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<p>1 (10:30 a.m.)</p> <p>2 CHAIRMAN:</p> <p>3 Q. Good morning, everybody. Are there any</p> <p>4 preliminary matters to come from our august</p> <p>5 legal friends? No?</p> <p>6 GREENE, Q.C.:</p> <p>7 Q. No, Mr. Chair, there are some process issues</p> <p>8 we will address following the presentations,</p> <p>9 but none at this time.</p> <p>10 CHAIRMAN:</p> <p>11 Q. So, Mr. Swinimer, sir, the stage is yours.</p> <p>12 MR. SWINIMER:</p> <p>13 A. Thank you very much indeed, Mr. Chairman.</p> <p>14 Good morning to everyone. I am Jack Swinimer</p> <p>15 from Holyrood and I thank everyone very much</p> <p>16 for allowing me to make a presentation to you</p> <p>17 today. I have been a member of the Holyrood</p> <p>18 Environmental Care Committee since 2005 and I</p> <p>19 have been a member of the Committee Liaison</p> <p>20 Committee of the Holyrood Thermal Generating</p> <p>21 Station since 2007. I am not here to speak to</p> <p>22 you on behalf of either committee, but as an</p> <p>23 individual. My mentioning these committees is</p> <p>24 to establish my background.</p> <p>25 On moving to Holyrood some ten years ago,</p>	<p>1 interrupted a Florida holiday to fly home to</p> <p>2 be part of the panel. There were many</p> <p>3 testimonials of suffering and deaths. At this</p> <p>4 meeting, everyone left the meeting with the</p> <p>5 clear understanding that the Cantox report was</p> <p>6 a discredited report and could not be relied</p> <p>7 on. Residents wanted scrubbers and</p> <p>8 particulate removal of equipment installed at</p> <p>9 the Holyrood facility.</p> <p>10 A petition was circulated by the present</p> <p>11 Mayor of Holyrood as an individual in the</p> <p>12 communities of Holyrood, Seal Cove and</p> <p>13 vicinities. This petition with over 5,000</p> <p>14 signatures was then presented to the</p> <p>15 Legislature. The former mayor of Holyrood</p> <p>16 forwarded a letter to the Provincial Minister</p> <p>17 of Environment asking that scrubbers and</p> <p>18 particulate removal equipment be installed at</p> <p>19 the Holyrood facility. Additionally, he asked</p> <p>20 that other mayors on the Avalon join him in</p> <p>21 sending letters to the Minister. Other mayors</p> <p>22 did send letters, including the former mayor</p> <p>23 of St. John's.</p> <p>24 In 2007, an Earth Day demonstration set</p> <p>25 up by the Holyrood Environmental Care</p>
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<p>1 I quickly became aware of the harmful</p> <p>2 pollutants emitting from the smoke stacks at</p> <p>3 the thermal generating station. In 2003, I</p> <p>4 believe it was, the Holyrood Town Council held</p> <p>5 a meeting to allow residents to voice their</p> <p>6 concerns. Representatives of Hydro were there</p> <p>7 and we were informed there would be a risk</p> <p>8 assessment carried out and invited residents</p> <p>9 to attend a meeting with Cantox officials who</p> <p>10 would be conducting the assessment. I won't</p> <p>11 belabour the point, but this assessment</p> <p>12 carried out for Hydro and paid for by Hydro</p> <p>13 was completely discredited on presentation to</p> <p>14 Holyrood residents.</p> <p>15 I have since learned when Hydro/Nalcor</p> <p>16 went to the Public Utilities Board for a rate</p> <p>17 increase to burn cleaner fuel, some of the</p> <p>18 members of your Board may have said words to</p> <p>19 the effect "based on the Cantox report, why do</p> <p>20 you need cleaner fuel?"</p> <p>21 Anyway, what did we do next? A town hall</p> <p>22 meeting in Holyrood was convened with the</p> <p>23 Provincial Minister of Environment and</p> <p>24 officials of Hydro in attendance. This</p> <p>25 meeting was so important to me that I</p>	<p>1 Committee was held in front of the Hydro sign</p> <p>2 on Route 60. It was a well attended meeting</p> <p>3 and it is worth noting the leader of the NDP</p> <p>4 party stood shoulder to shoulder with us on</p> <p>5 that day.</p> <p>6 With the foregoing as background, as you</p> <p>7 can imagine, residents of Holyrood were</p> <p>8 delighted that the Provincial Government and</p> <p>9 Nalcor, in their 2007 Energy Report on page 38</p> <p>10 said, and I quote "in the long term, the</p> <p>11 current level of emissions from the Holyrood</p> <p>12 facility is unacceptable" and further on page</p> <p>13 39 said, and I quote, "in the event that the</p> <p>14 Lower Churchill Project does not proceed as</p> <p>15 anticipated, scrubbers and precipitators will</p> <p>16 be installed at the Holyrood facility."</p> <p>17 Let me back up a bit and tell you one of</p> <p>18 the major reasons the Holyrood Thermal</p> <p>19 Generating Station is so unacceptable. The</p> <p>20 stacks at Holyrood are continually pumping</p> <p>21 harmful metals in the air. Some 50 metals</p> <p>22 including antimony, arsenic, nickel and</p> <p>23 vanadium are disbursed at Holyrood. The</p> <p>24 particulate matter from these stacks can be</p> <p>25 broken down into two groups: coarse particles</p>

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<p>1 and smaller particles, those 2.5 microns and 2 smaller. The coarse particles will damage 3 your house, your car and those things, but are 4 likely to be largely filtered out before 5 invading your body. However, the fine 6 particles travel deep into your lungs causing 7 lung damage and premature death.</p> <p>8 If you go on the internet, you will find 9 numerous references to particulate matter. I 10 am providing just two pages -- two references 11 and I've attached those pages. Many more 12 references could have been provided but these 13 two should give you an understanding of what 14 is involved.</p> <p>15 There could be those listening to my 16 remarks who will say "yes, but these harmful 17 toxins can be found in other sources" and I 18 agree, but I go back to the Canadian Cancer 19 Association's statement to the effect, and I 20 will paraphrase, if we can prove something is 21 harmful and you are releasing this in the air, 22 we don't have to prove you cause any 23 particular health problem. We simply have to 24 hold to the fact that these emissions do cause 25 health problems and should be discontinued.</p>	<p>1 assets to service the loan. Borrowing to 2 finance the cost of scrubbers and particulate 3 removal equipment at Holyrood will only add to 4 the provincial debt without any corresponding 5 increase in revenue producing assets.</p> <p>6 I'll conclude with this and hopefully it 7 will come over right. In multi-player hockey 8 and baseball trades, it is held that the team 9 that obtains the best player is the team that 10 wins the trade. With respect to Muskrat 11 Falls, if you substitute most believable for 12 best player, then I think Ed Martin, the Ed 13 Martin and Wade Locke team is the winner.</p> <p>14 Thank you very much. And if you do have 15 any questions, I'd be pleased to answer them.</p> <p>16 CHAIRMAN: 17 Q. Mr. O'Reilly? 18 O'REILLY, Q.C.: 19 Q. No questions, Mr. Chairman. 20 CHAIRMAN: 21 Q. Mr. Johnson? 22 MR. JOHNSON: 23 Q. No questions, Mr. Swinimer. Thank you very 24 Much. 25 CHAIRMAN:</p>
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<p>1 My appearing before you today is to 2 ensure that you are not taken in by the 3 politicians, bloggers and talk show 4 participants who would have you believe that 5 the 600 million expenditure on scrubbers and 6 particulate removal equipment is in some way 7 an attempt by Nalcor to come up with another 8 way to justify the Muskrat Falls Project. 9 Hopefully I have convinced you that the 10 residents of Holyrood and all of Conception 11 Bay and indeed, all of the Avalon, have fought 12 long and hard to have the Provincial 13 Government undertake to correct a long 14 standing problem. It is extremely 15 disappointing that certain people make 16 statements without researching the facts.</p> <p>17 I support the Muskrat Falls development. 18 I won't try to give you reasons. There are 19 others better qualified to do that than me. 20 But I do have 33 years in banking, largely in 21 the commercial lending field, so I know the 22 difference between lending money to finance 23 deficits and lending money to finance revenue 24 producing assets. Borrowing to finance 25 Muskrat Falls will see revenue producing</p>	<p>1 Q. Madame? 2 GREENE, Q.C.: 3 Q. No questions, Mr. Chair. 4 CHAIRMAN: 5 Q. Any member of the panel? 6 VICE-CHAIR WHALEN: 7 Q. No, thank you. 8 CHAIRMAN: 9 Q. Thank you very much, sir. No questions. 10 MR. SWINIMER: 11 A. May I say I'm disappointed because I would 12 like to ramble on, but thank you very much. 13 CHAIRMAN: 14 Q. Well, I admire your candour and your sense of 15 humour, rare commodities these days. Thank 16 you very much. 17 MR. SWINIMER: 18 A. My pleasure. 19 CHAIRMAN: 20 Q. I think we got to adjourn for the next setup, 21 have we, Madame Greene? 22 GREENE, Q.C.: 23 Q. Yes, we do, Mr. Chair. The next presentation 24 is scheduled for 11. It's by video- 25 conferencing, so we can't start before 11 and</p>

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<p>1 we do need a few moments to set up. So we</p> <p>2 need to adjourn until 11.</p> <p>3 (BREAK - 10:45 a.m.)</p> <p>4 (RESUME - 11:07 a.m.)</p> <p>5 CHAIRMAN:</p> <p>6 Q. Okay. I guess we're back for the electronic</p> <p>7 part of our exercise this morning and I</p> <p>8 understand we've got Philip Raphals of the</p> <p>9 Grand River Keeper Labrador Incorporated. Is</p> <p>10 that correct, sir? Can he hear us?</p> <p>11 MR. RAPHALS:</p> <p>12 A. Hello there.</p> <p>13 CHAIRMAN:</p> <p>14 Q. Okay, sir. I don't think there's any</p> <p>15 preliminary matters, so you're able to start.</p> <p>16 MR. RAPHALS:</p> <p>17 A. Okay. Thank you very much. Can you hear me</p> <p>18 alright?</p> <p>19 CHAIRMAN:</p> <p>20 Q. Perfect.</p> <p>21 MR. RAPHALS:</p> <p>22 A. Good morning, Mr. Chair, members of the Panel,</p> <p>23 Mr. Johnson. My name is Philip Raphals. I'm</p> <p>24 Executive Director of the HELIOS Centre, which</p> <p>25 is a non-profit energy research group in</p>	<p>1 make to you about the MHI report and the</p> <p>2 reference question more generally, and in</p> <p>3 particular with respect to the issues of the</p> <p>4 application of CDM in the load forecast, some</p> <p>5 comments of fuel price forecasts and on the</p> <p>6 wind power assessment that was used in</p> <p>7 preparing options.</p> <p>8 I'm very well aware of your Terms of</p> <p>9 Reference and that they do not include the</p> <p>10 review of other options and I will address</p> <p>11 these issues only in the context of the</p> <p>12 analysis of the two options that are before</p> <p>13 you.</p> <p>14 I would like to produce several documents</p> <p>15 that I think you'll find useful. I e-mailed</p> <p>16 them earlier and I'll mention when, when</p> <p>17 appropriate. The first is my PowerPoint</p> <p>18 presentation, I believe you have and I suppose</p> <p>19 we should call it GRK-1, and my CV, I don't</p> <p>20 know if you have it yet, but I think you will</p> <p>21 shortly, GRK-2.</p> <p>22 I'd also like to mention that I did</p> <p>23 submit a number of information requests via</p> <p>24 the Consumer Advocate, none of which have yet</p> <p>25 been answered. For me, this is an unusual</p>
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<p>1 Montreal and I'm here on behalf of Grand River</p> <p>2 Keeper Labrador.</p> <p>3 Just a few words about my background.</p> <p>4 I've been working in the energy field for 20</p> <p>5 years. In the early '90s, I was deputy</p> <p>6 scientific coordinator of the Environmental</p> <p>7 Assessment of the Great Whale Project, a 3,000</p> <p>8 megawatt hydro project meant for Northern</p> <p>9 Quebec that was in the end never built. In</p> <p>10 1997, I was co-founder of the HELIOS Centre</p> <p>11 and since then have appeared as an expert</p> <p>12 witness before Quebec's Energy Board in many</p> <p>13 hearings concerning Hydro Quebec's rates,</p> <p>14 energy efficiency program, supply plans,</p> <p>15 transmission tariffs and other matters. I</p> <p>16 have also worked on a large number of energy</p> <p>17 issues for clients in Canada and the US and</p> <p>18 I'm also chair of the Renewables Advisory</p> <p>19 Committee for the Low Impact Hydro Power</p> <p>20 Institute in the US.</p> <p>21 I just sent my CV. I didn't think to</p> <p>22 send it earlier. I don't know if you've seen</p> <p>23 copies of it yet, but I think you will</p> <p>24 shortly.</p> <p>25 I have a number of comments I'd like to</p>	<p>1 situation. I testify often before regulatory</p> <p>2 proceedings and I am used to seeing the</p> <p>3 answers before taking positions and if you</p> <p>4 don't mind, I would like to reserve the right</p> <p>5 to modify or supplement my comments today if</p> <p>6 necessary once the responses become available.</p> <p>7 First of all, I'd like to comment on some</p> <p>8 of the earlier exchanges before you. I have</p> <p>9 read some of your transcripts. Unfortunately,</p> <p>10 I haven't had time to read all of them.</p> <p>11 In a follow up to his first question to</p> <p>12 the Nalcor panel, the Consumer Advocate asked,</p> <p>13 and this is from February 13th, page 89 and 90</p> <p>14 of the transcript, "how did you ensure that as</p> <p>15 between the two options you were comparing</p> <p>16 that you were dealing with the optimal</p> <p>17 scenario under each one?" I think this is</p> <p>18 really an essential question. And Mr.</p> <p>19 Humphries' reply was the following: "within</p> <p>20 each one, we had a number of scenarios and</p> <p>21 generation sources that fit into those that</p> <p>22 were fed into the input and the Strategist</p> <p>23 program, then did an optimization to ensure</p> <p>24 that within each of these alternatives that</p> <p>25 the least cost scenarios was developed for the</p>

