

LOWER CHURCHILL HYDROELECTRIC GENERATION PROJECT
JOINT REVIEW PANEL

PROJET DE CENTRALE DE PRODUCTION D'ÉNERGIE HYDROÉLECTRIQUE DANS
LA PARTIE INFÉRIEURE DU FLEUVE CHURCHILL
COMMISSION D'EXAMEN CONJOINT

CANADIAN ENVIRONMENTAL ASSESSMENT REGISTRY 07-05-26178
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Volume 27

JOINT REVIEW PANEL

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1 St. John's, Labrador

2

3 --- Upon commencing on Monday, April 4, 2011

4 at 6:59 p.m.

5 --- OPENING REMARKS:

6 CHAIRPERSON GRIFFITHS: Well, good
7 evening, ladies and gentlemen.

8 I'd like to welcome you all here
9 to this general session of the Environmental
10 Assessment hearings.

11 My name is Lesley Griffiths. I am
12 one of the co-Chairs of the panel.

13 Before I introduce the rest of the
14 panel and the secretariat, I just want to mention
15 that we do have simultaneous translation, French
16 and English. If you take advantage of that, either
17 for the translation or because you'd just like to
18 boost the level of sound -- it can be quite useful
19 if you're not hearing that well what is happening.

20 You can obtain one of these units
21 and headsets at the back of the room by providing
22 your name and address -- you have to give them
23 back.

24 So, as I said, my name is Lesley
25 Griffiths. I am one of two co-Chairs of the panel.

1 Sitting on my left is Herb Clarke. Herb is the
2 other co-Chair. Next to Herb is Meinhard Doelle.
3 On my right is Jim Igloliorte, and next to Jim is
4 Cathy Jong. Together we make up the panel.

5 We also have a number of members
6 of our secretariat team, and you can -- they're
7 around the panel rooms, and outside, and you can
8 recognize them by the fact that they're wearing
9 gold badges. And if you have any questions about
10 this evening, about your participation this evening
11 or about the process itself, please feel free to
12 approach any secretariat member; they'd be very
13 pleased to help you.

14 This panel was appointed by the
15 Government of Canada and the Government of the
16 Province of Newfoundland and Labrador in January,
17 2009, and our mandate is to carry out an
18 independent and impartial review of the proposed
19 Lower Churchill hydroelectric generating project.
20 This is a project that is proposed by the
21 Proponent, who is Nalcor Energy.

22 So during the last two years plus
23 since we were appointed, it's been a fairly busy
24 time. First of all, the Proponent completed the
25 Environmental Impact Statement, and then the

1 process has involved considerable exchange of --
2 receipts of fairly high numbers of written
3 submissions from a wide range of participants,
4 about the material in the EIS.

5 And then there have been an
6 exchange of information requests going from the
7 panel to the Proponent and then the Proponent
8 providing information in response. So this is what
9 we've been doing over the past two years.

10 This led us to the point where the
11 panel made a determination that there was
12 sufficient information for us to proceed to the
13 public hearing stage, and obviously this is where
14 we are.

15 We began our hearings on March
16 the 3rd, and we're going to finish on April the 15th
17 in Goose Bay. So you can see, we've already been
18 at this for a month, so lots of information and
19 views have been heard by the panel, and the panel
20 has been asking a large number of questions as
21 well.

22 The time period that we were
23 given, March 1st to April 15th, we were given 45
24 days; our mandate gave us 45 days to complete the
25 hearings.

1 We have been carrying out three
2 types of hearings. We have completed our topic-
3 specific hearings, which are just as the title
4 describes. We had a topic per hearing, aquatic
5 environment; need, purpose and alternatives; those
6 kinds of things. We've now completed those.

7 We have been carrying out
8 community hearings that have been intended to focus
9 on the input from the residents of a particular
10 community, obviously.

11 And then the third type is what
12 we're having here today and tomorrow, which is a
13 general hearing, and the general hearing allows us
14 and you to address any issue that's relevant to the
15 review of this project.

16 In the procedures, there were some
17 different procedures attached to each type of
18 hearing, but obviously it's only general that's of
19 pertinence here today.

20 At the end of the hearings, we
21 have, the panel has, 90 days -- again we have no
22 discretion over that -- 90 days in which to
23 complete our report, and our report will include a
24 summary of what we have heard at these hearings.
25 It will also include our findings and our

1 recommendations.

2 The panel is an advisory body,
3 it's not a decision-making body. We will prepare
4 this report, we will submit it to the federal
5 Minister of Environment and the provincial Minister
6 of Environment and Conservation, and they will then
7 be -- proceed into their decision-making process,
8 and obviously they will be making their decision.

9 But I do want to say that I think
10 experience -- it's safe to say that experience has
11 shown that panel reports are taken very seriously.

12 Just some logistics: Everything
13 that is said during the hearings will be recorded
14 and will be used to make a written transcript. And
15 there will also be -- there are also audio files
16 generated so you can go home and relive the whole
17 experience, should you wish to do, which is
18 unlikely. That's useful for people who aren't
19 here, obviously, though the written transcript is
20 generally available on the Environmental Review
21 website by the next day and, similarly, the audio
22 files.

23 I've you got any questions about
24 how you access that, please talk to the
25 Secretariat.

1 The significance of all of that is
2 you need to speak into a microphone in order for it
3 to get on the transcripts. So I would ask everyone
4 to do that and using the microphone, if you could
5 identify yourself first for the court reporter.

6 I just want to say something about
7 the questioning process that we have in the general
8 hearings. We have a series of presentations, and I
9 will just go over that in a moment, what our agenda
10 is for tonight. After each presentation, we allow
11 a questioning period, and typically the panel gets
12 the first crack at the questions, not always.
13 Sometimes we shift the order. But the panel may
14 ask some questions of the presenter and then if
15 it's not Nalcor that's presenting, obviously, I
16 would then provide an opportunity for the Proponent
17 to ask questions of the presenter, and then I look
18 for questions from the floor. And to do that,
19 generally, I get you to identify yourself. We get
20 some names or identifiers, make a list, and off we
21 go.

22 We have a fairly full agenda -- we
23 do have a full agenda tonight and also tomorrow.
24 For that purpose, I'm going to be fairly firm about
25 the questioning process, bearing in mind that if we

1 have time at the end of the evening, I'm certainly
2 going to open it up again for more opportunities
3 for questions. So I'm going to ask you to, if you
4 have a question, give your question with -- not a
5 statement, please. I know you probably need some
6 preamble for your question, but ask your question
7 and then after hearing the response, a brief
8 follow-up question or a short comment at that point
9 would be fine.

