '10. Is that what you're  
14 asking?

15 MR. BOB PETERS: Why don't you tell the  
16 Board what -- what ICF sees as what's happening in the  
17 MISO electricity market between '06 and '10.

18 MR. JUDAH ROSE: You know, as we  
19 discussed, the -- '09 and '10 are -- prices have been low  
20 coinciding with the recession, and the previous five (5)  
21 years of which -- '06, '07, and '08 are inclusive, were  
22 very high prices. And as a matter of historical record,  
23 the five (5) year average was of -- 2004 to 2008 was  
24 sixty-six dollars (\$66) a megawatt hour on peak, and the  
25 -- it was thirty-three dollars (\$33) a megawatt hour in -

1 - in 2010 dollars in '09 and '10. So prices have come  
2 down.

3 MR. BOB PETERS: I just want to talk --  
4 talk just briefly, if I can, about the coal market again.  
5 I -- I had some thoughts from what you'd said this  
6 morning. Would the Board's understanding -- if you could  
7 help them with the coal side of the MISO market, is it  
8 correct that for existing coal plants, and I'm not  
9 talking about new ones, but existing ones, the fixed --  
10 the fixed price that would be attributed to those plants  
11 would be in the range of maybe even one (1) cent a  
12 kilowatt hour and the fuel costs could be between one (1)  
13 and two (2) cents a kilowatt hour?

14

15 (BRIEF PAUSE)

16

17 MR. JUDAH ROSE: Yes, I think that's  
18 pretty typical. But I think the discussion yesterday was  
19 that there was a range, and, you know, we -- because we  
20 work with MISO, we've been able to see in detail the --  
21 the full range. But I think that the typical delivered  
22 coal costs that you described and the other non-fuel  
23 costs going forward, I think is what we're talking about,  
24 are -- are roughly in the range that you were talking  
25 about.

1                   MR. BOB PETERS:    And in terms of existing  
2 penalties on carbon or pollutants, is there an existing  
3 premium of somewhere between zero and two (2) cents?

4                   MR. JUDAH ROSE:    Yes, it's -- today it's  
5 closer to zero.  Two (2) or three (3) years ago it was  
6 much higher.  You know, it was as -- and for some units  
7 it was as high as three (3) cents a kilowatt hour, but  
8 that was at the peak of the air pollutant permit market  
9 price.

10                  MR. BOB PETERS:    If any of Manitoba  
11 Hydro's intended counterparties cannot, for whatever  
12 reason, achieve a purchase from Manitoba Hydro of that  
13 energy, what alternative supplies would -- would ICF  
14 expect WPS or Minnesota Power to look to?

15                  MR. JUDAH ROSE:    I would expect that they  
16 would be looking primarily at new natural gas power  
17 plants.  Now, in some hours they may be purchasing from  
18 the market.  It might be cheaper than operating the gas  
19 plants, but the principal thing that they would be  
20 looking at would be a new natural gas power plant.

21                  MR. BOB PETERS:    Can you help the Board  
22 understand the relationship between the -- between the  
23 carbon penalty that would have to be ascribed to the coal  
24 generation that exists for the MISO prices to approach  
25 the greater than eighty-seven dollars (\$87) per megawatt

1 hour, as shown on page 42 of Manitoba Hydro Exhibit 55?

2 MR. JUDAH ROSE: It's -- it's difficult  
3 to do because I need to -- to have the -- sort of the  
4 brown power price before the -- the carbon premium. I  
5 think I can say for every ten dollars (\$10) of CO<sub>2</sub>, ten  
6 dollars (\$10) a tonne of CO<sub>2</sub> price, a coal plant would  
7 add around ten dollars (\$10) a megawatt hour or one (1)  
8 cent a kilowatt hour, and a brand-new gas combined-cycle  
9 would add around four dollars (\$4) a megawatt hour, or  
10 point four (.4) cents a kilowatt hour for every ten  
11 dollars (\$10) a tonne of CO<sub>2</sub>. So the coal -- the coal  
12 plant is resulting in more CO<sub>2</sub>, and therefore a higher  
13 cost for the -- for those emissions.

14 MR. BOB PETERS: Would that translate in  
15 telling the Board that, if the coal plant is right now  
16 priced -- I think you called it brown power. I'm not  
17 sure if I've got that -- your word used right, but if  
18 it's coming out at three (3) cents a kilowatt hour right  
19 now as brown power, for it to be upgraded or pay the  
20 penalty for the carbon, that would require carbon to be  
21 taxed at about fifty dollars (\$50) a tonne?

22 MR. JUDAH ROSE: At fifty dollars (\$50) a  
23 tonne, it would -- I think that that's a way to think  
24 about it, but what's happening is -- is that the -- the  
25 decision for the Utility is what's the marginal source of

1 supply? So the coal that we're discussing is sort of  
2 like the best coal, and it's not the marginal source of -  
3 - of supply. The marginal source of supply is they need  
4 megawatts to meet their reserve margin, so they've got to  
5 get some more megawatts, megawatts that are not already  
6 committed, and they have to decide on a net present value  
7 basis which is the best option.

8 Our studies are showing that gas is the  
9 predominant option, new coal power plants are not, and --  
10 and so I -- I don't think that you would look necessarily  
11 at -- you wouldn't look at an existing coal plant like  
12 the one we're talking about, although the calculation  
13 that we did -- that you did is correct, that a fifty  
14 dollar (\$50) a tonne would take a thirty dollar (\$30)  
15 megawatt hour plant that's coal to around eighty (80) as  
16 variable costs.

17 MR. BOB PETERS: But wouldn't -- wouldn't  
18 the -- the price of existing coal plus the expected  
19 carbon tax or carbon penalty be factors to consider for a  
20 counterparty as to whether or not they want to engage in  
21 purchasing electricity at eighty-seven dollars (\$87) a  
22 megawatt hour?

23 MR. JUDAH ROSE: Then again, it depends.  
24 I'm trying to be as clear on this one -- what they need  
25 to look at is the marginal cost, and the question is:

1 What is the marginal unit in each hour that's available,  
2 and what's the marginal cost of obtaining the necessary  
3 megawatts to ensure system reliability?

4                   And I think we discussed the fact that in  
5 many hours, gas is on the margin, and they need to take  
6 into account what the gas costs are on the margin and  
7 what the CO2 costs of the gas are and the CO2 costs of  
8 the coal to the extent that the coal's on the margin. So  
9 -- and they have to do it on a present-value basis,  
10 looking out over sort of the full-time horizon, which  
11 would easily be twenty (20) to thirty (30) years.

12                   MR. BOB PETERS: But if we have an  
13 existing coal plant in the MISO region owned by a  
14 counterparty, what would cause that counterparty to have  
15 to mothball the coal plant?

16                   MR. JUDAH ROSE: They don't have to  
17 mothball it. It's just a question that they have demand  
18 growth that they have to meet, so the plant can't count  
19 twice. So they have to get incremental megawatts and  
20 incremental megawatt hours, and so the -- to the extent  
21 that the plant is not available to provide those -- that  
22 increment, that's why you need more capacity.

23                   MR. BOB PETERS: All right. I have your  
24 point. Can you tell the Board, or confirm to the Board,  
25 that the wind mandates in the northernmost MISO states

1 have already reduced Manitoba Hydro's export market  
2 share?

3 MR. JUDAH ROSE: I don't have the -- the  
4 volume. I -- I do believe that it has, in certain hours,  
5 adversely affected the off-peak price, and I'm not sure  
6 how much of that is the -- the mandates as opposed to the  
7 wind itself. I just don't have in front of me how much  
8 that wind is reflecting the state mandates as opposed to  
9 other -- other programs.

10 MR. BOB PETERS: Does wind pricing  
11 currently place either downward or upward pressure on new  
12 contract prices?

13 MR. JUDAH ROSE: The online wind,  
14 everything else being equal, is a competing source of  
15 power in the hourly market.

16 As to the incremental source, it's -- it's  
17 a -- it's difficult to say. What our models are showing  
18 is typically a combination of gas and renewables are  
19 being built, with gas -- gas being the predominant  
20 resource, the one (1) that's providing the reliability.

21 There -- there is some uncertainty as to  
22 both the state mandates, and the associated federal  
23 programs, and that -- that uncertainty is ongoing. The -  
24 - for example, the production tax credit in the federal  
25 government expires in 2012, and there's a lot of dynamics



1 going on in Washington vis-a-vis the budget and those --  
2 those tax breaks.

3                   Without the tax breaks, wind be more  
4 expensive and -- and so that's -- it's -- it's a  
5 difficult question to answer because of the dynamics,  
6 which may have been affected as recently as this Saturday  
7 evening by the new -- newly proposed budget in the House  
8 of Representatives.

9

10   (BRIEF PAUSE)

11

12                   MR. BOB PETERS:    Can you inform the Board  
13 as to what target Minnesota has for wind production and  
14 where they currently are in terms of achieving that  
15 target?

16

17   (BRIEF PAUSE)

18

19                   MR. JUDAH ROSE:    In my September 2009  
20 report on page 46, it shows the State Renewable Portfolio  
21 Standards, and it has numbers of 25 percent by 2025, and  
22 30 percent by 2020, for Minnesota.

23                   I don't have the current status in front  
24 of me, and the one (1) thing I did want to observe is  
25 that some states do have limits on how much they'd be

1 willing to pay. Some of that is explicit, some of that's  
2 implicit, and as to whether or not they're going to meet  
3 these standards is partly a function of the federal  
4 subsidies, in my opinion, and there's some significant  
5 uncertainty about that.

6 MR. BOB PETERS: Has Minnesota even hit  
7 50 percent of its target yet?

8 MR. JUDAH ROSE: I -- I just -- I don't  
9 know. I don't have that in front of me.

10 MR. BOB PETERS: In turning to the  
11 proposed new contracts with Minnesota Power and Wisconsin  
12 Public Service, I think your evidence is you reviewed  
13 either the term sheets or a summary of the terms sheets.  
14 Have I got that right?

15 MR. JUDAH ROSE: Yes, sir.

16 MR. BOB PETERS: Do you recall which?

17 MR. JUDAH ROSE: That was the issue that  
18 we talked about earlier which I -- I just need to check.  
19 I don't have it in front of me.

20 MR. BOB PETERS: All right. Thank you.  
21 And you're not aware of these term sheets having changed  
22 since ICF saw them?

23 MR. JUDAH ROSE: Well, I assume that --  
24 that there would be some changes going from a term sheet  
25 to a finalized contract, based on my experience in

1 contracting, but aside from the comments that you've made  
2 I -- I'm not aware of what the changes were or to what  
3 extent they occurred.

4 MR. BOB PETERS: Where does ICF  
5 understand that Manitoba Hydro is going to get the energy  
6 to meet the term sheets when they're turned into  
7 contracts with NS -- with Wisconsin Public Service and  
8 Minnesota Power?

9 MR. JUDAH ROSE: They'll be getting some  
10 of that energy through the acceleration of the Keeyask  
11 and/or Conawapa power stations, in particular.

12 MR. BOB PETERS: And when you say  
13 acceleration, how many years are you talking of  
14 acceleration of Keeyask and Conawapa?

15 MR. JUDAH ROSE: I -- I don't remember.  
16 I think it's a few for Keeyask, and more for Conawapa,  
17 but I don't -- I don't remember the numbers.

18 MR. BOB PETERS: You understand that the  
19 plants are under consideration to be built to serve both  
20 the Minnesota Power and the Wisconsin Public Service  
21 contracts, if they come to fruition?

22 MR. JUDAH ROSE: That's my understanding,  
23 that the -- those two (2) contracts lead to accelerations  
24 of the hydro which would be built anyway.

25 MR. BOB PETERS: Built anyway, but some

1 years into the future.

2 MR. JUDAH ROSE: Yes, and, in the absence  
3 of the contract, with greater impacts on the ratepayer.

4 MR. BOB PETERS: All right. We'll --  
5 we'll talk about that. Have you got a document you can  
6 produce that leads you to that conclusion?

7 MR. JUDAH ROSE: Yes, it's the one (1)  
8 that we discussed earlier, on page 4 of my report. As to  
9 whether I can produce it, I think we had that discussion.  
10 But it's the basis for my conclusion, in combination with  
11 some of the other factors we discussed on transmission.

12 MR. BOB PETERS: This is the document  
13 that Manitoba Hydro's counsel has not agreed to let you  
14 put on the public record, correct?

15 MR. JUDAH ROSE: Yes, ma'am -- yes, sir,  
16 sorry.

17 MR. BOB PETERS: Close enough.

18 MR. JUDAH ROSE: Yes, ma'am, with respect  
19 -- or yes, sir, with respect to...

20 MR. BOB PETERS: How does ICF understand  
21 Manitoba Hydro is going to bring the energy from Northern  
22 Manitoba down to the US border?

23 MR. JUDAH ROSE: I -- I don't have a  
24 detailed under -- understanding. I know that the --  
25 there's plans to -- to use the existing system and the

1 augmentation of the system that becomes available through  
2 upgrades that are -- are -- as I understand, planned.  
3 But we did not look at that in detail.

4 MR. BOB PETERS: You're aware that  
5 Manitoba Hydro will need to construct what is referred to  
6 in these proceedings as Bipole 3 in order to bring the  
7 power from Conawapa down to Southern Manitoba?

8 MR. JUDAH ROSE: Again, I -- we didn't  
9 look at that -- that issue in detail. Again, I -- it may  
10 be that you need Bipole 3 even if you didn't need to  
11 bring the power down. We just did not look at that in  
12 detail.

13 MR. BOB PETERS: All right. And does ICF  
14 understand that a condition precedent or requirement for  
15 the export sales to Minnesota Power and Wisconsin is  
16 that, firstly, Minnesota Power must construct in the  
17 United States new transmission facilities to provide 250  
18 megawatts of incremental import and export capability?