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<p>1 Isolated Island, as well as the Interconnected 2 case." In other words, if I may paraphrase, 3 we know that each scenario is optimal because 4 it was produced by a computer program whose 5 goal is -- whose purpose is to produce optimal 6 scenarios, and we'll talk a little bit later 7 about the criteria under which that 8 optimization was performed. This seems to 9 suggest that really all we need to find an 10 optimal scenario is the right computer 11 software.</p> <p>12 To see what's wrong with this view, let's 13 imagine that the Emera agreement didn't exist 14 and the Lower Churchill Generation Project had 15 gone ahead as initially planned. In this 16 imaginary world, Gull Island and Muskrat Falls 17 have already been built. The interconnection 18 to Quebec has been reenforced. The open 19 access reservation on the Hydro Quebec 20 transmission system is in force and all the 21 energy from those two projects was presold to 22 buyers in New York City, making lots of money 23 for Nalcor and the government, and the island 24 of Newfoundland remains isolated. In that 25 world, the Isolated Island scenario is indeed</p>	<p>1 that they would succeed.</p> <p>2 So what might those solutions include? 3 Ways to control load growth for one thing. 4 Utilities all over the world confronted with 5 situations where the marginal cost of serving 6 new load are much greater than the average 7 cost of service existing load have been doing 8 this for years, often with great success. For 9 example, just to take one example, given the 10 importance of electric heating in 11 Newfoundland's load growth, I wouldn't be 12 surprised to see programs to promote the use 13 of heat pumps, which though they have a very 14 high capital cost are much more efficient than 15 resistant heaters and reduce overall electric 16 demand.</p> <p>17 Strategist and the other programs like it 18 are very powerful tools for exploring the 19 consequences of different actions and 20 strategies and inputs. I'm sure they would be 21 put to very good use in the ongoing effort to 22 find lower cost solutions to Newfoundland's 23 energy needs. But while it's one thing to 24 come up with these solutions over the years in 25 real time, it's quite another to come up with</p>
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<p>1 Newfoundland's resource plan. In that 2 imaginary world, as we approach the year 2017, 3 fuel prices are rising, according to the 4 reference scenario, and everything else is 5 unfolding just as set out in that Isolated 6 Island scenario and rates are going up with no 7 end in sight.</p> <p>8 So what would have happened over the next 9 10, 20 or 50 years? According to the Isolated 10 Island scenario, 25 megawatts of wind would 11 come online in 2014, Island Pond in 2015, the 12 Holyrood upgrade starting in 2015 and so on, 13 and rates would continue to go up as forecast. 14 And what would all of us be doing during those 15 years? Apparently, we would be going about 16 our business doing other things because the 17 optimal solution has already been defined back 18 in 2011. Obviously that's not the way things 19 would go.</p> <p>20 If that were the reality and the Isolated 21 Island was the only reality under discussion, 22 I think there are a great many very bright 23 people, many of whom are in this room, who'd 24 be working very hard to find better solutions 25 to improve that scenario and I have no doubt</p>	<p>1 them all at once in advance in a plan. But 2 utilities have been doing this for many years 3 too in processes called least cost planning or 4 integrated resource plan. These processes 5 also start with a load forecast, a set of 6 resource options and their costs and an 7 optimization program. But if all we needed 8 was the program, these processes wouldn't 9 exist.</p> <p>10 I think it's clear that Strategist is 11 just the beginning. Then it takes a lot of 12 hard work to find ways to improve the plan to 13 make it better and more robust to deal with 14 the many changes in inputs that will occur 15 over the years. And this indeed is, I think, 16 one of the most important differences between 17 the Interconnected scenario and the Isolated 18 Island scenario. The former has had thousands 19 of man hours of effort put into it to perfect, 20 optimize, reduce uncertainty as we've heard. 21 The Isolated Island scenario remains a draft. 22 And there's another important difference. If 23 the Muskrat projects go ahead, we have a very 24 good idea today what the island power system 25 will look like in 50 years, but if it doesn't,</p>

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<p>1 we really don't because chances are the future</p> <p>2 will not unfold precisely as set out in that</p> <p>3 scenario.</p> <p>4 It's important to emphasize that these</p> <p>5 scenarios are optimized for a given set of</p> <p>6 assumptions. MHI made this point very clearly</p> <p>7 in the closing paragraph of its executive</p> <p>8 summary, which I'd like to quote. It said</p> <p>9 "with projects of this magnitude and</p> <p>10 considering the length of the analysis period,</p> <p>11 there are risks and uncertainties associated</p> <p>12 with the key inputs and assumptions. Changes</p> <p>13 in these key inputs and assumptions will</p> <p>14 affect the financial results and must be</p> <p>15 assessed to determine materiality. These</p> <p>16 changes in key inputs and assumptions can</p> <p>17 impact the results of the analysis and shift</p> <p>18 preference for what is the least cost option."</p> <p>19 In other words, I think what they're</p> <p>20 saying is we don't really know which option is</p> <p>21 least cost because we don't know which inputs</p> <p>22 are going to turn out to be the right ones.</p> <p>23 The problem is that all of our assumptions and</p> <p>24 hypotheses will, in the end, most likely be</p> <p>25 contradicted by reality or at least refined by</p>	<p>1 greater or lower than the reference forecast,</p> <p>2 the need dates for resources will have to be</p> <p>3 adjusted. If the economic analysis underlying</p> <p>4 the wind power limitation is modified, just to</p> <p>5 take another example, or if new integration</p> <p>6 techniques were to become available, resource</p> <p>7 choices might change.</p> <p>8 Given all this, I can't help think that</p> <p>9 had the government asked you to compare the</p> <p>10 Interconnected scenario to Isolated Island</p> <p>11 scenarios, plural, rather than comparing it to</p> <p>12 the Isolated Island scenario, singular, the</p> <p>13 substantial resources devoted to this exercise</p> <p>14 would have been better spent. But I</p> <p>15 understand that is not your mandate.</p> <p>16 That said, I find that MHI has done an</p> <p>17 excellent job of pointing out the limitations</p> <p>18 of this scenario, limitations which would</p> <p>19 indeed be overcome if it were used in the</p> <p>20 first step in an in-depth planning process.</p> <p>21 However, I find that MHI has also missed a</p> <p>22 couple of points which I will focus on in the</p> <p>23 time I have left.</p> <p>24 One of the key issues for the Muskrat</p> <p>25 Falls Project is the pricing policy. This is</p>
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<p>1 reality as it evolves. As MHI also wrote,</p> <p>2 this is from Volume 2, page 205, fuel price</p> <p>3 forecasts have a very short shelf life.</p> <p>4 (11:15 a.m.)</p> <p>5 So the real challenge is to find a plan</p> <p>6 that is optimal, not just based on current</p> <p>7 assumptions, but that is robust over a broad</p> <p>8 range of possible futures. The challenge is</p> <p>9 to try to understand the implications of the</p> <p>10 possible twists and turns of fate and to try</p> <p>11 to avoid taking irrevocable actions that would</p> <p>12 turn out badly if reality turns out to be</p> <p>13 different from the one we thought of in our</p> <p>14 planning assumptions. Preparing such a long</p> <p>15 term strategy is an iterative process in which</p> <p>16 programs like Strategist play a very important</p> <p>17 role, but the program's output represents the</p> <p>18 beginning of the planning process, not the</p> <p>19 end.</p> <p>20 To take one example, the Northwest Power</p> <p>21 Plan produced by the Northwest Power Planning</p> <p>22 Council took years to produce and is 300 pages</p> <p>23 long with appendices -- plus appendices.</p> <p>24 Clearly, the Isolated Island scenario is</p> <p>25 a scenario, not a plan. If load growth is</p>	<p>1 addressed in Exhibit 36 from Nalcor and in</p> <p>2 PUB-Nalcor 46 and other documents. On</p> <p>3 February 15th, this issue came up when the</p> <p>4 Consumer Advocate asked "does the 2035</p> <p>5 ratepayer have to pay more so the 2017</p> <p>6 ratepayer can pay less?" That's from page 18</p> <p>7 of the transcript. In response, Mr. Goudie</p> <p>8 correctly pointed out that under a</p> <p>9 conventional cost of service arrangement, the</p> <p>10 unit cost would be highest in the initial</p> <p>11 years and lowest in later years so that people</p> <p>12 50 years from now would pay very little, page</p> <p>13 19. Then Mr. Bennett pointed out that under</p> <p>14 the proposed PPA, people 50 years from now</p> <p>15 would pay the same price in inflation adjusted</p> <p>16 terms as in 2017. That's on page 20. And</p> <p>17 Nalcor then explained that the different cost</p> <p>18 recovery pattern set out in CAKPL 27, revision</p> <p>19 1, are all equivalent. And I'm going to try</p> <p>20 to show you those curves.</p> <p>21 You can see the chart on the screen? So</p> <p>22 this is from the document I mentioned, CAKPL</p> <p>23 27, revision 1.</p> <p>24 MR. JOHNSON:</p> <p>25 Q. He's froze.</p>