10 If, during this process, you're
11 feeling moved to want to make a statement to the
12 panel, a comment about what you've been hearing, we
13 will do our best to accommodate that, and the best
14 way to do it is rather than standing up during the
15 question time, when I'm going to try and keep it to
16 questions, would be to identify yourself to the
17 Secretariat during the break and we will try and
18 fit in as many opportunities for, say, a five-
19 minute statement or comment from people as we can.

20 So we really do want your input.
21 We also want to use the time efficiently and we
22 want to be able to share it so everyone gets an
23 opportunity.

24 So that is the kind of process
25 we're going to use for questioning.

1 I think it almost goes without
2 saying, but I am going to say it, that we expect
3 all participants to be courteous and respectful in
4 their input, especially while asking questions.

5 Please, if you can remember that
6 the main purpose of this hearing is to elicit
7 information that's going to help the panel with
8 their deliberations, and that's really what we're
9 after rather than getting into debates that may not
10 assist with that process.

11 So anything you can do to help us
12 with our daunting task will be very fully
13 appreciated.

14 So I think just a reminder too
15 about cell phones. If people want to take a moment
16 to turn them off, that would be good for us.

17 So this evening our agenda is that
18 we will start off with a presentation by Nalcor
19 Energy and we will have a question period
20 afterwards; a presentation by Dr. Ken LeDez, then
21 Bruno Marcocchio, Sierra Club Atlantic. We'll
22 probably take a break at that point for 15 minutes.
23 I have Mr. Alan Ruffman, Claude Anger, the St.
24 John's Border Trade, Craig Ennis, and then Robert
25 Cadigan of the Newfoundland and Labrador Oil and

1 Gas Industries Association. So that's the line-up
2 for presenters.

3 And as I say, we will see if
4 people want to, who haven't registered, want to
5 make a short five-minute statement or presentation
6 and we can fit you in at the end of the evening, we
7 will certainly try to do that.

8 So that finishes my opening
9 remarks. We're very pleased to see you all here
10 this evening and appreciate your participation.

11 So I will now turn to the
12 Proponent and invite them to make their
13 presentation.

14 Mr. Bennett.

15 --- PRESENTATION FROM NALCOR BY MR. GILBERT

16 BENNETT:

17 MR. G. BENNETT: Thank you, Madam
18 Co-Chair.

19 I'm not sure if this microphone is
20 live. Can everybody hear me okay?

21 I'm Gilbert Bennett. I'm the
22 Vice-President for the Lower Churchill project with
23 Nalcor Energy.

24 Just to introduce the team that's
25 with us here this evening, so to my left, my far

1 left, is Mr. Jim McCarthy. Jim is the lead for the
2 aquatic component of our environmental assessment.

3 To my immediate left is Mr. Bob
4 Barnes. Bob is the engineering manager for the
5 Lower Churchill project with Nalcor.

6 And to my right is Mr. Todd
7 Burlingame. He's the manager for the environmental
8 assessment and our aboriginal consultation work in
9 respect of the project.

10 So just to set the stage for this
11 session, we have a presentation that gives an
12 overview of the project and some of the issues and
13 some of the need, purpose and rationale that we're
14 working with in respect of the project, so I'll
15 just quickly review that outline.

16 Initially, very quickly, I'll
17 review Nalcor Energy and their lines of business.
18 We'll look a little more closely at the Lower
19 Churchill project. We have some discussion with
20 respect to the need, purpose and alternatives and
21 then the project justification. We'll look at the
22 project in the context of sustainability, energy
23 and economic terms.

24 And finally, we'll highlight some
25 of the financial benefits and some of the material

1 that we've already covered in previous sessions
2 regarding environmental assessment.

3 So Nalcor, of course, is a
4 provincial Crown corporation. Our shareholder is
5 the Government of Newfoundland and Labrador and, I
6 guess, as a result of that, all the people of the
7 province are ultimately owners of Nalcor Energy.

8 We're organized into five lines of
9 business. The first one is very familiar to most
10 people in the province. Newfoundland and Labrador
11 Hydro has a history that goes back over 50 years,
12 completed the electrification of rural parts of the
13 province back in the 1950s, established a bulk
14 transmission grid and operates most of the
15 generation facilities within the province.

16 Nalcor Churchill Falls is
17 responsible for the hydroelectric generating
18 facility at Churchill Falls. We operate that
19 facility and have had that role since the mid
20 1970s.

21 There's lots of issues that we
22 could talk about in respect of that project, but
23 certainly from an operations and engineering and
24 performance perspective, that is a facility that we
25 are very proud of. We operate to a very high level

1 of standard and care in operating what is now the
2 eighth largest power-generating -- hydropower
3 generating facility in the world.

4 The oil and gas business unit is
5 responsible for managing the province's equity
6 interest in the offshore, most notably Hibernia
7 South, the White Rose expansion and the Hebron
8 project. Of course, the oil and gas division has
9 also been undertaking exploration activities of its
10 own in respect of a number of potential
11 opportunities on the West Coast.

12 The Bull Arm Fabrication Facility
13 was constructed in the '90s during the Hibernia
14 project. It's been used for successive offshore
15 development since then and now has a role in
16 providing capacity for the Vale project at Long
17 Harbour and will soon be turned over to the Hebron
18 partners for the construction of the Hebron
19 project.

20 So it's become a very important
21 and strategic asset for large-scale development in
22 the province.

23 And the fifth business unit is the
24 reason why we're here, I guess, in this proceeding,
25 is to talk about the Lower Churchill project.

1 This is an environmental hearing.
2 This is an environmental assessment that we're
3 working through here, and I think it's important to
4 highlight that we have a corporate environmental
5 policy and we have guiding principles that flow
6 from that policy that we take very seriously.

7 And maybe there's some relevant
8 excerpts from that policy. It's important that we
9 sustain a diverse and healthy environment for
10 present and future Newfoundlanders and
11 Labradoreans.

12 It's also important that we use
13 the province's natural resources in a wise and
14 efficient manner. It's important that we monitor
15 our ongoing environmental performance.

16 And finally, it's important that
17 we respect the cultural heritage of the people of
18 the province.

19 This policy and those guidelines
20 have been top in mind for us as we participate in
21 this process and will continue to be critical as we
22 move forward through planning and hopefully
23 execution of the project.

24 I won't spend a lot of time on
25 this slide, but for those of you who may not be

1 familiar with the location of the sites, Muskrat
2 Falls is approximately 40 kilometres away from
3 Happy Valley-Goose Bay and Gull Island is another
4 60 kilometres upstream, so a total of about 100
5 kilometres upstream from Happy Valley-Goose Bay.
6 So that should help put the project in perspective.