19 MR. JUDAH ROSE: My understanding is is  
20 there's a requirement that they -- there be construction  
21 of transmission. I don't remember the exact number of  
22 megawatts and -- but I do believe that an important  
23 aspect of it is the dual direction on commitment for firm  
24 transportation that's involved. That is, that there's an  
25 undertaking to be -- to enable Manitoba to use those

1 lines under certain circumstances to import power as well  
2 as export.

3 MR. BOB PETERS: The Minnesota Power sale  
4 is a 250 megawatt sale?

5

6 (BRIEF PAUSE)

7

8 MR. JUDAH ROSE: Yes, that's the  
9 information I have on page 96 of my September report.

10 MR. BOB PETERS: And so how much capacity  
11 do you expect them to construct for their transmission  
12 facilities?

13 MR. JUDAH ROSE: I mean, with that  
14 refreshment it seems that the two fifty (250) is the  
15 right number, but just my general understanding is that  
16 the transmission -- they're undertaking to build a  
17 transmission necessary to permit the import. It might be  
18 that trans -- I don't know exactly what that transfer  
19 capability is. Maybe the transfer capability might be  
20 bigger, I don't know.

21

22 (BRIEF PAUSE)

23

24 MR. BOB PETERS: I'd ask you to accept  
25 that it's 250 megawatts of incremental import and export

1 capability.

2 MR. JUDAH ROSE: If you're asking me to  
3 accept it, I'll be glad to accept that subject to check.  
4 It's just that my experience is that sometimes the  
5 transmission rating is a function of system conditions  
6 and so that there might be extra available under certain  
7 circumstances, but...

8 MR. BOB PETERS: All right. Your counsel  
9 can direct you when we have the next break to  
10 RCM/TREE/Manitoba Hydro First Round 27A, Attachment 1,  
11 and specifically, page 6 of 7. It's a summary of long-  
12 term contracts that I understand Manitoba Hydro provided  
13 to ICF. And I was quoting:

14 "The terms sheets require MP to  
15 construct new transmission facilities  
16 to provide 250 megawatts of incremental  
17 import/export capability."

18 And if you have a different number you can  
19 come back through your counsel and let the Board know,  
20 please.

21 MS. PATTI RAMAGE: Can I get the  
22 reference again, Mr. Peters?

23 MR. BOB PETERS: It's the Information  
24 Request from RCM/TREE to Manitoba Hydro in the First  
25 Round, 27A, Attachment 1, page 6 of 7.

1 (BRIEF PAUSE)

2

3 CONTINUED BY MR. BOB PETERS:

4 MR. BOB PETERS: I take it -- Mr. Rose,  
5 I'm not sure if you're waiting for me. I was waiting for  
6 you. But I'm just waiting for a confirmation that you'll  
7 use my 250 megawatt number unless you can come back with  
8 something different than that on the advice of your  
9 counsel.

10 MR. JUDAH ROSE: Okay.

11 MR. BOB PETERS: Thank you. And I'd also  
12 suggest in that same document -- now that I have it out,  
13 I'll read it, the last sentence, page 7 of 7 for Ms.  
14 Ramage's reference:

15 "The term sheet requires WPS to  
16 construct new transmission facilities  
17 to provide not less than 650 megawatts  
18 of incremental export capability and up  
19 to 750 megawatts incremental import  
20 capability."

21 Does that sound familiar to you, sir?

22 MR. JUDAH ROSE: You know, first of all,  
23 I thought we were talking about the two hundred and fifty  
24 (250) of MP.

25 MR. BOB PETERS: I moved on. I moved on



1 to WPS.

2 MR. JUDAH ROSE: Okay. You know, it  
3 doesn't sound familiar. I have 500 megawatts as the  
4 contracted ca -- capacity in the -- page 97 of my report.  
5 I -- I'm not disputing it, I -- I just -- I can't  
6 independently verify that.

7 MR. BOB PETERS: All right, you can  
8 verify that with your counsel at the break if you choose.  
9 So when you were talking to the Board before lunch about  
10 Manitoba Hydro having, you said, approximately a 5,000  
11 megawatt peak requirement, a thousand, I think, was your  
12 corrected evidence of existing transmission interties.  
13 These new term sheets would provide an incremental 1,000  
14 megawatts of transmission connection; is that correct?

15 MR. JUDAH ROSE: Accepting your numbers  
16 and just recognizing that the thousand of existing I  
17 think is some combination of firm and non-firm.

18 MR. BOB PETERS: Yes, I -- I think you're  
19 correct on that. But you'll accept that what we're  
20 talking here is an extra 1,000 megawatts of import  
21 capability being sought in the term sheets from Minnesota  
22 Power and Wisconsin Public Service combined?

23 MR. JUDAH ROSE: Yes, accepting your  
24 representation --

25 MR. BOB PETERS: All right.

1                   MR. JUDAH ROSE:    -- It certainly adds  
2 that way.

3                   MR. BOB PETERS:    And is it correct for  
4 the Board to understand that for the existing generation  
5 in the MISO region there's already enough existing  
6 transmission and no new transmission needed?

7                   MR. JUDAH ROSE:    I'm not sure what that  
8 question means.

9                   MR. BOB PETERS:    Well, what -- what I'm  
10 asking is that if there were no new contracts as between  
11 Minnesota Power and Wisconsin Public Service and Manitoba  
12 Hydro, there would be no need for new US transmission to  
13 be built?

14                  MR. JUDAH ROSE:    No, that's not correct.  
15 There's a -- a large --

16                  MR. BOB PETERS:    So --

17                  MR. JUDAH ROSE:    There's a large need for  
18 more transmission construction in the US in general in  
19 MISO too, and their plans call for significant increases  
20 in transmission.

21                  MR. BOB PETERS:    Are you suggesting that  
22 Minnesota Power and Wisconsin Public Service are going to  
23 build new transmission facilities regardless of whether  
24 they enter into a contract with Manitoba Hydro?

25                  MR. JUDAH ROSE:    Yes. It may not be the

1 facilities that we're talking about, but there's a  
2 general need for transmission in MISO. There are plans  
3 to construct additional transmission and -- however, it  
4 might not be the -- the type that facilitates the  
5 movement of power between Manitoba and MISO, but it's  
6 certainly the case that there's a need for and plans for  
7 more transmission.

8 MR. BOB PETERS: But do you know for  
9 certain that Minnesota Power and Wisconsin Public Service  
10 have plans for new transmission if there's no arrangement  
11 with Manitoba Hydro?

12 MR. JUDAH ROSE: I -- I would have to  
13 check, but I would say that I would be very surprised if  
14 there is a utility in the United States that doesn't have  
15 plans to upgrade its transmission over the next, say, ten  
16 (10) years.

17 MR. BOB PETERS: To support the Manitoba  
18 Hydro term sheets when they're turned into contracts with  
19 Minnesota Power and Wisconsin Public Service, there's a  
20 cost for that transmission line, correct?

21 MR. JUDAH ROSE: I believe that there's a  
22 cost for using the transmission, and there is a cost for  
23 sure of constructing it. It may --

24 MR. BOB PETERS: Your report estimates  
25 the cost to be approximately \$2 billion back in 2009 for

1 the -- for the US transmission related to the Minnesota  
2 Power and the Wisconsin Public Service contracts?

3 MR. JUDAH ROSE: Yes. I'm sorry, I -- I  
4 didn't realize you were referring to that. Yes, as we  
5 discussed, one (1) of the benefits of the contract  
6 relationship is that you're getting the counterparties  
7 to build about \$2 billion. It's based on a transmission  
8 service request that's footnoted, I believe, in my  
9 document.

10 MR. BOB PETERS: Yes, I noticed it there,  
11 too. I think it was \$1.4 billion with a -- with a la  
12 carte items including capital escalation.

13 MR. JUDAH ROSE: Right. That gets you in  
14 the direction of \$2 billion.

15 MR. BOB PETERS: And also the \$1.4  
16 billion doesn't include the, I think, interest during  
17 construction.

18 MR. JUDAH ROSE: Yes, that's right. The  
19 interest during construction is not --

20 MR. BOB PETERS: And then that might  
21 itself bring it closer to \$2 billion, but then that 2  
22 billion doesn't include the terminal, stations, and  
23 equipment costs?

24 MR. JUDAH ROSE: Yes, sir, that's my  
25 understanding. Yes, that's one (1) of the main

1 considerations that caused us to -- to, you know, see  
2 that the contracts were very favourable.

3 MR. BOB PETERS: And it doesn't include  
4 the reactive compensation that may be payable?

5 MR. JUDAH ROSE: That I don't know. I --  
6 I can't answer that one.

7 MR. BOB PETERS: Can you explain to the  
8 Board what reactive compensation is?

9 MR. JUDAH ROSE: Yes. There's a  
10 phenomenon in alternating current transmission systems  
11 that, when you move power a long distance, there's a --  
12 basically, the power begins to disappear. It's actually  
13 converted from real power to a thing called reactive  
14 power, and if you don't compensate for that with another  
15 form of reactive power, you end up losing your power.

16 So, for example, you could actually have a  
17 transmission line, say, of a thousand miles as an AC  
18 line. You could put in a hundred megawatts and none of  
19 it would come out on the other end unless you put some  
20 reactive power or compensation in. So I -- I assume that  
21 that's what it's referring to. Typically, for the AC  
22 transmission lines, you need capacitive reactance in the  
23 form of synchronous condensers.

24 MR. BOB PETERS: The \$2 billion estimate  
25 of US transmission doesn't include environmental costs,

1 permitting costs or regulatory costs either, does it?

2 MR. JUDAH ROSE: I don't have that --  
3 those details sitting here, so I -- I can't answer that,  
4 but it might be the case.

5 MR. BOB PETERS: And who does ICF  
6 understand will be paying for the \$2 billion plus to  
7 construct the US transmission to facilitate Manitoba  
8 Hydro's exports to Minnesota Power and Wisconsin Public  
9 Service?

10 MR. JUDAH ROSE: The transmission  
11 facilities on the US side, it's our understanding, will  
12 be paid for by the US counterparties.

13 MR. BOB PETERS: It would be logical,  
14 intuitive, and reasonable to expect that the US  
15 counterparties will factor in their costs of transmission  
16 into their overall contract with Manitoba Hydro, wouldn't  
17 that be correct?

18 MR. JUDAH ROSE: Yes. I do think it's  
19 worth noting that there -- there is an issue as to  
20 whether those transmission lines provide generalized  
21 benefits to MISO, and therefore should be generally  
22 charged to all MISO customers as opposed to those -- just  
23 those utilities.

24 There's a -- a general movement to -- I  
25 try to account for the fact that new transmission has

1 multiple uses, and -- and so there's an attempt to spread  
2 out the costs among the various parties. That could be a  
3 significant factor reducing the costs of making a  
4 commitment to build the transmission lines from the  
5 perspective of the counterparties since some of the costs  
6 will be paid for by other MISO utilities.

7 MR. BOB PETERS: You're not aware as to -  
8 - if that's happening in the case of Manitoba Hydro's  
9 sale to Wisconsin Public Service and Minnesota Power, or  
10 if it is, to what extent?

11 MR. JUDAH ROSE: My expectation is is  
12 that it may -- may very well be that a substantial  
13 portion is allocated generally across MISO customers, but  
14 the exact por -- proportion I don't believe has been  
15 decided. It's a new area of FERC policy.

16 MR. BOB PETERS: Might Manitoba Hydro  
17 have to pay any of those US transmission costs, in your  
18 view?

19 MR. JUDAH ROSE: I don't believe that  
20 it's subject to charges for transmission in -- in MISO  
21 generally, and I think the converse is also true. It's  
22 not that cost of -- of transmission here, and Manitoba is  
23 being charged across the border.

24 I think there are fees that would be  
25 required to be paid in the event that Manitoba Hydro

1 wanted to use the -- the line, say for imports to  
2 Manitoba, as we discussed earlier, but I don't believe it  
3 would be charged because I don't believe that  
4 transmission and generation are treated the same north of  
5 the border as they are south of the border.

6 MR. BOB PETERS: Would it be reasonable  
7 for the Board to expect that the purchasers, being  
8 Minnesota Power and Wisconsin Public Service, would  
9 deduct the cost of transmission from their forecast of  
10 market price in arriving at what they think they want to  
11 offer Manitoba Hydro for its energy?

12 MR. JUDAH ROSE: Yes, subject to what  
13 we've just discussed, which is they may not have to pay  
14 for the transmission, or -- or not have to pay for a  
15 significant portion of it.

16 MR. BOB PETERS: Who would own the  
17 transmission rights, according to ICF's understanding of  
18 the arrangement that Manitoba Hydro seeks to enter into  
19 with Wisconsin Public Service and Minnesota Power?

20 MR. JUDAH ROSE: The -- the understanding  
21 I have is, is that the rights would be owned by the  
22 counterparties subject to the fact that they have an  
23 obligation to offer the import capability to Manitoba  
24 Hydro for a fee.

25 That would be specified in the contract



1 and facilitate the importation of power in the event it  
2 was needed. And the -- that's my understanding, but I  
3 think that -- I don't have anything to add to that.

4 MR. BOB PETERS: Mr. Rose, let's -- you  
5 said in your introduction oh so long ago yesterday  
6 morning that you've acted for IPPs, or independent power  
7 producers, in the MISO region. I think you said most of  
8 them, if I recall. Am I correct on that?

9 MR. JUDAH ROSE: Yes. We -- I certainly  
10 have worked for many IPPs, or many owners of IPPs, and I  
11 believe I did say that we worked for a large number of  
12 the IPPs in -- in the MISO area. I don't have the exact  
13 numbers in front of me, but we've worked for a lot of the  
14 IPPs.

15 MR. BOB PETERS: Is it ICF's experience  
16 that before an IPP will build an electricity plant to  
17 sell the output, those IPPs will want to have firm  
18 contracts in hand that will return to them the revenues  
19 that will cover their costs of building the power plant?

20 MR. JUDAH ROSE: Yes, that -- that's a  
21 change that's occurred. One (1) of the points we  
22 discussed earlier in my direct was that a lot of IPPs  
23 built plants -- power plants without sufficient long-term  
24 firm contracts, and that caused them to go bankrupt. And  
25 today they're more likely to require a long-term contract

1 to build a power plant, or the -- the equivalent.