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<p>1 GREENE, Q.C.:</p> <p>2 Q. Excuse me, the screen has frozen here in St.</p> <p>3 John's. We're just going to check now with</p> <p>4 our technical people.</p> <p>5 MR. RAPHALS:</p> <p>6 A. So you don't see the graph I've put up?</p> <p>7 GREENE, Q.C.:</p> <p>8 Q. No, we do not see the graph and as well -</p> <p>9 CHAIRMAN:</p> <p>10 Q. You're seized up.</p> <p>11 GREENE, Q.C.:</p> <p>12 Q. Yeah, you're frozen.</p> <p>13 MR. RAPHALS:</p> <p>14 A. Okay. I guess that's not going to work then.</p> <p>15 I thought that it would. Okay.</p> <p>16 GREENE, Q.C.:</p> <p>17 Q. If you just give us a moment though until --</p> <p>18 there we are. We're back on now.</p> <p>19 MR. RAPHALS:</p> <p>20 A. Okay. That's good. Take it away. Let me try</p> <p>21 it once more and see if we can make it work.</p> <p>22 Okay. You don't see the -- do you see the</p> <p>23 graph?</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. No, we do not.</p>	<p>1 of page five, the nominal levelized union</p> <p>2 energy cost where nominal payments remain the</p> <p>3 same from beginning to end. Thus, I might</p> <p>4 make the same monthly payment of \$1,000 a</p> <p>5 month for 25 years until the principal and</p> <p>6 interest of my mortgage are paid off. In</p> <p>7 reality, there's inflation during those 25</p> <p>8 years which means that the real value of those</p> <p>9 constant dollar payments decreases. So even</p> <p>10 though I pay a flat \$1,000 a month, it'll hurt</p> <p>11 less in 25 years because the money will be</p> <p>12 worth less and hopefully my income will be</p> <p>13 greater.</p> <p>14 Now what about the escalating payment</p> <p>15 plan? Since the present value is the same,</p> <p>16 the bank could offer me the option of paying</p> <p>17 the same real dollar amount per year which</p> <p>18 would translate into nominal dollar payments</p> <p>19 that increase two percent a year with</p> <p>20 inflation. It would look a lot like the lower</p> <p>21 graph on page five. It would start, of</p> <p>22 course, at less than \$1,000 a month and would</p> <p>23 increase with inflation and end up much more</p> <p>24 than \$1,000 a month. And given the choice</p> <p>25 between these two plans, how many consumers</p>
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<p>1 MR. RAPHALS:</p> <p>2 A. Okay. So I'll get rid of that. So, I'm going</p> <p>3 to refer you for a few moments to this</p> <p>4 document, CAKPL 27, revision 1, which has</p> <p>5 three graphs showing different cost recovery</p> <p>6 patterns. And so, as I was saying, back on</p> <p>7 the 15th Nalcor was explaining that these</p> <p>8 different patterns are all equivalent, which</p> <p>9 is of course quite true, but it's really not</p> <p>10 the whole story.</p> <p>11 From an economic perspective, the three</p> <p>12 lines shown on pages four and five of this</p> <p>13 document are all equivalent. These three</p> <p>14 curves are, first of all, nominal annual cost,</p> <p>15 then nominal LUEC and what's referred to as</p> <p>16 escalating real LUEC. They all have the same</p> <p>17 present value and are thus interchangeable,</p> <p>18 from Nalcor's point of view, but that doesn't</p> <p>19 mean that they're equivalent from the</p> <p>20 consumers point of view.</p> <p>21 To think this through, I suggest we use</p> <p>22 the image of a mortgage, with which we're all</p> <p>23 familiar. It's not an exact analogy, but it's</p> <p>24 close enough. The typical mortgage with a</p> <p>25 payment plan is similar to the one at the top</p>	<p>1 would choose the second one? Not many, I</p> <p>2 think. The idea of constantly increasing</p> <p>3 mortgage payments, even if they're</p> <p>4 theoretically the same in constant dollars,</p> <p>5 would scare most of us off.</p> <p>6 The question that was asked on the 15th</p> <p>7 was "does the 2035 ratepayer have to pay more</p> <p>8 so that the 2017 ratepayer can pay less?" and</p> <p>9 I think the answer is that yes, he does.</p> <p>10 Future ratepayers will indeed pay much more</p> <p>11 for Muskrat Falls power under the escalating</p> <p>12 payment plan than they would with levelized</p> <p>13 payments.</p> <p>14 Now this all assumes that Muskrat Falls</p> <p>15 is owned by a non-regulated party, Nalcor,</p> <p>16 with the power sale governed by a PPA. If it</p> <p>17 were a regulated rate base asset, the</p> <p>18 situation would be very different. In Exhibit</p> <p>19 36, Nalcor explained why it chose a PPA over</p> <p>20 cost of service, but frankly, I don't find the</p> <p>21 explanation very convincing. Traditionally,</p> <p>22 Hydro project have been developed as rate base</p> <p>23 projects under cost of service principles,</p> <p>24 which implies higher costs in the first years</p> <p>25 that decrease dramatically over time. That's</p>

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<p>1 why the cost of Bay D'Espoir are so low now.</p> <p>2 If it had been built under a PPA instead of</p> <p>3 cost of service, it would cost Newfoundlanders</p> <p>4 far more today.</p> <p>5 In the exchange quoted earlier, Mr.</p> <p>6 Bennett also said, page 21 of the transcript,</p> <p>7 "and maybe, building on that point, the</p> <p>8 customers in 2068 who have an asset whose</p> <p>9 costs are fully recovered will have a similar</p> <p>10 situation as we've seen with Bay D'Espoir" and</p> <p>11 according to the transcript, the Chair then</p> <p>12 said "I can't wait." I believe you were</p> <p>13 referring to the expectation that eventually</p> <p>14 the cost of Muskrat Falls would be as low as</p> <p>15 those of Bay D'Espoir. I'm afraid though that</p> <p>16 you will be disappointed. Under the proposed</p> <p>17 regulatory framework, Muskrat Falls may never</p> <p>18 be a low cost resource. Let me explain.</p> <p>19 The tables provided at the end of CAKPL</p> <p>20 Nalcor 27, revision 1, allow us to better</p> <p>21 understand the proposed pricing formula, which</p> <p>22 is meant to cover both the PPA of Muskrat</p> <p>23 Falls and the actual costs of the Labrador-</p> <p>24 Island link under cost of service pricing.</p> <p>25 I've prepared a new version of this table</p>	<p>1 Falls and transmission link components using</p> <p>2 the same methodology described in Nalcor's</p> <p>3 note two, which results in a levelized nominal</p> <p>4 LUEC for Muskrat Falls of 126 dollars and that</p> <p>5 for the transmission link of 83 dollars.</p> <p>6 In column seven, I have changed the</p> <p>7 title, but not the numbers. While Nalcor</p> <p>8 refers to this as an escalating real LUEC, I</p> <p>9 find this a confusing notion, since the</p> <p>10 figures are actually in nominal dollars, not</p> <p>11 real ones. I think it's clearer to refer to</p> <p>12 it as a real LUEC expressed in nominal</p> <p>13 dollars. In other words, we've converted the</p> <p>14 nominal LUEC to real dollars, then</p> <p>15 retranslated it back into nominal dollars at a</p> <p>16 price that escalates with inflation. These</p> <p>17 are the actual prices in current dollars that</p> <p>18 will be charged to consumers for Muskrat power</p> <p>19 delivered to the island which starts at 152</p> <p>20 dollars a megawatt hour in 2017 and increases</p> <p>21 to 409 dollars in 2067, all in column seven.</p> <p>22 In column 7a, I've indicated the total</p> <p>23 annual payments, Muskrat Falls plus the</p> <p>24 transmission link, in current dollars and in</p> <p>25 column 7b, I subtracted from that the current</p>
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<p>1 which adds a few columns that separates out</p> <p>2 these two elements, which I've sent to you and</p> <p>3 I hope you have in front of you, and let's</p> <p>4 call it GRK-3.</p> <p>5 Now Nalcor's column five shows the</p> <p>6 nominal annual cost in dollars per megawatt</p> <p>7 hour of the whole project. This cost remains</p> <p>8 relatively constant, varying from 190 dollars</p> <p>9 to 260 dollars a megawatt hour over the life</p> <p>10 of the project. My new columns, in yellow, 5A</p> <p>11 and 5B, break down this nominal annual cost</p> <p>12 between the components, the Muskrat Falls and</p> <p>13 the transmission link components, by dividing</p> <p>14 the incremental costs of each, columns two and</p> <p>15 three, by the total energy in column one. We</p> <p>16 see that while the nominal annual cost of the</p> <p>17 transmission link falls from 147 dollars a</p> <p>18 megawatt hour at the beginning to 13 dollars</p> <p>19 at the end, the annual cost of Muskrat Falls</p> <p>20 increases from 92 dollars at the beginning to</p> <p>21 247 dollars at the end. These combined costs</p> <p>22 are then levelized on a nominal basis in</p> <p>23 column six, resulting in a fixed nominal</p> <p>24 dollar cost of 208 dollars a megawatt hour.</p> <p>25 Again, I've broken this down into Muskrat</p>	<p>1 dollar payments under the Muskrat Falls PPA --</p> <p>2 sorry, I've subtracted from that the</p> <p>3 transmission link payments from column three</p> <p>4 to produce the current dollar payments under</p> <p>5 the PPA, and then in column 7c, I've</p> <p>6 calculated the current dollar cost of Muskrat</p> <p>7 Falls power by dividing by the energy amount</p> <p>8 in column one. Column c, 7c, therefore shows</p> <p>9 the actual price paid to Nalcor for Muskrat</p> <p>10 Falls power, which starts at five dollars a</p> <p>11 megawatt hour in 2017 and rises to 396 dollars</p> <p>12 in 2067. This result, which is much more</p> <p>13 extreme than the blended results, results from</p> <p>14 mixing the PPA and COS cost and from the fact</p> <p>15 that customers have to pay the full cost of</p> <p>16 the transmission link. In either case though,</p> <p>17 the important point is that the price to be</p> <p>18 paid for Muskrat Falls power under the PPA in</p> <p>19 2067 comes in around 400 dollars a megawatt</p> <p>20 hour or 40 cents a kilowatt hour.</p> <p>21 Now if I'm not mistaken, the cost of</p> <p>22 Muskrat Falls power under a cost of service</p> <p>23 regime have not yet been produced in this</p> <p>24 file, but this information allows us to</p> <p>25 estimate them as well. Making the simplifying</p>