7 Of course, we're downstream of the
8 existing generating facilities at Churchill Falls.

9 Maybe to look a little more
10 closely, here's a slightly zoomed in perspective of
11 the two sites.

12 We can see that Gull Island is
13 located downstream of Churchill Falls. Gull Island
14 would be a 2,250 megawatt generating facility. The
15 reservoir extends approximately 230 kilometres
16 upstream to the Churchill Falls facility. The
17 flood area, however, is relatively constrained.
18 It's 85 square kilometres in the Churchill River
19 Valley.

20 And then further downstream we can
21 see the Muskrat Falls facility, which is an 824
22 megawatt site. It has a reservoir that extends
23 back to Gull Island and in doing so we have a flood
24 area of approximately 41 square kilometres.

25 So to put that in perspective, the

1 flood area on both sides, so about 126 square
2 kilometres, is about five percent of the flood area
3 at Churchill Falls.

4 This project is critical to the
5 future of our province. It's the cornerstone of
6 our province's energy plan and it's an easy
7 investment of revenue from non-renewable resources
8 into renewable ones.

9 The project has a relatively small
10 footprint and will produce more than 3,000
11 megawatts of clean renewable energy.

12 In a time where our domestic needs
13 are projected to increase and we need more
14 electricity this project will help meet those
15 domestic demands. It will also provide an
16 opportunity to export so that we have an
17 opportunity not only to generate revenue but to
18 lower greenhouse gas emissions across the rest of
19 the country.

20 We just saw on this map from the
21 previous slide that the project is very close to
22 Happy Valley-Goose Bay and as a result this project
23 will also facilitate further industrial development
24 in the Central Labrador region.

25 The project addresses three basic

1 needs; first, to provide a source of energy for
2 domestic use, including residential, commercial and
3 industrial needs. This project is the least cost
4 alternative for our province.

5 It will facilitate the
6 transformation of our economy from one based on the
7 offshore and non-renewable resources to one based
8 on renewables. In doing so, we also leave an
9 energy source with a useful life spanning centuries
10 to future generations.

11 Finally, it can generate long-term
12 revenues for the Province of Newfoundland and
13 Labrador and therefore to the people of the
14 province for services and infrastructure, including
15 social services, healthcare, education, municipal
16 and provincial infrastructure that we all rely on.

17 Simply put, the purpose of this
18 project is to ensure that Newfoundland and Labrador
19 obtains the benefit of its natural resources and
20 particularly its renewable ones.

21 Newfoundlanders and Labradoreans
22 will benefit from this project in many ways. It
23 will generate long-term sustainable revenue for the
24 province, contribute to energy security and open
25 the doors for future industrial activities that

1 need large quantities of power. This power will be
2 reliable and its price will be predictable.

3 The project will also reduce
4 greenhouse gas emissions allowing 98 percent of our
5 province's electricity production to be clean and
6 renewable, and that's something that few
7 jurisdictions throughout the world have achieved.

8 The development of Muskrat Falls
9 and Gull Island will also benefit our Canadian
10 neighbours through greenhouse gas productions as
11 well as through the provision of reliable and
12 predictably priced power. Given the volatility
13 we've seen in the price of oil in the past few
14 years, and even in the last few weeks for that
15 matter, price certainty is important to us all.

16 We've talked a lot about perceived
17 alternatives over the past few weeks; one thing is
18 very clear, no other alternative can meet the need
19 of this project in the same economical and
20 environmental matter.

21 This project, with more than 3,000
22 megawatts of clean renewable energy, is the envy of
23 the country, and so it should be. The project has
24 attributes that cannot be met by other potential
25 projects.

1 The project is large scale with
2 attractive per unit economics, economics that are
3 unmatched by other Canadian hydroelectric
4 developments.

5 The project has a small
6 environmental footprint and is located on an
7 already regulated river system with existing
8 natural barriers.

9 The project has minimal reservoir
10 storage and will have minimal effect on current
11 flow regimes on the Churchill River, and the
12 project will enable other renewable opportunities
13 in the future.

14 We're going to hear questions and
15 we have heard questions about why other
16 alternatives could meet the stated need. At the
17 outset it's important to remember that electricity
18 is an essential element of our modern way of life.

19 We all have a desire to reduce the
20 footprint we have on our shared environment, but
21 the reality is as a society we expect the lights to
22 come on when we turn the switch or that our homes
23 are warm throughout the winter. This is a basic
24 expectation that didn't exist a century ago but
25 this is where we are today, and alternatives to the

1 project have to be framed in that context.

2 Wind has been presented as an
3 alternative to the project, either on a small or a
4 large scale basis. Wind cannot fulfil the roll of
5 this project. Most importantly, wind is an
6 intermittent resource. Wind energy is received on
7 the electricity system when the wind blows, which
8 may or may not be when we need it; in other words,
9 wind does not offer firm power, and what I mean by
10 this is you can't count on wind when you need it.

11 People expect to be warm and
12 comfortable on a February evening when our system
13 load is the highest and wind simply cannot be
14 counted on to deliver when we need it the most.
15 Hydro can.

16 We've heard comments about hydro
17 being 1960s or 1920s technology but the fact of the
18 matter is that with water in the reservoir and
19 reliable proven technology we can deliver power
20 when it is needed, because something that's simple
21 and works simply shouldn't be a reason to consider
22 it to be a bad thing.

23 Other jurisdictions, if we look to
24 Denmark in Europe, have had high wind penetration
25 on their power systems. They also have more

1 interconnection capacity then they have wind
2 capacity so they can lean on the surplus capacity
3 available from the neighbours when the wind doesn't
4 blow.

5 We don't have that luxury. With
6 the completion of the Labrador Island transmission
7 link and the Maritime link, however, we will be
8 able to increase our wind penetration in the
9 future.

10 Nuclear generation is not an
11 alternative. It's not permitted under the
12 *Electrical Power Control Act* and even if it were it
13 lacks another important attribute of hydro, the
14 ability to operate efficiently over a wide
15 production range.

16 Nuclear units are designed to
17 operate at close to maximum output and are
18 generally not adept at ramping up and down their
19 production. This is in stark contrast to hydro
20 units which can quickly respond to demand changes.
21 That's what we call load following in the industry.
22 It can operate efficiently at different output
23 levels in response to seasonal demand.

24 And for those of us who live here
25 we know we're not on Arizona, solar is not a viable

1 alternative given our northern latitude. In
2 Ontario solar is sold by producers under their
3 standard offer program at a price of over 40 cents
4 per kilowatt hour, a rate that is approximately
5 four times the retail rate here in Newfoundland and
6 about 10 times the retail rate in Labrador.

