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<p>1 (9:00 a.m.)</p> <p>2 CHAIRMAN:</p> <p>3 Q. My solicitor can't see me, she says, so I got</p> <p>4 to -- well, good morning everybody. Before we</p> <p>5 start are there any preliminary matters? No?</p> <p>6 Well, this is -</p> <p>7 GREENE, Q.C.:</p> <p>8 Q. No, Mr. Chair.</p> <p>9 CHAIRMAN:</p> <p>10 Q. Okay. This is week two and of course, I guess</p> <p>11 I should do the introductions again. I'm Andy</p> <p>12 Wells, Chair of the Board, and on my left is</p> <p>13 Darlene Whalen, Vice-Chair, far right, Dwanda</p> <p>14 Newman, Commissioner, and James Oxford to my</p> <p>15 near right. Mr. O'Reilly is here for Nalcor</p> <p>16 and Mr. Johnson is the Consumer Advocate. So</p> <p>17 I guess I'll turn it over to -- I guess if</p> <p>18 there's nothing else, we'll go right to Mr.</p> <p>19 Martin, sir.</p> <p>20 MR. MARTIN:</p> <p>21 A. Thank you, Mr. Chairman, Commissioners,</p> <p>22 members of the public present, Consumer</p> <p>23 Advocate, Nalcor counsel. I welcome the</p> <p>24 opportunity to present a short presentation to</p> <p>25 the Board of Commissioners on a very vital</p>	<p>1 these estimates may prove out to be too high</p> <p>2 in the longer term, especially when we're</p> <p>3 dealing with 50 years given developments in</p> <p>4 the shale oil sector in the United States and</p> <p>5 really Mr. Chairman, I'd like the</p> <p>6 Commissioners to take judicial note or quasi-</p> <p>7 judicial note of the article in today's Globe</p> <p>8 and Mail that, you know, everybody is starting</p> <p>9 to focus in on this phenomena and, you know,</p> <p>10 right now, I think private sector investments</p> <p>11 are being made, for instance, maybe at Hebron</p> <p>12 in prices that go out maybe and assume maybe</p> <p>13 90 to 100 dollars. So everybody is trying to</p> <p>14 be fairly cautious about what these prices</p> <p>15 will evolve into and we're in a period of</p> <p>16 obvious extreme change.</p> <p>17 But I think there's a more fundamental</p> <p>18 point and that is even if they do turn out to</p> <p>19 be higher than Nalcor's or let's say the NEB's</p> <p>20 forecast, should we worry anyway? Because we</p> <p>21 are a significant oil producer, we have what</p> <p>22 we would call a -- what could be called an</p> <p>23 economic hedge to higher oil prices.</p> <p>24 (9:15 a.m.)</p> <p>25 If we compare the size of the Holyrood</p>
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<p>1 matter to the future of the province and I</p> <p>2 understand that there will be further</p> <p>3 presentations today and I'm sure they will</p> <p>4 cover many of the issues that probably I would</p> <p>5 like to cover, but in the interest of not</p> <p>6 duplicating, I would like to concentrate on a</p> <p>7 couple specific items.</p> <p>8 First, I want to talk about the price</p> <p>9 risk that's often associated with the thermal</p> <p>10 option. I guess the first thing we all have</p> <p>11 to concede is that forecasting oil prices is</p> <p>12 very challenging. This slide shows a</p> <p>13 relatively close correlation, I think, fair to</p> <p>14 say, between the NEB's November 11th 2011</p> <p>15 projection of prices out to 2035 and what we</p> <p>16 see as the equivalent implied Nalcor forecast</p> <p>17 of crude prices. We've had to make some</p> <p>18 assumptions. The first number 178 dollars is</p> <p>19 in current dollars as of 2035 and when you</p> <p>20 convert that to 2010 and make the equivalent</p> <p>21 of moving from fuel oil prices to crude</p> <p>22 prices, you get about 135. So the long term</p> <p>23 price is approximately 17 percent higher than</p> <p>24 the National Energy Board. But I think one of</p> <p>25 the things I am pointing out is that both</p>	<p>1 consumption per year against our oil</p> <p>2 production per year, we can see that, you</p> <p>3 know, we're much larger in the offshore than</p> <p>4 consumption at Holyrood and even if we doubled</p> <p>5 the present consumption of oil at Holyrood, it</p> <p>6 would still only represent two percent of our</p> <p>7 province's offshore oil resource and that's</p> <p>8 just in the Jean d'Arc Basin alone. So this</p> <p>9 graphic, it's a simple graphic representing</p> <p>10 the relative size and I think that in all our</p> <p>11 assumptions that we have to assume that</p> <p>12 Newfoundland is going -- Newfoundland and</p> <p>13 Labrador is going to continue to be a major</p> <p>14 oil exporter, up to and beyond 2041, the end</p> <p>15 of the Churchill Falls contract and to the end</p> <p>16 of the proposed Muskrat Falls 50-year take-or-</p> <p>17 pay contract.</p> <p>18 So, the oil price risk in the thermal</p> <p>19 project or the thermal option, the high oil</p> <p>20 prices is not really the risk to the economic</p> <p>21 wellbeing of the province and its people prior</p> <p>22 to 2041. Ironically, low oil prices are,</p> <p>23 especially if consumers have to pay rates</p> <p>24 based on a 50-year take-or-pay contract for</p> <p>25 relatively expensive, I would say expensive,</p>

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<p>1 Churchill Falls -- or I'm sorry, Muskrat Falls 2 power with all costs included, and at the same 3 time, of course, under a low price scenario, 4 we have a provincial government struggling 5 under low oil revenues.</p> <p>6 The essence of the risk in the thermal 7 option, you know, it's been stated that the 8 greatest risk to the Isolated Island case is 9 unstable and possibly rising oil prices, but 10 due to the oil price hedge that I've tried to 11 describe in the previous two slides, three 12 slides actually, there should be little, if 13 any, actual oil price risk. If we do have 14 high oil prices, we will also have high oil 15 revenues and a provincial government with an 16 ability to pay direct payments to the citizens 17 who need assistance due to any high oil 18 prices.</p> <p>19 Turning to the risk at the Muskrat Falls. 20 First point, I think, just as a point of 21 clarification, I think it's fair to say that 22 the 50 to 30 percent variation that we've 23 heard about associated with the class four or 24 DG2 cost projection does not measure the cost 25 risks associated with the Muskrat Falls</p>	<p>1 Key on the supply side is the rise of 2 shale oil and I would have to say shale gas 3 because there's a lot of fuel switching going 4 on in places where shale oil is being 5 developed, such as United States.</p> <p>6 The connection between the shale oil 7 revolution and oil prices. Rising shale 8 production is already having a significant 9 impact on crude oil prices in the central 10 United States and analysts are just starting 11 to study the wider and longer term 12 implications of this trend. If you stand back 13 and look at what's going on in the United 14 States, and I have personal knowledge of that 15 process through my business connections, 16 investment and technology are flowing strongly 17 into the shale oil sector which has the 18 typical strong innovation and cost reduction 19 character associated with a technology still 20 in its very early developmental stages and I 21 think that's really key. We have not seen the 22 measure of this new development at all, 23 although it's coming on so fast and so large 24 already. The key to assessing this connection 25 between shale oil and risk to future oil</p>
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<p>1 Project. That spread is merely a reflection 2 of how preliminary the DG2 cost projections 3 are. If a DG3 cost analysis and budget is 4 approved and sanctioned by the province, then 5 the true cost overruns from the sanction 6 budget start to accumulate from that date. I 7 would say that the largest true risk in the 8 Churchill Falls case or the Muskrat Falls case 9 is cost overruns and cost overruns on such 10 large projects typically arise from changes 11 during construction, including design changes, 12 and owner's inexperience in managing 13 contractors.</p> <p>14 The elements of the oil price risk. As I 15 said before, oil price projections are based 16 on complex assumptions and projections as to 17 future events. Geopolitical spikes, such as 18 we're seeing perhaps today with Iran, though 19 painful are of relatively small overall impact 20 on a 50-year time scale. Key to the 21 projections on the demand side are the 22 economic rise of the BRIC countries and 23 similar economies and these are already 24 factored in all credible projections and I'm 25 sure the projections that Nalcor are using.</p>	<p>1 prices is the depth of this resource and its 2 duration and you know, if it's a blip and it's 3 going to be gone in ten years, it's bigger 4 than a Tehran or some other geopolitical 5 spike, but it doesn't affect that 50-year 6 projection.</p> <p>7 But I think the key point I'd like to get 8 into is that it is -- how deep it is and how 9 strong it is and that runs from the simple 10 fact that organic rich shales which has this 11 shale oil potential are common throughout much 12 of the world. China, for instance, has 40 13 percent more resource in the shale oil and 14 shale gas realm than the United States, but as 15 Chinese officials themselves have stated 16 publicly, they are probably ten years or so 17 behind the United States. That's a short 18 period when we look at a 50-year project like 19 Muskrat Falls and frankly does pose tremendous 20 problems of planning to say British Columbia 21 LNG and Australian projects who may see their 22 market being undercut severely before payout 23 of their large projects occur.</p> <p>24 So if we just look at that concept of how 25 deep this is, with your permission just a few</p>

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<p>1 notes on where this shale oil is coming from. 2 Basically, it comes from organic rich rocks 3 called shales generalized. They're one of the 4 most common rocks worldwide. When these rocks 5 get buried, they get heated and their organic 6 material is transformed to oil and gas. Some 7 of that oil and gas gets expelled from the 8 shale and that's why we have Hibernias and 9 West Texas' and Saudi Arabias. But most of 10 it, and this is the key part, this is the fact 11 that its so hard to grasp and so revolutionary 12 in its concept, most of the oil and gas 13 generated stays in the shale, a rock that is 14 very tight, has no permeability and this oil 15 is locked in that formation.</p> <p>16 I like to say that for years we've been - 17 - since Colonel Drake drilled his first well 18 in Pennsylvania in 1857, we've been living off 19 the fumes of the gas tank and now the 20 engineers have found a way of tapping into the 21 gas tank itself. So let's try to see what 22 that really means. This is a little triangle 23 that I've developed to try to explain this. 24 It comes from a talk I gave to a Tight oil 25 conference in Denver last year. The total</p>	<p>1 well vertically in the old style and then you 2 turn it horizontally. Ironically, a lot of 3 that technology comes from the offshore oil 4 industry, including Hibernia. Hibernia has 5 been one of the laboratories and universities 6 of directional drillers from all over the 7 world. If you talk to people like 8 Schlumberger, they rotate their people through 9 here. It's been a big learning experience. 10 Again, fields in the North Sea I guess where a 11 lot of it came from.</p> <p>12 Once you have drilled your horizontal 13 lateral in the producing formation, in the 14 shale that you want to fracture, you basically 15 pump down water under pressure until the rock 16 fails, opening up that very tight rock and 17 flow back the water and the production of oil 18 and/or gas starts.</p> <p>19 The other factor is that in the United 20 States, where this tremendous revolution is 21 going on, that these oil shale plays are 22 literally everywhere. The peak areas on this 23 map represent organic rich shales that are now 24 under development to various degrees. 25 Originally, these were shale gas plays, but</p>
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<p>1 triangle represents all the oil and gas that's 2 generated in the organic rich shales in a 3 given basin. The small triangle at the top, 4 in red, represents the oil and gas that's been 5 exposed from that shale and which constitutes 6 the conventional oil and gas resource base, 7 the kind of base that we see at the Jean 8 D'Arc, Terra Nova, Hibernia, White Rose, et 9 cetera. The bottom part of the triangle is 10 the quantity of oil and gas generated but not 11 expelled and it represents it's still in the 12 shale and it constitutes the unconventional 13 resource base.</p> <p>14 And the general rule, and obviously it 15 varies with thermal regimes and quality of the 16 organic material and a whole host of factors, 17 but in general terms, on a basin wide 18 analysis, there's ten times as much -- if you 19 look at say West Texas, they probably have ten 20 times as much unconventional resource base as 21 their conventional, as large as it was, and 22 this is the revolutionary part. That's the 23 measure of the gas tank.</p> <p>24 The technology, as with many breakthrough 25 technologies, is very simple. You drill a</p>	<p>1 you know, there's been a shift into liquid 2 rich gases for the petrochemical industry and 3 oil. So it's -- and if I were to draw -- if I 4 were to present a map here of China, you would 5 see exactly the same pattern. If I were to 6 present you a map of India, you would see the 7 same pattern. Not many countries are like 8 Canada, made up of mostly Canadian Shield. 9 Most countries, South Africa, for instance, 10 has enormous shale and oil and gas resources.</p> <p>11 What's happened in the United States, as 12 evidenced by President Obama's State of the 13 Union address, is that this development, which 14 was largely confined to the Western United 15 States from North Dakota all the way down to 16 the Mexican border, has now come east of the 17 Mississippi, focusing on Pennsylvania and 18 Ohio, and Ohio in particular is oil rich as 19 opposed to Pennsylvania, which is in the 20 eastern part, mostly dry gas. As a result, 21 the policy makers in Washington have become 22 more aware of this phenomena and are changing 23 laws and getting behind it and in an 24 extraordinary degree of unity, pushing the 25 technology and the industry even further.</p>

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<p>1 When we look at just the last slide in 2 this idea, this is a EIA, the Energy 3 Information Agency in Washington, showing of 4 the -- and this would be changed by now, but 5 these were the sort of -- say a year ago, 6 these would be the areas. You see even 7 strange areas, southern Sweden, for instance, 8 places that you would not normally associate 9 with oil. So we have a big trend, a long 10 trend and a worldwide trend and it has to 11 affect oil prices in the longer term.</p> <p>12 So we have this fracture -- what I call 13 fracture enhanced hydrocarbon production. 14 It's several times larger, to say the least, 15 than the conventional base we've looked for. 16 The United States is going -- they presently 17 have probably 90 percent of the technology in 18 this area and it's on this very steep learning 19 curve and no one can catch you when you're on 20 that. It's like a giant Silicon Valley. And 21 this province cannot afford to remain isolated 22 from that revolution.</p> <p>23 With all due respect, Mr. Chairman, I 24 would like to say that we need an adjusted 25 process. We've heard that the preliminary --</p>	<p>1 recommendation to Government. The PUB should 2 then have a second round of hearings on the 3 final DG3 information before advising 4 Government.</p> <p>5 I thank the Board for your patience and 6 your attention. Thank you.</p> <p>7 CHAIRMAN:</p> <p>8 Q. Turn it over to Mr. O'Reilly, I think, do we? 9 Do you want to just have a brief -</p> <p>10 O'REILLY, Q.C.:</p> <p>11 Q. Yes, just a moment, Mr. Chairman.</p> <p>12 CHAIRMAN:</p> <p>13 Q. Sure.</p> <p>14 O'REILLY, Q.C.:</p> <p>15 Q. Thank you. Just a couple of brief -- one 16 question, Mr. Martin, that's all. On the oil 17 price risk you refer to, looking forward, what 18 you're telling the Board is that in your view 19 the PIRA forecast, the one that Nalcor has 20 received on oil, oil prices going forward, 21 that PIRA doesn't recognize or they haven't 22 been -- the impact of shale gas, the 23 revolution you say, that hasn't been 24 recognized or factored into these forecasts by 25 PIRA? Is that to my understanding?</p>
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<p>1 we've heard about the preliminary nature of 2 the information that was available to Nalcor 3 at DG2, which is a class four feasibility 4 level study anyway, and we've heard that 5 Nalcor has had to defer many questions 6 presented to them at this hearing because 7 studies were under way, information had not 8 been obtained, but they would be done and 9 ready for the more accurate DG3 studies. 10 However, as the matter now stands, this Board 11 of Commissioners in this process is supposed 12 to base its analysis on these lower accuracy 13 studies which are being reworked by Nalcor and 14 its financial and engineering advisors.</p> <p>15 (9:30 a.m.)</p> <p>16 It is a fundamental principle of good 17 public policy that the PUB should rest their 18 conclusion on the same facts and the same 19 calculations that Cabinet will be making its 20 decision on. Otherwise, the PUB's advice on 21 the reference question will not be informed. 22 The PUB should adjourn -- it obviously has to 23 seek the permission of Government, but the PUB 24 should adjourn until Nalcor has finished its 25 DG3 studies and has made a formal DG3</p>	<p>1 MR. MARTIN:</p> <p>2 A. I don't know. I'm not speaking about the 3 shale gas side.</p> <p>4 O'REILLY, Q.C.:</p> <p>5 Q. No, no, but the impact on the oil prices.</p> <p>6 MR. MARTIN:</p> <p>7 A. The shale -- no, no, on shale oil. I don't 8 know of any study to date, except with one 9 possible exception, a company called Bentec, 10 which is a subsidiary of Platts, probably the 11 premier oil forecasting company in the world 12 out of New York City, oldest and most 13 prestigious, their subsidiary in Colorado, 14 Bentec, two weeks ago put forward, to my 15 knowledge, the first study of the impact of 16 shale oil on oil prices and in so far as the 17 press material was concerned, basically 18 warning policy makers that they have to start 19 thinking about the impact of shale oil in the 20 longer term before making serious large 21 capital investments. So PIRA is no different 22 from any other in everybody in the industry is 23 playing catch up ball in this matter and I'll 24 be leaving tomorrow to go to Houston to a 25 conference and that's all everybody is going</p>