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<p>1 assumption that the capital structure and 2 depreciation of the two prices are the same, 3 we can simply inflate the transmission link 4 payments in column three to correspond to the 5 Muskrat Falls CPW. The result, which is shown 6 in column 8a, shows the annual current dollar 7 payments that would be required to cover 8 Muskrat Falls under a cost of service regime 9 identical to the one applied to the 10 transmission link. These costs start at 407 11 million dollars in 2017 and fall to 90 million 12 dollars by 2067. Column 8b then shows this 13 amount divided by the total energy each year 14 which gives the unit cost in dollars per 15 megawatt hour for Muskrat Falls under a cost 16 of service regime. That would start at 225 17 dollars a megawatt hour in 2017 and fall to 20 18 dollars a megawatt hour by 2067. Of course, 19 if consumers were credited with revenues of 20 third party sales, which would be normal in a 21 cost of service approach, the earlier cost 22 would be lower.</p> <p>23 What this little exercise reveals, and I 24 apologize for all the numbers, is the real 25 difference between cost of service and PPA</p>	<p>1 PPA proposed here. But in the case of Muskrat 2 Falls, it's Newfoundland consumers who will be 3 paying the escalating prices. In my view, 4 cost of service pricing would be far better 5 from their point of view in the long term.</p> <p>6 I'd now like to turn to the question of 7 conservation and demand management as 8 integrated into the load forecast.</p> <p>9 In Volume 1, page 31, of MHI's report, it 10 explains in its generic description of the 11 generation planning process that demand side 12 management is treated as if it were generation 13 as it represents a reduction from the baseload 14 forecast. The economics of DSM programs 15 should be evaluated to ensure they make a 16 positive contribution to the overall financial 17 well being of the province. That's from page 18 31 of Volume 1 of the report.</p> <p>19 But the approach used by NLH is very 20 different. Section 1.8 of Volume 2 begins, 21 and I quote, "it should be noted that the 22 domestic forecast does not include any 23 specific exogenous adjustment for specific CDM 24 programs. The NLH method of capturing and 25 estimating CDM effects is through the</p>
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<p>1 pricing. With a PPA, Muskrat Falls prices are 2 somewhat lower at first, but 20 times higher 3 by 2067. So Mr. Bennett was quite right. If 4 Muskrat Falls were subject to cost of service 5 regulation, in 50 years it would be almost as 6 cheap as Bay D'Espoir. But the real question 7 is what happens after 2067. Under cost of 8 service, the price would continue to decline 9 from 20 dollars a megawatt hour down. Under 10 the PPA scenario though, consumers would be 11 paying 400 dollars a megawatt hour for Muskrat 12 Falls power in 2067. How much will it cost in 13 2068? We don't know. That'll be up to the 14 government of the day. But frankly, I'd be 15 surprised if the price was suddenly cut to 20 16 dollars because it's all been paid off. Far 17 more likely it would continue at the levels 18 charged earlier, which would of course produce 19 a windfall profit for Nalcor and its 20 shareholders paid from the pockets of 21 Newfoundland consumers.</p> <p>22 At Churchill Falls, Hydro Quebec enjoys 23 pricing very similar to cost of service 24 pricing and Newfoundland and Labrador 25 certainly wish the pricing were more like the</p>	<p>1 technological change variable contained in the 2 regression equations." MHI then points out 3 this variable has a coefficient of minus 35.37 4 meaning that the average domestic use is 5 forecast to decline by 35.37 kilowatt hours 6 per year for the next 20 years.</p> <p>7 I think there are important problems with 8 this approach. First, it assumes, for no good 9 reason, that CDM progress is linear, gradual 10 and inexorable. More important, it assumes 11 that it does not depend on utility actions. 12 In Table 17, page 34 of Volume 2, MHI compares 13 Nalcor with three other Canadian utilities, 14 but unfortunately, the comparison does not 15 include the methodology for capturing and 16 estimating CDM effects. If it did, I think 17 you would find that the other utilities do not 18 follow this approach.</p> <p>19 MHI criticized Nalcor for preparing its 20 domestic forecast using only econometric 21 modelling techniques which it explains are not 22 the best utility practices in this area, 23 Volume 2, pages 20 and 39. It points out that 24 domestic load forecast is primarily driven by 25 electric space heat and emphasizes the</p>

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<p>1 developing and end use forecasting model would 2 have many benefits, including improving the 3 design of CDM programs. I find it remarkable 4 how little attention is paid in the MHI report 5 to CDM programs as such. It's clear the 6 planning methodology described by MHI is not 7 applied by Nalcor and by failing to treat CDM 8 as a resource, it's impossible to assess the 9 optimal level of investment. I suggest that 10 the forecasting methodology identified by MHI 11 using end use forecasting may be one of the 12 main reasons for the weakness of NLH's CDM 13 programs to date. MHI clearly indicated that 14 the amount of variability due to potential 15 load changes is high and could materially 16 impact the results of the CPW analysis. Given 17 the clear relationship identified by MHI 18 between future loads and the CPW differential 19 between the new scenarios of the reference 20 question, this issue goes to the heart of the 21 Board's reflections. 22 (11:30 a.m.) 23 I previously had the opportunity to look 24 in some detail at the results of NLH's and 25 Newfoundland Power's CDM programs to date.</p>	<p>1 scenario. 2 How plausible is this as a scenario? How 3 aggressive is an objective of reducing 4 Newfoundland's load growth by half? To help 5 us answer this question, I think it's 6 important to refer to the study of CDM 7 potential carried out by Marbek Resource 8 Consultants in 2008. I'm not sure if this 9 document is already in this file, but I know 10 you have a copy of it and if it's not, I will 11 ask you to record it in the file as GRK-4. It 12 was filed in response to PUB Order PU-8 in 13 2007 which required NLH to file it, as well as 14 a five-year plan for implementing CDM programs 15 in 2008. 16 The summary of the study findings, on 17 page nine, identifies the upper and lower 18 limits of achievable savings by the year 2026 19 at 951 and 556 gigawatt hours a year. This 20 table is also found on page 25 of Nalcor's 21 submission. According to the last page of 22 Exhibit 43, the 50 percent reduction scenario 23 would imply a reduction of 453 gigawatt hours 24 by 2026. In other words, the one plausible 25 CDM scenario explored by Nalcor is only 81</p>
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<p>1 This was last year. In the third year of 2 their five-year joint CDM plan, they had 3 accomplished less than half of the savings 4 forecast for that date and CDM's funding 5 through 2010 was also very much lower than 6 planned. Surprisingly, the MHI report is 7 silent about this. Why is this so important? 8 Because as MHI has indicated, the perceived 9 CPW difference between the infeed and the 10 isolated island scenarios is very sensitive to 11 load growth, which of course means load growth 12 net of CDM. 13 We saw in Exhibit 43, revision 1, several 14 load growth sensitivities. The first two of 15 them, I think, are not particularly plausible, 16 but the third one is important. The third 17 one, scenario C, suggests that cutting the 18 growth rate in half over the entire planning 19 period would reduce the CPW difference by 20 almost two-thirds, from two billion dollars to 21 763 million. This is a huge reduction. If 22 coupled with other plausible scenarios, such 23 as cost overruns or fuel price growth lower 24 than forecast, it could certainly result in 25 reversing the CPW advantage of the infeed</p>	<p>1 percent of the lower limit of achievable 2 savings for 2026 identified by NLH's 3 consultant in 2008. It can thus be thought of 4 as a model of a modest CDM program. 5 Furthermore, there's good reason to 6 believe that Marbek's estimates are 7 conservative in today's context for the simple 8 reason that they're based on 2008 avoided 9 costs of under ten cents a kilowatt hour. 10 That's on page four of the Marbek study. 11 Given the data currently before us concerning 12 the operating costs of Holyrood, the avoided 13 costs for an updated CDM study would be 14 obviously much higher, probably closer to 15 15 cents. The higher the avoided costs, the more 16 conservation measures are cost effective and 17 the greater incentive for consumers to 18 participate in them. Thus, it's virtually 19 certain that if Marbek were to update the 20 study today, the achievable potential figures 21 would increase. 22 I conclude from all this that MHI's study 23 failed to properly take into consideration the 24 impacts on load growth of a properly designed 25 and executed portfolio of CDM programs over</p>

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<p>1 the planning period. Had it done so, the CPW 2 advantage of the infeed scenario would be 3 greatly decreased, if not eliminated, even 4 before considering other sensitivities. 5 The fundamental problem here is that 6 Nalcor's generation planning methodology is 7 just that, a generation planning methodology. 8 Back in 2007, in PU-8, the Board very 9 properly, in my view, found that "an IRP, an 10 integrated resource plan, undertaken as part 11 of a generic process, as described in Order 12 PU-14 from 2004, is an important planning tool 13 and would enhance the information available to 14 the Board and other parties regarding future 15 generation and supply options of the 16 province," page 60. Earlier on the same page, 17 the Board quotes PU-14 from 2004 to say 18 "implementation of integrated resource 19 planning may present sound opportunities for 20 coordinated planning and improved regulation 21 involving both utilities. This process brings 22 together strategic planning, future supply and 23 demand, least cost analysis, demand side 24 management options and environmental 25 considerations."</p>	<p>1 also takes into account reductions of customer 2 costs resulting from reduced electricity use. 3 To expand a bit more on this, I'd refer 4 you to a recent study by the Regulatory 5 Assistance Project in the US which states, and 6 quote from page 73, "the goal of an IRP is to 7 identify the least cost resource mix for the 8 utility and its consumers. Least cost in this 9 case means lowest total cost over the planning 10 horizon given the risks faced. The best 11 resource mix is typically the one that remains 12 cost effective across a wide range of futures 13 and sensitivity cases, the most robust 14 alternative, and that also minimized the 15 adverse environmental consequences associated 16 with its execution." I have submitted to you 17 an excerpt from this study, as well as the 18 title page and table of contents, which I 19 would like to label GRK-5. 20 Once again, you must distinguish between 21 the generation scenario optimized on the basis 22 of cost only on the one hand and a robust plan 23 on the other. The isolated island scenario, I 24 think, is a clear example of the former. 25 Constitutes an important input in the</p>
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<p>1 Indeed, the generation planning 2 methodology used by Nalcor explicitly excludes 3 these last two elements, demand side 4 management options and environmental 5 considerations. On this last point, I'd refer 6 you to MHI Nalcor 41, revision 1, which states 7 "the chosen resource plans (generation 8 expansion plans) were selected on the 9 minimization of revenue requirement, Model S 10 the minimization of utility cost objective 11 function. As there was only one objective 12 function used, it's weighting was 100 percent. 13 There were no objectives tied together, only 14 one objection function was used." That states 15 clearly that the scenarios and particularly 16 the Isolated Island scenario were based on 17 cost minimization only, without taking into 18 account other aspects. 19 As I'm sure you're well aware, energy 20 efficiency programs are generally measured by 21 a number of tests, most important of which is 22 the total resource cost test, which measures 23 the total cost to a society of the measure, 24 not just the cost to the utility, thus unlike 25 a minimization of utility cost function, it</p>	<p>1 development of a plan but should not be 2 confused with a result. 3 I'd like to turn now briefly to the 4 question of fuel price forecasts. I simply 5 want to emphasize to you that fuel price 6 forecasts are highly uncertain and is 7 volatile, as I'm sure you already know. I 8 believe the PIRA high and low forecasts were 9 not made public, so to get an idea of the 10 extent of the spread between such forecasts, I 11 had to look to other sources. I've reproduced 12 -- I meant to put it on the screen, but that's 13 not working, but it's on my slides on page 14 six, I believe. The fuel price forecast from 15 the Northwest Power Planning Council 2009 16 power plan. By the way, I strongly recommend 17 the NPPC as a reference for integrated 18 resource planning methodologies. 19 As you can see, the high scenario shows 20 prices more than twice as great as the low 21 scenario, 120 dollars a barrel versus 45 22 dollars in 2030. As MHI wrote in their 23 report, these forecasts have a short shelf 24 life. While they're a necessary evil, it's 25 not a good idea to bet the farm that this</p>