7 Title is an interesting
8 opportunity for the future but is by no means a
9 proven technology, and from an engineering
10 perspective falls into the category of research and
11 development. Without a proven track record this
12 potential future alternative cannot be counted on
13 today to keep the lights on.

14 Small hydro and other renewables
15 are small scale solutions but have technical and
16 operational limitations that preclude them from
17 displacing production at our thermo-generating
18 facility at Holyrood. In particular, the inability
19 of these alternatives to deliver their output
20 during the winter peak is a significant
21 disadvantage.

22 We have an obligation at Nalcor
23 and at Newfoundland and Labrador Hydro to keep the
24 lights on and our homes warm all the time and this
25 project is the best and most economical way to make

1 that happen, both now and in the future.

2 The justification of this project
3 can be considered from three perspectives, first of
4 all in sustainability terms, secondly, in energy
5 terms, and thirdly, in economic terms, and over the
6 next few slides I would like to examine these in
7 some more detail.

8 Let's consider sustainability for
9 a moment. We all have a footprint on the planet.
10 Everything we do has an impact. The question that
11 we have to consider is how to minimize this impact.
12 When we think about our footprint and consider
13 what's acceptable, it's important to consider that
14 with a long-term view. We need to think about how
15 our decisions today will effect future generations.
16 And this project is both economically and
17 environmentally sustainable.

18 Our energy plan considers
19 sustainability and our future. As a society if we
20 were to extract our offshore oil and gas all we
21 have left is a depleted reservoir. Converting that
22 legacy to a renewable economy provides a basis for
23 sustaining our economy for generations to come.
24 Hydroelectric development is a sustainable
25 activity, no resources extracted and we leave an

1 energy source or a revenue stream for centuries.

2 This project has a smaller
3 footprint than other hydro alternatives. We've
4 heard references from Dr. Rosenberg of the World
5 Committee on Dams; developing this project on an
6 already regulated river with already developed
7 upstream storage has less impact than hydro
8 developments on other unregulated rivers.

9 Gull Island has approximately 580
10 million cubic metres of storage and Muskrat Falls
11 has about 50 million, so water that flows into the
12 reservoir must be used for production immediately.
13 Timing of outflows has to match inflows into the
14 reservoir or a spill will take place.

15 And just to put that storage in
16 perspective, the 630 million cubic metres of
17 storage in both reservoirs has to be compared to
18 the approximately 30,000,000,000, or 30 billion,
19 cubic metres of storage at the Churchill Falls
20 reservoirs.

21 The sites have minimal drawdown,
22 approximately 3 metres at Gull Island, about .5
23 metres at Muskrat Falls, and this is approximately
24 the same variation that we see on the river today.

25 We've heard a lot about Upper

1 Churchill over the past few weeks and, as I
2 mentioned earlier, Gull Island and Muskrat Falls
3 have a flood area that's approximately 5 percent of
4 the flood area at the Churchill Falls development,
5 and in doing so we produce approximately half of
6 the energy that's currently generated at Churchill
7 Falls.

8 As part of a larger system and
9 with a water management arrangement in place with
10 Churchill Falls, production can be scheduled for
11 Nalcor's entire fleet including other facilities
12 with significant storage capacity such as Churchill
13 Falls and Bay d'Espoir.

14 Contrary to the assertion of
15 others, this project represents sustainable
16 development. It provides a large-scale, renewable
17 source of energy for decades and centuries for
18 future generations. The project has minimal
19 incremental effect on the current aquatic,
20 terrestrial and atmospheric environments, and the
21 project provides positive economic benefits for at
22 least a decade during construction.

23 This project has been an
24 attractive energy resource for decades, it's been
25 studied for decades. It's well understood, was

1 granted environmental assessment approval once
2 already, has attractive development costs and the
3 question of market access, one question that has
4 been front and centre for decades, can also be
5 addressed.

6 Market opportunities were
7 presented clearly and filed information leading up
8 to this hearing. Market opportunities are based on
9 replacing aging infrastructure, replacing
10 greenhouse gas-emitting sources, growth in demand
11 for energy and capacity, and demand for more
12 sources of dispatchable power.

13 These four themes were discussed
14 at length in the EIS and various information
15 request responses and, most recently, in our
16 supplemental report that was filed in response to
17 Information Request JRP-146.

18 Replacement of aging
19 infrastructure is a key concern for utilities. We
20 know that asset turnover and the need to replace
21 aging facilities drives investment. Holyrood has
22 been in service for decades; it first went in
23 service in 1970. That facility, as others in
24 Atlantic Canada, are aging. The same is happening
25 in the U.S.

1 As I've already mentioned, the
2 cost of continuing as an isolated Island, which
3 involves upkeep at Holyrood, will be more expensive
4 than this project.

5 The need to replace greenhouse
6 gas-emitting facilities should be clear. Further
7 GHG reductions can be accomplished through tighter
8 regulation of greenhouse gas emissions, and while
9 this is politically challenging in the near-term,
10 we fully believe that it will take place in the
11 long-term. At the point, as we indicated in
12 various IR responses, coal-fired generation will be
13 displaced from its currently low marginal cost
14 position.

15 This is certainly the case in
16 Newfoundland and Labrador where the retirement of
17 thermal generation at Holyrood is committed, and to
18 Nova Scotia where renewable targets will displace
19 one terawatt hour per year of coal-fired
20 production.

21 As I mentioned earlier, hydro is
22 operationally flexible and facilitates development
23 and integration of other renewables.

24 This sentiment was echoed by Jean-
25 Francois Nolet, who is the Atlantic and Quebec

1 Policy Manager for the Canadian Wind Energy
2 Association, who responded to a question from a
3 reporter at the Telegram newspaper in January of
4 this year. He said that wind power and hydro are
5 the best couple. They go hand-to-hand. Wind is
6 the perfect complement to hydro, but wind cannot
7 replace hydro however, he said.

8 We expect to see demand growth in
9 the long-term. Since Newfoundland and Labrador,
10 just like practically every market in North
11 America, includes conservation measures, forecasts
12 already include various types of conservation
13 programs and CDN measures. Our "takeCharge of
14 Conservation" program, funded in conjunction with
15 Newfoundland Power, is an example of such.

16 Other measures such as plug-in
17 hybrid vehicles are not viable solutions today. We
18 have zero of those vehicles today, and assuming
19 that our entire population had one, they are not
20 generation sources. At best, they're very
21 expensive storage devices.

22 We acknowledge the demand and
23 prices have changed over the past number of years
24 and we should all acknowledge that these are normal
25 events to be taken into consideration.