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<p>1 to be talking about is how do we factor in</p> <p>2 shale oil in our future oil price projection.</p> <p>3 So PIRA is not to be faulted for not</p> <p>4 incorporating this. It's coming on so fast</p> <p>5 and so large that I wouldn't criticize PIRA.</p> <p>6 O'REILLY, Q.C.:</p> <p>7 Q. No, and I didn't intend to -- no, I didn't</p> <p>8 expect you would, but your point is that this</p> <p>9 revolution of additional sources of gas now is</p> <p>10 going to decrease, it's going to impact oil</p> <p>11 prices going forward because it's a great</p> <p>12 abundance of this other source. That's your</p> <p>13 point?</p> <p>14 MR. MARTIN:</p> <p>15 A. Yes, but it's not -- excuse me, it's not gas.</p> <p>16 It's oil.</p> <p>17 O'REILLY, Q.C.:</p> <p>18 Q. I know, the price of oil.</p> <p>19 MR. MARTIN:</p> <p>20 A. Yeah, I mean, at one time when the focus was</p> <p>21 on shale gas, I mean, up until literally two</p> <p>22 or three years ago, most people didn't believe</p> <p>23 that you would be able to apply this shale gas</p> <p>24 technology to the oil side because the oil</p> <p>25 molecule is quite significantly bigger than</p>	<p>1 dealt -- Mr. Goudie dealt with that somewhat</p> <p>2 during his presentation.</p> <p>3 The other thing is that I would make the</p> <p>4 observation as well, contrary to what Mr.</p> <p>5 Martin is suggesting, that the MHI study</p> <p>6 contradicts the position that the estimate,</p> <p>7 DG2 estimate is a preliminary estimate. They</p> <p>8 said it's a good estimate, a good DG2</p> <p>9 estimate.</p> <p>10 Those are the only two things that I</p> <p>11 would like to leave, and we'll be addressing</p> <p>12 this in our final submissions to the Board.</p> <p>13 Thank you.</p> <p>14 CHAIRMAN:</p> <p>15 Q. Mr. Johnson, do you have any?</p> <p>16 MR. JOHNSON:</p> <p>17 Q. I have no questions for Mr. Martin.</p> <p>18 CHAIRMAN:</p> <p>19 Q. Do you, Madame Greene?</p> <p>20 GREENE, Q.C.:</p> <p>21 Q. I have no questions for Mr. Martin. Thank you</p> <p>22 very much, Mr. Martin. But I did have one</p> <p>23 comment in relation to the comments of my</p> <p>24 learned friend, Mr. O'Reilly.</p> <p>25 With respect to DG2, MHI did find and did</p>
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<p>1 the methane which is being developed and the</p> <p>2 relative permeability that you need to</p> <p>3 increase to get the oil out was considered too</p> <p>4 much. So as a result, there was -- when the</p> <p>5 Eagle Ford play was developed in southern</p> <p>6 Texas, all of a sudden they realized that they</p> <p>7 could do it. They could transfer the</p> <p>8 technology. They piled billions and billions</p> <p>9 of dollars into that play and as a result, we</p> <p>10 have a technology that can be transferred</p> <p>11 literally around the world. So no, no one has</p> <p>12 put -- neither PIRA, nor the NEB, nor the EIA</p> <p>13 for that matter in the United States, has</p> <p>14 managed to capture this new fact of life.</p> <p>15 O'REILLY, Q.C.:</p> <p>16 Q. I think that's really all the questions that I</p> <p>17 have of the witness, but I would make the</p> <p>18 observation that with respect to the</p> <p>19 comparison between EIA price and the NEB</p> <p>20 future prices for oil, Nalcor has presented</p> <p>21 Confidential Exhibit 69. You have that before</p> <p>22 you and I think it contradicts the position</p> <p>23 that there is a discrepancy in the two prices</p> <p>24 between nominal and real prices for oil. I</p> <p>25 think they're pretty well the same and we</p>	<p>1 -- actually the report was a review of cost</p> <p>2 estimates as of DG2, which Nalcor's evidence</p> <p>3 is that at DG2, project definition is</p> <p>4 approximately five to ten percent of the</p> <p>5 project at that time and as a result of Mr.</p> <p>6 O'Reilly's comments, I wonder if Mr. Martin</p> <p>7 would like to further expand his last slide,</p> <p>8 which was a need for an adjusted process?</p> <p>9 Because I had assumed Mr. Martin was concerned</p> <p>10 about the preliminary nature of the project</p> <p>11 definition at DG2 versus DG3 and the project</p> <p>12 definition is approximately 40 percent. So I</p> <p>13 wonder, Mr. Martin, in light of Mr. O'Reilly's</p> <p>14 comments, would you be able to speak to that,</p> <p>15 please, on your last slide?</p> <p>16 MR. MARTIN:</p> <p>17 A. Thank you, Ms. Greene. I would -- this is not</p> <p>18 my area of real expertise, if I have any, and</p> <p>19 I hope there will be other presenters along</p> <p>20 those lines. But when I did talk about DG3</p> <p>21 numbers and reflecting, it's not just that the</p> <p>22 DG2 numbers are preliminary, and you are</p> <p>23 correct in your statement. My suggestion is</p> <p>24 based on a more fundamental principle, that it</p> <p>25 is if the Government of Newfoundland wants</p>

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<p>1 this Board to advise it about a decision that</p> <p>2 its going to make and so call inform the</p> <p>3 reference question, by definition, the Board</p> <p>4 must be looking at the same information that</p> <p>5 the Cabinet is looking at. Otherwise, it's an</p> <p>6 impossibly illogical situation and I would say</p> <p>7 that the Board has gone out of its way to</p> <p>8 share this process with the public of</p> <p>9 Newfoundland, with its webcast and in other</p> <p>10 ways, and I would make the second step of</p> <p>11 saying that that examination should be via a</p> <p>12 public hearing and I can't see why Nalcor</p> <p>13 would not be more than happy to agree to that,</p> <p>14 in the interest of good public policy.</p> <p>15 GREENE, Q.C.:</p> <p>16 Q. Okay. Thank you, Mr. Martin.</p> <p>17 CHAIRMAN:</p> <p>18 Q. Commissioner Newman?</p> <p>19 COMMISSIONER NEWMAN:</p> <p>20 Q. No questions, thank you very much, Mr. Martin.</p> <p>21 COMMISSIONER OXFORD:</p> <p>22 Q. No, Mr. Chairman.</p> <p>23 VICE-CHAIR WHALEN:</p> <p>24 Q. No. Thank you, Mr. Martin.</p> <p>25 CHAIRMAN:</p>	<p>1 using 90 to 100, but I would be shocked, quite</p> <p>2 frankly, if it were even that much or</p> <p>3 certainly if it were higher. I'd say that</p> <p>4 they probably -- that someone is conservative</p> <p>5 or they were prudent as Exxon, that they're</p> <p>6 probably in the 80 to 90 range.</p> <p>7 CHAIRMAN:</p> <p>8 Q. I don't know if that would be -- would that</p> <p>9 number be available to the Board? What</p> <p>10 internal number is Nalcor using therefore for</p> <p>11 its participation in these projects? I mean,</p> <p>12 it's participating with Exxon in Hebron.</p> <p>13 O'REILLY, Q.C.:</p> <p>14 Q. We don't know the answer to that.</p> <p>15 CHAIRMAN:</p> <p>16 Q. Can you -- can we, can the Board get that</p> <p>17 information or can you find out whether it's</p> <p>18 available?</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. Can we take the question under advisement?</p> <p>21 CHAIRMAN:</p> <p>22 Q. Oh sure, absolutely, yes. No, no, I don't</p> <p>23 want it answered now.</p> <p>24 O'REILLY, Q.C.:</p> <p>25 Q. I'd like to take the question under</p>
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<p>1 Q. Mr. Martin, you mentioned a Nalcor internal</p> <p>2 oil price. So what you're saying there is</p> <p>3 that Nalcor, in its oil investments, like in I</p> <p>4 guess Hebron, is it?</p> <p>5 MR. MARTIN:</p> <p>6 A. Hebron.</p> <p>7 CHAIRMAN:</p> <p>8 Q. They would be party to the internal oil price</p> <p>9 that the partners in that would be using for</p> <p>10 their capital budget projections?</p> <p>11 MR. MARTIN:</p> <p>12 A. How oil companies -- one of the most closely</p> <p>13 guarded secrets in an oil company is its</p> <p>14 investment assumptions, including oil prices,</p> <p>15 and I'm not quite sure about how the dynamics</p> <p>16 of the particular Hebron operating committee</p> <p>17 is working. I'd base the 90 to 100 dollar</p> <p>18 investment range on personal communication</p> <p>19 with very, very reputable oil economists and a</p> <p>20 person who's working closely with all the</p> <p>21 major oil companies and their reaction to a</p> <p>22 study which they -- a worldwide study they did</p> <p>23 about threshold economics and price</p> <p>24 assumptions. So I'm fairly confident that</p> <p>25 that's -- you know, I can't say that Exxon is</p>	<p>1 advisement.</p> <p>2 CHAIRMAN:</p> <p>3 Q. Sure. The EIA, I think I saw -- do you know</p> <p>4 whether the EIA has said that it considers --</p> <p>5 the Energy Information Agency, this is the</p> <p>6 research agency of the US Department of</p> <p>7 Energy, but I thought I read somewhere, I got</p> <p>8 it out there in a file, that they expected 80</p> <p>9 percent of the new electrical generation in</p> <p>10 the United States in the next 20 years is</p> <p>11 going to come from gas. Do you know if that's</p> <p>12 true?</p> <p>13 MR. MARTIN:</p> <p>14 A. Well right now, all new incremental --</p> <p>15 virtually all new incremental capacity in the</p> <p>16 United States is oilfield -- I'm sorry, gas</p> <p>17 fuel, shale gas fired.</p> <p>18 CHAIRMAN:</p> <p>19 Q. And that's -</p> <p>20 MR. MARTIN:</p> <p>21 A. And as coal plants come to their retirement</p> <p>22 date and sometimes even before, they're being</p> <p>23 replaced on the firm capacity side as well.</p> <p>24 CHAIRMAN:</p> <p>25 Q. And if you got a BTU price, you multiple it by</p>

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<p>1 six to get the BOE equivalent, barrel of oil, 2 is that how that works?</p> <p>3 MR. MARTIN:</p> <p>4 A. Yes. I mean, when you see in the paper that 5 the Henry Hub price for gas is \$2.50, you 6 multiply it by six and you get \$15.00 oil. So 7 consumers in the United States today are 8 heating their homes with the equivalent of 9 \$15.00 oil and last year, I think the 10 electrical prices in the United States were 11 cut in half. I think the most striking -- and 12 sometimes when you're seeing all these numbers 13 and seeing all this activity, you need kind of 14 a little -- some example to sort of put it in 15 perspective.</p> <p>16 There's a company out of Vancouver called 17 Methanex and Methanex is one of the most 18 successful companies in the petrochemical 19 business and they dominate the manufacture 20 around the world of methanol and their 21 business strategy is very simple. They would 22 go to a place like southern Chile, down at the 23 very boot near Tierra del Fuego, where Chile 24 had found some non -- totally uneconomic gas 25 with no plausible customer and they would buy</p>	<p>1 on the rock, they pulsed the pressure and they 2 could get 25 percent more production out of a 3 given well at lower cost and so the rates of 4 return that they're enjoying in these projects 5 are just fantastic. Meanwhile, there's a 6 whole bank of shale gas in reserve and shale 7 gas will -- I mean, that'll gradually -- over 8 time, that will be used as prices come up to 9 four dollars or five dollars, but the bottom 10 line for us is that in the United States, 11 eastern United States, the long term 12 electrical price is in the five or six cent 13 range and that's a number that we have to look 14 at. I mean, we don't want to be the highest 15 electrical cost area in -- or one of them, in 16 North America, you know. We don't want -- we 17 want to see how we can fit in. So I would -- 18 I don't want to trespass on the terms of 19 reference, but -</p> <p>20 CHAIRMAN:</p> <p>21 Q. And I saw also in the paper last week that 22 they say out in British Columbia, there could 23 be an oil and gas field out there the size of 24 Tabacon. Do you have any knowledge of that 25 geology?</p>
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<p>1 that gas at the cheapest possible price, just 2 enough -- just high enough to keep the company 3 in business and make a small profit, and they 4 would use that gas, lowest cost gas in the 5 world, to manufacture methanol. They did the 6 same in other places around the world, 7 including New Zealand. Methanex is now 8 dismantling a plant in Chile and moving it to 9 the United States.</p> <p>10 CHAIRMAN:</p> <p>11 Q. Your analysis, did your analysis take in -- I 12 mean, I just saw an article the other day now 13 on what's called super fracking technology. 14 Does this analysis contemplate this most 15 recent development?</p> <p>16 MR. MARTIN:</p> <p>17 A. The speed at which the United States is 18 developing this technology is absolutely 19 astounding. You know, if you're away from 20 that sector for say three months, you know, 21 there's been so much change, you can hardly 22 fathom it. For instance, last year, 23 Schlumberger came up with a new fracking 24 technique. It was relatively simple 25 improvement. Instead of a constant pressure</p>	<p>1 MR. MARTIN:</p> <p>2 A. Well, the Duvenay (phonetic) formation does 3 have good oil. I mean, basically if you look 4 at the fact that Alberta had a large -- 5 wherever you see around the world a place that 6 had a large conventional oil and gas reserve, 7 you know that the shale is still there that 8 that oil came from, so you have to go back and 9 work out and it's very much a working out 10 process. So, the amount of -- I think the 11 Chinese -- I saw an article recently as just 12 last week that the Chinese are now recognizing 13 the tremendous lead that the United States has 14 over them on the technical side. They thought 15 they could literally buy the technology, but 16 they can't buy this hyped up innovative thing 17 that the Americans are capable of. Silicon 18 Valley comes -- that mentality.</p> <p>19 The most striking thing about going to a 20 conference on shale oil and shale gas is the 21 tremendous number of young people being 22 involved, young men and women, young 23 engineers, and they're so enthusiastic, and 24 that's the energy the United States is tapping 25 into. So yes, super fracking is just one</p>

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<p>1 aspect. I mean, they've actually taken the</p> <p>2 MRI technology out of the hospital setting and</p> <p>3 applied it to the examination of shales where</p> <p>4 they're talking about nanodarcys. Now a darcy</p> <p>5 is not a big thing, but a nanodarcy is really</p> <p>6 -- and they use scanning electron microscopes</p> <p>7 to see these little tiny, tiny holes in the</p> <p>8 rock.</p> <p>9 So right across the board, it's quite a</p> <p>10 remarkable thing. I mean, and I was lucky</p> <p>11 enough to -- bumping into an old friend from</p> <p>12 Port aux Basques down in Houston seven years</p> <p>13 ago, I became engaged in it and it has been</p> <p>14 the most fascinating single thing that I've --</p> <p>15 and as I go around the conferences, I pick out</p> <p>16 the older people with the grey hair and you</p> <p>17 know, I've been in the business for 40 years</p> <p>18 and I say "have you ever seen anything like</p> <p>19 this before in your career?" and everybody to</p> <p>20 a person says no, this is the big one.</p> <p>21 CHAIRMAN:</p> <p>22 Q. I saw another article where one of the guys,</p> <p>23 one of the key players in Tabacon says he</p> <p>24 could have, in his company alone, 24 billion</p> <p>25 barrels of oil.</p>	<p>1 I haven't met him, but I mean, he's very</p> <p>2 respected in the industry, and that number</p> <p>3 would be a number that would be very much</p> <p>4 supported by his colleagues in the industry.</p> <p>5 CHAIRMAN:</p> <p>6 Q. So at 250 million barrels a year, that's a lot</p> <p>7 of oil. That's what the US consumes, I think</p> <p>8 I read that. Anyway. I think that was --</p> <p>9 yeah, and I think Commissioner Oxford had a</p> <p>10 question.</p> <p>11 COMMISSIONER OXFORD:</p> <p>12 Q. Mr. Martin, have you given any thought to what</p> <p>13 time frames would be involved to be able to</p> <p>14 bring this new technology, deliver fuel to the</p> <p>15 Province of Newfoundland and Labrador and be</p> <p>16 able to put it into production? Have you</p> <p>17 given any thought to the time frame of that?</p> <p>18 MR. MARTIN:</p> <p>19 A. Well, I don't think I'm allowed to talk about</p> <p>20 the importation of liquified natural gas.</p> <p>21 That's outside, as I understand outside the</p> <p>22 terms of reference. If I were allowed to talk</p> <p>23 about it, I'd say we could do it right away.</p> <p>24 CHAIRMAN:</p> <p>25 Q. I think that's a pretty good answer, isn't it?</p>
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<p>1 MR. MARTIN:</p> <p>2 A. That would be the total Tabacon, yes.</p> <p>3 CHAIRMAN:</p> <p>4 Q. That's the total, is it?</p> <p>5 MR. MARTIN:</p> <p>6 A. Yes, and I think -- and this is the other</p> <p>7 problem that's going on is that there is a big</p> <p>8 discrepancy between the well-founded -- I</p> <p>9 mean, everybody is playing catch up. The</p> <p>10 United States geological survey had to develop</p> <p>11 a brand new way of calculating reserves. I</p> <p>12 mean, their old methods did not work for this</p> <p>13 new technology, so they tend to be -- most of</p> <p>14 those official reserves that you see tend to</p> <p>15 be very much on the conservative side. I</p> <p>16 mean, you're talking about -- I think Mr.</p> <p>17 Hann, is it?</p> <p>18 CHAIRMAN:</p> <p>19 Q. I think that's his name.</p> <p>20 MR. MARTIN:</p> <p>21 A. Yeah, Mr. Hann of -</p> <p>22 CHAIRMAN:</p> <p>23 Q. Continental.</p> <p>24 MR. MARTIN:</p> <p>25 A. - Continental, you know, who I've heard speak.</p>	<p>1 Any further questions? Anybody else?</p> <p>2 GREENE, Q.C.:</p> <p>3 Q. No, Mr. Chair. I believe that concludes the</p> <p>4 questions for Mr. Martin.</p> <p>5 CHAIRMAN:</p> <p>6 Q. Thank you, Mr. Martin.</p> <p>7 MR. MARTIN:</p> <p>8 A. Thank you.</p> <p>9 CHAIRMAN:</p> <p>10 Q. Now, well, we're keeping to our schedule</p> <p>11 pretty good. Next we have Mr. Vardy and Mr.</p> <p>12 Penney, Dave Vardy and Ron Penney. Mr.</p> <p>13 Penney, are you the chairman of your</p> <p>14 contingent or are you co-chairs?</p> <p>15 MR. PENNEY:</p> <p>16 A. We're co-chairs, equal co-chairs.</p> <p>17 CHAIRMAN:</p> <p>18 Q. Equal co-chairs. Who's speaking first?</p> <p>19 MR. PENNEY:</p> <p>20 A. I'll be speaking first.</p> <p>21 CHAIRMAN:</p> <p>22 Q. Okay, sir.</p> <p>23 MR. PENNEY:</p> <p>24 A. And I hope I don't lapse into your honour or</p> <p>25 your worship.</p>