2 MR. BOB PETERS: They're no longer  
3 prepared to build it on spec in the -- in the vernacular.

4 MR. JUDAH ROSE: Yes, that's generally  
5 the case. Oh, they're willing but they can't get the  
6 financing. Let's put it that way.

7 MR. BOB PETERS: Or the financing is too  
8 prohibitive in terms of their costs.

9 MR. JUDAH ROSE: I'll go with that one  
10 (1), as well. The main thing is it's -- it's a different  
11 situation than it was ten (10) years ago.

12 MR. BOB PETERS: Now, as I understand the  
13 Wisconsin and Minnesota jurisdictions, you've told the  
14 Board they each have renewable portfolio standards. Have  
15 I got that right?

16

17 (BRIEF PAUSE)

18

19 MR. JUDAH ROSE: The -- I think we  
20 discussed that the Minnesota utilities have a portfolio  
21 standard that I -- that I described. I'm just -- I just  
22 don't remember what the Wisconsin standard was. I'm sure  
23 we --

24 MR. BOB PETERS: Page 46 of Appendix 12.2  
25 seems to indicate that Wisconsin shows in at 10 percent

1 by 2015.

2 MR. JUDAH ROSE: Yes, sir.

3 MR. BOB PETERS: And you're not aware as  
4 to how far along Wisconsin is in terms of meeting its  
5 renewable portfolio standard?

6 MR. JUDAH ROSE: No, not sitting here.

7 MR. BOB PETERS: And this renewable  
8 portfolio standard is a requirement by state legislation  
9 that the electric utilities such as Minnesota Power and  
10 Wisconsin Public Service have to ensure that in a given  
11 year a certain percentage of their electricity sold to  
12 their retail customers is derived from renewable  
13 resources, correct?

14 MR. JUDAH ROSE: Yes, in -- in the case  
15 of Wisconsin the 10 percent is a standard plus goal.  
16 It's labelled on -- on page 46. But as a general matter,  
17 the renewable portfo -- folio standard obligates the  
18 utility to source a certain percentage of its power from  
19 the renewable, subject that in some of the cases the  
20 standards are subject to cost limitations. That they are  
21 not authorized to, for example, result in rate increases  
22 above a certain amount.

23 And -- and in many cases the standards  
24 haven't been met fully and -- and so we're not really  
25 sure what's going to happen in the future. But as -- as

1 a theoretical matter, if there's no change in the  
2 standards, and there's no caveat via the cost, they have  
3 to provide a certain percentage via renewables.

4 MR. BOB PETERS: It would be an advantage  
5 to Minnesota Power and Wisconsin Public Service if the  
6 energy they're buying from Manitoba Hydro would be  
7 considered a renewable -- from a renewable resource,  
8 would it not?

9 MR. JUDAH ROSE: Yes, it's likely to be a  
10 -- a positive -- there's sort of two (2) levels. One (1)  
11 is the level of de jure. That's according to the law  
12 whether or not it meets the renewable portfolio standards  
13 and I -- I don't remember looking at that directly.  
14 There is the other issue of whether the commission even  
15 if it's not de jure, does look on the purchase favourably  
16 because it is renewable, even if it may not qualify under  
17 the law.

18 MR. BOB PETERS: And to qualify as energy  
19 from a renewable resource in Wisconsin or Minnesota, is  
20 Manitoba Hydro going to qualify?

21 MR. JUDAH ROSE: I -- I don't know  
22 sitting here. I mean, it's a fact that it's renewable,  
23 but it may not be a specified renewable in -- in those  
24 jurisdictions. I just -- I just don't know. I'm not  
25 saying that it isn't, I just don't know sitting here.

1                   MR. BOB PETERS:    It's my understanding  
2   that in Wisconsin as it relates to hydro-electric power,  
3   to be considered a renewable resource it has to be a  
4   resource with less than 60 megawatts capacity. Does that  
5   sound reasonable to you, sir?

6                   MR. JUDAH ROSE:    It is in the sense that  
7   -- there's an issue about large hydro versus small hydro,  
8   but I don't know what the situation sitting here is in  
9   Wisconsin. It's also -- just like the renewable  
10  portfolio standard itself, it's subject to legislative de  
11  -- decision and change.

12                  MR. BOB PETERS:    According to my  
13  understanding, in Minnesota, to qualify as a renewable  
14  resource the hydro has to come from a plant -- a hydro-  
15  electric plant with a capacity less than 100 megawatts.  
16  Would you agree with that, sir?

17                  MR. JUDAH ROSE:    I agree that -- I don't  
18  know what it is. If you're asking me if I agree with  
19  your understanding, I -- it sounds like it's your  
20  understanding, but I just don't know. And I -- and I --  
21  and again, I do emphasize that a) that's subject to  
22  change, and b) it still could be that it's -- that the  
23  approval that Minnesota has given to one (1) of the three  
24  (3) contracts we've discussed is related to the fact that  
25  even if it doesn't qualify for the renewable portfolio

1 standard, it is clearly a renewable.

2                   You know, it'd be -- it's difficult to  
3 exactly say how important that is, but I do think it's a  
4 -- a positive factor for getting approval of the  
5 contracts.

6                   MR. BOB PETERS:   Well, it's interesting  
7 you'd say that the renewable portfolio standard is  
8 subject to change. That would be change by the state  
9 legislature, correct?

10                  MR. JUDAH ROSE:   I -- I'm not a lawyer.  
11 I'd -- I -- to me, that's what it would probably be. But  
12 it may be that the power of the legislature has been  
13 delegated to an administrative agency. I just don't  
14 know.

15                  MR. BOB PETERS:   All right. Is ICF aware  
16 that in 2010 in the state of Wisconsin, Assembly Bill 649  
17 was promoted within the state senate which would have  
18 expanded the definition of renewable resource to  
19 specifically include hydro-electric power generated in  
20 Manitoba, Canada?

21                  MR. JUDAH ROSE:   I believe there -- that  
22 that was an issue in Wisconsin, but I don't -- I can't  
23 verify the exact reference.

24                  MR. BOB PETERS:   Can you also confirm for  
25 the Board that Wisconsin's bill failed to pass pursuant

1 to a joint senate resolution?

2 MR. JUDAH ROSE: I -- I can't confirm or  
3 deny. I don't know.

4 MR. BOB PETERS: We'll see if Mr. Cormie  
5 can help us when --

6 MS. PATTI RAMAGE: I was going to say --

7 MR. BOB PETERS: -- when we finally get  
8 to meet again.

9 MS. PATTI RAMAGE: -- it might be helpful  
10 again with Mr. Cormie, and, also, if some of these  
11 documents were put in front of the witness simply because  
12 like the confusion we perhaps had between term sheets and  
13 contracts, there's -- sometimes some of the language gets  
14 muddle between Mr. -- and it's not intentional or  
15 anything but we may not agree with the language that's  
16 used. And if the document's put to the witness, it's  
17 more helpful.

18 MR. BOB PETERS: Thank you, Ms. Ramage.

19

20 CONTINUED BY MR. BOB PETERS:

21 MR. BOB PETERS: Mr. Rose, in addition to  
22 state legislation mandating renewable portfolio  
23 standards, is it correct that the US Federal Renewable  
24 Energy Promotion Act was introduced in September of 2010?

25 MR. JUDAH ROSE: I -- I don't know. What

1 I know is that there is no enforceable federal renewable  
2 portfolio standard regardless of proposed legislation.

3 MR. BOB PETERS: And just to follow up on  
4 Ms. Ramage's point, I'm quoting from ICF International's  
5 web page on Renewable Energy Promotion Act of 2010. This  
6 was introduced, although you're not aware of it, Mr.  
7 Rose, as I understand it?

8 MR. JUDAH ROSE: Not sitting here right  
9 now, I don't remember. I do remember that there was  
10 proposed legislation in that regard. I just don't  
11 remember the -- all the specifics.

12 MR. BOB PETERS: And do you recall there  
13 being a penalty for noncompliance with the renewable  
14 energy requirements of the federal legislation that is  
15 proposed?

16 MR. JUDAH ROSE: My understanding is that  
17 there was en -- there was enforceability, but I -- again,  
18 I don't know the specifics. And if you have a document I  
19 can take a look at, but I -- otherwise, I can't answer it  
20 sitting here.

21 MR. BOB PETERS: I was just reviewing a  
22 document off your web page. I can hand it over to --

23 MR. JUDAH ROSE: If you -- that would be  
24 good.

25



1 (BRIEF PAUSE)

2

3 MR. BOB PETERS: Mr. Rose, while that may  
4 be draft legislation, you're telling the Board that to  
5 your knowledge there's no enacted legislation that deals  
6 with a mandatory requirement for renewable portfolio  
7 standards?

8 MR. JUDAH ROSE: Yes, that's correct,  
9 there is no national renewable portfolio standard in the  
10 United States.

11 MR. BOB PETERS: And with respect to the  
12 legislation that's proposed, it's again my understanding  
13 that new hydro-electric generation capacity has to be  
14 achieved from increased efficiency or additions of new  
15 capacity at existing hydro-electric projects before it  
16 federally qualifies as a renewable portfolio standard.  
17 Is that also your understanding?

18 MR. JUDAH ROSE: Sorry, are you referring  
19 to the specific Renewable Energy Promotion Act of 2010?

20 MR. BOB PETERS: I was, sir.

21 MR. JUDAH ROSE: And there's a specific  
22 quote that you want me to look at?

23 MR. BOB PETERS: I was just going to say,  
24 what -- what -- how does it apply to -- to hydro-electric  
25 power?

1                   MR. JUDAH ROSE:    This particular bill,  
2 specific, I don't know.

3                   MR. BOB PETERS:    Mr. Chairman, this might  
4 be an appropriate time for a -- an afternoon recess, and  
5 I'll regroup and continue after the break.

6                   THE CHAIRPERSON:    Very good, Mr. Peters.

7

8 --- Upon recessing at 2:48 p.m.

9 --- Upon resuming at 3:18 p.m.

10

11                   THE CHAIRPERSON:    Okay. Welcome back,  
12 everyone. Mr. Peters, whenever you're ready.

13                   MR. BOB PETERS:    Thank you, Sir.

14                   MR. PATTI RAMAGE:    Perhaps -- oh, before  
15 Mr. Peters begins, we have a -- a few answers to  
16 undertakings given by ICF, and in an effort to try to get  
17 answers out before Mr. Rose has to leave, I thought I  
18 would just get him to -- we would address them right now,  
19 if that's --

20                   THE CHAIRPERSON:    A very good idea.

21                   MS. PATTI RAMAGE:    Yeah. The first one,  
22 Mr. Rose was to indicate what the order of magnitude is  
23 of the cost charged by ICF through Manitoba Hydro -- to  
24 Manitoba Hydro for Exhibit 12.2. And if you recall, Mr.  
25 Rose indicated that it was in the range of two hundred

1 thousand dollars (\$200,000) and he was asked to confirm  
2 that.

3 So, Mr. Rose, could you speak to that.

4 MR. JUDAH ROSE: There we go. Okay. I  
5 can confirm again that -- if I can confirm, it's  
6 approximately two hundred thousand dollars (\$200,000).  
7 My best estimate right now is two hundred and two  
8 thousand dollars (\$202,000).

9 And another issue that came up is whether  
10 there are charges subsequent to that, and there were, and  
11 they're on the order of a hundred and fifty thousand  
12 dollars (\$150,000). That's a more approximate number.

13 And I think it was a question as to  
14 whether it was a fixed-price contract. There was a  
15 fixed-price element; I don't remember whether it includes  
16 transportation or travel, but then there were some change  
17 orders that were time and materials were added to it to  
18 get to the two hundred and two (202).

19 MS. PATTI RAMAGE: The next which -- and  
20 just for the record, that was transcript Undertaking 52.  
21 The next is transcript Undertaking 53, which Mr. Rose --  
22 Rose was to provide a list of drought reports that he saw  
23 that are not otherwise on the record before this Board.

24 And, Mr. Rose, can you do that.

25 MR. JUDAH ROSE: There are none of that

1 character.

2 MS. PATTI RAMAGE: And then next, for  
3 transcript Undertaking Number 54, Mr. Rose was to advise  
4 the Board which reports listed in Manitoba Hydro Exhibit  
5 3(a), (b), (c), which is the Manitoba Hydro's letter of  
6 February 26th and March 5th, which is the same letter,  
7 outlining a number of reports, but which reports were  
8 provided to ICF in preparation of Appendix 12.2.

9 MR. JUDAH ROSE: So there's the corporate  
10 risk management report, 2008 only; analysis of financial  
11 loss due to extended periods of drought, July -- July  
12 26th, 2007; executive discussion paper, October 18th,  
13 2005; 2002 to 2004, drought risk management review,  
14 January 18th, 2005.

15 MS. PATTI RAMAGE: Okay. Then next, this  
16 afternoon Mr. Peters wanted to know which term sheets did  
17 ICF look at in preparation of its reports, and I think  
18 there it was looking at the distinction between term  
19 sheets or summary of term sheets.

20 MR. JUDAH ROSE: We reviewed the NSP term  
21 sheet of October 2006, and I think it's -- it is the  
22 October 31st. So we did review the actual term sheet.  
23 For the MP, we had a term sheet and a term sheet  
24 amendment which were December 2007 and April 2009,  
25 respectively. For WPS, we had the term sheet and the

1 third amendment, which were March 2008 and February 2009,  
2 respectively. And I think some of the confusion is, in  
3 addition, we had summaries. So we had the term sheets  
4 and the summaries.

5 MS. PATTI RAMAGE: And then next there  
6 was also a question: Did ICF see the contract between  
7 NSP and Manitoba Hydro when it calculated its prices in -  
8 - in Appendix 12.2?