1 When a project has a useful life,
2 it's measured in decades. Economic cycles will
3 repeat many times.

4 We've talked about the economics
5 of Muskrat Falls and Gull Island in detail over the
6 past number of weeks and we'll discuss this further
7 next week.

8 The points of this slide are well-
9 documented in our material, but I think it's
10 important to review these points.

11 First of all, hydro facilities
12 have no reliance on fuel. They operate using known
13 and reliable technology. They have predictable and
14 low operating cost and, therefore, they have long-
15 term price predictability.

16 They have a long service life
17 that's measured in decades and can easily achieve
18 centuries. They provide a clean and renewable
19 energy supply. They're both firm and dispatchable
20 and have a high degree of operational flexibility.

21 These advantages are matched by no
22 other electric power generation technology.

23 Nalcor has comprehensive project-
24 planning investment evaluation processes that have
25 been applied to this project.

1 Significant due diligence has been
2 undertaken in developing a business case for this
3 project. We have obtained and acquired and used
4 expert advice from reputable consultants, including
5 PIRA, Hatch, SNC-Lavalin, PricewaterhouseCoopers
6 and Navigant.

7 The project has a strong business
8 case and generates an attractive rate of return.
9 The export portfolio business case has been
10 presented in our supplementary report to
11 Information Request JRP-146. And despite
12 suggestions to the contrary, the export business
13 case includes necessary transmission costs to reach
14 export markets.

15 As we discussed earlier in this
16 hearing, the methodology that's used for our
17 domestic planning has been presented in our
18 Generation Planning Issues report.

19 In considering our domestic market
20 where the delivered cost of energy is a key
21 criterion, energy from the project delivered to
22 Newfoundland has a \$2.2 billion net present value
23 advantage over continued use of thermal generation.
24 In other words, the present value of the total
25 savings to customers here on the Island over that

1 50-year study period is in the order of \$2.2
2 billion.

3 So I'd like to take a couple of
4 moments to speak to the issue of electricity rates
5 and, certainly, this issue has been discussed
6 during the hearing. We've also submitted
7 additional information as part of our response to
8 the March 21st letter from the panel.

9 This comparison here looks at two
10 options for customers on the interconnected Island
11 system, and this system of course includes almost
12 all communities on the Island, the exception being
13 a few communities on the south coast and the
14 northeast coast which rely on diesel generation.

15 The red line on this graph shows
16 us the future if we continue to operate as an
17 isolated Island. This includes costs such as
18 upgrades to the Holyrood plant, addressing
19 environmental issues associated with that facility,
20 and the volatile price of oil.

21 We've heard opinions that Nalcor
22 shouldn't proceed to the Lower Churchill Project,
23 that it's going to cost ratepayers too much.

24 Well, if we don't proceed with
25 that project, if we continue to put money into the

1 Holyrood plant, if we remain vulnerable to the
2 price of oil, that red line will be the reality for
3 customers here on the Island.

4 When we say the rates are going up
5 with or without this project, these are the numbers
6 and rates that we're facing, and I assure you that
7 based on the increasing cost of oil, I suspect
8 these predictions are going to be conservative.

9 The blue line on this chart
10 illustrates the significant cost reduction from
11 development of Muskrat Falls. With the long-term
12 view of prices, it's clear that not only is this
13 project clean and renewable energy, it's also our
14 least-cost option. This project will make
15 electricity more affordable for ourselves, our
16 children and our grandchildren.

17 Looked at another way, we've
18 looked at the cost of electric versus oil heating
19 for residential customers and we've seen, I guess,
20 a number of trends over the past number of years.

21 First of all, the market share of
22 electric heating in the province has consistently
23 increased, notwithstanding periods where electric
24 heat operating cost was actually higher than oil
25 heat, and if we think about the investment that's

1 required in people's houses to set themselves up
2 for oil heat, a considerable expense is required to
3 install an oil-fired heating system.

4 In the first place, the
5 considerations for individual homeowners has to
6 consider more than simply the operating cost and
7 the fuel cost on an ongoing basis.

8 The second point that we see here
9 is we expect these two curves to merge and in the
10 long-term, on a real basis -- and I'll come back to
11 that real basis explanation in a second -- the cost
12 of electric heat will be less than oil heat going
13 forward into the future.

14 And there's one thing that's worth
15 noting in this graph is that the price here is set
16 up in 2010 dollars, so we're in constant 2010
17 dollars and that's why we see the price of
18 electricity declining in real terms, into the long-
19 term, into the future.

20 But the point I want to leave here
21 is that we do have a heavy reliance on electric
22 heat in this province. We don't have natural gas
23 as an alternative and in the long-term electric
24 heat derived from Muskrat Falls is less expensive
25 than oil heat as an alternative for most

1 homeowners.

2 We think about the financial
3 benefits of this project, first of all, this
4 project will reach -- you know, will reach a large
5 part of our labour force, provides about 12 years
6 of construction employment and that's half a career
7 for many people.

8 The construction of the project
9 will follow the adjacency principle that's been
10 established for labour, that's first consideration
11 given to IBA commitments, to residents of Labrador,
12 to residents of Newfoundland, then to Canada and if
13 we need to go international we will.

14 Construction employment will also
15 adhere strictly to a diversity plan and a gender
16 equity plan and we will not waiver from that
17 commitment.

18 Just think about how this project
19 stacks up; employment peaks at over 2,000 person
20 years of direct employment and during operations we
21 see 50 people in Labrador and 30 operating here in
22 St. John's.

23 We've heard from the Chamber of
24 Commerce and the Economic Development Board in
25 central Labrador, they see tremendous business

1 opportunities and they're keen to work with the
2 business community to get ready for this project.

3 There will be also opportunities
4 for the business community throughout the rest of
5 the province now that we've signed an engineer
6 procurement and construction management contract
7 with SNC-Lavalin.

8 I'd encourage the business
9 community to start thinking about how this project
10 can help them and certainly to start talking to
11 Nalcor and to SNC-Lavalin about how we can be
12 involved.

13 The Government of Newfoundland and
14 Labrador, as well as other governments will benefit
15 via taxes and dividends and this is money that goes
16 back to the people in the province and of the
17 country in the form of government services such as
18 healthcare, transportation and education.

19 As I've highlighted already,
20 consumers throughout the province will benefit from
21 this power.

22 I'd like to take a moment to talk
23 about our approach to environmental assessment and
24 the role that consultation plays in that process.

25 The rigorous review of this

1 project takes more than 35 years of studies into
2 account. We've taken the precautionary approach
3 and are confident that we've contributed to a very
4 thorough comprehensive assessment. We've used and
5 will continue to use sustainable practices and
6 proven technologies in both our design, mitigation
7 and monitoring and follow-up.