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<p>1 CHAIRMAN:</p> <p>2 Q. Please don't.</p> <p>3 MR. PENNEY:</p> <p>4 A. Mr. Chair and Commissioners, it's a great</p> <p>5 pleasure for us to be here today and we very</p> <p>6 much appreciate the opportunity to present to</p> <p>7 the Board.</p> <p>8 We are two retired public servants with</p> <p>9 long experience in public service which</p> <p>10 involved providing advice to governments on</p> <p>11 many complex public policy issues. We have</p> <p>12 been accused of having an agenda and in fact,</p> <p>13 that is true. We do have an agenda, but our</p> <p>14 only agenda is to ensure that this issue,</p> <p>15 which in our view is the biggest public policy</p> <p>16 issue ever to have faced the province, gets</p> <p>17 the most thorough and rigorous review</p> <p>18 possible.</p> <p>19 We are not opposed in principle to the</p> <p>20 project. Our main concerns are with the</p> <p>21 process and whether Muskrat Falls is the best</p> <p>22 option either now or later. We recognize that</p> <p>23 the Board is severely constrained by both the</p> <p>24 Terms of Reference and by the refusal of a</p> <p>25 government to give the Board the time it needs</p>	<p>1 largest capital project ever undertaken in our</p> <p>2 history.</p> <p>3 On May the 5th, 2011, Dave and I wrote</p> <p>4 the Minister, the then Minister of Natural</p> <p>5 Resources, Shawn Skinner, asking that the</p> <p>6 exemption be lifted. In our letter, we stated</p> <p>7 the following: "This is one of the most</p> <p>8 important public policy issues ever to face</p> <p>9 the province and it is imperative that the</p> <p>10 choice made by Government be subject to</p> <p>11 independent review. The Muskrat Falls Project</p> <p>12 may well be the best public policy choice, but</p> <p>13 the people of Newfoundland and Labrador need</p> <p>14 to have that choice tested by the Board which</p> <p>15 is set up for that purpose. We are requesting</p> <p>16 that Government reconsider its decision to</p> <p>17 exempt the project from the jurisdiction of</p> <p>18 the Board in light of the magnitude of the</p> <p>19 project and the necessity to ensure that it is</p> <p>20 the best option, not only to meet our energy</p> <p>21 requirements, but to mitigate financial risk</p> <p>22 to the province."</p> <p>23 On June 17th, 2011, the Government</p> <p>24 announced that the Board would be asked to</p> <p>25 conduct a review which wasn't what we</p>
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<p>1 to do the job it was asked to do, but the</p> <p>2 bigger problem with this process which seems</p> <p>3 to have been forgotten is the fact that the</p> <p>4 Muskrat Falls Project has been exempted from</p> <p>5 the normal regulatory process which applies to</p> <p>6 all regulated utilities in the province and</p> <p>7 requires that all significant capital</p> <p>8 expenditures be approved by the Board. This</p> <p>9 is what has recently occurred with respect to</p> <p>10 an application by Hydro on a transmission</p> <p>11 project which was disallowed as part of the</p> <p>12 PUB's annual review of Hydro's capital</p> <p>13 expenditures.</p> <p>14 We note that this exemption was granted</p> <p>15 by a previous administration, so there's lots</p> <p>16 of blame to be shared about this particular</p> <p>17 decision. But it is important to note that</p> <p>18 the exemption order could have been lifted by</p> <p>19 the present administration, but hasn't been.</p> <p>20 Neither the previous administration nor the</p> <p>21 current administration has provided reasons</p> <p>22 for this exemption. I ask the question -- we</p> <p>23 ask the question, how can there possibly be</p> <p>24 any justification for distinguishing between</p> <p>25 relatively small capital projects and the</p>	<p>1 requested, but an important step nevertheless.</p> <p>2 The Minister wrote us on June 22nd formally</p> <p>3 responding to our letter and saying the</p> <p>4 following: "as a Government, we felt it</p> <p>5 important to independently engage the PUB's</p> <p>6 expertise on this fundamental question as the</p> <p>7 Muskrat Falls development is the most</p> <p>8 significant electrical generation and</p> <p>9 transmission project undertaken by the</p> <p>10 province in 50 years. This review is just one</p> <p>11 of the elements of Government's strategy to</p> <p>12 ensure that this project is subject to input</p> <p>13 from various sources prior to sanction and</p> <p>14 will further enhance our goal to engage the</p> <p>15 people of the province and ensure confidence</p> <p>16 about a decision to move ahead and sanction</p> <p>17 this project."</p> <p>18 We do appreciate the respectful and</p> <p>19 thoughtful way in which the former Minister,</p> <p>20 the Honourable Shawn Skinner, responded to us.</p> <p>21 This was somewhat encouraging, but as events</p> <p>22 unfolded and other alternatives have come to</p> <p>23 the fore, it is clear to us that the Terms of</p> <p>24 Reference are far too narrow. By limiting the</p> <p>25 Terms of Reference and the time given to the</p>

1 Board, there is a real question as to whether
 2 the Government has done what it said it would
 3 do in terms of engaging the people of the
 4 province in an open public debate. We also
 5 note that one of the casualties of the
 6 decision not to extend the deadline for the
 7 Board's report is the inability of the Board
 8 to conduct its plan of technical conference,
 9 which has meant that there's no opportunity
 10 for Newfoundland Power and its parent, Fortis,
 11 to provide its effective (phonetic) island
 12 project and question the technical experts,
 13 which no doubt would have added greatly to the
 14 process, but we do urge Fortis to make its
 15 views publicly known. We think that's very
 16 important for this process.

17 O'REILLY, Q.C.:
 18 Q. Mr. Chairman, I'm trying to follow the outline
 19 that was filed by Mr. Penney and Mr. Vardy and
 20 there were six points that are noted, we got
 21 those on Friday, and I'm going to try to find
 22 out where - probably he can help me where we
 23 are in his outline. Which of the six areas?

24 MR. PENNEY:
 25 A. I'm very close.

1 O'REILLY, Q.C.:
 2 Q. You're very close to the first one?

3 MR. PENNEY:
 4 A. Yes.
 5 (10:00 a.m.)

6 O'REILLY, Q.C.:
 7 Q. Well, the only thing, Mr. Chairman, if we have
 8 a limited amount of time, there were a number
 9 of people, I presume, who read the very clear
 10 statement of area of inquiry, and I'm sure
 11 this is all very interesting, but it doesn't
 12 seem to inform the process that the Board is
 13 involved in and its mandate and the reference
 14 question to be dealing with these sorts of
 15 things. I mean, I'm sure there's a forum for
 16 that. I question whether or not this is the
 17 one and if there are others that had a similar
 18 elastic view of what the Terms of Reference
 19 encompass, then probably they might respond
 20 accordingly and ask to speak at this thing as
 21 well, but, you know, I just find that this
 22 seems to be far afield from what the reference
 23 question is and more particularly going to the
 24 points that were raised in the file as the
 25 basis for the issue this morning.

1 CHAIRMAN:
 2 Q. Well, I - Mr. Penney, I mean, we've allowed,
 3 well, to 11 o'clock for your presentation and
 4 are you - you're going to be within that time
 5 frame, are you?

6 MR. PENNEY:
 7 A. And if you'll wait until my very next
 8 sentence, you'll see that I'll be starting on
 9 the particular - on the Terms of Reference.

10 CHAIRMAN:
 11 Q. So those remarks were what you might call
 12 preambletory.

13 MR. PENNEY:
 14 A. That's right.

15 CHAIRMAN:
 16 Q. Okay.

17 MR. PENNEY:
 18 A. If I may continue then, the decision to
 19 embark upon this project is a major public
 20 policy decision that will impact on future
 21 generations. The PUB has been asked to
 22 provide their recommendation as to whether we
 23 need additional power and to choose between
 24 two alternate options. We all know that the
 25 choices which must be made are, in fact, more

1 complex. There are many options to be
 2 considered, not just two. A decision to
 3 proceed with Muskrat at a later date is a
 4 realistic option, but not one which is posed
 5 by Government. We note that the Board's
 6 review is limited to examination of those two
 7 options; the Muskrat Falls project, and the
 8 isolated island development scenario. The
 9 review will not address alternatives such as
 10 wind power, natural gas, the role of energy
 11 conservation and demand side management, or
 12 environmental concerns, or the impact on
 13 electrical rates to end users.

14 I am a lawyer by profession and a former
 15 Deputy Minister of Justice with the province.
 16 I also recently retired as a City Manager of
 17 St. John's where I spent 17 years. I bring
 18 considerable experience from my role as City
 19 Manager on the financial risk of cost overruns
 20 on major projects. While those projects were
 21 not of the same magnitude as a multi-billion
 22 dollar Muskrat Falls project, the City did
 23 construct large projects in an era of
 24 tremendous increases in materials and labour
 25 costs, which continues to be the case now. I

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<p>1 am, as a result of my job with the City, 2 familiar with cost estimating processes and 3 the various stages which you go through. As 4 you go further along, I know that this process 5 is meant to more accurately estimate the cost 6 of a project as detailed designs are completed 7 and tender documents are prepared leading to 8 the final pre-tender estimates.</p> <p>9 The City, of course, just as Nalcor is 10 doing, followed those processes utilizing 11 outside engineering consultants and our own 12 internal expertise, but we found inevitably 13 that the actual tenders results and final cost 14 did significantly increase the final cost of 15 large projects, such as the construction of 16 the Civic Centre and the harbour clean-up 17 project. In a project of this magnitude there 18 is great potential for large cost increases, 19 particularly when this project if sanctioned 20 will be undertaken at the same time as other 21 large construction projects are underway, such 22 as the Hebron oil and gas project. We also 23 note that the last major hydro project 24 constructed by Hydro, Cat Arm, came in 25 significantly over estimated costs, and</p>	<p>1 Just turning now to reliability issues. 2 We note the questions about reliability have 3 been an important focus of the work of 4 Manitoba Hydro at the hearings last week. 5 Given that the Avalon Peninsula, and 6 particularly the North East Avalon, will be 7 very vulnerable when Holyrood is closed down 8 under the interconnected option, this issue is 9 of vital importance to this part of the 10 province, and it's actually one of the reason 11 why I became interested in this public policy 12 issue. As we well know, the Avalon Peninsula 13 is vulnerable to disruptions anywhere along 14 the line. Power disruptions under the 15 interconnected option might occur in Labrador, 16 along the Strait of Belle Isle, along the Long 17 Range Mountains in Central Newfoundland, or of 18 course on the Isthmus of the Avalon. We do 19 agree that the Maritime link does provide some 20 added security, but if a disruption occurs on 21 the transmission lines crossing the Isthmus of 22 Avalon, then the most effective back up power 23 has to be on the Avalon Peninsula. The 24 interconnected option calls for Holyrood to be 25 decommissioned as a generating plant. Having</p>
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<p>1 perhaps the Board might consider asking Hydro 2 to provide the initial estimate and the final 3 cost of the Cat Arm Project as part of its 4 processes.</p> <p>5 There is also one aspect of risk 6 management which I don't think has been 7 addressed or at least the sharing of risk, and 8 that is the possible use of the Lower 9 Churchill Development Corporation, a joint 10 federal/provincial body which was set up years 11 ago to construct the Lower Churchill. LCDC is 12 owned 49 percent by the Government of Canada 13 and 51 percent by the Government of 14 Newfoundland and Labrador. This Act is still 15 in existence and we think that serious 16 consideration should be given to using that 17 Corporation to construct Muskrat Falls if it 18 is sanctioned rather than doing it on our own. 19 I note that the City and the Province used a 20 similar mechanism, a construction board, 21 consisting of City and Provincial 22 representatives, together with representatives 23 of Destination St. John's, to manage the 24 construction of the Civic Centre and to share 25 the risk.</p>	<p>1 Holyrood so close to the St. John's urban 2 region provides this area of the province with 3 considerable energy security.</p> <p>4 We also note that the MHI Report raises 5 serious concerns about how the reliability 6 issue has been addressed by Nalcor. We 7 acknowledge again that the connection to Nova 8 Scotia may provide us with access to power in 9 the event of a loss of supply, depending on 10 where the problem occurs. For example, the 11 location of a loss of transmission line 12 matters for this to work, and the capacity of 13 EMERA, the suppliers, will be affected by 14 where and when the loss of power occurs. If 15 it happens during the late winter or early 16 spring, which is our time of maximum risk, 17 Nova Scotia would also be in a high demand 18 situation at the same time as they may have 19 lost power from Muskrat Falls. Should the 20 Board's report make recommendations on this 21 matter, we believe as well that the Board 22 should be given the opportunity to review any 23 further work which is being done on this part 24 of the project sanction process.</p> <p>25 I now turn it over to my colleague, Dave</p>

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<p>1 Vardy, who has a lot more expertise in this, 2 given that he was on the Board of Hydro and 3 is, of course, the Past Chair of the Board of 4 Commissions of Public Utilities. 5 MR. VARDY: 6 A. Good morning, Mr. Chairman. My name is 7 David Vardy. I'm by training an economist and 8 by career a Senior Executive with various 9 government agencies in the province, the Chair 10 of the Public Utilities Board from 1994 to 11 2001. When I served as Secretary to the 12 Cabinet from '78 to '85 under Premier's Frank 13 Moores and Brian Peckford, I was a member of 14 the Board of Newfoundland and Labrador Hydro. 15 In August of last year, I wrote a paper for 16 Action Canada on the Muskrat Falls Project, 17 and I'm tabling a copy of this paper dated 18 August 31st, 2001, in order to place it on the 19 record for this proceeding. 20 I will deal with the following issues; 21 risk mitigation, the MHI Report, the end of 22 the Churchill Falls Power contract, capital 23 structure, cost of service, water management, 24 conclusions. 25 The mitigation of risk is a key issue to</p>	<p>1 The historical advantage of hydro 2 electric power is that while capital costs may 3 be high, the operating costs are low. Once it 4 is built, the project runs itself, and if 5 fossil fuel energy costs are rising, then 6 capital intensive hydro projects will 7 stabilize the cost and over time the low and 8 stable cost will be its advantage. Such was 9 the case with the Bay D'Espoir Project, which 10 has been an enormous asset. If energy prices 11 behave unpredictably and start to decline, 12 then this hydro electric project could turn 13 into an albatross. We cannot predict 14 accurately what can happen. We must exercise 15 prudence and then make a decision. The shale 16 gas revolution is causing uncertainty in 17 energy markets and we are well advised to 18 recognize its impact, not only on oil and gas 19 prices, but also on electricity prices 20 throughout North America. 21 The isolated island alternative contains 22 a series of smaller projects which allow 23 Newfoundland Hydro to move forward and supply 24 power, maintain system reliability, and 25 thereby provide ample time to mitigate the</p>
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<p>1 be addressed in this hearing. There is risk 2 associated with all options, not just one. 3 Some of the risks are controllable; some are 4 not. Some can be anticipated and known; 5 others are unknown. We can never be assured 6 that all risks have been identified and 7 minimized. However, we must attempt to ensure 8 that system planning takes all risk factors 9 into account. We believe that in a project of 10 this magnitude, all available expertise and 11 information should be mobilized. The major 12 risks as we have identified them are as 13 follows; capital cost overruns, volatile oil 14 and gas prices, over-estimation of load 15 growth, under-estimation of load growth from 16 emerging new industrial users of electricity, 17 volatile electricity prices in potential 18 export markets for electricity produced in 19 Newfoundland and Labrador, changes in 20 demography which may impact upon load growth, 21 decline in family formation and new home 22 construction, and changes in the usage of 23 electricity, and finally, physical risks such 24 as storms and icebergs scouring on the Strait 25 of Belle Isle.</p>	<p>1 risk associated with Muskrat Falls and to 2 explore other options. The Muskrat Falls 3 Project is of such a scale and nature that 4 once a decision has been made, there is no 5 turning back. We cannot make piecemeal 6 adjustments. The cost of Muskrat Falls is all 7 up front and inescapable. 8 Our recommendation is that Government 9 take short to medium term energy decisions 10 which will allow sufficient time for the 11 province to complete its due diligence on 12 Muskrat Falls. The Joint Environmental Review 13 Panel established by both levels of Government 14 to review the EIS for the Lower Churchill had 15 a full two years to do their job, and that 16 panel raised serious questions about the 17 merits of Muskrat Falls. Now the PUB is being 18 rushed to finalize its recommendation by the 19 end of March. While the Government filed the 20 reference in June, the submission from Nalcor 21 was not received until November, and the MHI 22 Report was not completed for the Board until 23 the end of January. In light of this, we 24 believe that this tight deadline is patently 25 unfair to the Board, as was the Government's</p>