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<p>1 year's fuel forecasts will come true.</p> <p>2 The next page of my slides, entitled EIA</p> <p>3 retrospective review, comes from a document</p> <p>4 put together by the Energy Information Agency</p> <p>5 in the US and its a summary and review of the</p> <p>6 accuracy of their own fuel price forecasts</p> <p>7 going back to 1982 and I've e-mailed the</p> <p>8 original document, one page that you see</p> <p>9 there, which we'll call GRK-6.</p> <p>10 To summarize the results, to read this</p> <p>11 all of the blue numbers are over forecasts and</p> <p>12 the green numbers are under forecast and the</p> <p>13 numbers refer to the percent of over or under</p> <p>14 forecast. Again, if you have the full page</p> <p>15 version, it'll be easier to read. But to</p> <p>16 summarize it, you'll see that in the top left</p> <p>17 corner, the top and left parts of the chart</p> <p>18 are all blue and that's because from 1982 all</p> <p>19 the way to 1985, 1982 to '85, the EIA's</p> <p>20 forecasts were dramatically too high, over 100</p> <p>21 percent. From '86 to 1995, they were still</p> <p>22 dramatically too high by 35 percent on</p> <p>23 average. But then, for the next ten years,</p> <p>24 from 1996 to 2005, they were uniformly and</p> <p>25 regularly too low, 32 percent on average.</p>	<p>1 fuel price forecasts.</p> <p>2 And now I'd like to move to my last</p> <p>3 subject which is the wind power assessment,</p> <p>4 the wind power component of the Isolated</p> <p>5 Island scenario. In Section 11.3 of Volume 2</p> <p>6 of its report, MHI explains that it relied on</p> <p>7 Nalcor's 2004 assessment of the limitations</p> <p>8 for non-dispatchable generation, which is</p> <p>9 Exhibit 61, which in turn recommends an upper</p> <p>10 limit of 80 megawatts for wind. I was</p> <p>11 surprised to see that MHI did no analysis or</p> <p>12 commentary on this study. It simply affirmed</p> <p>13 that the 80 megawatt limit is reasonable.</p> <p>14 In its submission on page 74, Nalcor</p> <p>15 explains that this study "established two</p> <p>16 limits regarding the possible level of wind</p> <p>17 generation integration on the Isolated Island</p> <p>18 system, an economic limit and a maximum</p> <p>19 technical limit." The economic limit is that</p> <p>20 over--above 80 megawatts, according to the</p> <p>21 2004 study, there would be a significant</p> <p>22 increase in the risk of spill from the hydro</p> <p>23 reservoirs. With an additional 20 megawatts</p> <p>24 of wind resulting in an increase in expected</p> <p>25 spill from 9 to 19 gigawatt hours a year, with</p>
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<p>1 What's particularly interesting about</p> <p>2 this is that the errors aren't random.</p> <p>3 They're systematic. We don't see a mix of</p> <p>4 green and blue in this chart.</p> <p>5 CHAIRMAN:</p> <p>6 Q. That's interesting.</p> <p>7 MR. RAPHALS:</p> <p>8 A. When they started over forecasting, they</p> <p>9 continued to do it for many years. Which</p> <p>10 means that the forecasters were not just a</p> <p>11 little bit off, they were systematically wrong</p> <p>12 in the same direction for years on end. For</p> <p>13 over a decade, they consistently over forecast</p> <p>14 oil prices and from 1995 until today, they've</p> <p>15 consistently under forecast them.</p> <p>16 Unfortunately, that's doesn't mean that</p> <p>17 today's forecasts are necessarily under</p> <p>18 forecasts. We may well be at the point where</p> <p>19 lows switches to high. It simply means that</p> <p>20 there is a very substantial chance that</p> <p>21 today's forecasts will be wrong and that they</p> <p>22 may be significantly wrong, and unfortunately,</p> <p>23 we really don't know in which direction. That</p> <p>24 needs to be kept in mind in evaluating</p> <p>25 scenarios where key components are based on</p>	<p>1 a cost of 1.3 million dollars, and the</p> <p>2 technical limit could result and could require</p> <p>3 the curtailment of wind down to 130 megawatts</p> <p>4 during periods of light load. To avoid</p> <p>5 incurring these costs, NLH recommended</p> <p>6 limiting installed wind power to 80 megawatts.</p> <p>7 Obviously, hydro spillage and wind curtailment</p> <p>8 are to be avoided as much as possible, but in</p> <p>9 an economic analysis, it's the bottom line</p> <p>10 that counts. So I think we need to look a</p> <p>11 little bit closer at this issue.</p> <p>12 First let's start with the cost of wind</p> <p>13 power. Nalcor's submission, somewhat</p> <p>14 surprisingly, relies on a pamphlet by the</p> <p>15 Pembina Institute in Albert NGO, to state the</p> <p>16 cost of onshore wind is 8 to 10 cents a</p> <p>17 kilowatt hour, pointing you the good wind</p> <p>18 sites on the island are at the lower end of</p> <p>19 this range. In fact, based on our studies and</p> <p>20 on data from the Canadian Wind Atlas, we</p> <p>21 estimated that wind costs on the island could</p> <p>22 be much lower, as low as \$66.00 a megawatt</p> <p>23 hour. That same dataset suggests that the</p> <p>24 capacity factor for island wind developments</p> <p>25 could be as high as 45 percent. In other</p>

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<p>1 words, what we knew already, Newfoundland's</p> <p>2 wind resource is dramatically better than the</p> <p>3 average Canadian resources on which that 8 to</p> <p>4 10 cent estimate is based.</p> <p>5 Put together, this means that an</p> <p>6 additional 20 megawatts of installed wind</p> <p>7 capacity would produce 79 gigawatt hours a</p> <p>8 year at a cost of 5.2 million dollars, and</p> <p>9 that's a leveled cost. Now let's accept</p> <p>10 Hydro's conclusion that doing this would</p> <p>11 indeed result in increasing spillage, and</p> <p>12 let's charge all the spillage to the wind</p> <p>13 project. So there'd be a cost of 1.3 million</p> <p>14 dollars additional, and let's charge that to</p> <p>15 the wind project too. The result is we have</p> <p>16 almost 80 gigawatt hours for a total of 6.5</p> <p>17 million dollars or about \$82.00 a megawatt</p> <p>18 hour, net the spillage. This is not to be</p> <p>19 sneezed at compared to the cost of either</p> <p>20 Muskrat Falls with transmission or Holyrood.</p> <p>21 Of course, it goes without saying, and I</p> <p>22 know this has been discussed in earlier</p> <p>23 sessions, that you can't run a power system on</p> <p>24 wind alone, back up power is essential.</p> <p>25 Whether it can consist of the existing</p>	<p>1 account the cost of curtailment and spillage,</p> <p>2 there's no reason to exclude it.</p> <p>3 Finally, it's important to mention that</p> <p>4 the 2004 study itself made very clear that it</p> <p>5 was a preliminary investigation. I quote, I</p> <p>6 think this is from page four of the study,</p> <p>7 "However, given the preliminary nature of this</p> <p>8 investigation, it would be prudent to further</p> <p>9 limit the initial quantities of wind</p> <p>10 generation into the system. Consideration</p> <p>11 should be given to a step-wise pattern of</p> <p>12 increased penetration levels over a number of</p> <p>13 years to gain direct operating experience with</p> <p>14 the technology and its integration into the</p> <p>15 island system. This would allow Hydro to</p> <p>16 further define the opportunities and</p> <p>17 constraints associated with the resource</p> <p>18 without subjecting customers to undue expense</p> <p>19 or power quality issues. As well, it would</p> <p>20 allow the industry to arrive at possible</p> <p>21 solutions, which along with the experience</p> <p>22 gained by Hydro, may permit penetration levels</p> <p>23 beyond those currently identified". Indeed</p> <p>24 the Government of Newfoundland and Labrador</p> <p>25 seems to continue to be interested in the</p>
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<p>1 Holyrood Plant, a re-fired Holyrood, or some</p> <p>2 other combination of resources, is not an</p> <p>3 issue here since we're limited to examining</p> <p>4 the isolated island scenario, but, of course,</p> <p>5 in a future planning process, I presume these</p> <p>6 questions will be explored in detail.</p> <p>7 As for the technical limit, the Nalcor</p> <p>8 submission states that for wind generation</p> <p>9 above 130 megawatts, it would not always be</p> <p>10 possible to maintain system stability during</p> <p>11 periods of light load, and during these</p> <p>12 periods wind generation would have to be</p> <p>13 curtailed, again reducing the economic benefit</p> <p>14 of additional wind generation. What this</p> <p>15 really means is the technical limit is an</p> <p>16 economic limit as well, and the curtailment is</p> <p>17 the solution. Obviously, wind generators</p> <p>18 don't like curtailment any more than hydro</p> <p>19 operators like spillage. Since the underlying</p> <p>20 energy is free, it hurts to throw it away, but</p> <p>21 sometimes system operations do require that.</p> <p>22 In areas with open wholesale markets, wind</p> <p>23 generators are now frequently required to</p> <p>24 curtail generation when so required. If new</p> <p>25 wind generation is economic, taking into</p>	<p>1 possibility of increasing wind penetration</p> <p>2 beyond the levels identified in the 2004</p> <p>3 study. A request for proposals was recently</p> <p>4 issued by the Department of Natural Resources</p> <p>5 concerning onshore wind in Phase 2 of its</p> <p>6 Energy Innovation Roadmap process. I would</p> <p>7 like to enter that document into the record as</p> <p>8 well as GRK 7.</p> <p>9 For onshore wind, one of the areas to be</p> <p>10 included in the roadmap is identified as grid</p> <p>11 inflexibility and integration. On page 8, the</p> <p>12 RFP states, "The ability of the grid to absorb</p> <p>13 higher penetrations of intermittent wind</p> <p>14 energy is a function of the flexibility of</p> <p>15 other generation supply, interconnection,</p> <p>16 customer loads, and the availability of</p> <p>17 electricity storage facilities. This is</p> <p>18 particularly challenging for Newfoundland and</p> <p>19 Labrador, given the absence of these features</p> <p>20 at the present time". One of the work</p> <p>21 products requested in this RFP is, page 9, "To</p> <p>22 assess the flexibility of existing generation</p> <p>23 capacity in Newfoundland and Labrador,</p> <p>24 particularly with respect to the integration</p> <p>25 of a significant amount of variable</p>

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<p>1 generation, e.g. wind power". The consultant 2 is also asked to, "recommend options and 3 technologies that could improve the 4 flexibility of the existing generating 5 facilities, to recommend options which could 6 lead to the development of new concepts for 7 the techno-economic integration of high wind 8 penetration systems featuring hydro and 9 possibly gas and storage facilities, and to 10 recommend options for the development of power 11 management strategies and system designs that 12 are tolerant of high proportions of wind 13 generated power and the consequence 14 fluctuations in energy supply, by providing 15 mechanisms such as storage loads of wide area 16 balancing that provide grid stability despite 17 unpredictable supply characteristics".</p> <p>18 Read together, the 2004 study and the 19 2012 RFP make it very clear that the 80 20 megawatt limit is not only preliminary, but 21 that significant effort is underway as we 22 speak to overcome it. While it may be prudent 23 today to limit wind penetration to 80 24 megawatts, it is, I think, not at all 25 reasonable to assume that this limit will</p>	<p>1 commenters, you have ample reason to suggest 2 that given the many assumptions underlying the 3 isolated island scenario, in particular, and 4 the great uncertainties surrounding these 5 parameters, that that scenario is unlikely to 6 be realized precisely as defined in the Terms 7 of Reference. In other words, in the event 8 that the Muskrat Falls Project does not go 9 ahead, there's no reason to believe that this 10 particular scenario will ever be put into 11 place.</p> <p>12 If the Muskrat Falls Projects do not go 13 forward, your planning processes will continue 14 to evolve and will undoubtedly lead to 15 solutions very different from the ones set out 16 in the Terms of Reference. To me, that makes 17 the reference question largely academic. Even 18 if you were to find in the 2 billion dollar 19 CPW difference between the two scenarios is 20 accurate, that finding is of little 21 significance in relation to the underlying 22 question of whether or not the Muskrat Falls 23 Projects are in the public interest for the 24 people of Newfoundland and Labrador. 25 That concludes my comments. If you have</p>
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<p>1 remain in place for the next decade, much less 2 for the next 50 years. Thus, it is incorrect 3 to conclude that the isolated island scenario 4 includes the economically optimal level of on 5 island wind generation.</p> <p>6 To conclude, normally I would conclude a 7 presentation like this by suggesting a 8 decision that I would make if I were in the 9 regulator's shoes. In this case, this is 10 particularly difficult because of the nature 11 of the reference question. You've been asked 12 whether or not the Muskrat Falls project 13 represents the least cost option compared to 14 the isolated island option, as defined in your 15 Terms of Reference. On one level, that 16 involves verifying that the costs attributed 17 to each option are correct and that it appears 18 that your consultants have done excellent work 19 in this regard. On a deeper level, though, it 20 also involves verifying that these scenarios 21 make sense, though not going so far as to 22 suggest that they might be changed. This is a 23 delicate line to walk and I don't envy you the 24 task. That said, I think that between MHI's 25 comments and mine, and those of other</p>	<p>1 questions, I'll be delighted to respond. 2 Thank you very much for your attention.</p> <p>3 CHAIRMAN: 4 Q. Sir, do you have any questions? 5 O'REILLY, Q.C.: 6 Q. No. Just for clarification from Mr. Raphals, 7 Mr. Raphals, my name is Tom O'Reilly, and I'm 8 counsel for Nalcor. Can you hear me? Can you 9 hear me, Mr. Raphals?</p> <p>10 MR. RAPHALS: 11 A. Just barely. 12 O'REILLY, Q.C.: 13 Q. I'm doing the best I can here. Any better? 14 MR. RAPHALS: 15 A. Okay, yeah, that's a little better. 16 O'REILLY, Q.C.: 17 Q. Oh, good, okay. I just want - 18 MR. RAPHALS: 19 A. Who's speaking? 20 O'REILLY, Q.C.: 21 Q. My name is Tom O'Reilly, and I'm counsel for 22 Nalcor Energy. 23 MR. RAPHALS: 24 A. Thank you. 25 O'REILLY, Q.C.:</p>