9 MR. JUDAH ROSE: We have not reviewed any  
10 contract; we have just reviewed term sheets.

11 MS. PATTI RAMAGE: Okay. And finally,  
12 there was one (1) other question posed to Mr. Rose with  
13 respect to transmission -- the transmission required for  
14 the MP and WPS contracts, or the -- the term sheets.

15 Mr. Rose gets his information from  
16 Manitoba Hydro, so I can advise that Manitoba Hydro does  
17 not agree with Mr. Peters' understanding of the -- of  
18 that transmission. And -- but I would suggest that,  
19 because that information is with -- is with Mr. -- with  
20 Manitoba Hydro, not with Mr. Rose, that that be put to  
21 Manitoba Hydro when the panel comes back on. There --  
22 there really isn't much value in asking Mr. Rose the  
23 information that is -- purely comes from the Corporation.

24 THE CHAIRPERSON: Thank you, Ms. Ramage.  
25 I don't think that was the exhaustive list of questions

1 to Mr. Rose, that's correct?

2 MS. PATTI RAMAGE: No, there's still a  
3 few we're working on, but we wanted to get them out as  
4 quickly as we could.

5 THE CHAIRPERSON: Very good. Good idea.  
6 Mr. Peters...?

7

8 CONTINUED BY MR. BOB PETERS:

9 MR. BOB PETERS: Mr. Rose, it's not that  
10 I didn't hear Ms. Ramage, and I know she'll perhaps  
11 disagree, but in terms of the transmission for imports,  
12 if you reviewed the terms sheets, as you've indicated, do  
13 you not have those -- those numbers, in terms of the  
14 import capability, under the term sheets with Wisconsin  
15 and Minnesota?

16 MR. JUDAH ROSE: I -- I don't have those  
17 sitting here, and I agree with Ms. Ramage.

18 MR. BOB PETERS: When you did your  
19 report, that's Appendix 12.2 -- 12.2, Mr. Rose, did ICF  
20 concern itself with the cost of the generating stations  
21 that were needed to service Minnesota Power and Wisconsin  
22 Public Service?

23 MR. JUDAH ROSE: I think the answer is:  
24 Indirectly we did look at some documents, and I believe  
25 we included a total capital budget estimate. I think we

1 discussed that earlier.

2                   But I don't know that it was sufficiently  
3 specific so that it related to the specific contracts.  
4 And, of course, in that case it was an acceleration of  
5 the capital expenditures, so you'd have to deal with the  
6 -- I guess the difference in the time value of the cost  
7 rather than just the cost itself.

8                   MR. BOB PETERS: Do you agree that the  
9 time value of the cost is a tool used when you're  
10 evaluating different options that can be used under  
11 development?

12                   MR. JUDAH ROSE: Yes. As we discussed,  
13 the net present value of the cost and benefits should  
14 take into account the -- the time val -- the risk  
15 adjusted time value of money.

16                   MR. BOB PETERS: And do you agree that  
17 Manitoba Hydro is going to seek recovery of the costs it  
18 has incurred to construct Keeyask, Conawapa, and Bipole  
19 3, when those facilities are ready to come on line?

20                   MR. JUDAH ROSE: I assume so, but I don't  
21 have any independent knowledge, other than what I've seen  
22 in the risk report, and the general view that investments  
23 will be included as -- generally as part of the rate  
24 base.

25                   MR. BOB PETERS: Are you aware that the

1 capital expenditure forecast back in 2008 for Keeyask was  
2 \$3.7 billion? Is that a number that you're familiar with  
3 when you were looking at the -- at the materials that  
4 lead to your Appendix 12.2 report?

5 MR. JUDAH ROSE: I don't remember,  
6 sitting here, that specific number, no.

7 MR. BOB PETERS: Are you aware that the  
8 \$3.7 billion number for Keeyask went up to 4.6 billion in  
9 capital expenditure forecast '09, and the Board's been  
10 told that it's gone up for the construction of Keeyask  
11 now to 5.6 billion in the CEF, the capital expenditure  
12 forecast, for 2010?

13 MR. JUDAH ROSE: I'm not aware of those  
14 figures.

15 MR. BOB PETERS: Are you aware as to  
16 whether those figures were included in the net present  
17 value case studies that you -- you've referenced a couple  
18 of times to the Board this afternoon?

19 MR. JUDAH ROSE: I -- all I can say is  
20 the analysis that I looked at was prepared before my  
21 report, and I wouldn't expect, if what you're saying is  
22 true, and -- and I can't independently verify it, that  
23 facts that occurred later would have been incorporated,  
24 but beyond that, I -- I don't know.

25 MR. BOB PETERS: Oh, of course. If -- if



1 these revisions came post your report, you wouldn't have  
2 considered them for your report.

3 MR. JUDAH ROSE: That's correct.

4 MR. BOB PETERS: All right. And likewise  
5 on Conawapa, back in the capital expenditure forecast of  
6 '08, the capital cost was forecast at \$4.9 million. Are  
7 you able -- sorry, \$4.9 billion.

8 Are you able to confirm for the Board that  
9 was the number used in the net present value, or  
10 discounted cash flow study that you saw when the  
11 Minnesota Power and Wisconsin Public Service contracts  
12 were looked at?

13 MR. JUDAH ROSE: No, I can't.

14 MR. BOB PETERS: And since then, Conawapa  
15 has increased in cost from 4.9 billion in '08, to 6.3  
16 billion in '09, and now the Board is told that in the  
17 capital expenditure forecast of 2010 Conawapa is now  
18 forecast as \$7.8 billion. Are you --

19 MR. JUDAH ROSE: Sorry, are you asking me  
20 to confirm that your statements are true?

21 MR. BOB PETERS: Are you aware of that?

22 MR. JUDAH ROSE: No, I'm not.

23 MR. BOB PETERS: All right. And you are  
24 aware that when it comes time for these plans to be put  
25 in service, the costs attributed by Manitoba Hydro to

1 Keeyask, Conawapa, and Bipole 3 are going to come through  
2 to the income statement, correct?

3 MR. JUDAH ROSE: I assume so, based on my  
4 understanding of the -- of the basic accounting of the  
5 Utility, which is is that a portion of the rate base is  
6 charged to the income, and there's return of and on  
7 invested capital, as is there are to the benefits from  
8 those projects.

9 Excuse me. Let me just put a stop to  
10 that. I apologize.

11 MR. BOB PETERS: Not a problem, sir. Not  
12 a problem.

13 MR. JUDAH ROSE: Okay.

14 MR. BOB PETERS: All right. In -- in --  
15 much like you and I discussed earlier, and I don't want  
16 to belabour the points, with Wuskwatim a calculation can  
17 be done with Keeyask as well as Conawapa and even Bipole  
18 3, in terms of what the carrying costs are on an annual  
19 basis for that first year that it comes online.

20 Have you done that or seen that?

21 MR. JUDAH ROSE: No, and, you know, of  
22 course, my comment would be the same, which is what we  
23 need to do is an analysis of the cost and benefits  
24 through the lifetime of the assets and look at the cost  
25 and benefits on an integrated basis. Because other

1 things may have become more expensive too, and my  
2 experience has been that generally there's been  
3 significant cost escalation, generally. But I have not  
4 done that particular calculation.

5 MR. BOB PETERS: All right. What we can  
6 agree on, can we, Mr. Rose, is that when Keeyask comes  
7 on, according to my numbers, and you can take them  
8 subject to check, is that there's an approximate \$500  
9 million a year of additional costs that are going to come  
10 into Manitoba Hydro's income statement?

11 MR. JUDAH ROSE: For a purpose of a  
12 hypothetical, I'll -- I'll be glad to make that  
13 assumption. I can't --

14 MR. BOB PETERS: Thank you.

15 MR. JUDAH ROSE: -- verify it.

16 MR. BOB PETERS: And based on an output  
17 of about 4,400 gigawatt hours per year from Keeyask on an  
18 energy basis for that first year, the energy is available  
19 at, on average, eleven point four (11.4) cents a kilowatt  
20 hour.

21 You'll take my math, subject to check?

22 MR. JUDAH ROSE: Actually, I -- I did  
23 check it and you're -- if you're just asking me to divide  
24 500 million by 4.4 gigawatt hours, it's eleven (.11)  
25 cents per kilowatt hour.

1 MR. BOB PETERS: And if you did the same  
2 type of exercise for the Conawapa generating station, at  
3 \$7.8 billion and an output of 7,700 gigawatt hours, you'd  
4 come out to about nine point one (9.1) cents a kilowatt  
5 hour?

6 MR. JUDAH ROSE: Sorry, that's 7.8  
7 billion?

8 MR. BOB PETERS: No, I'm saying it's \$700  
9 million a year of costs related to the Conawapa when it  
10 comes online in its first year.

11 MR. JUDAH ROSE: Right. So that's -- I  
12 am getting nine point one (9.1) cents per kilowatt hour.  
13 What -- what year is that?

14 MR. BOB PETERS: Conawapa is expected to  
15 be in service 2024.

16 MR. JUDAH ROSE: Okay. So that would  
17 compare to the hundred and twenty-five dollars (\$125) a  
18 megawatt hour that was in my PowerPoint, subject to the  
19 fact that really we need to look at the cost and benefits  
20 on an integrated basis, but --

21 MR. BOB PETERS: And when those costs  
22 come online, can you assure the Board that for 100  
23 percent of the Keeyask and Conawada -- wapa output, that  
24 those costs will be returned from the export  
25 counterparties?

1 MS. PATTI RAMAGE: Mr. Chairman, this --  
2 this goes well beyond the scope of ICF's retainer. They  
3 weren't asked to look at a capital plans review of  
4 Conawapa and Keeyask, so asking for Mr. Rose to make a  
5 conclusion on the -- on those two (2) plants -- and  
6 Manitoba Hydro has maintained continually it's premature  
7 anyways. He's -- he's walked through Mr. Peters' math.  
8 But asking for that type of conclusion, it -- it's not  
9 addressed in his report and -- and I don't think it's  
10 appropriate to ask for it on the fly.

11 THE CHAIRPERSON: I'll ask Mr. Peters to  
12 explain himself a bit more, but I do notice from the ICF  
13 report under the introduction it says, "specifically,  
14 Manitoba Hydro requested." And then the second point was  
15 the adequacy of price that Manitoba Hydro drives or will  
16 drive from export sales transactions, both long-term firm  
17 and short-term opportunity sales.

18 Mr. Peters...?

19 MS. PATTI RAMAGE: If maybe I could  
20 address that. I think that's the adequacy of the price.  
21 I don't think Mr. Rose was asked to address the -- the  
22 price in comparison to the cost of the new plants.  
23 That's not something he did in any real detail.

24 THE CHAIRPERSON: Yeah. Well, what does  
25 adequacy mean if not price versus cost?

1 MS. PATTI RAMAGE: I think he looked at  
2 adequacy, and I think he -- he showed eight (8) different  
3 items he compared it to, in terms of forecasts, in terms  
4 of ICF's own forecast, in terms of the -- the -- Manitoba  
5 Hydro's group of forecasting its -- its average  
6 forecasts, and other items, but I don't think it went  
7 directly against the -- the capital plans.

8 He -- he simply didn't have that  
9 information available at the time he did this. Manitoba  
10 Hydro didn't have that for him. And to -- I'm just  
11 saying today, to do it on the fly is -- it's not what we  
12 asked him to do.

13 THE CHAIRPERSON: Mr. Peters, can you  
14 help in this discussion?

15 MR. BOB PETERS: I can help by drawing  
16 the Board's attention to page 4 of the ICF report. Page  
17 4 is part of the executive summary. It's also repeated  
18 elsewhere in the report. But I'll take the Board to the  
19 sentence -- the third sentence under the paragraph  
20 starting, "Lower rates in the future." Certainly, sir.  
21 Page 4, and this is Appendix 12.2. And there's a chart  
22 at the top of the page.

23 THE CHAIRPERSON: I have it.

24 MR. BOB PETERS: And there's the third  
25 sentence under the paragraph of, "Lower rates in the

1 future." I was testing Mr. --

2 THE CHAIRPERSON: Mr. Peters, just hold  
3 one (1) second.

4 MR. BOB PETERS: Yes, sir.

5

6 (BRIEF PAUSE)

7

8 THE CHAIRPERSON: Okay.

9

10 (BRIEF PAUSE)

11

12 THE CHAIRPERSON: Okay, we all are  
13 looking at the same page.

14 MR. BOB PETERS: My -- my point, Mr.  
15 Chairman, is that ICF has made the statement, and I'm  
16 looking at the third sentence underneath the chart that  
17 says:

18 "The proposed prices are on average  
19 above Manitoba Hydro's costs."

20 And I talked with Mr. Rose about that this  
21 morning -- or maybe it was this morning -- about  
22 Wuskwatim, and I wanted to talk to him about that, about  
23 Keeyask and Conawapa. I sense we're reaching the same  
24 conclusion.

25 MR. JUDAH ROSE: Well, I mean, you know,

1 let me just ma -- state the following:

2                   Number 1. Any calculation that we do  
3 where we're looking at say nine (9) cents a kilowatt  
4 hour, needs to be compared to the 2025, in part, long-  
5 term price, which is greater than a hundred and twenty-  
6 six dollars (\$126) a megawatt so we have the right apples  
7 to apples, assuming that these are nominal dollars, is  
8 the first issue.

9                   The second issue is, is what we had at the  
10 time was a study that took into account the conditions at  
11 that time, not the conditions that you're describing  
12 here, which may have changed in a number of different  
13 ways, not just the costs for the equipment, but the cost  
14 of the alternatives.

15                   And so I didn't conduct a detailed study,  
16 as was indicated. We looked at a study that showed that  
17 the plants were net beneficial, even not taking into  
18 account all the transmission benefits, which we went  
19 through the two (2) -- the \$2 billion for the  
20 construction, the fact that it gets constructed, the fact  
21 that you have access in the event of an emergency, a  
22 Black Swan event.