8 Consultation is a critical part of
9 this process. It begins when the project is
10 submitted for environmental assessment and
11 continues throughout the process.

12 Since registering the project for
13 environmental assessment back in December of 2006
14 we've consulted with various groups, such as non-
15 government organizations, regulators, Aboriginal
16 groups and community groups.

17 We've had public consultation in
18 the form of open houses throughout Labrador, as
19 well as here in St. John's, and we've incorporated
20 that information into the thousands of pages of
21 information that's been submitted thus far.

22 An important point I'd like to
23 make here is that consultation doesn't end with
24 these hearings or once a project begins
25 construction. Its consultation efforts and

1 activities will continue into construction and
2 throughout operations, particularly in terms of
3 monitoring and follow-up and potential effects, the
4 predictions that we've made and the ongoing
5 monitoring to confirm that they were in fact
6 accurate.

7 During the past several weeks
8 we've touched on many key issues as part of this
9 project, I won't go into detail here again today
10 but if people do have questions on these points we
11 can either address them in this forum or we can
12 direct you to that information that's available in
13 the existing documentation and material that's
14 already been covered throughout the environmental
15 assessment.

16 And I'd like to conclude by asking
17 everybody to think about the importance of this
18 project for future generations.

19 This project is a cornerstone of
20 our province's energy plan and our long-term energy
21 policy. We've seen the positive effects of revenue
22 from offshore oil and gas but it's important to
23 remember that oil is non-renewable; once it's taken
24 from the ground it's gone, so are those revenues,
25 unless we invest those revenues strategically.

1 This project is a strategic
2 investment for Newfoundland and Labrador, one that
3 takes a portion of that revenue from non-renewable
4 energy and invests it in a renewable future so that
5 future generation, our children and grandchildren
6 can benefit from those revenues and this resources.

7 It will significantly reduce
8 greenhouse gas emissions, provide energy security,
9 and bring benefits to the people of this province,
10 as well as their neighbours in Atlantic Canada and
11 beyond.

12 Thank you.

13 CHAIRPERSON GRIFFITHS: Thank you
14 very much, Mr. Bennett, for your presentation.

15 I'm just going to ask for
16 everyone's indulgence for one second, there was
17 something I did not say in the opening remarks and
18 I would -- if you don't mind, I would just like to
19 say it now because otherwise I'm going to forget
20 again and then we will go to questions.

21 The point that I forget to say in
22 my opening remarks was just that because the panel
23 -- everything that the -- when we are writing our
24 report and reaching our conclusions we must be
25 guided only by material and information and views

1 that have been placed on the public record, either
2 by written submissions or by saying at the
3 hearings.

4 I just want to mention that
5 because this means that we are unable to have any
6 private discussions with you about the project. So
7 I just wanted to bring that to your attention.

8 You will see the panel gliding in
9 and out, it's not because we're unfriendly but
10 because that's what we must do.

11 So that's -- I'm sorry about
12 forgetting to say that at the beginning.

13 As you can imagine, we've been in
14 the hearings for a month, almost day-in and day-out
15 and the Proponent has been making presentations
16 pretty well at the beginning of every session and
17 usually the panel has been starting off with
18 questions for the Proponent but the Proponent might
19 be pleased to take a little break from us, because
20 we've had a lot of opportunities and we're not
21 quite finished anyway with asking questions of the
22 Proponent.

23 We decided it was important to
24 maximize the time that you have for that, so I
25 think the panel is going to hold off with questions

1 for the Proponent at this point.

2 I'm going to ask for questions
3 from the floor. It may be that one or more of us
4 gets moved to ask a question after that but.

5 So could I possibly have a show of
6 hands of people who would like to ask a question.

7 Unfortunately I'm at a
8 disadvantage of not knowing names here, though we
9 did in Goose Bay.

10 So the lady at the back and the
11 gentleman over the right, the gentleman at the
12 back.

13 All right, without names it's a
14 problem but I'm going to -- the lady in the back,
15 if you'd like to come forward to the mic and say
16 your name.

17 --- QUESTIONS BY THE PUBLIC:

18 MS. KELLAND DYER: Hello to the
19 panel. My name is Sue Kelland Dyer, a member of
20 the public with questions for Nalcor.

21 I'm trying to determine -- first
22 of all, I just wanted to make sure I understand
23 this. The deal is not done yet, right?

24 MR. G. BENNETT: You're thinking
25 about the Emera arrangements?

1 MS. KELLAND DYER: The deal.

2 MS. G. BENNETT: Yes, that's
3 right, they're not -- we're still working towards
4 agreements.

5 MS. KELLAND DYER: Okay. All
6 right. I'd like to talk about the 50 people in
7 Labrador, 30 in St. John's; is that correct? That
8 would be long-term employment?

9 MR. G. BENNETT: Yes, that's
10 right.

11 MS. KELLAND DYER: Would you be
12 able to tell me what the long-term employment might
13 be if the energy was used in Labrador for
14 industrial purposes?

15 MR. G. BENNETT: Well it depends
16 on -- of course it would depend on the industrial
17 business that is created, whether it were a mine or
18 some other activity.

19 MS. KELLAND DYER: Something like
20 an aluminium smelter?

21 MS. G. BENNETT: It'd be fairly
22 big numbers. It'd be hundreds of people.

23 MS. KELLAND DYER: And that would
24 be on top of the construction, of course, of the
25 12, it doesn't change that?

1 MR. G. BENNETT: That's right.

2 MS. KELLAND DYER: What would be
3 the cost of the power per kilowatt if there was no
4 transmission built out of Labrador?

5 MR. G. BENNETT: We've already --
6 we've answered the question of the bus fare cost at
7 Muskrat Falls, it's in the order of \$75 a megawatt
8 hour in 2017.

9 MS. KELLAND DYER: What does it
10 mean to me, a regular person, everybody else here,
11 what's the difference in the cost?

12 MR. G. BENNETT: The cost that we
13 have evaluated compared to Holyrood ---

14 MS. KELLAND DYER: No, no, if the
15 power is simply held in Labrador without
16 transmission out, what would be the cost?

17 MR. G. BENNETT: I think I
18 answered you; it was \$77.00 a megawatt hour.

19 MS. KELLAND DYER: Can you put
20 that in our terms? Like, you talk about it like
21 regular ---

22 MR. G. BENNETT: Okay, give me
23 the ---

24 MS. KELLAND DYER: Half price,
25 half, a quarter?

1 MR. G. BENNETT: Do you mean in
2 cents per kilowatt hour?

3 MS. KELLAND DYER: Half? What?
4 Give me a percentage.

5 MR. G. BENNETT: Of what? I'm
6 not ---

7 MS. KELLAND DYER: What it would
8 cost if -- if we took the transmission costs out,
9 left the power in and plugged the industry in in
10 Labrador, what would be the difference in the cost?