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<p>1 refusal to allow the time requested by the</p> <p>2 Board.</p> <p>3 (10:15 a.m)</p> <p>4 Nevertheless, we welcome this opportunity</p> <p>5 to voice our opinions. Is the current timing</p> <p>6 right for the project for Muskrat Falls; it is</p> <p>7 the best of times and the worst of times, to</p> <p>8 quote Charles Dickens. Interest costs are low</p> <p>9 and money is available to finance a major</p> <p>10 project. Loan guarantee financing may be</p> <p>11 available from the Federal Government. Oil</p> <p>12 prices are high. The economic environment is</p> <p>13 uncertain. Signs of a buoyant economy are</p> <p>14 emerging in the United States, and the Eastern</p> <p>15 economies such as China and India are surging.</p> <p>16 On the other hand, unemployment has risen in</p> <p>17 Canada and even in Newfoundland and Labrador.</p> <p>18 Europe is in turmoil with Greece and Italy</p> <p>19 tottering toward bankruptcy. New shale oil</p> <p>20 discoveries are dramatically changing the</p> <p>21 energy landscape. While there are risks</p> <p>22 associated with Muskrat Falls, there are also</p> <p>23 advantages to removing our historical</p> <p>24 electrical isolation on the island. There are</p> <p>25 inherent benefits to electrical integration</p>	<p>1 would like some commentary on other supply</p> <p>2 options as well as the timing of Muskrat Falls</p> <p>3 in light of MHI's qualified support for the</p> <p>4 project.</p> <p>5 Mr. MHI Report concluded that the DG 2</p> <p>6 capital cost estimates were equivalent to a</p> <p>7 Class 4 estimate, which is a feasibility</p> <p>8 estimate and its a range of accuracy of + 50</p> <p>9 percent to -30 percent. The information</p> <p>10 provided by Nalcor and reviewed by MHI was</p> <p>11 generally current as of the fall of 2010 and</p> <p>12 was used by Nalcor in making its DG 2</p> <p>13 decision. Nalcor did not generally provide</p> <p>14 information on the detailed engineering or</p> <p>15 financial work completed after DG 2. The</p> <p>16 capital cost information is therefore a year</p> <p>17 out of date and it has the potential for cost</p> <p>18 overruns of 50 percent. We had expected that</p> <p>19 the cost estimates would be beyond feasibility</p> <p>20 estimates in their confidence limits at this</p> <p>21 stage of the project. MHI's comments on the</p> <p>22 load forecast are organized around domestic</p> <p>23 customers, small general service, and</p> <p>24 industrial customers. For domestic customers,</p> <p>25 the load forecast has been generally reliable,</p>
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<p>1 for an island based system. Power can flow</p> <p>2 both ways, so it can benefit from being</p> <p>3 electrically connected not only with Labrador,</p> <p>4 but also with the rest of North America. The</p> <p>5 issue for us is whether we have undertaken a</p> <p>6 comprehensive assessment of the risks as well</p> <p>7 as the options available to us.</p> <p>8 The Joint Environmental Panel on the</p> <p>9 Lower Churchill Generation Project identified</p> <p>10 a number of key risks which need to be</p> <p>11 mitigated. We will speak later about how much</p> <p>12 progress has been made to address these</p> <p>13 concerns. We would like formally to enter the</p> <p>14 joint panel report into evidence before the</p> <p>15 PUB, and we would appreciate the advice of the</p> <p>16 Board with regard to what we need to do to</p> <p>17 place it before the Board.</p> <p>18 Now I turn to the major findings of the</p> <p>19 MHI Report. The MHI Report contains much that</p> <p>20 is useful. We would have liked to have seen</p> <p>21 more analysis with regard to the actions that</p> <p>22 could be taken to reduce peak loads, such as</p> <p>23 side agreements with major industrial users or</p> <p>24 the use of unpeak pricing. This is an area in</p> <p>25 which more research is required. We also</p>	<p>1 presumably helped by the work of Newfoundland</p> <p>2 Power in forecasting the load of its own</p> <p>3 customers. MHI noted that for the domestic</p> <p>4 forecast the load is consistently under-</p> <p>5 forecasted by 1 percent per year. They</p> <p>6 suggested that end-use modelling techniques</p> <p>7 would improve the accuracy of the forecast.</p> <p>8 The general service forecast has been quite</p> <p>9 accurate. The industrial load has been over-</p> <p>10 estimated as a result of the closure of two</p> <p>11 pulp and paper mills, and also the remaining</p> <p>12 mill has adjusted its operation so that it</p> <p>13 purchases much less from Hydro and is close to</p> <p>14 meeting its needs from its own Deer Lake Hydro</p> <p>15 Facilities.</p> <p>16 MHI points out that the addition of a</p> <p>17 large industrial customer could have a large</p> <p>18 impact on the projected load. While Nalcor's</p> <p>19 forecast into the future may appear to be</p> <p>20 conservative, Nalcor has tended in the past to</p> <p>21 over-estimate its future load growth.</p> <p>22 Nalcor's submission to the Board in November,</p> <p>23 2011, projects a high level of housing starts,</p> <p>24 even when population is static. The</p> <p>25 submission states as follows, "As depicted in</p>

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<p>1 Figure 4", which I would ask Mike to put up 2 before you, "As depicted in Figure 4, the 3 number of domestic customers has continued to 4 grow despite the province's declining 5 population. This has occurred because 6 household and consumer formation are naturally 7 more related to the subset of population that 8 is 25 years and older. This is the age subset 9 which predominantly forms households and 10 drives the demand for housing. Changes in real 11 disposable income have also been historically 12 linked to customer growth".</p> <p>13 Now I turn to the next chart, which is a 14 chart of provincial population and - sorry, 15 I'm getting ahead of myself. We have three 16 observations to make on these data on load 17 growth. One, the continued growth of the 18 older population subset cannot be predicted to 19 continue indefinitely. We have to look at the 20 numbers in the age group, 24 to 45, which are 21 responsible for new family formation and for 22 most of the housing starts. This age cohort 23 is already showing signs of slower growth as 24 shown in the chart below, which I'd like to be 25 put up next, which is the one that's before</p>	<p>1 note that MHI refers to the system reliability 2 studies and observes that Nalcor should rely 3 more heavily on probabilistic criteria as to 4 other utilities in Canada. We note as well 5 that integration studies will not be completed 6 until March, 2012. MHI report that good 7 utility practice requires these integration 8 studies be completed as part of the project 9 screening process in DG 2. MHI considers this 10 a major gap in Nalcor's work to date. These 11 integration studies must be completed prior to 12 the project sanction. MHI suggests that the 13 generation engineering and cost estimation is 14 in a better state of readiness than the 15 transmission component of the project. MHI 16 report as well that Nalcor currently does not 17 comply with North American Electrical 18 Reliability Corporation Standards, NERC 19 standards. A majority of utilities in Canada 20 have adopted the definition of good utility 21 practice that incorporates adherence to NERC 22 Standards. Also should the Maritime link 23 proceed and Nalcor participates in the 24 electricity marketplace, NERC Standards will 25 ultimately apply. MHI recommends that Nalcor</p>
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<p>1 you now. This shows the - the red line shows 2 the 25 to 44 year old people. That reached a 3 bulge in the early 90s and is now starting to 4 decline. So this group has been declining. 5 Secondly, as the population grows older with 6 little natural increase, it projected that 7 there will be more senior citizens. As you'll 8 see from the blue line, the blue line shows 9 those who are 65 and higher. These senior 10 citizens are likely to have lower incomes than 11 the younger population and to live in smaller 12 spaces, thereby requiring less space heating. 13 The blue line in the chart shows the projected 14 increase in the number of senior citizens, 65 15 years and older, of whom I am one. Third, we 16 note that the provincial forecasts go only to 17 2029, which raised the question of attempting 18 to forecast so far into the future as 2067, 19 for which period we do not have demographic 20 projections. While we appreciate Nalcor's 21 point that low growth continued in the post 22 moratorium period when there was an outflow of 23 population, and we have to recognize the 24 demographic outlook is virtually flat.</p> <p>25 Turning to the reliability studies, we</p>	<p>1 complete a self-assessment and prepare for 2 full compliance to NERC Standards, with or 3 without the Maritime link. Nalcor has 4 selected a 1 to 50 year reliability return 5 period, a basis for design loading criteria 6 for the HVDC transmission line, which is 7 inconsistent with the recommended 1 to 500 8 year reliability return period outlined in the 9 international standard. Nalcor has stated 10 that the additional capital cost increase for 11 the 1 to 150 year return period for the 12 transmission line would be 150 million. In 13 the latter case, Nalcor should also give 14 consideration to an even higher level 15 reliability return period in the remote Alpine 16 regions. MHI recommends that Nalcor adhere to 17 these criteria for the HVDC transmission line 18 design.</p> <p>19 We believe that Nalcor should include the 20 additional capital cost for the 1 to 150 year 21 reliability return period, and for the even 22 higher 1 to 500 standard in the higher and 23 more remote regions. Since achieving the 1 to 24 150 year return period adds 150 million to the 25 capital cost, we presume that the higher</p>

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<p>1 standard recommended by MHI would cost</p> <p>2 somewhat more. A high standard of reliability</p> <p>3 on such a distant source is crucial and this</p> <p>4 expense should be added to the reference case</p> <p>5 for the Muskrat Falls calculation of CPW and</p> <p>6 all the sensitivity analyses performed on that</p> <p>7 reference case.</p> <p>8 We also note that the isolated island</p> <p>9 option includes 582 million dollars capital</p> <p>10 expenditure for pollution abatement, but</p> <p>11 during the time since that expenditure was</p> <p>12 called for in the 2007 Energy Plan,</p> <p>13 Newfoundland Hydro has been successful in</p> <p>14 abating sulphur dioxide and particulate</p> <p>15 emissions by using low sulphur fuel. Also the</p> <p>16 2007 Plan was prior to the closure of the</p> <p>17 Grand Falls Mill, which was not anticipated,</p> <p>18 but a side effect of which was to free up a</p> <p>19 large amount of hydro electricity. With</p> <p>20 availability of that clean energy and the use</p> <p>21 of cleaner fuel, there will be much less</p> <p>22 emissions to abate and, therefore, the</p> <p>23 benefits of the capital expenditure will be</p> <p>24 much less than we thought in 2007. We</p> <p>25 emphasize that we support a pollution</p>	<p>1 resource. Between now and 2041, we will</p> <p>2 carefully plan and make decisions to ensure</p> <p>3 Upper Churchill's success in the future, as</p> <p>4 well as organizing our current and future</p> <p>5 energy resource developments to maximize</p> <p>6 benefits, while minimizing fluctuations in our</p> <p>7 economy". In this context, it is surprising</p> <p>8 that Nalcor's planning does not rely upon</p> <p>9 Churchill Falls power in the years from 2041</p> <p>10 to the end of the planning period in 2067. In</p> <p>11 the response to MHI-Nalcor 3, the question is</p> <p>12 posed as follows, "What consideration has been</p> <p>13 given to the excess power capacity that will</p> <p>14 become available associated with the</p> <p>15 termination of the Upper Churchill Falls</p> <p>16 Agreement in 2041". The answer in part is as</p> <p>17 follows, "There is inherent uncertainty around</p> <p>18 guaranteeing the availability of supply from</p> <p>19 Churchill Falls in 2041 because it is</p> <p>20 difficult to determine the environmental and</p> <p>21 policy frameworks that will be in place 30</p> <p>22 years out - 30+ years out. There are other</p> <p>23 issues surrounding the Churchill Falls asset</p> <p>24 with respect to Hydro Quebec, as Nalcor is not</p> <p>25 the sole shareholder of the Churchill Falls</p>
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<p>1 abatement, but are pointing out that other</p> <p>2 measures have substantially addressed the</p> <p>3 problem. Moreover, we understand that the</p> <p>4 abatement equipment will not reduce greenhouse</p> <p>5 gases. Therefore, the present value of the</p> <p>6 582 million should be removed from the CPW</p> <p>7 calculation for the reference case; namely,</p> <p>8 the isolated island option.</p> <p>9 A few comments on the end of the Muskrat</p> <p>10 Falls Power Contract -</p> <p>11 MR. PENNEY:</p> <p>12 A. Churchill Falls.</p> <p>13 MR. VARDY:</p> <p>14 A. The Churchill Falls Power Contract. The 2007</p> <p>15 Energy Plan identifies the year 2041 as a</p> <p>16 landmark year for access to electric power</p> <p>17 from Churchill Falls. This is the year when</p> <p>18 the 1969 Power Contract expires, and Nalcor</p> <p>19 Energy as the majority shareholder in CF(L)Co</p> <p>20 will have access to the facility and the</p> <p>21 energy. The Energy Plan, Focusing Our Energy</p> <p>22 2007, states on page 22, "We will maintain our</p> <p>23 focus on 2041, when the Upper Churchill</p> <p>24 Contract expires and the province is in a</p> <p>25 position to receive the full benefit from this</p>	<p>1 operation".</p> <p>2 We find this response surprising and</p> <p>3 incredible. The least uncertain event for the</p> <p>4 energy future of this province is that the</p> <p>5 Churchill Falls contract expires in 2041; we</p> <p>6 even know the exact day of the expiry. The</p> <p>7 Winter Availability Contract also expires in</p> <p>8 2041, as does the Shareholders Agreement</p> <p>9 between CF(L)Co and Hydro-Quebec. The</p> <p>10 reservoir, dams, turbines, and related</p> <p>11 facilities are in place with no construction</p> <p>12 required. Under the interconnected plan,</p> <p>13 Nalcor does include Churchill Falls power</p> <p>14 starting in 2057, yet we are told that 2041,</p> <p>15 some 16 years earlier in time is too uncertain</p> <p>16 to consider Churchill Falls as an option.</p> <p>17 The only uncertain element about</p> <p>18 Churchill Falls is whether the current</p> <p>19 litigation in the Quebec Court that challenges</p> <p>20 the contract might result in access to the</p> <p>21 power sooner than 2041. If this materializes,</p> <p>22 then the Province might well be advised to</p> <p>23 maintain its flexibility to benefit from such</p> <p>24 an outcome by holding off its decision to</p> <p>25 commission the Muskrat Falls Project.</p>

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<p>1 In the period 2041 to 2067, Nalcor's</p> <p>2 isolated island system includes 12 thermal</p> <p>3 plants and two wind turbines, all at a cost of</p> <p>4 5.5 billion in current dollars. The Labrador</p> <p>5 infeed system includes six 50 megawatt CT</p> <p>6 units at a cost over the same period, 2041 to</p> <p>7 2067, of just over 1 billion dollars. The</p> <p>8 difference in nominal or current dollars is</p> <p>9 4.5 billion. Does this create a bias in favour</p> <p>10 of Muskrat Falls? We raise that question for</p> <p>11 the Board's consideration.</p> <p>12 Nalcor's analysis assumes that the</p> <p>13 consumption of energy is the same in every</p> <p>14 year under both options, but in the isolated</p> <p>15 island option, especially in the later years,</p> <p>16 there is a substantial price difference for</p> <p>17 rate payers. This is the essence of the Joint</p> <p>18 Panel's recommendation 4.3 to adopt integrated</p> <p>19 resource planning, which reflects the impact</p> <p>20 of rate changes upon demand and the associated</p> <p>21 revenue requirement.</p> <p>22 If under the isolated island option rate</p> <p>23 payers pay higher rates, then their</p> <p>24 consumption will be less. This means less</p> <p>25 need for capacity and less fuel consumption.</p>	<p>1 the Joint Panel asks, "Why Nalcor's least cost</p> <p>2 alternative to meet domestic demand to 2067</p> <p>3 does not include Churchill Falls power, which</p> <p>4 would be available in large quantities from</p> <p>5 2041 or any recall power in excess of</p> <p>6 Labrador's needs prior to that date,</p> <p>7 especially since both would be available at</p> <p>8 near zero generation cost", recognizing of</p> <p>9 course that there would be transmission costs</p> <p>10 involved. The Joint Panel recommends this</p> <p>11 question should be included in the Terms of</p> <p>12 Reference of the independent analysis, along</p> <p>13 with the following questions, which I will</p> <p>14 pass over in the interest of brevity.</p> <p>15 We recommend that the Board accept the</p> <p>16 advice of the Joint Panel to adopt the</p> <p>17 principles of integrated resource planning</p> <p>18 which places more weight on demand side</p> <p>19 management than on least cost supply planning.</p> <p>20 I want to turn for a few moments to the</p> <p>21 capital structure, the cost of service and the</p> <p>22 power purchase agreement. The capital</p> <p>23 structure of public utilities is carefully</p> <p>24 calibrated in order to minimize the cost of</p> <p>25 capital. Typically the balance of debt and</p>
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<p>1 Nalcor should be requested to adjust the CPW</p> <p>2 of the isolated island option reference case</p> <p>3 to reflect this likelihood under the</p> <p>4 integrated resource planning framework, as</p> <p>5 recommended by the Joint Panel.</p> <p>6 In Nalcor's submission of November, 2011,</p> <p>7 they indicate that they have included</p> <p>8 Churchill Falls power beginning in 2057 and</p> <p>9 reaching 500 gigawatt hours in 2067. However,</p> <p>10 there's no indication of Churchill Falls as</p> <p>11 being considered under the isolated island</p> <p>12 option. In light of the strong commitments in</p> <p>13 the Energy Plan of 2007 relating to Churchill</p> <p>14 Falls, it is ironic that Churchill Falls was</p> <p>15 screened out of the analysis in Decision Gate</p> <p>16 2.</p> <p>17 In its recommendation 4.2, the Joint</p> <p>18 Federal Provincial Environmental Panel</p> <p>19 describes the Terms of Reference which should</p> <p>20 be covered by an independent analysis of</p> <p>21 alternatives to meeting domestic demand. We</p> <p>22 are citing these recommendations here in the</p> <p>23 understanding that this inquiry by the Public</p> <p>24 Utilities Board constitutes the independent</p> <p>25 analysis recommended by the Joint Panel, and</p>	<p>1 equity is tilted toward debt, recognizing the</p> <p>2 opportunity cost of debt capital is deemed by</p> <p>3 regulators to be lower than the cost of equity</p> <p>4 capital. Regulators, of whom I used to be</p> <p>5 one, use the long term, 30 year or longer</p> <p>6 Government of Canada Bonds borrowing rate for</p> <p>7 bonds as the risk free proxy for the cost of</p> <p>8 debt capital. To that risk free rate is added</p> <p>9 the risk of equity which is less secured than</p> <p>10 is debt capital. Bond holders demand that</p> <p>11 shareholders make a significant contribution</p> <p>12 by injecting a meaningful measure of equity.</p> <p>13 The financial strength of a privately owned</p> <p>14 utility is often measured by the absolute size</p> <p>15 of shareholder equity and by its relative</p> <p>16 size, compared with debt. A typical capital</p> <p>17 structure would be 70 percent debt, 30 percent</p> <p>18 equity. A strong infusion of equity provides</p> <p>19 potential lenders with confidence that the</p> <p>20 company is financially strong. This will</p> <p>21 normally reduce the cost of debt capital.</p> <p>22 Much has been written on the subject of the</p> <p>23 optimum capital structure.</p> <p>24 Mr. Chairman, at the hearing last week</p> <p>25 you raised the issue of the optimum capital</p>