23                   So -- and the idea of guaranteeing, which  
24 was in your question, I think is -- needs to be seen in  
25 the sense of what's the alternative? Can I guarantee



1 what the alternative is? If the alternative is not to  
2 build -- not to build the transmission because you don't  
3 have the contracts and not to have the contracts and have  
4 gas, and you're having a volatile gas and you're not  
5 protected against your need -- not having transmission,  
6 but I can -- I can't guarantee that result either. And  
7 so I think the -- overall, I think it's -- the issue's  
8 not what is guaranteed, but, given that there's no way  
9 around having risks, what is the lowest cost and what is  
10 the -- the reasonable approach, given the situation of  
11 the company?

12 MR. ROBERT MAYER: I think I got this  
13 working again. I'm still reading the -- the paragraph  
14 that Mr. Peters put to Mr. Rose. It talks about proposed  
15 prices are, on average, above Manitoba Hydro's costs.  
16 I'm still trying to understand Ms. Ramage's objection  
17 because that clearly, when we're talking about costs --  
18 and we've been talking through this whole hearing about  
19 \$20 billion in expenditures. Am I led to believe that  
20 this report that IC -- that that statement was made by  
21 ICF without looking at the cost reflections, even as they  
22 then were, of Conawapa and Keeyask and Bipole 3?

23 MS. PATTI RAMAGE: Mr. Vice Chair, I  
24 would suggest that ICF tested the adequacy of the price  
25 based on the bullets listed on page 75 of its report.

1 That's the historical spot prices, the existing contract  
2 prices, domestic generation service prices, the ICF  
3 wholesale price forecasts, the consensus price forecasts,  
4 the approach to future price forecasting and incremental  
5 production costs, non-price benefits, and market timing  
6 and trends.

7                   So if we go through that list and bring it  
8 down to as close as we can get to the areas we're looking  
9 to explore now, I would say that is the incremental  
10 production costs. And -- and ICF, in -- on the last  
11 paragraph of page 75, identifies what they base their --  
12 their study on.

13                   And what I'm saying is that we didn't  
14 retain ICF to do a capital plan study or -- and so if --  
15 if we -- I think it's fair to ask them what that  
16 statement means and -- and what they looked at, but not  
17 to now go forward today with additional informa -- or  
18 throwing additional information at them, whether it's  
19 updated information on -- on those materials. The report  
20 is what the report is and those -- that's how they tested  
21 the price.

22                   MR. ROBERT MAYER:    Okay.  The last  
23 bullet, as I have highlighted.  Proposed contract prices  
24 are also above the costs of producing the power.  Which  
25 power are we producing when we talk about the costs of

1 producing the power? I'm assuming it's the incremental  
2 power at least that we would need in order to meet these  
3 contracts, and that would be, as I understand it, Keeyask  
4 and Conawapa, which may have had different numbers, but  
5 at -- at least some numbers had to be put forward in  
6 order to make that statement. Am I correct?

7 MR. JUDAH ROSE: I think the answer is  
8 no, sir, you're not correct. That is, you are correct in  
9 the sense that you need to know the costs, but the issue  
10 is the acceleration of the costs, not the costs  
11 themselves.

12 In the analysis that we reviewed, the --  
13 meeting the contracts involves the acceleration of  
14 Keeyask and Conawapa, not the actual construction, so you  
15 need to -- it's -- you need to look at what the cost  
16 would have been without the contracts and what the  
17 benefits would have been, and -- and then also with --  
18 with the contracts.

19 So it's -- to just take the costs of the  
20 plant exaggerates the costs because you're accelerating  
21 the costs. It's not -- you're not -- your paying for  
22 them as -- totally.

23 MR. ROBERT MAYER: So then you not only  
24 needed to know the costs that Conawapa was going to be if  
25 we -- if it's built in the next reasonably short period

1 of time, you would have had to know what its cost was  
2 going to be if it wasn't accelerated. So did you have  
3 those numbers?

4 MR. JUDAH ROSE: We did have a cost study  
5 that was extant as of the time that we did the report.

6 MR. ROBERT MAYER: At the time you had  
7 the report, then, you had an estimate from Manitoba Hydro  
8 what it would have cost to build Conawapa when it would  
9 have been required for domestic use, and you would have  
10 had a cost estimate of what it would cost to build  
11 Conawapa when they proposed to build it at the  
12 accelerated date, and you would have had the opportunity  
13 therefore to determine the difference in cost and the  
14 cost-benefit of the acceleration.

15 Is that what you told me?

16 MR. JUDAH ROSE: Yes, we would have the  
17 ability to take -- take into account the time value of  
18 money of ten (10) dol -- say ten dollars (\$10) versus --  
19 in ten (10) years versus ten dollars (\$10) versus -- in  
20 seven (7) years. So that difference is not ten dollars  
21 (\$10). It's some fraction of that, and we would be able  
22 to also assess the -- the benefits, as well.

23 And that conclusion was very much that it  
24 was a net beneficial project, and we have not revisited  
25 it with the new numbers, and -- and -- but I also want to

1 make sure that we are comparing apples to apples in terms  
2 of inflated dollars for 2025 versus those today.

3 THE CHAIRPERSON: Mr. Peters...?

4 MR. BOB PETERS: Yes, thank you.

5

6 CONTINUED BY MR. BOB PETERS:

7 MR. BOB PETERS: When we talk contract  
8 prices in the report that Ms. Ramage has drawn to the  
9 Board's attention on page 75, the same thing is repeated  
10 on page 12 of the ICF Appendix 12.2 report, the proposed  
11 contract prices, in this case what you're saying is for  
12 the contract on-peak power price in 2010 dollars it's  
13 eighty-seven dollars (\$87) a megawatt. That's the  
14 contract price for the on -- on-peak portion, sir?

15 MR. JUDAH ROSE: No. What I'm saying is,  
16 is that in 2010 dollars it's greater than eighty-seven  
17 dollars (\$87) a megawatt hour on-peak for the --

18 MR. BOB PETERS: All right.

19 MR. JUDAH ROSE: -- long-term contracts,  
20 and in --

21 MR. BOB PETERS: I'll accept --

22 MR. JUDAH ROSE: -- 2025 dollars it's one  
23 hundred and twenty-six (126) compared to some of these  
24 numbers here that also appear to be in similar year  
25 dollars.

1 MR. BOB PETERS: Does ICF concur that  
2 there will be a shortfall between the revenue received  
3 from Keeyask estimated over a -- excuse me -- the revenue  
4 for Keeyask calculated at average export prices versus  
5 the total expenses for Keeyask when it comes online in  
6 2021?

7 MR. JUDAH ROSE: No, the material that we  
8 reviewed indicated it was net beneficial, that was the  
9 material on page 4 where we had the specific estimate for  
10 the -- I believe the fourth sentence in, for two (2) of  
11 the three (3) proposed contracts that are related to the  
12 acceleration of two (2) of the large facilities, not  
13 counting the \$2 billion of avoided transmission costs,  
14 not counting the benefits past 2041, if there are any,  
15 and not counting the Black Swan. And that's the  
16 information that we had, and is one (1) of the bases for  
17 our conclusions.

18 MR. BOB PETERS: You didn't do a  
19 calculation, and you and ICF didn't do a calculation, as  
20 to whether there would be any estimated incremental  
21 revenue requirement as between the revenues and the costs  
22 for the Keeyask plant when it came on service?

23 MR. JUDAH ROSE: No, the conclusion is  
24 that it's net beneficial, so there's no increment that's  
25 needed to get over the threshold of being net beneficial.

1 That's why you have 153 million of present value savings.

2 MR. BOB PETERS: All right.

3 MR. JUDAH ROSE: I'm sorry if I'm not  
4 understanding the questions here, but you know, I -- I am  
5 -- I want -- I have not review -- reviewed the  
6 information subsequent to the preparation of the report.  
7 But the calculations that are being presented here are  
8 incorrect in their fundamental approach to the problem.

9 MR. BOB PETERS: Would you accept, and  
10 ICF accept, that the revenue from Keeyask, based upon  
11 generation, calculated at average export prices in 2021,  
12 the revenue would be about approximately \$294 million?  
13 Do you have any way of knowing that, sir?

14 MR. JUDAH ROSE: No, I don't.

15 MR. BOB PETERS: Do you have any way of  
16 disagreeing that the total expenses in 2021 coming from  
17 that plant are going to be in the neighbourhood of \$500  
18 million a year?

19 MR. JUDAH ROSE: I -- I can't comment on  
20 those numbers. I -- they're numbers that you presented,  
21 and I -- I see no written basis for that, and I have no  
22 recollection of those numbers.

23 MR. BOB PETERS: Well, if you want to see  
24 a written basis you can ask Ms. Ramage to show you the  
25 revenues that are expected to come from Keeyask in

1 PUB/Manitoba Hydro First Round 197.

2 MR. JUDAH ROSE: Sir, it's my experience  
3 that if you want me to comment on a document, you hand it  
4 to me and I can review it and take the time to review it.  
5 And I've -- I've listened to this now for two (2) or  
6 three (3) hours, and I find it inappropriate and unfair  
7 to me, to -- to ask me to comment on documents I haven't  
8 seen, plus to answer questions already asked and  
9 answered.

10

11 (BRIEF PAUSE)

12

13 MR. BOB PETERS: Could you answer the  
14 question, sir, as to whether or not the costs of  
15 producing power from Keeyask in year 1 are going to be  
16 recovered from the export sales that you have identified  
17 on page 42 of Manitoba Hydro Exhibit 55?

18

19 (BRIEF PAUSE)

20

21 MR. JUDAH ROSE: Could you please repeat  
22 the question?

23

24 (BRIEF PAUSE)

25



1                   MR. BOB PETERS:    When the costs of  
2   Keeyask are advanced to be paid and put on the income  
3   statement by Manitoba Hydro, will there be sufficient  
4   revenue from the Keeyask generating station to pay 100  
5   percent of those annual costs?

6                   MR. JUDAH ROSE:    Is it -- I -- I can't  
7   answer that question.  I can't answer that question.  I  
8   don't -- I don't have an answer to that.

9                   MR. BOB PETERS:    Thank you.  Does that  
10  same answer hold true if I asked you about whether or not  
11  the costs of Conawapa will be fully covered from the  
12  revenue from Conawapa in 2025?

13                  MR. JUDAH ROSE:    Yes, it's a subset of  
14  the issue that I have in front of me, the results of the  
15  combination of the changes in Conawapa and Keeyask with  
16  respect to the two (2) contracts, but not the individual  
17  -- and not the individual year, but I have the net  
18  present value over the horizon out to 2041.

19                  MR. BOB PETERS:    Mr. Rose, you told the  
20  Board that you have looked at Manitoba Hydro's IFF  
21  forecast, Integrated Financial Forecast.  Have I got that  
22  right?

23                  MR. JUDAH ROSE:    Yes.

24                  MR. BOB PETERS:    And you looked at the  
25  2009 version, or the IFF-09 version?

1                   MR. JUDAH ROSE:    We discussed yesterday  
2   that it was -- there was a footnote here, I thought it  
3   was '08 that was in the report.  I may have looked at '09  
4   as well.

5                   MR. BOB PETERS:    All right.  If your  
6   counsel could refer you to Tab 4 of Board Council's first  
7   book of documents you'll see the electric IFF-09-1.

8

9                                   (BRIEF PAUSE)

10

11                   MR. BOB PETERS:    That would be in Volume  
12   number I, Tab 4.

13

14                                   (BRIEF PAUSE)

15

16                   MR. BOB PETERS:    Do you see the format,  
17   sir, of the Integrated Financial Forecast as it's  
18   presented?

19

20                                   (BRIEF PAUSE)

21

22                   MR. JUDAH ROSE:    I do, but I don't see  
23   the date of the document, so I can't...  I thought that  
24   we had dis -- I had looked at the 2008 version.

25

                  MR. BOB PETERS:    Well, let's just take a

1 second with -- with this version and see if you can  
2 assist the Board in understanding that if one (1) assumes  
3 that Manitoba Hydro currently has a debt-equity at  
4 approximately 75:25, you're prepared to make that  
5 assumption for me, sir?

6 MR. JUDAH ROSE: Yes.

7 MR. BOB PETERS: And you can also assume  
8 that for the next, let's say decade, inflation is  
9 approximately 2 percent. Are you prepared to make that  
10 assumption?

11 MR. JUDAH ROSE: Okay. I mean, I prefer  
12 2 1/2 percent, but if you're asking me to make an  
13 assumption, I'll -- I'll do that.

14 MR. BOB PETERS: Please. And you'll see  
15 on the IFF-09-1 that's in front of you, a line near --  
16 two-thirds (2/3) of the way down the page near the  
17 bottom, under:

18 "Additional General Consumers Revenue  
19 Percent Increase."

20 And you'll see starting in 2012 and going  
21 forward for the balance of that first page that the rate  
22 increase nominally is shown at 3.5 percent. Do you see  
23 that?

24 MR. JUDAH ROSE: Starting in 2013 --

25 MR. BOB PETERS: Yes, sir.

1                   MR. JUDAH ROSE:    -- through 2020?  I do  
2  see that.

3                   MR. BOB PETERS:    Can you explain to the  
4  Board what would be some of the possible reasons that a  
5  rate increase in excess of inflation would be needed  
6  going forward over that decade?

7                   MS. PATTI RAMAGE:    Mr. Peters, again,  
8  this isn't what mis -- the ICF report is about.  And --  
9  and I don't think it's fair to put to the witness an IFF  
10 that he hasn't seen before.  It's clear -- the ICF report  
11 is the '08 one, but nevertheless, one that he hasn't seen  
12 before and asked him -- ask him for conjecture on why  
13 something that was not part of his report may or may not  
14 be happening.

15

16 CONTINUED BY MR. BOB PETERS:

17                   MR. BOB PETERS:    Mr. Rose, you're not  
18 prepared to offer your conjecture?

19                   MR. JUDAH ROSE:    Well, one reason that  
20 rates sometimes increase faster than inflation is -- is  
21 that the costs increase faster than inflation, and so  
22 that's not an uncommon phenomenon.  My understanding is  
23 that, you know, that's -- certainly that's a possibility.