11 MR. G. BENNETT: I can give you
12 the cost in numerical terms. It's about seven
13 point cents per kilowatt hour.

14 MS. KELLAND DYER: Versus?

15 MR. G. BENNETT: Versus our
16 delivery cost year based on a forecast here on the
17 Island, is about -- is about 14 cents.

18 MS. KELLAND DYER: Half. Does
19 that make that a competitive sort of energy
20 arrangement for industry?

21 MR. G. BENNETT: It certainly is a
22 less expensive alternative than we have in front of
23 us today, that being Holyrood.

24 MS. KELLAND DYER: No, not for
25 Newfoundland. In Labrador, would it be competitive

1 to attract industry, the seven cents?

2 MR. G. BENNETT: We haven't seen
3 that thus far.

4 MS. KELLAND DYER: So it's to be
5 used on the basis of we need it for growth in
6 domestic?

7 MR. G. BENNETT: It's a less
8 expensive alternative than our domestic
9 alternative, that being Holyrood here on the
10 Island, yes.

11 MS. KELLAND DYER: So you do not
12 believe that this -- as you described as the best,
13 and I'm sure the National Research Council, many of
14 them, have said the best remaining hydro potential,
15 and what we've seen recently with the nuclear power
16 and what is gone on there, and the value of hydro
17 power as you describe it, and I concur, there is no
18 interest whatsoever in industry for Labrador for
19 this?

20 MR. G. BENNETT: If you look at
21 the previous efforts that have been expended and
22 undertaken in respect of aluminum, for example, no,
23 we have not seen that interest.

24 MS. KELLAND DYER: What haven't
25 you seen?

1 MR. G. BENNETT: We have not seen
2 anybody come forward and say, "We would like to
3 develop." Now, have there been previous
4 engagements with other industrial customers, yes,
5 there have been, over the years.

6 There are interested developers in
7 the resource sector in Labrador, outside of energy-
8 intensive industry. If we look to mining,
9 potential mining customers and mining developments,
10 we have had discussions with those customers, and
11 we will continue to do so.

12 MS. KELLAND DYER: Would you
13 acknowledge, sir, that there are aluminum smelters
14 in most jurisdictions that have a wealth of
15 hydroelectric power?

16 MR. G. BENNETT: I would say that
17 that's one observation, but you have to look at the
18 entire business case for aluminum, that being the
19 cost of energy, the cost of raw material, the cost
20 of construction, the operating costs, cost of
21 shipping in and out, and the cost of labour. So
22 that's ---

23 MS. KELLAND DYER: And how would
24 you compare that ---

25 CHAIRPERSON GRIFFITHS: Excuse me.

1 Excuse me ---

2 MS. KELLAND DYER: Yes.

3 CHAIRPERSON GRIFFITHS: --- Ms.

4 Kelland Dyer, we do have to share the question
5 time.

6 MS. KELLAND DYER: Yes.

7 CHAIRPERSON GRIFFITHS: Are you
8 almost finished with ---

9 MS. KELLAND DYER: Yes.

10 CHAIRPERSON GRIFFITHS: --- that
11 line of questioning?

12 MS. KELLAND DYER: I just wanted
13 to carry on, just finish up this line, I guess, and
14 then I'm finished.

15 CHAIRPERSON GRIFFITHS: Yes, if
16 you would.

17 MS. KELLAND DYER: Just with the
18 smelter issue.

19 CHAIRPERSON GRIFFITHS: If you
20 would, thank you.

21 MS. KELLAND DYER: How would you
22 -- thank you.

23 How would you compare Quebec,
24 Norway, Iceland, now Greenland, from the standpoint
25 of the business model for industry and aluminum

1 development?

2 MR. G. BENNETT: They all have
3 their -- they all have their different cost
4 structures. I'm not an expert in global aluminum,
5 so it's difficult for me to talk about the various
6 -- the merits of those various markets.

7 We know that Quebec has a legacy
8 of inexpensive power, and I suspect to a large
9 extent may have been driven by Churchill Falls.
10 But the operating costs in one jurisdiction don't
11 easily translate over to other jurisdictions. They
12 all have their own issues and advantages.

13 MS. KELLAND DYER: Do you have
14 comparative costs from those countries to our costs
15 of power here?

16 MR. G. BENNETT: Do you mean the
17 initial, average or marginal cost?

18 MS. KELLAND DYER: Do you have a
19 cost comparison? Anything that's relative?

20 MR. G. BENNETT: Well, I was
21 looking for some more specificity from your
22 perspective.

23 MS. KELLAND DYER: I see.

24 MR. G. BENNETT: When you talked
25 about cost, what did you mean? I mean it's --

1 MS. KELLAND DYER: I would love to
2 have the human resources to be able to provide
3 that, but I -- I guess I'm just asking for a
4 general comparison.

5 MR. G. BENNETT: We haven't done
6 an analysis of the European market, for example,
7 and we know that there are legacy smelters in
8 Norway.

9 There are also, for example,
10 significant investments that are happening in the
11 aluminum sector outside of those four
12 jurisdictions. And one that comes to mind was Norsk
13 Hydro, who originally started the business in
14 Norway, is now investing in the Middle East
15 using ---

16 MS. KELLAND DYER: Correct.

17 MR. G. BENNETT: --- natural gas,
18 so ---

19 MS. KELLAND DYER: One final
20 question is all I have. Is there a problem?

21 MR. G. BENNETT: I'm just waiting
22 for your question.

23 MS. KELLAND DYER: I'm finished,
24 thank you.

25 CHAIRPERSON GRIFFITHS: Thank you

1 very much, Ms. Kelland Dyer.

2 The gentleman over on the right?

3 MR. BOWDRING: My name is Paul
4 Bowdring.

5 I just have a simple question. Do
6 you have a slide showing the transmission route
7 across the Island, and then across to Nova Scotia?

8 MR. G. BENNETT: I don't think I
9 have it in this deck.

10 CHAIRPERSON GRIFFITHS: Excuse me,
11 sir, is this ---

12 MR. G. BENNETT: Was there a
13 follow-up? Maybe we could ---

14 CHAIRPERSON GRIFFITHS: Is there a
15 follow-up to that? Or is there something you want
16 to see?

17 MR. BOWDRING: No, that's all. I
18 just wanted to see the transmission route across
19 the Island, and then across the gulf to Nova
20 Scotia.

21 CHAIRPERSON GRIFFITHS: You don't
22 have it in this deck, but you have it that you
23 could show a little later on, Mr. Bennett?