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<p>1 structure for a Crown owned public utility. 2 You asked whether a capital structure with a 3 95 percent debt might be preferred to one with 4 75 percent debt, in light of the lower cost of 5 debt capital, and the fact that Nalcor is a 6 provincially owned Crown corporation, whose 7 financial position is grounded in the credit 8 standing of the Provincial Government. 9 Nalcor, an unregulated company, will be 10 the builder and owner of Muskrat Falls. 11 Nalcor will sell the power to Newfoundland and 12 Labrador Hydro, a regulated subsidiary of 13 Nalcor Energy, through a power purchase 14 agreement. The capital structure in Decision 15 Gate 2 has been established at 100 percent 16 equity. This is unusual in two respects. One 17 is the fact that it places all the risk on the 18 province. An equity contribution would not 19 qualify for a federal loan guarantee. Second 20 is the fact that the imputed cost of capital 21 will be higher than it would be under a 22 balanced capital structure. The response to 23 20 states, "For analysis, Nalcor has assumed 24 the Labrador-Island Transmission Link was 25 financed on a regulated cost of service basis</p>	<p>1 Newfoundland and Labrador Hydro, and Nalcor. 2 As a non-regulated entity, Nalcor is outside 3 of the full scrutiny of the Public Utilities 4 Board. 5 In the present case Nalcor intends to 6 follow a different pricing regime, modelled 7 along the lines of Bruce Power and one which 8 is not based on cost of service in single 9 years. Under this model, the cost of service 10 is recovered over the life of the project. 11 The departure from cost of service pricing has 12 been chosen on the grounds that this would 13 lead to excessively high prices, creating 14 "rate shock" and imposing too high a burden on 15 consumers in the early years. The consumption 16 of power at that time would be about 40 17 percent of capacity and consumers would have 18 to absorb the cost of all 100 percent of the 19 power in a cost of service model. 20 Under the Bruce Power model, the 21 shareholder, government, will subsidize the 22 power in the early years and recover the 23 subsidy in later years. They will forego a 24 return in the early years and seek a higher 25 return in later years. Effectively, the cycle</p>
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<p>1 with 75 percent debt and a 10 percent return 2 on equity. The Muskrat Falls generating 3 facility was assumed to be financed with 100 4 percent equity with a cost based escalating 5 rate established to provide an 8.4 percent 6 internal rate of return based on sales to the 7 Island". 8 Nalcor Energy has proposed that prices be 9 set independently of cost when Muskrat Falls 10 comes on stream. The standard approach to 11 public utility pricing - rate setting is that 12 they be based - rates be based on the cost of 13 service. The cost of service is subject to 14 confirmation by the Public Utilities Board and 15 normally the Board approves rate changes based 16 on changes in the cost of service, and these 17 cost of service studies are done on an annual 18 basis. Certainly they're done in advance of 19 rate hearings, general rate applications. The 20 cost of service approach is normally applied 21 to public utilities that are regulated 22 entities. Nalcor Energy will be developing 23 Muskrat Falls, and Nalcor is not a regulated 24 entity and will be selling power to a power 25 purchase agreement between the public utility,</p>	<p>1 of foregoing income in the early years and 2 receiving it later is tantamount to a subsidy 3 at the front end, offset by a surcharge at a 4 later time. If it does not involve inter- 5 generational transfers, one has to assume that 6 the reduced rates in the early years are 7 financed by taxpayer subsidies. 8 The bulk of expenditures under the 9 interconnected options are being assessed 10 outside of cost of service methodology, while 11 the isolated island option is assessed through 12 traditional cost of service rate-making. We 13 ask is this a concern of the Board? 14 There has been discussion of the costs 15 and prices of Muskrat Falls power. The 16 pricing regime proposed is unusual and unclear 17 to many. The result is that there is a lack 18 of clarity on the issue which should be 19 absolutely clear, and that is the cost of 20 power produced from Muskrat Falls. The Board 21 should consider asking Nalcor to prepare a 22 document that clearly indicates; (a) the cost 23 of power, and (b) the rates charged to 24 customers for each year. This distinction 25 between cost and price is important.</p>

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<p>1 The point we are making is that Nalcor 2 has not been clear with regard to what is the 3 cost of serving the energy requirements of the 4 island. The energy is confusing. Compounding 5 this is the fact that there appears to be 6 subsidy in the early years when rates are set 7 below cost of service. Any subsidy of this 8 nature will have the effect of stimulating 9 demand and will lead to a different load 10 growth than is assumed in the isolated island 11 option.</p> <p>12 Finally, if indeed the Muskrat Falls 13 generation is to be financed by equity, then 14 the escalating supply price should reflect 15 that. Specifically, the supply price should 16 be determined by a 10 percent internal rate of 17 return, which Nalcor states is the cost of 18 equity rather than the 8.4 percent used by 19 Nalcor. Doing so will result in a new price 20 that reflects the cost of using taxpayers' 21 money for equity financing. Nalcor should 22 determine that price and adjust the CPW 23 accordingly.</p> <p>24 (10:30 a.m.) 25 Before giving our conclusions and</p>	<p>1 Quebec. We're not comforted by the response 2 that the management agreement in place is the 3 panacea. Nor are we comforted by the plethora 4 of hydrological studies which make no 5 reference to the control exercised by Hydro 6 Quebec through the power contract. While the 7 pattern of production at Churchill Falls may 8 match well with the power demands for Muskrat 9 Falls, the Province requires greater certainty 10 with respect to the management of water. We 11 are asking the Board to probe this issue in 12 their examination of Nalcor Energy and MHI.</p> <p>13 I now turn the presentation back to my 14 colleague, Mr. Penney, for the conclusion of 15 our conclusions and recommendations.</p> <p>16 MR. PENNEY: 17 A. Thank you, David. Just to take a few 18 minutes, we are confident that the Board will 19 weigh the evidence laid before it and make 20 appropriate recommendations to the benefit of 21 all rate payers and the people of Newfoundland 22 and Labrador. In particular, we commend to 23 the Board a thorough review of the work of the 24 Joint Federal Provincial Review Panel, which 25 made a number of recommendations which we</p>
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<p>1 recommendations, I want to make a few comments 2 on the water management issue on the Churchill 3 River. The optimization of energy production 4 at Churchill Falls depends upon integrated 5 management of the Churchill River. The 6 evidence on hydrology is extensive, including 7 CRE 28, Revision 1, but we've not found 8 evidence relating to the Churchill Falls Power 9 Contract itself. We understand that Hydro 10 Quebec controls the flow of water under the 11 1969 contract and that they were not a party 12 to the 2009 Churchill River Management 13 Agreement. We refer, for example, to Article 14 4.2.1(ii) of the Power Contract which reads as 15 follows, "Hydro Quebec may require deliveries 16 which have the effect of varying the amount of 17 water to be carried in storage at any time 18 provided that in so doing sufficient water is 19 left in storage so that minimum capacity", 20 which is a defined term, "can always be 21 maintained".</p> <p>22 We have asked Nalcor to advise how it 23 proposes to achieve water management to 24 optimize Muskrat Falls production in the 25 absence of a formal agreement with Hydro</p>	<p>1 believe continue to be valid. While the Board 2 has to make an uncomfortable choice between 3 only two options, it is our hope that the 4 issue of the right timing will be addressed.</p> <p>5 We recommend that Government consider the 6 following options. That they take short to 7 medium term energy decisions which will allow 8 us to complete our due diligence on Muskrat 9 Falls. This means that we should commission 10 one or more small energy projects to allow 11 Government to assess other options, including 12 accessing Churchill Falls power in 2041 or 13 before, conversion of the Holyrood Plant to 14 natural gas, purchase of power from suppliers 15 outside the province, incentives to save 16 electricity by installing other forms of space 17 heating, such as heat pumps and use of time of 18 day pricing, and commissioning Muskrat Falls 19 at a later date. That the Government consider 20 the use of the Lower Churchill Development 21 Corporation as a model for developing Muskrat 22 Falls in the interest of sharing risk with the 23 Province. We recommend that the Board 24 consider the following; that the Board take 25 into evidence the report of the Joint Panel,</p>

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<p>1 that the Board take into evidence Mr. Vardy's 2 Action Canada paper, that the Board accept the 3 advice of the Joint Panel to adopt the 4 principles of integrated resource planning, 5 that the Board carefully examine the 6 demographic profile in the province to 7 question the assumptions with respect to new 8 home construction up to 2067, that the Board 9 also investigate the potential load tapering 10 that may be associated with the growth of new 11 technologies, such as heat pumps, which are 12 more energy efficient, along with energy 13 saving practices such as time of day pricing. 14 We recommend that you review the high capital 15 cost of the Holyrood plant associated with ESP 16 and scrubbers, in view of the higher quality 17 fuel now being used. We recommend that the 18 Board accept the higher reliability standard 19 for the transmission lines, particularly those 20 in higher elevations and remote locations. 21 Should the Board's report make recommendations 22 on this matter of reliability, we urge the 23 Board, and we ask the Government really, to 24 give the Board the opportunity to review any 25 further work which is done to improve</p>	<p>1 recommend that the choice between the 2 interconnected and the isolate option be 3 qualified to allow for consideration of 4 Muskrat Falls to proceed at a later time, 5 allowing for fuller assessment of the options, 6 including the greater and earlier access to 7 Churchill Falls power. 8 Finally, we want to thank Nalcor for 9 their professionalism and commitment 10 throughout this process. I note that they 11 reached out to Dave Vardy and I early on in 12 the process and invited us in for a 13 comprehensive briefing, and we appreciate that 14 very much. They have supplied us and 15 interested parties with considerable 16 information with courtesy and integrity, and 17 we thank them for that. We also wish to thank 18 again the Board for the opportunity to make 19 this presentation, and we wish you very well 20 in your deliberations and you have a very 21 important job to do. Thank you. 22 (10:45 a.m.) 23 CHAIRMAN: 24 Q. Mr. O'Reilly, I guess you want a few moments 25 to contemplate.</p>
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<p>1 reliability. In assessing the interconnected 2 and isolated options, the Board should 3 recognize the higher risk exposure and the 4 potential threat to reliable service on the 5 Avalon upon decommissioning of the Holyrood 6 generating plant. That the Board review the 7 proposed capital structure proposed by Nalcor. 8 That the Board consider asking Nalcor to 9 prepare a document that clearly indicates the 10 cost of power and the rates changed to 11 customers - 12 MR. VARDY: 13 A. Charged. 14 MR. PENNEY: 15 A. For each year and for each option. That the 16 Board examine any constraints that may exist 17 to water management on the Churchill River 18 arising from the contract. We also recommend 19 that you give consideration to the supply 20 options based on Churchill Falls as committed 21 in the Energy Plan. The Joint Panel also 22 recommended that other supply options be 23 considered, such as natural gas, along with 24 conservation and demand side management. We 25 support this recommendation. Finally, we</p>	<p>1 O'REILLY, Q.C.: 2 Q. Yes, that would be appreciated. I see we're 3 quarter to, and the break, according to the 4 timing and I appreciate that there is some 5 elasticity in that, probably what we could do, 6 I don't know if the panel members are going to 7 hang around, probably we could have the break 8 now a little early. Would that work - would 9 that work? 10 CHAIRMAN: 11 Q. Sure. 12 O'REILLY, Q.C.: 13 Q. I don't know how we're going to deal with - 14 some of the things there may be no 15 questioning, but I'd like an opportunity of 16 discussing the materials and - this is the 17 first time we've seen it. 18 CHAIRMAN: 19 Q. Oh, yes, absolutely. Mr. Penney, and Mr. 20 Vardy. 21 MR. VARDY: 22 A. By all means, no problem. 23 CHAIRMAN: 24 Q. You're ordered to stick around. 25 MR. VARDY:</p>

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<p>1 Q. We're going to be around here, and the other</p> <p>2 thing I should say to you is that a printed</p> <p>3 version of our remarks will be circulated, is</p> <p>4 available.</p> <p>5 CHAIRMAN:</p> <p>6 Q. So what we can do is break for - Madam Greene.</p> <p>7 GREENE, Q.C.:</p> <p>8 Q. Yes, I was going to comment on the schedule.</p> <p>9 As you know, the schedule for today was posted</p> <p>10 on the website on Friday. We do have some</p> <p>11 changes in the schedule. We are scheduled now</p> <p>12 for half hour break. The presenter for 12</p> <p>13 o'clock unfortunately had a family emergency</p> <p>14 and has requested to be rescheduled. So the</p> <p>15 12 o'clock presentation will not go ahead. We</p> <p>16 are trying to move up the other two that were</p> <p>17 slated for following that, so I wanted to</p> <p>18 point that out. The other thing is that we</p> <p>19 are working with the individual who needed to</p> <p>20 reschedule for 12, plus another party, and</p> <p>21 there may be additional presentations on</p> <p>22 Thursday. We will know that later today and</p> <p>23 we'll also post it on the website when it is</p> <p>24 finalized. So right now, Mr. Chair, if we</p> <p>25 could take the break -</p>	<p>1 considering the presentation that they make,</p> <p>2 there are a few things I would like to draw to</p> <p>3 the Board's attention with respect to what</p> <p>4 Nalcor has already filed. So you'll want to -</p> <p>5 as you work through their presentation, and of</p> <p>6 course the work that you're doing in this</p> <p>7 review process, and the first one deals with</p> <p>8 the - I've had a chance to look at the written</p> <p>9 presentation, page 10. I think this was Mr.</p> <p>10 Vardy's, when he says, "It is surprising", I'm</p> <p>11 just taking a section of it there, you get the</p> <p>12 drift of it, "In this context, it is</p> <p>13 surprising that Nalcor's planning does not</p> <p>14 rely upon Churchill Falls power in the years</p> <p>15 from 2041 to the end of the planning period in</p> <p>16 2067", and then he refers to MHI-Nalcor 3, the</p> <p>17 question is posed as follows, "What</p> <p>18 consideration has been given to the excess</p> <p>19 power capacity that will become available</p> <p>20 associated with the termination of the Upper</p> <p>21 Churchill Falls Agreement in 2041", and then</p> <p>22 he quotes part of the answer, as follows,</p> <p>23 "There is inherent uncertainty around</p> <p>24 guaranteeing the availability of supply from</p> <p>25 Churchill Falls in 2041 because it is</p>
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<p>1 CHAIRMAN:</p> <p>2 Q. And we'll reconvene at 11:15.</p> <p>3 GREENE, Q.C.:</p> <p>4 Q. Yes, thank you.</p> <p>5 O'REILLY, Q.C.:</p> <p>6 Q. That's fine.</p> <p>7 CHAIRMAN:</p> <p>8 Q. Okay, thank you.</p> <p>9 (RECESS)</p> <p>10 (11:25 a.m.)</p> <p>11 CHAIRMAN:</p> <p>12 Q. Make me look 15 years younger, will you?</p> <p>13 GREENE, Q.C.:</p> <p>14 Q. Only 15?</p> <p>15 CHAIRMAN:</p> <p>16 Q. That's how - that's how bad it is, right, I'm</p> <p>17 happy with 15. I believe, Mr. O'Reilly, we're</p> <p>18 ready, we're back to you, sir.</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. Thank you, Mr. Chairman. We don't want to</p> <p>21 engage in a discussion on this with the panel.</p> <p>22 Nalcor thanks them for their presentation and</p> <p>23 the work they've obviously put into the</p> <p>24 materials and so on, but there are, however, a</p> <p>25 few things that I just - when the Board is</p>	<p>1 difficult to determine the environmental and</p> <p>2 policy frameworks that will be in place 30</p> <p>3 plus years out". Can we just flip to MHI-</p> <p>4 Nalcor 31 - I'm sorry, 3. Go down to the</p> <p>5 bottom of the - line 17 and - page 3, is it?</p> <p>6 Page 3, yeah, okay. You'll see beginning at</p> <p>7 line 17, it says, "In comparison to the</p> <p>8 interconnected island scenario, the deferred</p> <p>9 interconnection is not economically justified</p> <p>10 as the CPW premium for deferral over the</p> <p>11 interconnected scenario, that is construction</p> <p>12 of Muskrat Falls Labrador-Island Transmission</p> <p>13 Link is 1.3 billion dollars". So there is -</p> <p>14 that has been factored in as part of it, so</p> <p>15 I'd just draw that to your attention, to the</p> <p>16 fullness of the response in Nalcor 3. So the</p> <p>17 entire response needs to be considered and</p> <p>18 read by the Board in its deliberations. The</p> <p>19 other question raised, and I don't - I think</p> <p>20 again Mr. Vardy probably, that Nalcor's</p> <p>21 position is that there is no - it is Nalcor's</p> <p>22 position that there is no inter-generational</p> <p>23 inequity in the recommendation being put</p> <p>24 forward, the position by Nalcor being put</p> <p>25 forward. I think Nalcor's position, to the</p>