24                   MR. BOB PETERS:    Any others come to mind?

25                   MR. JUDAH ROSE:    The revenues are growing

1 less than inflation is a possibility relevant to Manitoba  
2 Hydro's export revenues, but tho -- those are the general  
3 drivers of rate increases.

4

5 (BRIEF PAUSE)

6

7 MR. BOB PETERS: Mr. Rose, will you  
8 undertake through counsel to provide this Board with the  
9 advice as to what costs were included in the present  
10 value study that you've referred to repeatedly this  
11 afternoon but aren't allowed to show the Board, what  
12 costs are included in that report with respect to  
13 Conawapa, Keeyask, Bipole 3?

14

15 (BRIEF PAUSE)

16

17 MS. PATTI RAMAGE: Mr. Peters, what we're  
18 going to suggest is that we take the undertaking under  
19 advisement because of the confidentiality concerns, but  
20 we will make our best efforts to provide something to the  
21 Board, but we have to look at that. And I think -- and  
22 ensure that confidentiality can be adequately protected  
23 but attempt to provide the Board with -- with some level  
24 of assurance with respect to -- to what that entailed.

25

MR. BOB PETERS: Mr. Chairman, I'm

1 content to accept Ms. Ramage's suggestion, although I  
2 don't quite frankly understand why the capital costs of  
3 Keeyask, Wuskwatim, Conawapa, Bipole 3 aren't a matter of  
4 public record.

5                   We've seen an escalating series of capital  
6 expenditure forecasts, and one would have assumed that  
7 those -- one (1) of those capital expenditure forecasts  
8 would have underpinned the document that Mr. Rose has  
9 referred to as the net present value study between the  
10 alternatives examined by Manitoba Hydro, but unless Ms.  
11 Ramage has changed her mind, I suggest we just move on  
12 and she can take it, subject to -- or under advisement  
13 and get back to the Board on whether or not it's a proper  
14 undertaking.

15                   MS. PATTI RAMAGE: Mr. Peters is quite  
16 right in terms of the total capital costs, but that's --  
17 it's -- it's not -- I'm going to just check on this one  
18 (1) more time before I try to articulate this.

19

20                   (BRIEF PAUSE)

21

22                   MS. PATTI RAMAGE: The document that  
23 we're referring to is not a net present value study of  
24 alternative versus sales, it's just a sum of rate  
25 savings, so we have to look at what -- what went into

1 that figure.

2                   And, Mr. Peters, you're looking puzzled,  
3 and that's okay, but that's what we need to look at, too,  
4 is exactly what went into that and -- and give the Board  
5 that information. But I -- I'm saying it's under  
6 advisement because we need to look at what went in that  
7 figure, but it's not what you're thinking went into that  
8 figure. It's not the capital costs, and that's not the  
9 study. I -- I think you're thinking it's something that  
10 it's not.

11

12 --- UNDERTAKING NO. 59:        UNDER ADVISEMENT - ICF to  
13                                    indicate what costs were  
14                                    included in the present value  
15                                    study, with respect to  
16                                    Conawapa, Keeyask, and Bipole  
17                                    3

18

19                   MR. BOB PETERS:    She knows me too well.  
20 She now knows what I'm thinking, Mr. Chairman. But I'll  
21 appreciate her advice, and I think we'd best wait to --  
22 to see what is produced, and then we can decide how it  
23 measures on all fours with the document that Mr. Rose has  
24 referred to repeatedly. So I thank Ms. Ramage for that  
25 assistance.

1 CONTINUED BY MR. BOB PETERS:

2 MR. BOB PETERS: Mr. Rose, a drought is a  
3 situation where the water is below average. Is that a  
4 good definition?

5 MR. JUDAH ROSE: That's a -- a  
6 definition. You know, I don't think there's a tight  
7 definition. If it's mildly below average, it's mildly  
8 below average, but again, I don't think there's a  
9 specific definition of -- in -- in the work that I've  
10 been doing, but there are, when you look at the history,  
11 some things that stand out right away as either  
12 individual years of drought or extended droughts.

13 MR. BOB PETERS: And a drought could be  
14 worse than the historical record owned by Manitoba Hydro?

15 MR. JUDAH ROSE: Yes.

16 MR. BOB PETERS: I want you to help, if  
17 you can, to the Board, quantify the exposure of Manitoba  
18 Hydro. In a drought worse than the historical record,  
19 what is Manitoba Hydro's obligation to NSP?

20 I do want to caution you that I'm not  
21 looking for any information that has been redacted from  
22 the public record or ordered confidential by the Board,  
23 and I repeat that in the context of my question.

24

25 (BRIEF PAUSE)



1 MS. PATTI RAMAGE: Mr. Rose has never  
2 been provided the terms of the contract, and that again  
3 was not part of his retainer, and I don't know how you  
4 could even begin to start doing this without  
5 understanding the terms of the contract.

6 MR. ROBERT MAYER: Ms. Ramage, page 17 of  
7 the report talks about firm volume reduction in the event  
8 of drought, tells us what we don't have to supply, tells  
9 us how it's different from the previous contracts.

10 How can you make that statement in light  
11 of what's -- what I've read on paper, even with the  
12 reductions (sic), that I can figure out which contract  
13 we're talking about?

14 MR. JUDAH ROSE: Yeah. I mean, I th --  
15 you know, there -- there's two (2) issues here. One (1)  
16 is is because -- I think you're right, the NSP contract  
17 has a different provision relative to the other two (2),  
18 where the obligation goes away, and so it's easy to  
19 calculate the exposure.

20 The question is is what -- how much hydro  
21 is available in -- you know, in that circumstance, what  
22 are the obligations and what are the mitigations in the  
23 contract. One (1) of the things that I discussed, but I  
24 can't remember whether it's confidential -- one (1)  
25 second.

1 (BRIEF PAUSE)

2

3 MR. ROBERT MAYER: I would just point out  
4 to Ms. Ramage that, and -- and you undoubtedly know, that  
5 the section we're now dealing with is the -- is within  
6 the limits of the previous droughts. The volume  
7 reduction in the event of unprecedented drought is on the  
8 next page.

9

10 (BRIEF PAUSE)

11

12 MS. PATTI RAMAGE: I think the best we  
13 can do at this point is -- is take this one (1) again  
14 under advisement. I -- to me, it's very apparent that to  
15 attempt to do this would require Mr. Rose to see the  
16 contract, to see the confidential terms in the contract.  
17 Not the term sheet, but the contract, and then to import  
18 items such as the impacts of the co -- of -- of different  
19 options in the contract, and how they would interplay,  
20 and -- and I -- confidentiality becomes a concern, and we  
21 can look at it and see what can be done. I think that's  
22 the -- the best I can offer up at this point.

23 THE CHAIRPERSON: Mr. Peters, how do you  
24 suggest we --

25 MR. BOB PETERS: Well --

1 THE CHAIRPERSON: -- proceed?

2 MR. BOB PETERS: -- the snail's pace at  
3 which we're progressing may lead credence to Ms. Ramage's  
4 point.

5 What I was trying to get from Mr. Rose to  
6 assist the Board is the quantification of the risks  
7 Manitoba Hydro faces in situations of drought to the  
8 counterparties that it's hoping to be in a contractual  
9 relationship with for many years, and find out if -- how  
10 that -- how Mr. Rose is able to quantify the exposure to  
11 Manitoba Hydro.

12 I'm not looking for specific confidential  
13 terms, but in terms of -- in situations where the drought  
14 is worse than historical record, what is the financial  
15 exposure, and is he able to quantify that, and then  
16 compare that to what the exposure is when it's a drought  
17 that is within the historical bounds of Manitoba Hydro's  
18 records.

19 And I'm not sure if Ms. Ramage is able to  
20 indicate whether Mr. Rose would be able to provide any  
21 assistance in that regard or not.

22 MR. JUDAH ROSE: It's -- it's a difficult  
23 undertaking, even if it wasn't for the issue of the  
24 confidentiality of the term sheets, and so -- so I -- I'm  
25 not sure that I -- I can, and I'll be glad to discuss it

1 with counsel.

2 MS. PATTI RAMAGE: I think we'll take it  
3 to the back room, and if -- perhaps if Mr. Rose cannot  
4 assist, we can see what Mr. Cormie or Mr. Surminski can  
5 provide, but -- but I think in the interest of moving  
6 along, that would be the best way to deal with it.

7 MR. BOB PETERS: I'll move along. Yes,  
8 I'm going to hold Ms. Ramage to that one, I think, if  
9 she's prepared to accept it, in terms of an undertaking  
10 to come back to the Board to provide the Board with some  
11 quantifications that aren't going to be subject to  
12 confidentiality as best they're able to determine.

13 MS. PATTI RAMAGE: As best we're able to  
14 determine and willing to accept.

15 MR. BOB PETERS: There's enough room in  
16 there for you to manoeuver that.

17

18 --- UNDERTAKING NO. 60: ICF to provide the  
19 quantification of the risks  
20 Manitoba Hydro faces in  
21 situations where the drought  
22 is worse than historical  
23 record, what is the financial  
24 exposure and quantify it, and  
25 give a comparison to what the

1 exposure is for a drought  
2 within the historical records  
3

4 CONTINUED BY MR. BOB PETERS:

5 MR. BOB PETERS: I want to turn to a new  
6 topic, Mr. Chairman, Board Members, Mr. Rose, merchant  
7 sales. Manitoba Hydro performs merchant sales currently?

8 MR. JUDAH ROSE: Manitoba Hydro  
9 undertakes asset-related transactions and arbitrage-  
10 related transactions. I wouldn't -- I don't -- I don't  
11 think it's fair to characterize that they're doing  
12 merchant sales as such.

13 MR. JUDAH ROSE: To me, merchant sales  
14 would be you think that the price is going to go one (1)  
15 direction and, unrelated to any other position that you  
16 have, you undertake a risky transaction to -- to, if you  
17 will, speculate on that expectation, as opposed to a  
18 situation in which you're operating under your -- and  
19 related to your asset position. But if you have a  
20 different defi -- definition, I'll -- I'll be glad to  
21 reconsider my answer.

22 MR. BOB PETERS: All right, reconsider  
23 this then, Manitoba Hydro purchases power in MISO,  
24 transmits it to another market, and tries to sell it for  
25 a profit. Is that merchant trading?

1                   MR. JUDAH ROSE:    I think the critical  
2 thing would be is whether it's an arbitrage transaction  
3 or a non- arbitrage transaction.  If it was an arbitrage  
4 transaction I don't know whether it qualifies under that  
5 definition.  It could be a situation where you have  
6 transmission assets between two (2) markets and you're  
7 simultaneously buying and selling the assets, that's  
8 merchant.  I believe they do that under some set of  
9 controls.

10                   But arbitrage is referring to riskless  
11 transactions as opposed to non-arbitrage transactions  
12 where they're holding inventory and they're in a  
13 speculative position.

14                   MR. BOB PETERS:    On an arbitrage  
15 transaction Manitoba Hydro wouldn't lose money.  Isn't  
16 that correct?

17                   MR. JUDAH ROSE:    Yes, the idea would be  
18 is that you would only undertake the arbitrage  
19 transaction if it was a profitable transaction, and  
20 because you're arbitraging between the markets,  
21 presumably you're locking in -- in a profit.

22                   MR. BOB PETERS:    Buy low, sell high?

23                   MR. JUDAH ROSE:    That's correct, or at  
24 least taking into account the difference between the  
25 markets.

1                   MR. BOB PETERS:    In an attempt to buy in  
2 a lower market, sell in a higher market and recover your  
3 costs?

4                   MR. JUDAH ROSE:    That's the general -- a  
5 general transaction.

6                   MR. BOB PETERS:    All right.  Without  
7 parsing it down to arbitrage and non-arbitrage or any  
8 other subcategories, is ICF aware that Manitoba Hydro has  
9 done merchant trading over the last five (5) years?

10                  MR. JUDAH ROSE:    It's our understanding  
11 that the transactions as tak -- undertaken that are  
12 either asset-related or related to arbitrage  
13 transactions, and if that fits the definition then they  
14 are doing those type of transactions.

15                  MR. BOB PETERS:    Is ICF aware that  
16 Manitoba Hydro lost money in four (4) of the last eight  
17 (8) years on its merchant trading function?

18                  MR. JUDAH ROSE:    I'm -- I'm not sure what  
19 you're referring to.  Is there a document you would like  
20 me to review?

21                  MR. BOB PETERS:    I'm asking if ICF is  
22 aware that Manitoba Hydro has lost money in its merchant  
23 trading function over the last eight (8) years, in at  
24 least four (4) of the eight (8) years?

25                  MS. PATTI RAMAGE:    I'm trying to stay off

1 the mic here, but I'm not sure that the question is a  
2 fair question, and I had thought Mr. Cormie had explained  
3 that, that the -- in terms of the four (4) year loss.  
4 And if you could give me a moment to see if I can locate  
5 a reference to that, that...

6 MR. BOB PETERS: Ms. Ramage, Manitoba  
7 Hydro Exhibit 23, filed as undertaking -- response to  
8 Undertaking number 4. The Board will have a copy of that  
9 in the materials. It's Manitoba Hydro Exhibit 23. I'm  
10 sorry, I don't know which day it was filed.

11 MS. PATTI RAMAGE: And we ha -- we have  
12 that in front of us. I just -- I was concerned with the  
13 characterization that -- whether that would -- whether  
14 Mr. Rose would be familiar with that at all, but we --  
15 we've got the undertaking in front of him.

16

17 CONTINUED BY MR. BOB PETERS:

18 MR. BOB PETERS: Well, Mr. Rose, ICF  
19 looked at the merchant trading at Manitoba Hydro when it  
20 did its report that's filed as Appendix 12.2, did it not?

21 MR. ROBERT MAYER: It would appear to be  
22 Chapter 8, page 102.

23 MR. BOB PETERS: Thank you.

24

25

(BRIEF PAUSE)



1                   MR. JUDAH ROSE:    You know, we looked at  
2 the -- the issue of whether they should be involved in  
3 merchant trading transactions and what were the controls  
4 and procedures in place regarding the transactions, the  
5 governance structure and various other -- other elements.  
6 But we didn't review the -- as I recall, the -- the  
7 profit and loss that they had in -- in various different  
8 activities.