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<p>1 Q. I just wanted to bring you back to the slide 2 presentation. We don't have the benefit of 3 your written text that you read from, but we 4 do have reproduced a series of copies of 5 slides, and we've been trying to follow that 6 as you go through your written text, but can 7 you just flip over to page six of your slides 8 there. I just wanted to clarify - do you have 9 that in front of you?</p> <p>10 MR. RAPHALS:</p> <p>11 A. That's the fuel price forecasts page?</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. Yes, okay.</p> <p>14 MR. RAPHALS:</p> <p>15 A. Yes.</p> <p>16 O'REILLY, Q.C.:</p> <p>17 Q. This is forecast prepared by NWPPC. That is 18 the Northwest Power Planning Council, is that 19 correct?</p> <p>20 MR. RAPHALS:</p> <p>21 A. Yes, that's right.</p> <p>22 O'REILLY, Q.C.:</p> <p>23 Q. Okay, and are they in the business of 24 forecasting fuel prices?</p> <p>25 MR. RAPHALS:</p>	<p>1 MR. RAPHALS:</p> <p>2 A. I believe so, yes. I'm reading it the same 3 way you are. I don't have any intimate 4 knowledge of this document.</p> <p>5 O'REILLY, Q.C.:</p> <p>6 Q. Mr. Chairman, I think that's all I have. I 7 was just interested, and again, I'm sorry, I 8 have had very little time to look at this, but 9 I was looking at your CV and your educational 10 background.</p> <p>11 MR. RAPHALS:</p> <p>12 A. Yes.</p> <p>13 O'REILLY, Q.C.:</p> <p>14 Q. And I was just curious because am I correct, 15 you have a B.A., cum laude, in Philosophy, 16 from Yale?</p> <p>17 MR. RAPHALS:</p> <p>18 A. Yes, that's right.</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. I'm not familiar with the Degree, M.M. that 21 you got from Boston University in 1976. What 22 is that?</p> <p>23 MR. RAPHALS:</p> <p>24 A. That's a Masters in Music.</p> <p>25 O'REILLY, Q.C.:</p>
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<p>1 A. They're in the business of forecasting - of 2 planning the power system for the Northwestern 3 United States.</p> <p>4 O'REILLY, Q.C.:</p> <p>5 Q. Okay.</p> <p>6 MR. RAPHALS:</p> <p>7 A. And the fuel forecasts, I didn't check to see 8 what their source is. I didn't dare submit 9 the document either, it's hundreds of pages, 10 but certainly it's available on the internet.</p> <p>11 You're welcome to -</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. Well, I think we're all gratified for that. 14 The other thing, on the left hand side of the 15 margin, do I understand that this graph 16 portrays 2006 dollars?</p> <p>17 MR. RAPHALS:</p> <p>18 A. Yes, apparently it does.</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. Okay. Is that correct?</p> <p>21 MR. RAPHALS:</p> <p>22 A. Yes.</p> <p>23 O'REILLY, Q.C.:</p> <p>24 Q. If we read it that way, we would be 25 interpreting it correctly?</p>	<p>1 Q. A Masters in Music, okay. That's fine, that's 2 fine.</p> <p>3 MR. RAPHALS:</p> <p>4 A. In an earlier life, I was a professional 5 cellist.</p> <p>6 O'REILLY, Q.C.:</p> <p>7 Q. Good, Yo Yo Ma.</p> <p>8 MR. RAPHALS:</p> <p>9 A. Yes, a wonderful musician.</p> <p>10 O'REILLY, Q.C.:</p> <p>11 Q. Good for you. I don't think I have anything. 12 We will address any issues involving what we 13 consider to be errors of factual assumptions 14 and a response in our written submission that 15 will be filed with the Board, Mr. Chairman.</p> <p>16 MR. JOHNSON:</p> <p>17 Q. I just have, if I could, a question to clarify 18 something, Mr. Raphals, and as you're probably 19 aware, Manitoba Hydro International -</p> <p>20 MR. RAPHALS:</p> <p>21 A. I'm sorry, I can't hear you very well. Can you 22 speak closer to the microphone?</p> <p>23 MR. JOHNSON:</p> <p>24 Q. Yes, I'll certainly try. As you're aware - 25 can you hear me now?</p>

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<p>1 MR. RAPHALS:</p> <p>2 A. Yes, that's better, thanks.</p> <p>3 MR. JOHNSON:</p> <p>4 Q. Okay. Manitoba Hydro International has</p> <p>5 compared the cumulative present worth of each</p> <p>6 of the two options presented to the Board for</p> <p>7 study in this reference. My understanding is</p> <p>8 that as regards the preference for the in-feed</p> <p>9 option over the isolated island option,</p> <p>10 Manitoba Hydro has said that whether a PPA is</p> <p>11 used or whether a cost of service methodology</p> <p>12 is used, the CPW preference of the in-feed</p> <p>13 option over the isolated option is not</p> <p>14 significantly affected. Do you agree with</p> <p>15 MHI's conclusion in that regard?</p> <p>16 MR. RAPHALS:</p> <p>17 A. Well, yes, I do, because the - the difference</p> <p>18 between the two depends on how you pay for it,</p> <p>19 whereas the CPW refers to the cost of the</p> <p>20 installations. So CPW is looking at the - you</p> <p>21 know, the present value or present worth cost</p> <p>22 of these two options compared to each other</p> <p>23 regardless of who pays for them or how or</p> <p>24 when. The difference between the PPA and the</p> <p>25 cost for service is a question of who pays for</p>	<p>1 than what the total costs are.</p> <p>2 MR. JOHNSON:</p> <p>3 Q. Just to question and clarify for people who</p> <p>4 are going to be -</p> <p>5 MR. RAPHALS:</p> <p>6 A. I'm sorry, I can't hear you, sir.</p> <p>7 MR. JOHNSON:</p> <p>8 Q. Just to clarify for people who are reading the</p> <p>9 transcript, MHI has indicated that in their</p> <p>10 judgment the use of CPW, Cumulative Present</p> <p>11 Worth, is a legitimate measure of determining</p> <p>12 what is the least cost between these two study</p> <p>13 options, and would you agree with MHI in that</p> <p>14 regard?</p> <p>15 MR. RAPHALS:</p> <p>16 A. I would not dispute that statement.</p> <p>17 MR. JOHNSON:</p> <p>18 Q. I just wanted to clarify your position. Thank</p> <p>19 you very much for the presentation.</p> <p>20 MR. RAPHALS:</p> <p>21 A. Okay. If I could just add one thing as well.</p> <p>22 I should have mentioned it earlier. The Table</p> <p>23 I prepared, the one with the yellow columns,</p> <p>24 obviously I'm manipulating figures coming from</p> <p>25 Nalcor, and if Nalcor sees errors in that, or</p>
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<p>1 them, when, and how, and how much.</p> <p>2 MR. JOHNSON:</p> <p>3 Q. But CP -</p> <p>4 MR. RAPHALS:</p> <p>5 A. I agree they're two different questions.</p> <p>6 MR. JOHNSON:</p> <p>7 Q. But the CPW is aimed at determining what the</p> <p>8 least cost is.</p> <p>9 MR. RAPHALS:</p> <p>10 A. Well, the CPW is the cost of each option for a</p> <p>11 given set of assumptions, and the</p> <p>12 sensitivities that they've examined show that</p> <p>13 each time you change an assumption, the</p> <p>14 differential changes in some cases very</p> <p>15 dramatically.</p> <p>16 MR. JOHNSON:</p> <p>17 Q. I understand that, but is -</p> <p>18 MR. RAPHALS:</p> <p>19 A. I try to point out that I think that they</p> <p>20 could have gone farther in analysing the</p> <p>21 impacts on that difference of a more thorough</p> <p>22 sets of CDM options. I think that's a real</p> <p>23 hakuna in their study, but again whether it's</p> <p>24 paid up front, whether it's paid - you know,</p> <p>25 how it gets paid is a very different question</p>	<p>1 would like - I'd be very interested in their</p> <p>2 directions. Thank you.</p> <p>3 GREENE, Q.C.:</p> <p>4 Q. No questions, Mr. Chair.</p> <p>5 CHAIRMAN:</p> <p>6 Q. Anybody - well, I think - thank you very much,</p> <p>7 sir. I don't think there's any further</p> <p>8 questions. So we thank you for your</p> <p>9 participation.</p> <p>10 MR. RAPHALS:</p> <p>11 A. Thank you very much for your time.</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. Thank you.</p> <p>14 CHAIRMAN:</p> <p>15 Q. And I guess there's no further matters, is</p> <p>16 there? Are there any further procedural</p> <p>17 matters you wish to bring before us?</p> <p>18 GREENE, Q.C.:</p> <p>19 Q. Yes, there are, Mr. Chair.</p> <p>20 CHAIRMAN:</p> <p>21 Q. Okay.</p> <p>22 UNKNOWN SPEAKER:</p> <p>23 Q. The audio feed and everything is gone now.</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. Yeah, but you can see me now, which we don't</p>