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<p>1 contrary, the project benefits the future 2 generations. The basis for this, we submit, 3 is seen in the comparisons between the 4 alternatives in RFI-KPL 27, Revision 1, and I 5 think that was filed just recently and was 6 discussed in the evidence, a very thorough 7 discussion of that in the evidence last 8 Wednesday, which the Board can find at pages 9 16 to 36 of the transcript of last Wednesday's 10 proceedings. Of course, it stands with reason 11 that the interconnected alternative leaves, of 12 course, the future generations with a long 13 term asset that the isolated island 14 alternative will not. So I think that's 15 something that we want to draw to the Board's 16 attention as well.</p> <p>17 GREENE, Q.C.:</p> <p>18 Q. Excuse me, Mr. Chair. This morning, which 19 gave me leeway to all of the parties, I would 20 just like to point out that the last two 21 points appeared to be more in the nature of 22 submissions that would be addressed by Nalcor 23 in their final argument, and I'm not sure - 24 Mr. O'Reilly now introduces another element as 25 to whether he wishes any other party to also</p>	<p>1 degree of leeway necessity has been built into 2 this, and I think that it's fair, for example, 3 if a presentation is made, as Mr. Vardy refers 4 to MHI-Nalcor 3 and quotes from that, I think 5 it's only reasonable that we should have the 6 opportunity of showing to the Board that there 7 is a full - you have to read the fullness of 8 the RFI. If you're referring to a part of it, 9 I think it's reasonable to invite the Board to 10 consider reading the whole text of the thing 11 to get the accuracy of it.</p> <p>12 GREENE, Q.C.:</p> <p>13 Q. And again I'm repeating myself, I am not 14 taking exception or objection in any way 15 whatsoever to Nalcor having that opportunity 16 to point out additional issues or concerns 17 that the panel should take into account when 18 reviewing any presentation. My question goes 19 as to the appropriate time to do that, and my 20 understanding of the process today was the 21 presenters would have the opportunity to make 22 their presentation and to be asked questions 23 by Nalcor. If you wish to go further and to 24 point out additional considerations, that 25 opportunity should be given to all of the</p>
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<p>1 address these issues from a legal argument 2 perspective. There are no questions for the 3 panel from Nalcor, but -</p> <p>4 O'REILLY, Q.C.:</p> <p>5 Q. That's what I told them, that's what I said to 6 the panel, and I'm just drawing to the Board's 7 attention for the fullness of the response 8 that when they're saying that I want to get 9 the full - when the Board is considering that, 10 this will be part of the Board's 11 consideration. It will be addressed as well 12 in our response.</p> <p>13 GREENE, Q.C.:</p> <p>14 Q. And I certainly understand that, but I guess 15 my question for the panel then would from a 16 process perspective, if we are entertaining 17 argument, legal argument, with respect to any 18 issues at this time, they may wish the other 19 counsel as well, but in my view, the last two 20 comments by Nalcor have been more in the line 21 of final legal argument or submissions, and I 22 did not think that was the purpose of the 23 process this morning.</p> <p>24 O'REILLY, Q.C.:</p> <p>25 Q. Right. Well, you know, I mean, a certain</p>	<p>1 counsel here. So I'm raising the issue of the 2 appropriate process to be followed, given the 3 time constraints that we have as well with the 4 other presenters who are here waiting.</p> <p>5 O'REILLY, Q.C.:</p> <p>6 Q. Okay. Well, I take the objection - I think it 7 is an objection. It is an objection, and if 8 there's an objection to be taken to pointing 9 out these two or three things that we wanted 10 to draw to the Board's attention, I guess 11 we'll have to abide by the ruling of the Chair 12 on that and incorporate them in our final 13 submission.</p> <p>14 (11:30 a.m.)</p> <p>15 CHAIRMAN:</p> <p>16 Q. But you will not be precluded in making these 17 comments in your final submission.</p> <p>18 O'REILLY, Q.C.:</p> <p>19 Q. Oh, no, I realize that, I realize that.</p> <p>20 CHAIRMAN:</p> <p>21 Q. Okay.</p> <p>22 O'REILLY, Q.C.:</p> <p>23 Q. I thought it would be -</p> <p>24 CHAIRMAN:</p> <p>25 Q. How much more have you got to ask, I mean,</p>

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<p>1 now?</p> <p>2 O'REILLY, Q.C.:</p> <p>3 Q. You know, just to point out to the Board that</p> <p>4 the presenters concerns with respect to water</p> <p>5 management are dealt with in Confidential</p> <p>6 Exhibit 26. That's another thing we just want</p> <p>7 to draw to the Board's attention, and that the</p> <p>8 issue of cost overrun for both expansion plans</p> <p>9 are contained in Exhibit 99. That's the only</p> <p>10 comments we really have to say. We will be</p> <p>11 responding, of course - not responding, but we</p> <p>12 will be making a detailed presentation and</p> <p>13 final submissions at the end of this when</p> <p>14 these points to the extent that they have to</p> <p>15 be also fortified and addressed will also be</p> <p>16 presented.</p> <p>17 CHAIRMAN:</p> <p>18 Q. So you don't - you have no further questions?</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. I have no further questions of the panel. I</p> <p>21 said that at the beginning and thanked them</p> <p>22 for their presentation.</p> <p>23 CHAIRMAN:</p> <p>24 Q. I don't want anybody to feel that they're</p> <p>25 being procedurally shortchanged. I wouldn't</p>	<p>1 houses, they're not being very innovative,</p> <p>2 looking at and doing things differently. I</p> <p>3 think there's a need for education, more</p> <p>4 education, so that the consumers are aware of</p> <p>5 other possibilities. Instead of installing</p> <p>6 electric heat, they should be aware of what</p> <p>7 the possibilities are, and I think that there</p> <p>8 various different kinds of heat pumps, but my</p> <p>9 understanding is you can save considerable</p> <p>10 amounts of money, economically it's a good</p> <p>11 investment, but people that are investing in</p> <p>12 homes are having a difficulty in getting the</p> <p>13 downpayment and so anything that adds to their</p> <p>14 capital cost is a deterrent. So it might be a</p> <p>15 good long term investment, but they can't</p> <p>16 afford to make that long term investment</p> <p>17 because they can't afford the downpayment, and</p> <p>18 I think it's as simple as that. Do I know</p> <p>19 anything about the technical aspects of heat</p> <p>20 pumps; not really.</p> <p>21 CHAIRMAN:</p> <p>22 Q. There's a - I read, like, it's called Jevons</p> <p>23 Paradox. Did you ever hear of that?</p> <p>24 MR. VARDY:</p> <p>25 A. No.</p>
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<p>1 be able to stand the criticism. Mr. Johnson,</p> <p>2 do you have any questions of Messrs Penney or</p> <p>3 Vardy?</p> <p>4 MR. JOHNSON:</p> <p>5 Q. No. I just wish to thank them for their</p> <p>6 presentation, but I don't have any specific</p> <p>7 questions to ask of these gentlemen.</p> <p>8 CHAIRMAN:</p> <p>9 Q. Does our -</p> <p>10 GREENE, Q.C.:</p> <p>11 Q. No, Mr. Chair, no, thank you.</p> <p>12 CHAIRMAN:</p> <p>13 Q. Just one question. I don't know if you guys</p> <p>14 can shed any light on it, but heat pumps,</p> <p>15 they're supposed to be quite energy efficient.</p> <p>16 Is that your understanding?</p> <p>17 MR. VARDY:</p> <p>18 A. I can speak with some - not authority, but</p> <p>19 with some casual knowledge of this because I</p> <p>20 have a son who has a heat pump, and I'm not</p> <p>21 selling heat pumps, but I know he's saving a</p> <p>22 lot of money, and I think that there's - my</p> <p>23 sense is that the Newfoundland construction</p> <p>24 industry is so overheated today that people</p> <p>25 are building houses just replicating existing</p>	<p>1 CHAIRMAN:</p> <p>2 Q. He was the first energy economist and he</p> <p>3 pointed out that increasing energy efficiency</p> <p>4 doesn't necessarily lead to less consumption.</p> <p>5 So is your son's electrical bill dropped</p> <p>6 because he's using a heat pump, or has he</p> <p>7 bought two more TVs?</p> <p>8 MR. VARDY:</p> <p>9 A. No, he's - it's simply because he doesn't have</p> <p>10 to pay as much for heating his home.</p> <p>11 CHAIRMAN:</p> <p>12 Q. Okay, because that's usually what - I've read</p> <p>13 it happens, people save on one aspect of their</p> <p>14 energy consumption to efficiency, but they</p> <p>15 consume it by adding more gadgets to the</p> <p>16 household lineup.</p> <p>17 MR. VARDY:</p> <p>18 A. That's what economists call elastic demand.</p> <p>19 CHAIRMAN:</p> <p>20 Q. Elastic demand, yeah.</p> <p>21 MR. VARDY:</p> <p>22 A. The price goes down, consume more.</p> <p>23 CHAIRMAN:</p> <p>24 Q. The only other question I had or comment was</p> <p>25 on the demographics. I mean, people say</p>

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<p>1 demography is destiny, and we're only out to</p> <p>2 what, 2025 there with the -</p> <p>3 MR. VARDY:</p> <p>4 A. 2029, I think it is.</p> <p>5 CHAIRMAN:</p> <p>6 Q. 2029, was it? Do you know what the - what the</p> <p>7 replacement population ratio is for</p> <p>8 Newfoundland?</p> <p>9 MR. VARDY:</p> <p>10 A. I presume it's the same as anywhere else.</p> <p>11 CHAIRMAN:</p> <p>12 Q. Well, it varies see.</p> <p>13 MR. VARDY:</p> <p>14 A. 2.1, I think is the -</p> <p>15 CHAIRMAN:</p> <p>16 Q. 2.1 is the - what you need to keep the show on</p> <p>17 the road, right?</p> <p>18 MR. VARDY:</p> <p>19 A. Yeah, exactly.</p> <p>20 CHAIRMAN:</p> <p>21 Q. But are we below that?</p> <p>22 MR. VARDY:</p> <p>23 A. We're well below that. I can't give you the</p> <p>24 number, but we're -</p> <p>25 CHAIRMAN:</p>	<p>1 the Avalon Peninsula area, but obviously the</p> <p>2 statisticians are very cautious about anything</p> <p>3 that's going to happen, and I think that, you</p> <p>4 know, as - and this is the driving force, you</p> <p>5 know, the biggest factor here when you look at</p> <p>6 all the sensitivity analysis is load growth,</p> <p>7 and clearly the number of people in our</p> <p>8 province is a key factor, and do we believe</p> <p>9 our population is going to continue to be</p> <p>10 level or - because if it does, then we will</p> <p>11 become increasingly less important in this</p> <p>12 country because the national growth rate is</p> <p>13 higher, we're becoming an increasingly smaller</p> <p>14 part of Canada, but in any event, nobody seems</p> <p>15 to know. We need to do more research on our</p> <p>16 demography and what are the factors that are</p> <p>17 going to grow our economy. There were some</p> <p>18 people, of course, years ago, Parsible Copes</p> <p>19 (phonetic), who felt we'd all be better off if</p> <p>20 we had half the number of people that we have</p> <p>21 now, and even though Parsible Copes was a</p> <p>22 mentor of mine, I don't particularly subscribe</p> <p>23 to that point of view.</p> <p>24 CHAIRMAN:</p> <p>25 Q. He didn't have a happy end here, did he?</p>
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<p>1 Q. Well below.</p> <p>2 MR. VARDY:</p> <p>3 A. We're well below that, yeah.</p> <p>4 CHAIRMAN:</p> <p>5 Q. And that's - I mean, that's very difficult to</p> <p>6 change. I mean, that's a long - once you're</p> <p>7 on that track, it's difficult to - you know,</p> <p>8 if you look at it like Japan, I mean, Japan is</p> <p>9 finished, you know.</p> <p>10 MR. VARDY:</p> <p>11 A. It's a lifestyle issue, I guess, but, I mean,</p> <p>12 if you believe that the current boom - oil and</p> <p>13 gas boom is going to continue into the future,</p> <p>14 it'll attract more people in here over the</p> <p>15 long run. So it's very difficult to do these</p> <p>16 long term demographic projections. All the</p> <p>17 projections I've seen done by the Newfoundland</p> <p>18 Statistical Agency, or the Newfoundland and</p> <p>19 Labrador Statistical Agency, are virtually</p> <p>20 level. They're just small changes, and do I</p> <p>21 believe that; I'm not so sure if I believe</p> <p>22 that our population is going to be - my sense</p> <p>23 is that our population is going to go down or</p> <p>24 it's going to go up significantly because of</p> <p>25 what's happening in the St. John's region, or</p>	<p>1 MR. VARDY:</p> <p>2 A. He didn't.</p> <p>3 CHAIRMAN:</p> <p>4 Q. Like, the other thing I find with forecasting</p> <p>5 generally, I mean, aside from something like</p> <p>6 demographics because that's like - it's kind</p> <p>7 of fixed, I mean, your population ratio is</p> <p>8 difficult to move. It's kind of like building</p> <p>9 a hydro project, once you got it built, you</p> <p>10 have certitude, and I think there's a lot of</p> <p>11 certitude in the demographic reality, but with</p> <p>12 respect to other forecasting, I mean, it's</p> <p>13 very difficult to get beyond five or six years</p> <p>14 in terms of economic forecasting. Would you</p> <p>15 agree with that or -</p> <p>16 MR. VARDY:</p> <p>17 A. Absolutely. I mean, the thing about it is</p> <p>18 anybody who can forecast the price of oil in a</p> <p>19 years time will make a million dollars, an</p> <p>20 enormous amount of money because forecasting</p> <p>21 is an extremely difficult thing to do, and</p> <p>22 demographic forecasting is probably less</p> <p>23 difficult because people's patterns change</p> <p>24 very slowly, people procreation patterns</p> <p>25 change very slowly, but, of course, some of</p>

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1 these factors are very volatile. I would say
 2 demography is less volatile obviously than oil
 3 prices. It's probably one of the most stable
 4 factors in our society is our demography, and
 5 it hasn't changed an awful lot. It's
 6 interesting how, as Mr. Bennett points out,
 7 you know, that even after the moratorium, the
 8 consumption of electricity didn't go down, but
 9 that's partly because of the fact that a lot
 10 of people maintained their homes in rural
 11 Newfoundland. They go off to Alberta, but
 12 they're continuing to heat that home because
 13 they know that if they leave that home, if the
 14 power is disconnected, they're going to have
 15 to get it reinspected and it might not pass
 16 inspection, so they keep the power on. So the
 17 result of that is you got a lot of homes in
 18 rural Newfoundland that are heated, the lights
 19 are kept on, but the people are somewhere
 20 else. How long is that going to continue?
 21 It's very difficult to predict.

22 CHAIRMAN:

23 Q. The only other comment I'll have is hind-
 24 casting, I would like to be able to take all
 25 these economic forecasts and put a model and

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1 run them backwards to see if they could
 2 predict what actually happened. I know in
 3 climate change, the models that the IPCC are
 4 using, they couldn't predict temperatures that
 5 actually happened, so, I mean, what
 6 reliability can you have on them for the
 7 future. I don't know if that's true generally
 8 with economic studies or not, but - anyway.

9 MR. VARDY:

10 A. Don't know.

11 CHAIRMAN:

12 Q. Thank you very much then.

13 MR. VARDY:

14 A. Thank you.

15 CHAIRMAN:

16 Q. Now who is next?

17 GREENE, Q.C.:

18 Q. Mr. Chair, with respect to the schedule, the
 19 next presenter is Ms. Walzthoni, who is here
 20 this morning. Our presentation at 12 o'clock
 21 has had to be rescheduled, but Mr. Winsor, our
 22 12:30 presenter, is available and will come on
 23 directly after Ms. Walzthoni. So we will just
 24 carry on.

25 CHAIRMAN:

1 Q. Okay, sure. Good morning.

2 MS. WALZTHONI:

3 A. Thank you very much for your time and letting
 4 me present. I'll be very brief.

5 CHAIRMAN:

6 Q. Probably you could officially identify
 7 yourself for the record.

8 MS. WALZTHONI:

9 A. My name is Tracy Walzthoni, and I live in
 10 about a two kilometre radius from the Holyrood
 11 Thermal Generating Station. I also have been
 12 sitting on the Community Liaison Committee
 13 with the station for a number of years.

14 I don't have a lot of technical stuff.

15 I'm just presenting as a consumer and as
 16 someone who lives next to the station. I've
 17 lived in the house there since 1990. I have a
 18 beautiful piece of property there, and as a
 19 child, my parents had a cabin there. So from
 20 1970 on spent a lot of time there. There's
 21 been a lot of changes, and I'll give credit
 22 where it's due, I have seen a lot of changes
 23 for the better in living next to the plant.

24 I can remember when I was younger and
 25 when the generators would cut in, there would

1 be a problem, you know, the whole cabin would
 2 actually shake, and there was a lot of
 3 pollution that came out and you saw it a lot
 4 more than you do today. Sitting on the
 5 Community Liaison Committee, I see a lot, I
 6 guess - I saw Hydro and the station as the
 7 enemy when lived there - when I started living
 8 there because of all the pollution that was
 9 coming out, there's no - there's no pollution
 10 capture equipment at all, but what I've seen
 11 is that they're willing to work with the
 12 community and hear our concerns and try and
 13 make changes to make things better.