9

10 CONTINUED BY MR. BOB PETERS:

11                   MR. BOB PETERS:    As I understand your  
12 evidence, Mr. Rose, if an arbitrage transaction is a  
13 riskless transaction, I've quoted you correctly, sir?

14                   MR. JUDAH ROSE:    Yes, it's a --

15                   MR. BOB PETERS:    And --

16                   MR. JUDAH ROSE:    -- transaction assuming  
17 the credit car -- the counterparties pay.

18                   MR. BOB PETERS:    So when you see in front  
19 of you Manitoba Hydro Exhibit 23, you weren't aware that  
20 Manitoba Hydro was conducting merchant trading since 2004  
21 under circumstances where they were losing money in some  
22 years?

23                   MR. JUDAH ROSE:    Again, I -- the  
24 definition of merchant trading that we were interested in  
25 is the one that we were using, which is non asset-

1 related, non-arbitrage transactions, and to our  
2 knowledge, they were not involved in those. There may be  
3 a different definition. I'm not familiar with this  
4 particular table. They are involved in transactions,  
5 but, to my knowledge, they weren't of the type that we  
6 were focussed in on.

7 MR. BOB PETERS: And if Manitoba Hydro's  
8 merchant trading function resulted in Manitoba Hydro  
9 losing money, that would be a non-arbitrage transaction,  
10 correct?

11 MR. JUDAH ROSE: Assuming that the  
12 counterparties paid. And as I'm sitting here, there --  
13 there was perhaps some testing of the market procedures  
14 when the market came online, as I recall. But as a  
15 general matter, the -- the Corporation was not involved  
16 in what we defined as merchant transaction, so -- so  
17 there -- there may have been -- this -- this exhibit that  
18 -- may be referring to other activities.

19 MR. BOB PETERS: Well, let's just examine  
20 that thought. The transactions that are shown in front  
21 of you on Manitoba Hydro Exhibit 23 are, in my words, non  
22 asset-related transactions in that Manitoba Hydro  
23 purchased the energy in MISO. It's not from their own  
24 generating facilities. They purchased it in MISO and  
25 they sold it into yet another jurisdiction.

1                   So I'm telling you, under my words, it's  
2 not asset-related. And I'm also suggesting to you that  
3 in those cases in '04, '05, '07, and '10 Manitoba Hydro  
4 lost money so it wasn't riskless, so it wasn't arbitrage.  
5 So, therefore, under your definition it would be a non-  
6 arbitrage merchant trading. Have I got that right?

7                   MR. JUDAH ROSE: I -- I can't comment on  
8 the -- this particular exhibit. What I can say is is  
9 that, to my knowledge, the only thing the -- the company  
10 had been doing was arbitrage transactions, asset-related  
11 transactions, and there was some testing of the market  
12 when it got started at MISO. Other than that, I'm not  
13 aware of any other activities and/or profits and loss  
14 associated with that. I'm certainly not aware of the  
15 activities that occurred after we completed our report in  
16 2009.

17                   MR. BOB PETERS: All right. Are you  
18 aware of a report July the 4th, 2007, a report on risks  
19 faced by Manitoba Hydro and export markets, and I won't do  
20 this well, by Dr. Bhattacharyya, spelled B-H-A-T-T-A-C-H-  
21 A-R-Y-Y-A?

22                   In your review of Manitoba Hydro's  
23 merchant trading transactions, did you come across, or  
24 were you provided with, a report from the doctor that  
25 I've mentioned?



1 questions to him, so...

2 MR. BOB PETERS: Well, I may not have the  
3 luxury of that time, Ms. Ramage, but thank you for the  
4 suggestion.

5

6 CONTINUED BY MR. BOB PETERS:

7 MR. BOB PETERS: Mr. Rose, if you want to  
8 put those reports down. If this Board concludes that  
9 there is evidence that shows that Manitoba Hydro lost  
10 money on its merchant trading transactions, and by my  
11 calculation, in -- from April 2008 through to March 2000  
12 -- I'm sorry. From April 2006 through to March 2007, the  
13 red bars on the graph demonstrate an approximate \$4  
14 million loss on transactions to Manitoba Hydro. Would  
15 that represent the type of activity that ICF suggests  
16 Manitoba Hydro not be involved in?

17 MS. PATTI RAMAGE: Mr. Peters, we're  
18 attempting to find the transcript reference, but those  
19 bars relate to the resettlement activities that have  
20 nothing to do with the trading activities. And we're  
21 just in the back trying to find the transcript references  
22 where Mr. Cormie explained the -- how the resettlement  
23 charges were dealt with, but -- but that's what those  
24 bars relate to. And until Mr. Rose certainly has an  
25 opportunity to review that and understand the

1 resettlement charges, I don't think it's fair to put it  
2 to him and fair to describe it as a loss or to -- to put  
3 it to him.

4 MR. BOB PETERS: Well, then, I'll just  
5 draw to Mr. Rose's attention the last sentence on page 30  
6 of the good doctor's report that precedes the graph with  
7 the red bars, Ms. Ramage.

8

9 CONTINUED BY MR. BOB PETERS:

10 MR. BOB PETERS: And according to the  
11 report -- and I will quote:

12 "However, when we look at the revenue  
13 from this trading activity shown in  
14 Figure 8, we find that this is mostly a  
15 loss-making activity."

16 So, Mr. Rose, you can review the report I  
17 provided your counsel, and if you have comments, you're  
18 welcome to provide them back.

19 I will also want to draw your attention  
20 then to the front page, Exhibit 23.

21 MR. JUDAH ROSE: Right. I'm not -- I did  
22 want to say that, as I look at the -- when I was talking  
23 about a transaction being profitable, I -- I was doing it  
24 separate from any fixed costs.

25 So in every year -- and again, I -- I just

1 observe here, and every year the numbers are positive  
2 with respect to gross profit. It may be that there's the  
3 allocation -- for example, labour may be a fixed cost,  
4 and the transmission allocation, I don't -- I don't know.  
5 That may be also sort of a fixed cost.

6                   So it's something to -- that would be on  
7 my mind, which is -- is again, I was referring to a  
8 transaction sitting there before the allocation of fixed  
9 costs, so that would be one concern, but the other is I  
10 haven't -- I don't remember seeing the report, and I  
11 haven't seen the exhibit, and we were not looking at the  
12 issue of the allocation of the cost, but -- but the  
13 nature of the transactions, the controls, and how they  
14 would be on an incremental basis.

15                   MR. BOB PETERS:    And ICF stands by its  
16 recommendation that Manitoba Hydro should not enter into  
17 merchant trading functions where they're losing money.

18                   MR. JUDAH ROSE:    The -- the thing that  
19 they should -- that we think that they should not do is  
20 be involved in transactions that are not asset related,  
21 and not arbitrage related.

22                   If they have other active -- if they have  
23 activities that are necessary to support assets, and it  
24 somehow results in an accounting situation like this,  
25 that's a different -- a different matter.

1                   It may be, for example, the transmission's  
2 important for other reasons, like reliability, and the  
3 costs need to be allocated somewhere, and it just needs -  
4 - that may be a -- essentially still an asset-related, in  
5 my view, activity.

6                   But the company, to my knowledge, has --  
7 has -- is not interested in, and is not pursuing  
8 transactions that are not asset related, and not related  
9 to arbitrage transactions.

10                   MR. BOB PETERS:    Do you know if any of  
11 the transactions shown on Manitoba Hydro Exhibit 23 are  
12 asset related?

13                   MR. JUDAH ROSE:    I don't -- I don't know  
14 anything about the exhibit.

15                   MR. BOB PETERS:    Did ICF undertake an  
16 independent quantification of drought risk?

17

18   (BRIEF PAUSE)

19

20                   MR. JUDAH ROSE:    It wasn't independent of  
21 -- it was not independent of data that was provided to  
22 us, but we did look at the historical record when we were  
23 thinking about the quantification of -- of drought risk.

24                   MR. BOB PETERS:    Did ICF take the  
25 Minnesota Power, Wisconsin Public Service, and NSP



1 contracts and measure them against the drought experience  
2 in 2003/'04 in Manitoba?

3 MR. JUDAH ROSE: No, except for to  
4 observe, as I discussed, that one (1) of the changes that  
5 occurred relative to 2003/2004 is that the -- there were  
6 changes in the term sheets of MP and WPS so that they  
7 would not require the delivery explicitly in a drought  
8 worse than the worse on record.

9 So there were changes that occurred, but  
10 we didn't do a detailed simulation of a repeat of that  
11 event.

12 MR. BOB PETERS: Are you telling the  
13 Board the term sheets with Minnesota and Wisconsin  
14 changed?

15 MR. JUDAH ROSE: Relative to the  
16 contracts that were existing at the time in 2003 in -- in  
17 terms of the im -- explicit -- not having to deliver in a  
18 worse drought than worse on record. So, there were  
19 changes that had occurred in the com -- in the company's  
20 approach to contracting over time subsequent to the 2003  
21 drought. I think that's related to what you asked.

22 MR. BOB PETERS: Not exactly, but I -- I'm  
23 wondering: Are you telling the Board that the term sheet  
24 with Minnesota Power, you've seen more than one (1)  
25 version of it?

1                   MR. JUDAH ROSE:    That was -- for sure  
2 wasn't what I in -- meant to say.  I think, in fact, we  
3 did -- I told you that we saw some amendments earlier.

4                   MR. BOB PETERS:    All right.  And let me -  
5 - let me rephrase my question.  Sorry, sir.

6                   When you looked at the Minnesota Power  
7 December 2007 term sheet, did it change with respect to  
8 the worse drought on record when you saw the amendment of  
9 April 2009?

10                   Just check with your counsel before you  
11 answer that because I'm not asking you to put any  
12 confidential information on the record.

13

14                                       (BRIEF PAUSE)

15

16                   MR. JUDAH ROSE:    Again, I -- I don't  
17 recall any change between the -- in this -- in that  
18 regard with --between December 2007 and 2000 -- and April  
19 2009.

20                   My point was simply that relative to 2003,  
21 the contracts that were in place then are different than  
22 the ones now with respect to MP and WPS --

23                   MR. BOB PETERS:    All right.  The term --  
24 term sheets didn't change, they were just different from  
25 what the prior contract was in terms of the terms and

1 conditions.

2 MR. JUDAH ROSE: Related to what would  
3 happen in a drought worse than the worse on record.

4 MR. BOB PETERS: All right. Has ICF  
5 studied the correlation between Manitoba Hydro's drought  
6 periods and corresponding high import prices?

7 MR. JUDAH ROSE: Yes, we have.

8 MR. BOB PETERS: And is it -- what --  
9 what correlation did you find?

10 MR. JUDAH ROSE: We didn't see any  
11 significant correlation, and -- and we also looked at it  
12 from the perspective of whether we would expect to see a  
13 correlation, and -- and generally we wouldn't expect to  
14 see a significant correlation.

15 MR. BOB PETERS: What years did you  
16 examine?

17

18 (BRIEF PAUSE)

19

20 THE CHAIRPERSON: Mr. Peters, how longer  
21 do you think you'll require this witness today? We're  
22 trying to determine whether we should take a short break  
23 and come back, because I understand the time pressures  
24 that are involved. Like, we could carry on further today  
25 if we had a short break if that's what you need.

1                   MR. BOB PETERS:    I would -- I believe I'd  
2 conclude my questions in a half an hour.

3                   THE CHAIRPERSON:    Okay. Well, let's take  
4 ten (10) minutes now then.

5                   MR. BOB PETERS:    Fair enough. Thank you,  
6 sir.

7

8 --- Upon recessing at 4:29 p.m.

9 --- Upon resuming at 4:41 p.m.

10

11                   THE CHAIRPERSON:    Okay, Mr. Peters.

12

13 CONTINUED BY MR. BOB PETERS:

14                   MR. BOB PETERS:    Mr. Rose, you took away  
15 a question I asked you about the years in which ICF  
16 studied to see if there was a correlation as between  
17 Manitoba Hydro's drought periods and corresponding high  
18 import prices. And --

19                   MR. JUDAH ROSE:    Yes.

20                   MR. BOB PETERS:    -- I didn't get an  
21 answer. At least I didn't -- I didn't note or recall  
22 that I got an answer from you, sir.

23                   MR. JUDAH ROSE:    Yeah, no, there's a --  
24 there's a question pending. What I recall is is that we  
25 took a look at the one (1) drought that coincided with

1 the historical record on prices, the '97 to 2010 period  
2 of time. And by just looking at sixty-six (66), which I  
3 was flipping to, you see that the 2003/2004 period of  
4 time was the only drought that overlapped with the price  
5 time series that we have of '97 through 2010. And then -  
6 - and I think what we observed is when you looked at 2000  
7 -- when you looked at 2003/2004, the prices are lower  
8 than the prices in other periods of time. They're a  
9 little bit higher than average, but I think it's re --  
10 more related to other market trends not related to the --  
11 it is our conclusion it wasn't related to the -- the  
12 hydro event.

13 MR. BOB PETERS: What page are you  
14 looking at for your conclusion on that, sir?

15 MR. JUDAH ROSE: Well, I'm -- you know,  
16 I'm just looking at page 99 of the PowerPoint where it  
17 shows the prices. I don't remember where the -- the --  
18 we discussed the analysis. I'd have to look elsewhere in  
19 the report.

20 But regardless, just looking at the time  
21 series, there are -- there are many years in which the  
22 prices are higher than they were in '03/'04, and some  
23 which were lower, and so there wasn't a pronounced  
24 correlation in the historical record between the drought  
25 and the market prices.

1                   If you'd like, I can try to find out where  
2 that is in the report.

3                   MR. BOB PETERS:    No, that's fine, sir.  
4 I'm -- I'm satisfied with that. Thank you.

5

6                                   (BRIEF PAUSE)

7

8                   MR. BOB PETERS:    In terms of quantifying  
9 the drought risk for Manitoba Hydro, it's ICF's  
10 recommendation that Hydro should be using multiple  
11 variables in coming to its conclusions?