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<p>1 need.</p> <p>2 CHAIRMAN:</p> <p>3 Q. What's wrong with that?</p> <p>4 GREENE, Q.C.:</p> <p>5 Q. I prefer not to watch myself on TV.</p> <p>6 MR. JOHNSON:</p> <p>7 Q. It wasn't a problem until then.</p> <p>8 (12:00 p.m.)</p> <p>9 GREENE, Q.C.:</p> <p>10 Q. Yes, Mr. Chair, there's a few process</p> <p>11 matters. We have now completed the</p> <p>12 presentation part of the public consultation,</p> <p>13 and there are a few matters that we wanted to</p> <p>14 discuss and raise with the panel as this is</p> <p>15 our last opportunity to be together in this</p> <p>16 process.</p> <p>17 The first relates to comments. As I have</p> <p>18 mentioned before, the Board welcomes all</p> <p>19 public comments with respect to the reference</p> <p>20 and the Terms of Reference before the panel.</p> <p>21 The deadline for comments is the 29th of</p> <p>22 February. As we have indicated in our notice</p> <p>23 and in the information on the website, the</p> <p>24 individual posting the comments identity will</p> <p>25 be protected. In terms of when the comments</p>	<p>1 number have been filed since the hearing</p> <p>2 process began, and approximately 55 have been</p> <p>3 filed since February 10th. So there are a</p> <p>4 number outstanding, and I would ask Nalcor to</p> <p>5 speak to the status of the outstanding</p> <p>6 requests for information to them. Before they</p> <p>7 do, I would advise that there were 19 requests</p> <p>8 for information filed of MHI. I anticipate</p> <p>9 that those responses will be filed later today</p> <p>10 or by tomorrow at the latest. So I would ask</p> <p>11 Nalcor to respond to the status of the</p> <p>12 outstanding requests for information that have</p> <p>13 not yet been answered, and wonder if they can</p> <p>14 provide us with an update at this time as to</p> <p>15 when they expect the responses to be filed.</p> <p>16 O'REILLY, Q.C.:</p> <p>17 Q. Yes, Counsel, Mr. Chair, members of the</p> <p>18 Panel, the - I think by our count there are 94</p> <p>19 RFIs that have to be responded to. Those</p> <p>20 remain outstanding. We expect that we will</p> <p>21 have 19 of those filed by tomorrow, and the</p> <p>22 others are currently a work in progress. As</p> <p>23 you can appreciate, some of these were</p> <p>24 received in the course of these proceedings</p> <p>25 and our resources have been somewhat</p>
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<p>1 are posted, only initials will be used.</p> <p>2 However, in posting the comments, the</p> <p>3 individual must identify their identity to the</p> <p>4 Board to ensure the integrity of the process</p> <p>5 with respect to the comments. So all comments</p> <p>6 with respect to the Terms of Reference should</p> <p>7 be posted at any time between now and the</p> <p>8 close of business on the 29th of February. If</p> <p>9 anyone has any additional questions about</p> <p>10 that, they should contact the Board Secretary,</p> <p>11 Ms. Cheryl Blundon.</p> <p>12 The next item I would like to address is</p> <p>13 the issue of the outstanding requests for</p> <p>14 information. As of today, the Consumer</p> <p>15 Advocate, I believe, has had 270 requests for</p> <p>16 information. In terms of the process, now</p> <p>17 that the process has been completed, I wanted</p> <p>18 to advise the parties listening on the webcast</p> <p>19 that the Board has determined that all RFIs</p> <p>20 must be filed by the close of business on this</p> <p>21 Friday. There will be no requests for</p> <p>22 information filed after this Friday, tomorrow,</p> <p>23 which is February 24th.</p> <p>24 The next then is the issue of the</p> <p>25 responses to the requests for information. A</p>	<p>1 challenged by trying to deal with answering</p> <p>2 those RFIs and at the same time dealing with</p> <p>3 the process of the hearing itself.</p> <p>4 Next week we, of course, have a deadline</p> <p>5 to put our written submission and there's a</p> <p>6 fair bit of work to do on that because we have</p> <p>7 to incorporate those things we heard,</p> <p>8 including some of the things we heard this</p> <p>9 morning. So it's proposed that over the next</p> <p>10 - we anticipate that we will be able to have</p> <p>11 all of those filed, everything completed not</p> <p>12 later than March 9th, and I think that given</p> <p>13 what we have been provided with in this case,</p> <p>14 and I can appreciate my learned friend has</p> <p>15 identified some that he regards as being more</p> <p>16 critical than others for a response, and he's</p> <p>17 advised us of those and we're taking those and</p> <p>18 putting those to the fore to get answers to</p> <p>19 those - responses to those RFIs done, you</p> <p>20 know, out of sync - out of timing to</p> <p>21 accommodate his request. So I can tell you</p> <p>22 that at the outside we would have everything</p> <p>23 completed not later than Friday, the 9th of</p> <p>24 March.</p> <p>25 GREENE, Q.C.:</p>

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1 Q. Mr. Johnson, do you have any comment with
2 respect to the receipt of responses from
3 Nalcor?
4 MR. JOHNSON:
5 Q. No, as - I think as Mr. O'Reilly indicated, I
6 have communicated with him and copied Board
7 Counsel on the batch of questions that I
8 wanted brought to the fore, so that I could
9 have them for the purpose of my making
10 submission.
11 O'REILLY, Q.C.:
12 Q. We're going to try to accommodate that.
13 MR. JOHNSON:
14 Q. Yes. So I'm content that they are put to the
15 fore.
16 O'REILLY, Q.C.:
17 Q. Yeah, yeah.
18 MR. JOHNSON:
19 Q. So I accept them at that.
20 GREENE, Q.C.:
21 Q. As has been mentioned, the normal process, of
22 course, is to have the record complete before
23 written submissions. This, however, has been
24 an unusual process, not the normal regulatory
25 process, and in light of the number of RFIs

1 advised that of the 19 for MHI, I believe 18
2 were proposed by Mr. Raphals, or 18 of the 19,
3 and as I indicated earlier, the responses from
4 MHI will be filed if not by later this
5 afternoon, then by tomorrow at the latest. So
6 that will be at least some of the RFIs posed
7 by Mr. Raphals.
8 MR. JOHNSON:
9 Q. Okay.
10 GREENE, Q.C.:
11 Q. And they were - we received them late last
12 Thursday, the 16th of February. Unfortunately,
13 we got them after MHI had left to catch their
14 plane. The next point then - so the schedule
15 then for RFIs shall be all RFIs must be filed
16 by tomorrow, February 24th, with all responses
17 in from Nalcor by March 9th, with the
18 exception that those identified by the
19 Consumer Advocate as required for the purpose
20 of his submission, Nalcor will do everything
21 possible to have those replied to in advance
22 of March 9th and as soon as possible.
23 The next issue then as the tidy up issue
24 relates to outstanding undertakings from the
25 hearing. The Board Secretary has distributed

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1 that have come in in the last two weeks, I
2 believe, Mr. Chair, that March 9th is a
3 reasonable date, subject to, as Mr. Johnson
4 has just pointed out, he has identified the
5 RFIs that he would like responses to prior to
6 that to assist him in writing his submission
7 for the 2nd, and I understand Nalcor has
8 undertaken to do that, so -
9 O'REILLY, Q.C.:
10 Q. We're sensitive to that, yeah.
11 GREENE, Q.C.:
12 Q. In my view, the proposed response to the RFIs
13 is satisfactory.
14 MR. JOHNSON:
15 Q. Just a point too, and perhaps I should have
16 raised it, Mr. Raphals is correct, there was
17 questions put to me and I put them on the
18 record, I think the day that I received the
19 request, but again that was during - just a
20 few days ago, or the 16th, I believe, and I
21 think there's been questions asked since then,
22 but that's when, I think, those were put on
23 the record for Mr. Raphals.
24 GREENE, Q.C.:
25 Q. And on that point, I would point - I have been

1 a List of Undertakings. Three are outstanding
2 at this point in time. The first relates to
3 the analysis completed on the adequacy of
4 system integration studies. The next relates
5 to the value of all tenders, contracts, work
6 packages, as shown in the Nalcor website on a
7 particular date. The last relates to the
8 internal number Nalcor is using for
9 participation in energy projects for the price
10 of oil for its investment purposes. So I
11 would ask Mr. O'Reilly, on behalf of Nalcor,
12 to address those three outstanding RFIs and
13 where they are in terms of responding.
14 O'REILLY, Q.C.:
15 Q. Yes, thank you. Mr. Chairman, the first
16 undertaking identified on page two which
17 remains outstanding deals with the total value
18 of the tenders and contracts that were
19 identified on the Nalcor website that was the
20 position - we will have a response to that by
21 tomorrow, to file a response. With respect to
22 the second last - on February 16th
23 undertakings dealing with the issue of the
24 analysis done by Nalcor on the system
25 integration, we'll have a response for that,

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I'm told, by Tuesday. We will be able to file something by Tuesday. The last undertaking is somewhat problematic, and I can assure you one thing, that information is way above my pay scale and I submit this, that this really engages - to the extent that such a number exists, really a discussion in this forum about a matter that Nalcor would regard, I think, and reasonably so, as confidential information, and so in an effort to deal with that, I don't think that dealing with confidential information in this forum is consistent with that idea of confidential - keeping confidential information confidential. I would propose that we would file an answer on that as a confidential exhibit, as a confidential response, with the designation and determination that the matter is confidential. I can tell you, we will have an issue on the relevancy of the thing because one is related to the cost of the - an analysis of what the risks are associated with investing a certain sum of money, and a floor price below which you start to lose money as opposed to forward looking and what the price

O'REILLY, Q.C.:
 Q. That's fine, in response to the undertakings.
 GREENE, Q.C.:
 Q. Yes.
 O'REILLY, Q.C.:
 Q. Yes, okay, that's understood.
 GREENE, Q.C.:
 Q. Okay, the last point then to raise today relates to a request that when Mr. Vardy presented earlier this week, he asked during his presentation, and then followed up with a formal request to the Board, to file as part of the record the report of the Joint Review Panel on the Lower Churchill Generation Project that was released in August of 2011. At this time, I thought that we should ask the parties who are here today if they have any position or any comment they wish to make with respect to the request to file that particular report as part of the record in this proceedings, which would then be available for review by the Commissioners.
 MR. JOHNSON:
 Q. I guess the view I take of it, I don't feel strongly one way or the other. I mean if

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of oil, those two things are completely different, but at any rate, I think the proper forum in which to do that, the proper procedure for us to follow would be to file a confidential response to that in a confidential capacity for the Board's consideration.

GREENE, Q.C.:

Q. And the timing on that response would be?

O'REILLY, Q.C.:

Q. We can have that for Tuesday.

GREENE, Q.C.:

Q. Okay. Mr. Chair, based on the responses, I just wanted to point out a caveat to the previous schedule we just discussed on all RFIs being due tomorrow. As I've indicated to Nalcor before, depending on the responses that are filed to those undertakings, we may have additional RFIs, which of course we can't have by tomorrow if we don't get the responses by tomorrow. So I did want to point out that there may be additional RFIs coming from the Board with - or from the Consumer Advocate with respect to that new information that will be filed by Nalcor.

someone wants the Board to have a document, if the Board would find it useful for the purpose of answering the question, I mean, it - it certainly hasn't played a role so far in the number of requests and exhibits and MHI analysis, but I don't really have a firm position on it one way or the other, to be honest with you.

O'REILLY, Q.C.:

Q. Well, you know, I share - I guess I have a concern when you take a report prepared by a panel which was constituted under legislation, environmental legislation, provincial and federal, and they have a particular mandate, and then you take that report which has not formed a part of any of the discussion or analysis in these proceedings, and then just file it and leave it unexplained or without the person tendering the document to explain the purpose for putting it in, or in support of the particular person's views or whatever. It's very difficult to understand how that really could have any relevancy to these proceedings. When I say that, I recognize that, you know, this report is available

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<p>1 online and people can access it. It's almost 2 like saying in a way, you know, not only don't 3 file it, but don't read it either, right, you 4 know, and that seems to be pushing the matter 5 a bit far. It appears by filing the report, 6 it seems to be giving the report a status on a 7 matter that I consider as being irrelevant to 8 these proceedings, irrelevant in the sense 9 that it doesn't inform these proceedings, and 10 it's really the result of a deliberation by a 11 panel structured to do something completely 12 different than this panel is. So in the 13 absence of - in the absence of an explanation 14 as to the purpose for having it filed to 15 support a particular position, or to extract 16 from that a certain thing which could be the 17 subject of comment or response by Nalcor, I 18 think I'd have to raise an objection to filing 19 the report holus-bolus, and in the sense of 20 filing it. That, I think, would be my 21 position on the thing. Latterly, it wasn't 22 something that the Board obviously felt of its 23 own volition was required because it came out 24 of a presentation by one of the presenters as 25 opposed to something the Board felt was</p>	<p>1 the Panel has received evidence in this matter 2 relating to that particular issue, which has 3 been tested through the RFI process and also 4 through the presentations here by Nalcor. So 5 that would be a factor as well that should be 6 taken into account by the Panel in making 7 their decision as to whether this particular 8 report will help inform their consideration of 9 the Terms of Reference, and if there is a 10 decision to make as part of the record, 11 obviously there would have to be consideration 12 given by the panel to the weight to be given 13 to any part of the report that could be 14 relevant to the Terms of Reference before you, 15 because you have your - the evidence before 16 you, which has been tested by the parties and 17 through this process, is the evidence that 18 should be considered by the Panel in reviewing 19 the Terms of Reference and responding to the 20 reference question. 21 (12:15 p.m.) 22 CHAIRMAN: 23 Q. So what you're basically saying is that in 24 areas where there's commonality in the report 25 and in our Terms of Reference, we through this</p>
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<p>1 rational. So in the absence of an explanation 2 from the presenter as to what that is supposed 3 to support, what relevant part of these 4 proceedings that report is germane, I'm a 5 little bit reluctant to accept that, yes, this 6 should form part of the record and the Board 7 is free to refer to it without the benefit of 8 having the particular issue addressed - the 9 parties to address the particular issue on 10 that. So I think that would be my position on 11 the thing. 12 CHAIRMAN: 13 Q. Do you have an opinion in this matter? 14 GREENE, Q.C.: 15 Q. Not really, Mr. Chair. I believe Mr. O'Reilly 16 has outlined what the issues are that the 17 panel should take into account. The report - 18 the panel that was struck to consider the 19 issues and then release that report had a 20 different mandate than the Terms of Reference 21 before the Panel, and did cover quite a number 22 of topics that are not part of the Terms of 23 Reference before the Panel, which is - and, of 24 course, on the one or two issues that were 25 common, which would be the need for the power,</p>	<p>1 process have covered them off. 2 GREENE, Q.C.: 3 Q. And that you should take into account the 4 evidence that you would have. I'm really not 5 sure what weight the Panel should give, if 6 any, to the type of public report that was 7 struck for another purpose that reviewed its 8 own evidence and made findings based on the 9 evidence it had before them. 10 CHAIRMAN: 11 Q. Okay. Well, I think I agree with you. I 12 don't know about the rest of you. 13 GREENE, Q.C.: 14 Q. I'm not sure if you would like to confer for a 15 few moments or if you want to - 16 CHAIRMAN: 17 Q. Do you want to just leave that with - I mean, 18 you know, I think I'm - 19 O'REILLY, Q.C.: 20 Q. I guess it's in your hands now, anyway. 21 CHAIRMAN: 22 Q. We're going to take it under advisement, but I 23 think - I think, you know, which way we're 24 going to go. I think we're - I'm satisfied 25 with the explanation of both Mr. O'Reilly and</p>