14 There shouldn't be any doubt that living
 15 there has had an impact on my life. I have a
 16 beautiful view of CBS, I have two huge trees
 17 on this side, so the view of the plant is
 18 usually blocked. I'm on higher ground and I
 19 sit probably about the same level as the base
 20 of the stacks. So in the summer, I experience
 21 at least six weeks usually of quiet emission
 22 free enjoyment of where I live. It's been
 23 considerably longer in recent years due to the
 24 loss of Stephenville and Grand Falls, and
 25 those major industrial consumers, and I guess

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<p>1 there's more effective management of the hydro 2 power that's on the island too, which is 3 making a difference. 4 (11:45 a.m.) 5 So ever since we purchased our permanent 6 residence there, I certainly longed for the 7 day when I wouldn't have to look at the smoke 8 coming out of the stacks any more. So I have 9 lobbied Government in the past to make 10 improvements and choose greener alternatives 11 that might eventually eliminate the plant. 12 I've also gained a greater understanding of 13 what that means, like, with regards to wind 14 power, it's not there on demand, it's not 15 something that can be totally relied upon as 16 reliable power source, and I understand that a 17 lot better now than I did at the time. 18 When the plant is operating, it's a 19 nuisance. I've often questioned the possible 20 effects it could have on my family's health. 21 I've done a little bit of research on the 22 effects of sulphur dioxide emissions and other 23 chemicals that are emitted totally unfiltered 24 from the stacks. So there's nothing really 25 healthy that comes out of the stacks. There's</p>	<p>1 result of some soot excursions in the past. 2 Thankfully that hasn't been an issue in the 3 last couple of years, but it was always 4 alarming, you know, to come out in the morning 5 and see little pieces of ash all over your 6 vehicle and, you know, wonder - it would 7 actually create some pitting in the paint, so 8 you wonder, okay, if it's doing that to the 9 paint of the car, what is it doing to me and 10 my family. 11 There's noise pollution. Sometimes when 12 there's problems and things have to kick in 13 quickly, it's quite loud. It's not like when 14 I was a child and everything shakes, but it's 15 still very alarming if that kind of thing 16 happens at 2 o'clock in the morning. 17 I've also noticed when fuel delivery 18 happens - I didn't quite correlate it with 19 what was happening, but I did call a couple of 20 times and express that there was this really 21 acidic odour. So what I discovered was that 22 it's from when they get fuel delivered and 23 it's the venting of the fuel tanks, and that 24 lasts a long time, however long the refuelling 25 - like, sometimes it's been an entire day.</p>
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<p>1 been studies on sulphur dioxide in, like, St. 2 John, New Brunswick, and Sudbury, done by 3 Health Canada and it's been correlated to 4 decreased lung function and especially have 5 greater impacts on certain people who are more 6 sensitive with regards to asthma and other 7 breathing difficulties. 8 I've also read some of the material 9 safety data sheets on some of the other 10 chemical emissions like vanadium pentoxide and 11 it's kind of scary when you look at those 12 things and know that they're coming out. So 13 some examples of negative experiences, the 14 aesthetics - like, in the summertime, as I 15 drive in on the by-pass road, I see the large 16 pink clouds, they float out from the stack and 17 they go all the way across Bell Island. So it 18 creates some stress. On windy days in the 19 winter when all three units are operating, I 20 have experienced - like, if the wind is 21 blowing it down on us and where we're up high, 22 an acidic taste in my mouth and coughing 23 spurts, and things like that where you would 24 go in, or I would turn off my air exchanger. 25 So there's also been some property damage as a</p>	<p>1 So the impacts to me, I guess, and I 2 think it's a cost, I guess, is stress, 3 curtailing outdoor activities, as I said 4 turning off my air exchanger, having to wash 5 vehicles, and in some cases siding, being 6 startled by the sudden loud noises. So those 7 costs of creating stress for people in the 8 area and the possible sulphur dioxide 9 emissions harming people, like, for me, I 10 guess, I get most of the nuisance because I'm 11 so close, so I actually see the big pieces 12 falling down, but the very fine particulate 13 matter that floats down CBS, you know, it 14 impacts a lot of people and I don't think they 15 see it. It's not in their backyard, so they 16 don't even think about it. I think if it was 17 sitting in the middle of St. John's, there 18 would have been something more done a long, 19 long time ago. 20 So the reason I'm here basically is I'm 21 willing to pay whatever cost - if my 22 electricity bill increases. I've seen it 23 increase anyway because of the price of oil, 24 but I believe, I guess, that it's a greener 25 option to develop Muskrat Falls, it's a vision</p>

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<p>1 for the future, it'll make us less dependant</p> <p>2 on oil, and I think for a long term solution,</p> <p>3 whatever it costs, I think it'll most</p> <p>4 certainly be worth it.</p> <p>5 That's really all I have to say.</p> <p>6 CHAIRMAN:</p> <p>7 Q. Thank you. Does anybody have any questions?</p> <p>8 MR. JOHNSON:</p> <p>9 Q. No questions, Mr. Chair.</p> <p>10 CHAIRMAN:</p> <p>11 Q. Thank you.</p> <p>12 MS. WALZTHONI:</p> <p>13 A. Thank you very much.</p> <p>14 GREENE, Q.C.:</p> <p>15 Q. Mr. Chair, the next presenter is Mr. Fred</p> <p>16 Winsor.</p> <p>17 MR. WINSOR:</p> <p>18 A. My name is Fred Winsor. I am the Conservation</p> <p>19 Chair with the Atlantic Canada Chapter of</p> <p>20 Sierra Club Canada. The Sierra Club Canada,</p> <p>21 or the Sierra Club, generally is the oldest</p> <p>22 environmental non-governmental organization in</p> <p>23 North America. It was founded in 1894 by John</p> <p>24 Muir out in San Francisco. The club itself</p> <p>25 has some very basic objectives and principles;</p>	<p>1 have actually reduced greenhouse gases.</p> <p>2 So in terms of here in Newfoundland, we</p> <p>3 have two major goals. One is to close down</p> <p>4 Holyrood because of the greenhouse gas</p> <p>5 emissions coming out of there, and Holyrood</p> <p>6 produces between 800,000 and 1.2 million tons</p> <p>7 of greenhouse gases annually, and it's done</p> <p>8 that for the last 30 years. One of the by-</p> <p>9 products of greenhouse gas emissions that</p> <p>10 we've discovered over the last 15 years with</p> <p>11 research is the presence of ocean</p> <p>12 acidification. That greenhouse gases when</p> <p>13 they're emitted, when they come back, they get</p> <p>14 absorbed by the ocean, so this warms up the</p> <p>15 ocean, but the other thing it does is it forms</p> <p>16 carbonic acid, and carbonic acid finds its way</p> <p>17 into eroding the shells of crab and lobster,</p> <p>18 shell fish. This is well documented and it's</p> <p>19 a major international crisis, but for here we</p> <p>20 see Newfoundland being such a rich - such rich</p> <p>21 fishery and potential for rich fishery when it</p> <p>22 recovers, and it will recover, that we need to</p> <p>23 get a handle on reducing greenhouse gas</p> <p>24 emissions particularly for our ocean</p> <p>25 environment. This is just a little background</p>
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<p>1 the main one being habitat protection. We are</p> <p>2 essentially - that's generally our major</p> <p>3 focus, and in the last 15 to 20 years with the</p> <p>4 rising awareness of greenhouse gas emissions</p> <p>5 and climate change and global warming, our</p> <p>6 main goal is to reduce greenhouse gas</p> <p>7 emissions. That's the one thing that we focus</p> <p>8 on above everything else. So for us in</p> <p>9 Newfoundland, reducing greenhouse gases, what</p> <p>10 we have found out nationally and</p> <p>11 internationally it's primarily a local issue,</p> <p>12 reducing greenhouse gases, and an example of</p> <p>13 that is in North America in the past 10 years,</p> <p>14 40 of the largest cities in North America have</p> <p>15 all met and surpassed their KYOTO targets of</p> <p>16 reducing greenhouse gases, and they've done it</p> <p>17 all locally in the cities mainly by public</p> <p>18 transit, coming up with all kinds of energy</p> <p>19 efficiency, doing all kinds of things to</p> <p>20 reduce greenhouse gas emissions. So it's</p> <p>21 something that never came out in all these</p> <p>22 discussions of Durban (phonetic) of saying how</p> <p>23 North America was going in one direction.</p> <p>24 It's not the - the municipalities have</p> <p>25 actually gone in the opposite direction. They</p>	<p>1 on the activities of the Sierra Club.</p> <p>2 Regarding Muskrat Falls, or the two options I</p> <p>3 should say, the Sierra Club itself has been</p> <p>4 opposed to large hydro developments for, I</p> <p>5 would say it's about 75 years now. In the</p> <p>6 United States, there is an ongoing program to</p> <p>7 decommission hydro dams and it's mainly</p> <p>8 associated with the huge amounts of habitat</p> <p>9 destruction that they've witnessed there from</p> <p>10 constructing hydro dams. In the past 100</p> <p>11 years, there's been over 1,000 dams</p> <p>12 decommissioned in the United States. So the</p> <p>13 Americans do not consider -- most American</p> <p>14 governments do not consider hydroelectric</p> <p>15 electricity as green energy and I think that's</p> <p>16 a point that we need to make. It's -- they</p> <p>17 don't consider it that. They don't consider</p> <p>18 it in New York for sure, and California for</p> <p>19 sure, and lots of other States. So it's a --</p> <p>20 for them, it has major destruction of habitat</p> <p>21 and they've got lots and lots of evidence to</p> <p>22 support it. So on that point alone, we're</p> <p>23 opposed to Muskrat Falls.</p> <p>24 Regarding keeping Holyrood open to 2067,</p> <p>25 again the greenhouse gas emission is again --</p>

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<p>1 it's totally unacceptable for us. I know 2 myself before I was associated with Sierra 3 Club, we had numerous committees trying to do 4 something about reducing emissions coming out 5 of Holyrood aside from greenhouse gases, 6 sulphuric acid, the mercury and cadmium, heavy 7 metals, that sort of thing, and I mean, it's - 8 - you're up against a stone wall, I mean, 9 really, but the greenhouse gas emission thing 10 is the biggest and that really has -- and none 11 of that will be solved with any kind of 12 filters or whatever at Holyrood and it will 13 not be solved with natural gas either because 14 natural gas produces 50 percent of the 15 greenhouse gases that oil produces. So 16 instead of 800,000 to 1.2 million tons of 17 greenhouse gases, we'd be looking at between 18 400 to 600,000 tons annually and so, that's 19 not really -- that's not a green solution. 20 (12:00 p.m.) 21 So with those situations, I mean, we're - 22 - you know, but we're not trying to be -- but 23 our presentation today is not meant to be 24 negative. We've come here with options and I 25 think we need to be looking at options and</p>	<p>1 production, the decentralization of 2 electricity production, it's quite astounding 3 actually. I mean, myself being somewhat 4 associated with it, because over the years 5 I've had to write a number of papers on energy 6 policy, it's quite amazing the breakthroughs 7 in technology, again stemming originally 8 coming out of Germany, but it really has gone 9 quite global. I suppose in the computer world 10 they call it viral, but anyway. 11 But locally, you know, in Newfoundland, 12 individuals, municipalities, community 13 organizations and businesses have all 14 expressed interest in becoming involved in 15 electricity production. We've had -- just 16 this weekend I was reading in the paper, 17 they're looking for somebody -- looking at 18 proposals for biogas, you know, from farmers. 19 And farmers, I should say, really have been 20 some of the leaders worldwide in terms of 21 small scale energy production. They have been 22 just huge leaders of it in an awful lot of 23 countries, just little aside. 24 But we need to look at other models. 25 That's our position is we need to look at</p>
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<p>1 that's one of the problems that we see with 2 the current process that you've been asked to 3 deal with is that you're given two options 4 that we would consider to be -- neither one of 5 them are really very good, but are there other 6 options out there? We think there are lots of 7 other options out there and lots of very good 8 and proven ones and so that's what we'd -- 9 we'd like to send the message that we'd like 10 to see those options examined. I mean, you 11 know, discounting of the relevant factors, 12 such as energy efficiency, environmental 13 concerns, off peak rates, demand side 14 management, other energy products and options, 15 I mean, I think on the government side, not 16 only your side, because you're just 17 implementing what they're asking you to do, 18 but I think it reflects very poor judgment and 19 an absence of essential critical thinking 20 needed to properly assess our future energy 21 needs and that's a -- I mean, globally these 22 days, energy production is -- well, they're 23 having a renaissance. That's the only way I 24 can describe it. The changes in the 25 technology, the changes in methods of</p>	<p>1 other models of energy production. We have 2 some -- well, we're not allowed to talk about 3 wind power, but we'll mention it. We have 4 incredible wind energy in Newfoundland, even 5 blows -- I hate to use that analogy, but it's 6 quite startling the amount of wind energy that 7 we have here compared to other parts of North 8 America, compared to other parts of the world 9 for that matter. But there's just a report 10 came out, I only got to see it on the weekend, 11 done here locally by four engineers at the 12 Engineering school, where they identified that 13 the wind energy capacity in Newfoundland is 14 over 100 times the energy consumed, the 15 electricity consumed in Newfoundland in 2006, 16 100 times. I mean this is a major, major 17 energy source that should not be ignored in 18 these kind of deliberations. 19 When we're talking about spending 4.4 20 billion dollars, I think we should be starting 21 to have some serious looks at other options, 22 and other options that are -- I mean, I know 23 this is a political decision by Provincial 24 Government, and we've written the Provincial 25 Government asking for them to look at these</p>

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<p>1 things, but nobody seems to -- it seems to be 2 the elephant in the room that nobody wants to 3 talk about. But it's the -- the evidence is 4 just -- you know, it's a kind of energy 5 production that should be supported because 6 it's benign. It has -- you know, it doesn't 7 have any greenhouse gas emissions. It doesn't 8 have any stacks and it doesn't need a fuel 9 source. I mean, all you're doing is putting 10 up turbines. The fuel is blowing by all the 11 time. As far as -- you know, I know that 12 oftentimes I hear engineers with hydro 13 projects complaining "oh, we'll have to spill 14 water if we go to wind energy or any other 15 energy source." Well, we spill wind every 16 day. Every single day, we're spilling all 17 kinds of wind. So it's not a -- as far as the 18 energy source is concerned, you have to think 19 a little bit different about it, but it's 20 there and I mean, we're sitting right in the 21 middle of it. It's quite remarkable.</p> <p>22 But the other effect that going this 23 direction, in terms of an industrial 24 development model, is that you're building an 25 industry, not a mega project, and you know,</p>	<p>1 may not be viable or feasible, depending on 2 all kinds of other factors. This way you can 3 just build it slowly, expand it slowly.</p> <p>4 As far as dispatchable power, we have 5 lots of hydro power on the island that we can 6 use as dispatchable power, but you have to 7 have a significant amount of alternate sources 8 of power. I heard somebody talking earlier 9 about geothermal. Yes, geothermal works very 10 well in Newfoundland and it's something that 11 should be considered. Energy efficiency has 12 been completely neglected in the province from 13 what we can see. It's given a little bit of 14 lip service, but really there hasn't -- we 15 haven't really gotten into serious energy 16 efficiency. I don't think we have any kind of 17 even idea of how many buildings have been 18 retrofitted. You know, that's another thing. 19 We're not looking at it as a -- because you 20 can save an incredible amount of electricity 21 from energy efficiency programs, but that's 22 not -- we're not in that ballgame at all here, 23 not that I've -</p> <p>24 And the other thing about small scale 25 energy production is that if you have a set</p>
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<p>1 and from the research that we've done, where 2 you're into building an industry of various 3 kinds of renewable energies, that has a much 4 greater multiplier effect on the economy and 5 it's a longer lasting one. Mega project, you 6 have work for four or five years and then 7 basically it's -- everything is shut down and 8 then after that, it's shut down and you just 9 got a few people running it. Whereas if 10 you've got small green renewable projects 11 dispersed all around the place, it creates 12 long term employment. So I think that's 13 something that needs to be considered.</p> <p>14 And of course, with any of these energy 15 projects, these small scale energy projects, 16 the tipping factor has always been the ability 17 to sell the surplus on the grid. That is the 18 key and this is something that, again, you 19 know, could be a very good -- we can see it's 20 a very positive alternative to Holyrood and it 21 can happen here. We don't need to build a 22 transmission line. We can do the -- we can 23 build the capacity here and we'll get away 24 from all of that large scale getting here, so 25 it's tied up into a large project which may or</p>	<p>1 price for your product and if you have access 2 to the electricity grid, guaranteed access, 3 financing can be private and is often private 4 in most other jurisdictions. So, you know, 5 this is a -- so we're not again depending on 6 governments to finance or subsidize these 7 sorts of things.</p> <p>8 And the other thing is who should benefit 9 from all this electricity production? Who are 10 going to be the beneficiaries? Who should 11 profit from it? Should it be the shareholders 12 of Emera? Should it be Nalcor? Well, Nalcor 13 is going to make money on it anyway because 14 they're going to be operating the electricity 15 grid. So they can't lose. Should it be the 16 Provincial Government? Well, the Provincial 17 Government, if we -- you know, they could 18 possibly get something out of it, some tax 19 money. Or should it be the citizens of the 20 Province who can generate electricity and sell 21 it locally and we can have a different model 22 of development? That's how we see it, that we 23 can do -- there are other models out there and 24 then we should be looking at really other 25 kinds of energy to the table. Thank you.</p>