12                   MR. JUDAH ROSE:    Our conclusion was not  
13 that; it was the following, which is -- is that it's  
14 reasonable to use the one (1) variable that they're  
15 using, or the one (1) measure they have, which is the  
16 five (5) year drought. I think we discussed that they  
17 picked an event that happened at that level or worse  
18 twice in -- in almost a hundred years, so that was around  
19 a 2 percent chance that it would be at that level or  
20 worse. And we felt that that was adequately stressful  
21 compared to other stress tests that organizations have.

22                                   However, in the event that you are already  
23 in a drought, it can be useful to look at multiple  
24 parameters moving simultaneously, such as prices, but it  
25 -- it's not the case that what they're doing before

1 you're in a drought is unreasonable; just the opposite.  
2 It -- it's reasonably stringent and stressful.

3 MR. BOB PETERS: But as for multiple  
4 variables, once Manitoba Hydro would be in a drought, the  
5 one you gave in terms of shortage pricing, that -- that  
6 wouldn't exist, would it?

7 MR. JUDAH ROSE: I -- I'm not sure what  
8 you're referring to in terms of shortage pricing.

9 MR. BOB PETERS: Just increased import  
10 costs to reflect Manitoba Hydro's dire condition.

11 MR. JUDAH ROSE: Right. Once they're --  
12 you're in a drought, I think it is useful to look at  
13 stress cases that involve the movement of additional  
14 parameters. One of them could be price, and -- and the  
15 company definitely needs to, and it has in the past once  
16 it's gone into a drought, looked at higher demand cases:  
17 the one (1) in ten (10) year demand case, and the  
18 possibility that the drought is a -- the beginning of a  
19 worse than the worst drought on record, or as bad as the  
20 worst drought as -- on record.

21 MR. BOB PETERS: ICF was of the view that  
22 Manitoba Hydro should have a written drought preparedness  
23 plan; am I correct on that?

24 MR. JUDAH ROSE: Yes. We felt that it  
25 would be useful.

1                   MR. BOB PETERS:    And ICF also determined  
2 that Manitoba Hydro's risk management infrastructure  
3 needs to be brought up to industry standards, correct?

4                   MR. JUDAH ROSE:    Yes, as a -- a -- we  
5 felt that there were improvements that were needed,  
6 certainly for -- for documentation and for the middle  
7 office, that it would be helpful to have improvements,  
8 and we observed that some of those improvements were in  
9 progress or being contemplated.

10                  MR. BOB PETERS:    Let's turn the Board  
11 back to February, March, April, May, June 2009, when ICF  
12 was conducting its research.

13                               What did ICF find in existence with  
14 respect to Manitoba Hydro's documentation?

15                  MR. JUDAH ROSE:    As we discussed, we --  
16 the engagement was a little bit later in the months, but  
17 that's just a -- a small difference. We were doing the  
18 work primarily in the -- sort of the May 2000 (sic) time  
19 period and thereafter.

20                               One of the things that we found was -- is  
21 that there were controls in place, and they're described  
22 in the -- in the chapter, but we felt that additional  
23 clarification and -- and documentation with respect to  
24 merchant transactions would be appropriate. That was an  
25 example of one (1) of the things that we thought would



1 have improved documentation that would be helpful.

2 MR. BOB PETERS: Is that the only one (1)  
3 that comes to mind?

4 MR. JUDAH ROSE: You know, I can -- if  
5 you -- no. I'm -- I'm looking at page 107, and it  
6 summarizes what we think the next steps should be for the  
7 -- the company. It's sort of Section 8.7.

8 MR. BOB PETERS: No, I -- I've read that  
9 paragraph, and I -- I went through and numbered the nine  
10 (9) points in it, but I was referring specifically to the  
11 documentation that ICF has determined needs to be brought  
12 up to industry standards. And you've told us about the  
13 drought preparation plan, or drought preparedness plan,  
14 and the clarification with respect to merchant  
15 transaction.

16 Was there any other documentation that you  
17 found on site that was not appropriate?

18 MR. JUDAH ROSE: If -- if -- the issue on  
19 the industry standards with respect to the drought  
20 management, you know, because of the unusual  
21 circumstances of the company, I -- I don't think that  
22 that's the term that we were referring -- we thought it  
23 would be helpful to write up the drought plan, not that  
24 the company isn't doing drought planning, but it would be  
25 helpful to -- to write it up.

1                   And, separately, we were also looking at  
2 the documentation related to transactions and -- and the  
3 power marketing function, and the one that stands out to  
4 me is the -- the documentation on merchant trading, which  
5 we felt should be updated. But, sitting here, nothing  
6 else jumps out at me. We did want to see improvements in  
7 the -- the mid-office activity.

8                   MR. BOB PETERS:     That would be under  
9 structures that you wanted to see the mid-office  
10 improvements? That was one of the deficiencies in the  
11 structures that you've worded?

12                  MR. JUDAH ROSE:     Yes, I -- I believe so.

13                  MR. BOB PETERS:     All right. Was there a  
14 middle office when ICF came on scene?

15                  MR. JUDAH ROSE:     Yes.

16                  MR. BOB PETERS:     And how many people were  
17 in the middle office?

18                  MR. JUDAH ROSE:     I believe it was just  
19 one (1) person, to my recollection.

20                  MR. BOB PETERS:     And do you know the  
21 qualifications of that individual?

22                  MR. JUDAH ROSE:     I -- I don't remember  
23 the qualifications sitting here.

24                  MR. BOB PETERS:     Do you know to whom that  
25 individual reported?

1 (BRIEF PAUSE)

2

3 MR. JUDAH ROSE: No, I don't remember to  
4 -- to whom that person reported.

5 MR. BOB PETERS: Do you -- do you recall  
6 the responsibilities the individual had back in 2009?

7 MR. JUDAH ROSE: No, what -- what I  
8 recall was that there needed to be more capability to  
9 assist in the oversight function.

10 MR. BOB PETERS: Do you recall what  
11 authority the individual had back in 2009?

12 MR. JUDAH ROSE: No, I -- I don't, not  
13 sitting here.

14 MR. BOB PETERS: When you tell the Board  
15 in the report that the procedures that Manitoba Hydro  
16 need to be brought up to industry standards, what  
17 procedures were you looking at when you went in in 2009  
18 and made that statement?

19 MR. JUDAH ROSE: I was referring to the -  
20 - the upgrades in the mid-office review of the -- of the  
21 transactions, is my recollection. And --

22 MR. BOB PETERS: Okay.

23 MR. JUDAH ROSE: -- participation in the  
24 general oversight function.

25 MR. BOB PETERS: Sorry, the middle

1 office's participation in general oversight?

2 MR. JUDAH ROSE: Right.

3 MR. BOB PETERS: And when you say that  
4 the systems needed to be brought up to industry standards  
5 back in 2009, what procedures were there when you were on  
6 site? I'm sorry, what -- let me rephrase the question.

7 When ICF determined that Manitoba Hydro's  
8 risk management infrastructure needed to be brought up to  
9 industry standards relative to systems, what was there in  
10 2009 in respect of this aspect of the review?

11 MR. JUDAH ROSE: It was related to risk  
12 measurement and -- and oversight.

13 MR. BOB PETERS: Can you be more specific  
14 as to what the -- what the concern was there?

15 MR. JUDAH ROSE: I think the concern was  
16 -- I can't be that much more specific. I think that --  
17 there -- there is an issue about -- with what the  
18 Corporation is doing, how much measurement you need to  
19 have of the risks. And to the extent that the Company is  
20 not involved in the merchant transactions, then the  
21 measurement systems, for example, the value-at-risk  
22 systems would -- requirements would be less, but that  
23 there still needs to be oversight to ensure that the --  
24 the controls and the require -- and the restrictions are  
25 in place.

1 (BRIEF PAUSE)

2

3 MR. BOB PETERS: Did ICF determine  
4 whether or not the middle office could run their own  
5 scenario analysis?

6 MR. JUDAH ROSE: I don't remember that  
7 being a -- a focal point. The general concern was is  
8 that there was -- there was a need for greater capability  
9 to participate in -- in oversight.

10 MR. BOB PETERS: And did ICF have any  
11 conclusions relative to the computer system access and  
12 functionality available to the middle office?

13 MR. JUDAH ROSE: That there needed to be  
14 improvements in that area commensurate with the -- the --  
15 the scope of activities of the Company, that it would  
16 benefit from improvements.

17 MR. BOB PETERS: Why would that be a  
18 benefit?

19 MR. JUDAH ROSE: It would allow the  
20 Company to have a -- a better sense of what the company's  
21 exposure is and how it could be managed, and that could  
22 be particularly helpful in a -- in a drought situation.

23 There were measures in place, but the --  
24 more formalization and greater accuracy in terms of the  
25 quantification would be beneficial and -- and a -- and

1 greater ability to have middle office oversight would be  
2 helpful.

3 MR. BOB PETERS: Did ICF see any work  
4 done by risk advisory on drought management?

5

6 (BRIEF PAUSE)

7

8 MR. JUDAH ROSE: Yes, we reviewed a  
9 report that they prepared related to the drought risk  
10 management during the '03/'04 period.

11 MR. BOB PETERS: There's multiple ICF  
12 reports on the record of this proceeding. I'm sorry,  
13 risk advisory reports. There's multiple risk advisory  
14 reports on the record of this proceeding.

15 Do you recall or have access to the date  
16 of the report that you reviewed, or is that a matter you  
17 could undertake to obtain and advise through counsel?

18 MR. JUDAH ROSE: I -- you know, I think  
19 we discussed earlier that there was a report entitled,  
20 "2002 to 2004 Drought Risk Management Review," Ja --

21 MR. BOB PETERS: And what -- what's the  
22 date, sir?

23 MR. JUDAH ROSE: January 18, 2005.

24 MR. BOB PETERS: Thank you.

25

1 (BRIEF PAUSE)

2

3 MR. BOB PETERS: When you told the Board  
4 earlier, Mr. Rose, that a ten dollar (\$10) carbon penalty  
5 per tonne would equate to approximately one (1) cent a  
6 kilowatt hour increase in cost on coal, those are the  
7 numbers you used, I believe; is that correct?

8 MR. JUDAH ROSE: Yes, sir.

9 MR. BOB PETERS: And a ten dollar (\$10)  
10 per tonne carbon penalty on -- in existence would  
11 translate to about a decimal four (.4) of .01 cent per  
12 kilowatt hour increase on natural gas generated  
13 electricity costs?

14 MR. JUDAH ROSE: Yes, with the  
15 specification that it be a very -- you know, the -- among  
16 the most advanced combined cycles. If it was a peaking  
17 unit or an older unit, it would have a higher emission  
18 rate but, generally, it would be below coal. The point -  
19 - point four (.4) was for a unit, I believe, that has a  
20 heat rate of around 7,000 BTU per kilowatt hour, which  
21 would be obtained from a highly efficient new combined  
22 cycle.

23 MR. BOB PETERS: Would there be a  
24 correlation, a one-to-one correlation, between those  
25 penalties or additional adders on the electric costs

1 generated by coal and gas?

2                   Would that premium translate one to one  
3 straight through to hydro energy?

4                   MR. JUDAH ROSE:    If we knew for certainty  
5 that that was going to be the outcome in the marketplace,  
6 I think it would -- it'd be something close to one to  
7 one.  I -- the -- the issue is -- is what's the  
8 probability of the event, and everyone is concerned about  
9 it.  I think people are implicitly or explicitly putting  
10 some carbon premium in their decisions.

11                   And so it's -- it's hard to say right now  
12 it's -- it's one to one.  But if we knew for certainty  
13 that was the case, then everything else being equal, it  
14 would be a premium directly for Hydro.

15                   MR. BOB PETERS:    And you also had  
16 mentioned when you were reviewing your direct evidence  
17 through Ms. Ramage that you had an opportunity to review  
18 a couple of reports, and I believe you named them by --  
19 by the author, two (2) doctors.  And all I can say is my  
20 cryptic notes show some paleoclimatic report perhaps  
21 dealing with sediment studies, and also a  
22 dendrochronology report.

23                   Do you remember saying words to those  
24 effect in your direct evidence?

25                   MR. JUDAH ROSE:    Yes, I --



1 MR. BOB PETERS: And what -- that was in  
2 relation to two (2) reports that you reviewed?

3 MR. JUDAH ROSE: Right. They're --  
4 they're documents of -- I do remember reviewing, I  
5 believe, articles. I don't know if -- what the exact  
6 right word is, but definitely reviewed materials. And as  
7 per an earlier undertaking, we're just trying to get the  
8 citations for that.

9 MR. BOB PETERS: All right. And in  
10 addition to the citations, could you provide then a copy  
11 of the -- those documents that you reviewed subject to  
12 any confidentiality concerns that Manitoba Hydro may  
13 raise?

14 MR. JUDAH ROSE: Right, and subject to  
15 any copyright issues, which I -- I don't know that there  
16 are any. In my recollection, they were like journal  
17 articles, but subject to that caveat.

18  
19 --- UNDERTAKING NO. 62: ICF to provide a copy of the  
20 documents reviewed by Mr.  
21 Rose, subject to any  
22 confidentiality concerns that  
23 Manitoba Hydro may raise  
24

25 MR. BOB PETERS: Mr. Chairman, I'd like

1 to thank Mr. Rose for putting up with my questions as --  
2 as he did. Those complete my questions, and I thank him  
3 for his answers.

4 THE CHAIRPERSON: Okay. Thank you, Mr.  
5 Peters. Thank you, Mr. Rose. Thank you, Ms. Ramage.  
6 And we'll see you all tomorrow morning at -- at 9:30.

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8 (WITNESS RETIRES)

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10 --- Upon adjourning at 5:00 p.m.

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13 Certified Correct,

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Cheryl Lavigne, Ms.

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