<p style="text-align: right;">Page 77</p> <p>1 our counsel on the issue. I think that, you 2 know, we've had sufficient argument on the 3 matters where there is a common interest, so I 4 don't know how adding this report would assist 5 us, probably not legal, anyway, I don't know. 6 VICE-CHAIR WHALEN: 7 Q. We're going to talk about it. 8 CHAIRMAN: 9 Q. But we're going to talk about it, yeah. God 10 forbid, I mean, I don't - it's not like - is 11 it Lincoln's Cabinet, Lincoln voted "A" and 12 there was 10 "Nays", and Lincoln said the "A" 13 had it. It doesn't look that way around here, 14 even if I am supposed to be Chairman. I guess 15 this concludes the proceedings, and I want to 16 thank Mr. O'Reilly and Nalcor, Mr. Johnson, 17 the Consumer Advocate, and, of course, our own 18 staff, including our formidable Legal Counsel, 19 who is a repository of great wisdom, and we 20 will proceed with the next stages in this 21 process, and I guess the drama comes to an end 22 by the end of March. So thank you all for 23 your participation. 24 MR. JOHNSON: 25 Q. Thank you very much.</p>	<p style="text-align: right;">Page 79</p> <p>1 CERTIFICATE 2 I, Judy Moss, do hereby certify that the foregoing 3 is a true and correct transcript of a hearing of the 4 Muskrat Falls Review, heard before the Board of 5 Commissioners of Public Utilities on the 23rd day of 6 February, A.D., 2012, in St. John's, Newfoundland and 7 Labrador and was transcribed by me to the best of my 8 ability by means of a sound apparatus. 9 Dated at St. John's, NL this 10 23rd day of February, 2012 11 Judy Moss 12 Discoveries Unlimited Inc.</p>
<p style="text-align: right;">Page 78</p> <p>1 O'REILLY, Q.C.: 2 Q. Thank you. 3 (12:18 p.m.) 4 HEARING CONCLUDED</p>	

<p>-\$-</p> <p>\$1,000 [4] 23:4,10,22,24 \$66.00 [1] 44:22 \$82.00 [1] 45:17</p> <p>-'-</p> <p>'85 [1] 41:19 '86 [1] 41:21 '90s [1] 10:5</p> <p>-1-</p> <p>1 [8] 20:19,23 22:4 25:20 31:9,18 34:13 38:6 1.3 [2] 44:1 45:13 1.8 [1] 31:20 10 [4] 14:9 44:16 45:4 77:12 100 [2] 38:12 41:20 10:30 [1] 1:1 10:45 [1] 9:3 10th [1] 63:3 11 [3] 8:24,25 9:2 11.3 [1] 43:5 11:07 [1] 9:4 11:15 [1] 18:4 11:30 [1] 33:22 120 [1] 40:21 126 [1] 27:4 12:00 [1] 61:8 12:15 [1] 75:21 12:18 [1] 78:3 13 [1] 26:18 130 [2] 44:3 46:9 13th [1] 12:13 147 [1] 26:17 15 [1] 36:14 152 [1] 27:19 15th [3] 20:3 22:7 24:6 16th [3] 66:20 67:12 68:22 17 [1] 32:12 18 [3] 20:6 67:1,2 19 [6] 20:13 43:25 63:7 63:21 67:1,2 190 [1] 26:8 1976 [1] 55:21 1982 [3] 41:7,18,19 1985 [1] 41:19 1995 [2] 41:21 42:14 1996 [1] 41:24 1997 [1] 10:10</p> <p>-2-</p> <p>2 [7] 18:2 31:20 32:12,23 43:5 48:5 51:18 2.5 [1] 5:1 20 [11] 10:4 14:9 20:16 29:17 30:2,9,15 32:6,23</p>	<p>43:23 45:6 2003 [1] 2:3 2004 [7] 37:12,17 43:7 43:21 47:4 48:2 49:18 2005 [2] 1:18 41:24 2006 [1] 54:16 2007 [5] 1:21 3:24 4:9 35:13 37:8 2008 [4] 35:8,15 36:3,8 2009 [1] 40:15 2010 [1] 34:5 2011 [2] 14:18 71:15 2012 [3] 49:19 79:6,10 2014 [1] 14:11 2015 [2] 14:11,12 2017 [8] 14:2 20:5,16 24:8 27:20 28:11 29:11 29:17 2026 [3] 35:18,24 36:2 2030 [1] 40:22 2035 [2] 20:4 24:7 205 [1] 18:2 2067 [8] 27:21 28:12,19 29:12,18 30:3,7,12 2068 [2] 25:8 30:13 208 [1] 26:24 21 [1] 25:6 225 [1] 29:16 23rd [2] 79:5,10 247 [1] 26:21 24th [2] 62:23 67:16 25 [5] 14:10 23:5,7,11 35:20 260 [1] 26:9 27 [4] 20:18,23 22:4 25:20 270 [1] 62:15 29th [2] 61:21 62:8 2nd [1] 66:7</p> <p>-3-</p> <p>3,000 [1] 10:7 300 [1] 18:22 31 [2] 31:9,18 32 [1] 41:25 33 [1] 6:20 34 [1] 32:12 35 [1] 41:22 35.37 [2] 32:3,5 36 [2] 20:1 24:19 38 [1] 4:9 39 [2] 4:13 32:23 396 [1] 28:11</p> <p>-4-</p> <p>40 [1] 28:20 400 [2] 28:19 30:11 407 [1] 29:10 409 [1] 27:21 41 [1] 38:6</p>	<p>43 [2] 34:13 35:22 45 [2] 40:21 44:25 453 [1] 35:23 46 [1] 20:2</p> <p>-5-</p> <p>5,000 [1] 3:13 5.2 [1] 45:8 50 [8] 4:21 14:9 16:25 20:12,14 30:5 35:22 50:2 55 [1] 63:2 556 [1] 35:19 5A [1] 26:10 5B [1] 26:11</p> <p>-6-</p> <p>6.5 [1] 45:16 60 [2] 4:2 37:16 600 [1] 6:5 61 [1] 43:9</p> <p>-7-</p> <p>7 [1] 48:8 73 [1] 39:6 74 [1] 43:14 763 [1] 34:21 79 [1] 45:7 7a [1] 27:22 7b [1] 27:25 7c [2] 28:5,8</p> <p>-8-</p> <p>8 [3] 44:16 45:3 48:11 80 [7] 43:10,13,20 44:6 45:16 49:19,23 81 [1] 35:25 83 [1] 27:5 89 [1] 12:13 8a [1] 29:6 8b [1] 29:12</p> <p>-9-</p> <p>9 [2] 43:25 48:21 90 [2] 12:13 29:11 92 [1] 26:20 94 [1] 63:18 951 [1] 35:19 9th [5] 64:12,23 66:2 67:17,22</p> <p>-A-</p> <p>A.D [1] 79:6 a.m [5] 1:1 9:3,4 18:4 33:22 ability [2] 48:12 79:8 able [3] 9:15 64:10 69:1 above [3] 43:20 46:9 69:4 absence [4] 48:19 73:13</p>	<p>73:13 74:1 absorb [1] 48:12 academic [1] 51:17 accept [3] 45:9 65:19 74:5 access [2] 13:19 73:1 accommodate [2] 64:21 65:12 accomplished [1] 34:3 according [5] 14:3,9 25:11 35:21 43:20 account [6] 38:18 39:1 47:1 74:17 75:6 76:3 accuracy [1] 41:6 accurate [1] 51:20 achievable [3] 35:18 36:1,20 actions [3] 15:19 18:11 32:11 actual [3] 25:23 27:17 28:9 add [2] 7:3 59:21 adding [1] 77:4 additional [7] 43:23 45:6,14 46:14 62:9 70:19 70:22 Additionally [1] 3:19 address [6] 1:8 11:10 56:12 62:12 68:12 74:9 addressed [2] 20:1 74:8 adds [1] 26:1 adequacy [1] 68:3 adjourn [2] 8:20 9:2 adjusted [2] 19:3 20:15 adjustment [1] 31:23 admire [1] 8:14 advance [2] 16:1 67:21 advantage [2] 34:25 37:2 adverse [1] 39:15 advise [2] 62:18 63:7 advised [2] 64:17 67:1 advisement [1] 76:22 Advisory [1] 10:18 Advocate [7] 11:24 12:12 20:4 62:15 67:19 70:23 77:17 affect [1] 17:14 affected [1] 57:14 affirmed [1] 43:12 afraid [1] 25:15 afternoon [1] 67:5 again [7] 26:25 39:20 41:14 46:13 55:7 58:23 66:19 Agency [1] 41:4 aggressive [1] 35:3 ago [2] 1:25 66:20 agree [5] 5:18 57:14 58:5 59:13 76:11 agreement [1] 13:13 ahead [3] 13:15 16:23</p>	<p>51:9 aimed [1] 58:7 air [2] 4:21 5:21 Albert [1] 44:15 allow [4] 2:5 25:20 47:15 47:20 allowing [1] 1:16 allows [1] 28:24 almost [4] 30:5 34:20 45:16 73:1 alone [1] 45:24 along [1] 47:21 alright [1] 9:18 alternative [1] 39:14 alternatives [1] 12:24 always [1] 46:9 amount [5] 23:17 28:7 29:13 33:14 48:25 ample [1] 51:1 analogy [1] 22:23 analysing [1] 58:20 analysis [13] 11:12 17:10 17:17 19:3 33:16 37:23 43:11 44:9 68:3,24 69:22 72:6,17 annual [7] 22:14 26:6,11 26:16,19 27:23 29:6 answer [4] 7:15 24:9 35:5 69:15 answered [2] 11:25 63:13 answering [2] 64:1 72:3 answers [2] 12:3 64:18 anticipate [2] 63:8 64:10 anticipated [1] 4:15 antimony [1] 4:22 anyway [3] 2:21 76:20 77:5 apologize [1] 29:24 apparatus [1] 79:8 appeared [1] 10:11 appearing [1] 6:1 appendices [2] 18:23,23 application [1] 11:4 applied [2] 29:9 33:7 appreciate [2] 63:23 64:14 approach [5] 14:2 29:21 31:19 32:8,18 appropriate [1] 11:17 area [2] 32:22 49:15 areas [3] 46:22 48:9 75:24 argument [1] 77:2 arrangement [1] 20:9 arrive [1] 47:20 arsenic [1] 4:22 aspects [1] 38:18 assess [2] 33:8 48:22 assessed [1] 17:15 assessment [7] 2:8,10</p>
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