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<p>1 CHAIRMAN: 2 Q. Do you have any questions, sir? 3 O'REILLY, Q.C.: 4 Q. We don't have any questions. 5 MR. JOHNSON: 6 Q. No, Mr. Chairman. 7 O'REILLY, Q.C.: 8 Q. No, we don't have any questions. 9 GREENE, Q.C.: 10 Q. No, no questions, Mr. Chair. 11 COMMISSIONER NEWMAN: 12 Q. No questions. 13 CHAIRMAN: 14 Q. Are you aware of -- when you say wind is 15 benign and green, are you aware of the energy 16 content that's involved in making wind 17 turbines? The consumption of steel, the 18 consumption of concrete. You're talking about 19 habitat destruction. Are you aware of the 20 content of the hardware earth elements that go 21 into making a wind turbine? 22 MR. WINSOR: 23 A. Yes. 24 CHAIRMAN: 25 Q. And you still maintain it's green?</p>	<p>1 MR. WINSOR: 2 A. Okay. Yeah, okay. 3 CHAIRMAN: 4 Q. And with respect to concrete, concrete is 5 highly energy -- high consumer of energy. So 6 to make the claim that somehow wind is green 7 is simply economically not true. I can 8 document that. 9 MR. WINSOR: 10 A. Well once -- so you're talking about in terms 11 of the actual technology itself, just building 12 the infrastructure? 13 CHAIRMAN: 14 Q. I'm starting from point A. 15 MR. WINSOR: 16 A. Okay. So you - 17 CHAIRMAN: 18 Q. Right through. You build the thing, you put 19 it up and you start operating it. Once it's 20 operating, well, maybe it's - 21 MR. WINSOR: 22 A. Well then, yeah, once it's operating, the fuel 23 is free. 24 CHAIRMAN: 25 Q. Are you aware of the -- like in jurisdictions</p>
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<p>1 MR. WINSOR: 2 A. Compared to the other options, yeah. 3 CHAIRMAN: 4 Q. I'd like to see your study that shows that. 5 MR. WINSOR: 6 A. I mean, well -- I mean, it's one of a number 7 of other products. I mean, you don't have -- 8 just well, a couple of things. Once it's 9 built, it's there. Usually steel is not the - 10 - they're going more to fibreglass these days 11 than steel. 12 CHAIRMAN: 13 Q. It doesn't matter what you use. What I'm 14 saying is that anybody who makes the claim 15 that wind is a green source of energy, you got 16 to start with the basics. We had the same -- 17 I had the same discussion with Mr. Bennett. 18 When they did their GHG calculations, they 19 took into account the construction of Muskrat 20 Falls and if you're going to talk about wind, 21 you've got to look at the fact that these -- 22 whether they're made from fibreglass or steel 23 or whatever, you've got to start from the 24 beginning and look at the energy content that 25 is used in the manufacturing.</p>	<p>1 that got a lot of wind, are you aware of what 2 the kilowatt -- what the cost of electricity 3 is? Do you know -- like Denmark for instance 4 got I think the highest wind penetration per 5 capita in the world. They're paying 30 cents 6 a kilowatt hour. 7 MR. WINSOR: 8 A. Right. 9 CHAIRMAN: 10 Q. For their energy. 11 MR. WINSOR: 12 A. That's right. And then as that fixed cost 13 becomes paid off, the price of their energy 14 will drop. 15 CHAIRMAN: 16 Q. Well, you better -- again, I can - 17 MR. WINSOR: 18 A. The other thing that's happening is that the 19 cost of wind turbines is also dropping. You 20 can buy a one megawatt wind turbine now for 21 1.3 million euros and that's down from about 22 four or five million euros a few years ago. 23 Same is true with solar panels. Solar panels, 24 their prices are dropping quite rapidly. 25 CHAIRMAN:</p>

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<p>1 Q. The Energy Information Agency says the cost of</p> <p>2 wind energy is rising; the cost of solar</p> <p>3 energy is rising. I mean, I make my -- I</p> <p>4 don't want to take up a lot of time here, but</p> <p>5 I mean, much of what you've said about</p> <p>6 alternative energy does not stand the test of</p> <p>7 economics because all these alternative energy</p> <p>8 sources are -- they don't have any density and</p> <p>9 that's the problem you got with wind. It</p> <p>10 doesn't -- it's not dense. It can't provide</p> <p>11 much energy for the inputs that go into it.</p> <p>12 Whether it's biomass, biogas, ethanol, wind,</p> <p>13 it's not energy efficient, aside from the fact</p> <p>14 that wind is not power. How is wind power?</p> <p>15 In what sense is wind power? Wind is energy</p> <p>16 but in what sense is it power? What do you</p> <p>17 mean by -- when I use the term power, I mean,</p> <p>18 I turn the switch on, it's the electric</p> <p>19 switch, the electricity is there. I can raise</p> <p>20 it up and down.</p> <p>21 MR. WINSOR:</p> <p>22 A. Well, you have to convert it to electricity,</p> <p>23 yes.</p> <p>24 CHAIRMAN:</p> <p>25 Q. But it's never there when you want it. You</p>	<p>1 science out there kicking around, trying to</p> <p>2 deflect what's happens, what's actually</p> <p>3 happening elsewhere and there's no doubt about</p> <p>4 that.</p> <p>5 CHAIRMAN:</p> <p>6 Q. I've looked at wind in Germany, in France, in</p> <p>7 Denmark, in England, and I can't see where you</p> <p>8 can run a modern energy system with any kind</p> <p>9 of a major component of wind energy. It is</p> <p>10 simply economically, and in terms of energy</p> <p>11 security and grid stability, impossible. But</p> <p>12 anyway, I guess it is debate that should be</p> <p>13 had. I mean, I do agree with you on one</p> <p>14 point, that these issues have never been</p> <p>15 properly debated and I think it's time for a</p> <p>16 debate. I don't guess I'm going to be</p> <p>17 involved in it, but it's something that should</p> <p>18 be debated. What is green and what is not?</p> <p>19 MR. WINSOR:</p> <p>20 A. Well, maybe if we can round up enough money,</p> <p>21 we'll be able to bring in Paul Gipe from</p> <p>22 California, who is the world wind energy</p> <p>23 expert and he could talk to you seriously</p> <p>24 about the subject.</p> <p>25 CHAIRMAN:</p>
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<p>1 can't rely on it. Would you like to run your</p> <p>2 pacemaker on wind energy?</p> <p>3 MR. WINSOR:</p> <p>4 A. You run it with a -- you have a mix of energy</p> <p>5 sources and many people are operating quite</p> <p>6 well these days with this mix of energy</p> <p>7 sources.</p> <p>8 CHAIRMAN:</p> <p>9 Q. Anyway, I was just told to be -- not argue</p> <p>10 with presenters. Thank you. But I really</p> <p>11 think that the Sierra Club, on a lot of these</p> <p>12 issues, I mean, it just hasn't done the basic</p> <p>13 research to make their claims. I mean, on</p> <p>14 ocean acidification, I mean, that simply, from</p> <p>15 what I've read, is not true. But anyway, I'd</p> <p>16 like to see your study on that matter.</p> <p>17 (12:15 p.m.)</p> <p>18 MR. WINSOR:</p> <p>19 A. I can provide you with all kinds of peer</p> <p>20 review studies on that.</p> <p>21 CHAIRMAN:</p> <p>22 Q. Sure.</p> <p>23 MR. WINSOR:</p> <p>24 A. That's not a question of that whatsoever. But</p> <p>25 the other side of it is there is a lot of junk</p>	<p>1 Q. And are you aware of what's happening in</p> <p>2 California with energy?</p> <p>3 MR. WINSOR:</p> <p>4 A. Well, California hasn't bought into -</p> <p>5 CHAIRMAN:</p> <p>6 Q. Anyway.</p> <p>7 MR. WINSOR:</p> <p>8 A. We're not going to get into that one.</p> <p>9 CHAIRMAN:</p> <p>10 Q. No.</p> <p>11 MR. WINSOR:</p> <p>12 A. Except that California hasn't bought into feed</p> <p>13 in tariff legislation yet.</p> <p>14 CHAIRMAN:</p> <p>15 Q. No, and -- well, that's the only right</p> <p>16 decision they've made probably with respect to</p> <p>17 energy supply.</p> <p>18 MR. WINSOR:</p> <p>19 A. That's your opinion, sir.</p> <p>20 CHAIRMAN:</p> <p>21 Q. It is. Anyway, thank you.</p> <p>22 MR. WINSOR:</p> <p>23 A. Thank you.</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. Thank you, Mr. Winsor. Just for the record,</p>

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<p>1 for clarity around the terms of reference, the 2 Terms of Reference presented to the Board 3 relate to the two identified options and as 4 noted -- stated in the notice, the public 5 notice for this hearing, other supply options 6 are not part of the mandate before the Board. 7 So while there well may be discussions around 8 wind and its potential in Newfoundland, it is 9 not part of the mandate and I just wanted to 10 ensure that that was clearly understood by 11 everybody who's watching and listening.</p> <p>12 CHAIRMAN: 13 Q. Okay. I'm chastened.</p> <p>14 GREENE, Q.C.: 15 Q. Definitely didn't mean to do that, Mr. Chair, 16 but just wanted to -- I would never do that to 17 the Chair, but for the people who are watching 18 this on the webcast as well, the Terms of 19 Reference, as we have posted on the website 20 and as pointed out in the notice, give very 21 specific terms and one of them is that other 22 sources of supply are not to be considered 23 within the Terms of Reference, only the two 24 options as outlined in the Terms of Reference 25 and I just wanted to clarify that.</p>	<p>1 ingredient for plant life. It has nothing to 2 do with global warming. Somehow the 3 environmentalists are persuading us that it 4 must be limited.</p> <p>5 Water vapour is a far more effective heat 6 trapping agent and without it, the temperature 7 of the earth would be below freezing. But the 8 environmentalists seem to have carried the 9 day. It's distressing that some of the 10 proponents of Muskrat Falls Project have been 11 sucked in. Among them are graduates with more 12 degrees than a thermometer. Lower orders must 13 not dare to disagree.</p> <p>14 The problem I have is that if they're 15 wrong about the danger of carbon dioxide, they 16 could well be wrong about other things. So we 17 can't believe anything they say, you know. If 18 you tell me it's raining, I'm going to have to 19 check it out. It's too bad, but I just don't 20 agree with you.</p> <p>21 The big problem I have is with the 22 transmission line. Sure, I think Muskrat 23 Falls could be -- a generating station could 24 be built there with very little difficulty, 25 some expense, of course, but bringing that</p>
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<p>1 CHAIRMAN: 2 Q. I think next is Mr. Carter. Is that correct?</p> <p>3 GREENE, Q.C.: 4 Q. Yes, Mr. Chair.</p> <p>5 CHAIRMAN: 6 Q. Mr. Carter, sir.</p> <p>7 MR. CARTER: 8 A. Thank you, Mr. Chairman. I appreciate that 9 predictions are very difficult, especially 10 about the future. If the Nalcor people were 11 all astrologers, I would treat them with 12 scorn, but if they believe in this global 13 warming and hazards of carbon dioxide, I'll 14 merely treat them with pity.</p> <p>15 Fork over six billion dollars or the 16 lights will go out. That seems to be the 17 message that it sends. That's the kind of 18 language blackmailers use.</p> <p>19 Has to do with closing down Holyrood 20 Thermal Generating Station. While it's true 21 that that facility is past its best before 22 date, the problem is that people who believe 23 in carbon dioxide poisoning, I think are so 24 far out to lunch that it's not worth much more 25 comment. Carbon dioxide is an essential</p>	<p>1 power to -- well, where do you bring it to? 2 Holyrood, I suppose, where there's a proper 3 distribution centre. Anyone -- now, I'm 4 nearly 80 and I've seen a lot of bad weather 5 in my time, including the sleet storm of '58 6 when the power was out for some weeks, and my 7 mother was born in Tilt Cove, mining town 8 there, and lived there until she was a 9 teenager and she said that three-day storms 10 were not at all unusual, and can you imagine 11 trying to send out repair crew in weather like 12 that? It's just not feasible.</p> <p>13 Now it's tragic, but this is the 100th 14 anniversary of the Titanic disaster and if 15 that iceberg had come down the Straits, it 16 would have carried all before it, you know. 17 So I can't see that you can reliably get power 18 across the Straits, and once you do, if you 19 do, then you've got to bring it down the Great 20 Northern Peninsula, either on the west side in 21 which case it would face the hazard of salt 22 spray, or if you bring it down the east side, 23 you've got storms, and of course, got storms 24 in both areas.</p> <p>25 And you know, I don't feel very happy</p>

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1 about having my source of power so remote from
2 me. I don't think it's reliable and I have
3 the experience to evaluate that. So I'm not
4 satisfied to be dependent on such a distant
5 source of power and I'm not alone. You know,
6 the power has to traverse the Straits of Belle
7 Isle, known as iceberg alley, and undersea
8 cable and down the Great -- it's just too much
9 to -- can you imagine a repair crew trying to
10 repair a downed line in such conditions? So
11 much for the security of supply.

12 We have an effective distribution system
13 in place. Why jeopardize this? Why can't --
14 if Holyrood is past its best before date,
15 let's put in another unit in there. You know,
16 you just slip in another. The cost could be
17 great. It could be a billion dollars, but
18 you're not paying for any transmission line
19 and the transmission line, I think, you've
20 already admitted that it's two billion
21 dollars. You'd buy an awful lot of oil with
22 two billion dollars, an awful lot, and we
23 heard in a previous presentation that fracked
24 oil, or whatever they call it, is going to be
25 much cheaper. So, I think we should, if

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1 nothing else, hold off on developing Muskrat
2 Falls for these very reasons.

3 I don't know whether the public have
4 cottoned on to the fact that the six billion
5 dollars is not a grant, but it's something
6 that we have to go out and -- it's a loan and
7 we have to pay interest on it and the interest
8 on six billion dollars, I haven't done the
9 math carefully, but it's something like 400
10 million a year, something like that, certainly
11 nothing less. And that will -- you know,
12 that's going to use up all our oil money, be
13 impoverished.

14 Now it's also impossible to get inside
15 the minds of the Nalcor people, but I would
16 suggest, and I'm tempted to think, that being
17 in charge of a six million dollar -- six
18 billion dollar project is inclined to puff out
19 of your chest and make you feel very
20 important, and it's not six million, but six
21 billion, six thousand million, six thousand
22 million. Where have we heard that kind of
23 talk before?

24 So, I think we can fall back on
25 Shakespeare. He said it best "better to bear

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1 the ills we have than fly to others that we
2 know not of." So there's my -- those are my
3 thoughts and whereas you might want to develop
4 Muskrat Falls, I'd say wait. Wait and try the
5 other option by renovating Holyrood. And as
6 for the danger of greenhouse gas, that's just
7 so much rubbish and anyone who suggests that
8 needs to have their head examined, as far as
9 I'm concerned. So there it is. Any
10 questions?

11 CHAIRMAN:

12 Q. Thank you, sir. Anybody have any questions of
13 Mr. Carter on this?

14 MR. JOHNSON:

15 Q. I have no questions for Mr. Carter, thank You.

16 CHAIRMAN:

17 Q. Thank you, sir.

18 O'REILLY, Q.C.:

19 Q. Mr. Chairman, if I just might make one comment
20 and that's all, and it's really directed a bit
21 to the tone of the presentation. You know,
22 this is supposed to be a respectful process
23 and has been and will continue to be, I'm
24 sure, under the watchful guidance of the
25 Commission and its counsel, but I think I

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1 would be remiss if I didn't take exception on
2 behalf of my client to the use of innuendo
3 contained in the first sentence, and I think
4 that if this process is going to work, with
5 all the lumps and bumps that we've accredited
6 to it, being respectful of one another's views
7 I think is an important aspect of getting to
8 the truth of the matter. So that's the only
9 thing I do want to say.

10 MR. CARTER:

11 A. Well, if you're going to tell me that the moon
12 is made of green cheese, I'm going to show
13 pity and I'm going to disagree. The fact that
14 somehow it's gotten into some people's heads
15 that greenhouse gases, carbon dioxide, is a
16 danger, I say to you that every day you're
17 pumping out two kilograms of carbon dioxide
18 yourself. So if you want to stop the
19 production of carbon dioxide, my suggestion to
20 you is that you stop breathing.

21 O'REILLY, Q.C.:

22 Q. Good advice.

23 CHAIRMAN:

24 Q. We take your point, sir, and we take Mr.
25 O'Reilly's point too as well.

1 MR. CARTER:

2 A. I don't mean to be insulting, but I'm being
3 insulted by this greenhouse gas nonsense.

4 CHAIRMAN:

5 Q. Thank you, sir. What's next, Madame?

6 GREENE, Q.C.:

7 Q. In terms of the schedule, Mr. Chair, we are
8 actually finished for today, in terms of the
9 presenters.

10 CHAIRMAN:

11 Q. Okay.

12 GREENE, Q.C.:

13 Q. We do have a change in the schedule for
14 tomorrow. The revised schedule will be posted
15 on the Board's website. Unfortunately, Ms.
16 Yvonne Jones who was scheduled to start the
17 presentations tomorrow is weatherbound in
18 Labrador and cannot make it for early tomorrow
19 morning. But hopefully will be in and will be
20 joining us in the afternoon. So tomorrow, we
21 will begin the day at ten a.m. with a
22 presentation by Mr. Dumaresque. The
23 presentation by Ms. Jones has been moved to
24 after the break in the afternoon, so it will
25 be two p.m. for Ms. Jones tomorrow afternoon.

1 The other presentations are as on the original
2 schedule, but a revised schedule will be
3 posted. So we start tomorrow morning at ten
4 a.m. with a presentation by Mr. Dumaresque,
5 followed by one from NOIA at 10:30 and then
6 two individual members of the public at 11:30
7 and 12 -- actually three members of the
8 public, another at 12:30, and then Ms. Jones
9 at 2:00 in the afternoon for tomorrow.

10 There's still some uncertainty as to
11 whether we will need to have a scheduled time
12 for Thursday and we are working coordinating
13 with those individuals to try to finalize that
14 this afternoon.

15 CHAIRMAN:

16 Q. So if that is satisfactory, we'll adjourn
17 until 10:00 tomorrow morning. Thank you.

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 20th 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 20th day of February, 2012
11 Judy Moss
12 Discoveries Unlimited Inc.

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