24 MR. G. BENNETT: Yes, I think I
25 could probably find a presentation in my laptop and

1 we could maybe bring it up after the break, if
2 that's helpful.

3 I can talk to it, if you -- I can
4 generally describe the route, if that would be
5 helpful as well.

6 MR. BOWDRING: Well, yes, if you
7 could describe it, and then if you could show it to
8 us, I would appreciate that.

9 MR. G. BENNETT: Sure, okay. I'll
10 just go back to my map of Labrador here. There we
11 go.

12 So, generally speaking, the
13 transmission line follows Central Labrador. We've
14 looked at a couple of alternatives here, one to
15 come from Bell Island to meet a point right here,
16 one could follow the Trans-Labrador Highway from
17 Muskrat Falls, and generally heads across toward
18 Forteau, crosses the Strait of Belle Isle to
19 Flower's Cove, comes down the western side of the
20 northern peninsula, across the Long Range Mountains
21 east of Gros Morne National Park, generally a
22 southeast direction towards Grand Falls-Windsor,
23 just south of Grand Falls-Windsor, goes pretty well
24 in a straight line toward Clarenville, and then
25 follows the existing transmission lines between

1 Clarenville and Soldiers Pond, which of course is
2 just outside St. John's.

3 The Maritime connection leaves a
4 location on the west coast -- at this point in
5 time, near Bottom Brook, near Stephenville --
6 follows the existing transmission line down the
7 Trans-Canada Highway on the west coast, towards a
8 point near Cape Ray, where we're going to water and
9 go to Cape Breton.

10 So that's sort of a verbal
11 description. We have a couple of maps that I can
12 pull out later, if that's helpful.

13 CHAIRPERSON GRIFFITHS: Okay,
14 thank you, sir. I'm sorry, I didn't hear your
15 name, so I can't use it in thanking you.

16 When you come to the mic if you
17 could really say your name clearly please, it would
18 be very helpful for me. I don't always catch it.

19 I believe there was another
20 gentleman, a green shirt, and then the gentleman in
21 the front afterwards?

22 MR. TRELA: My name is Piotr
23 Trela, and I have a couple of mainly technical
24 questions, but maybe one more general.

25 You're looking to the alternative

1 to the damming the river, putting in-flow, in-flow
2 infrastructure, that you get the energy from the
3 flow of the river as opposed to the -- from falling
4 of the river over the fall -- over the dam.

5 MR. G. BENNETT: Right.

6 MR. TRELA: So was this completely
7 not doable, or much less efficient, or because the
8 damage to the environment would be much less?

9 MR. G. BENNETT: You're right, the
10 different is, as you've pointed out, the amount of
11 energy output that you get from the flowing water,
12 compared to the head that's created when you create
13 the dam, is much less.

14 MR. TRELA: So would this be 50
15 percent, 10 percent?

16 MR. G. BENNETT: Far less than
17 that.

18 MR. TRELA: Okay. A question, and
19 I put this into the comments which I -- as a member
20 of a group from Memorial and from Corner Brook. We
21 submitted questions about the clearance of the
22 reservoir, and in the EIS it had been stated that
23 -- I mean there are several options.

24 You can either leave most of the
25 trees and other material untouched, you can clear

1 all which are technically available, or you can go
2 in between the two, some you remove less, and EIS
3 was saying that most economical version is the one
4 in the middle.

5 And my point is that, first, I'm
6 not really sure whether I buy it, because if you
7 build the infrastructure, logging infrastructure to
8 remove this stuff to the, let's say, 30 or 40
9 percent you will be doing anyway, the same
10 infrastructure can be used to remove the rest.

11 Second, it will make the problems
12 more difficult to deal with, environmental problems
13 and things, because when you leave the organic mass
14 at the bottom of the water, it will start to
15 decompose, a source of greenhouse gases.

16 Second, you have changes of low
17 oxygen, which then in turn will cause methymercury
18 releases. So the more stuff you leave behind, the
19 more of those problems you will have.

20 Furthermore, we will let this
21 thing, this wood, to rot at the same time when
22 we're clearing west coast of this Island, because
23 Kruger requires wood for things, so obviously
24 there's a disconnect between those things.

25 So I would -- if this project

1 goes, I think that at least the option of removing
2 all the material which can be technically removed
3 should be looked really closely at.

4 CHAIRPERSON GRIFFITHS: Do you
5 have a question ---

6 MR. TRELA: And then ---

7 CHAIRPERSON GRIFFITHS: --- you
8 would like to ask arising from this ---

9 MR. TRELA: My question is, is
10 this still on? Is it still the preferred choice of
11 Nalcor to remove only some of the technically
12 available wood or did they have a change of heart
13 since the report last year?

14 MR. G. BENNETT: There are a
15 number of factors and there is a -- I guess there
16 is a fairly extensive amount of study work done.
17 Maybe the first observation I could make is that
18 most of the timber that's in the Muskrat Falls
19 reservoir will in fact be removed, and that's a
20 question that relates to the depth of the reservoir
21 and the need to clear a significant amount of the
22 forest in order to prevent it from sticking up into
23 the reservoir itself.

24 So there are a number of -- I
25 think we have a number of different analyses to

1 show the amount that's cleared out of Muskrat. The
2 number is less than Gull Island, and it's a
3 function of the topography of the reservoir, the
4 steepness of the sides, but I would say that in the
5 deeper -- certainly the deeper portions of the Gull
6 Island reservoir, there is timber that is left in
7 the lower parts of the reservoir.

8 We've done analysis to look at
9 methylmercury production as a result of that. The
10 difference with and without reservoir clearing is
11 not a significant -- it's not a significant
12 difference.

13 Maybe offline I can get you the
14 references in the information request responses and
15 the EIS that point to that.

16 Other uses for the timber, that is
17 something we have done a fair bit of work on, and
18 what we find is that the cost of removing the
19 timber and the cost of shipping it to a location
20 where it can be used is greater than the value of
21 the timber.

22 It's a frustrating situation to
23 look at the reality of the forest industry today,
24 and we do find that it is not competitive and not
25 economical to move timber from the reservoir area,

1 for example, to the crew relocation in Corner
2 Brook.

3 But a lot of work has been done
4 there. There's been a lot of dialogue with the
5 Department of Natural Resources to understand what
6 we can do with that resource. It's a frustrating
7 situation, but it is just not economically feasible
8 to take it out.

9 MR. TRELA: But not including the
10 externalities which -- damage to the environment
11 ---

12 MR. G. BENNETT: No, we have ---

13 MR. TRELA: From a purely narrow
14 economical point of view, this will be -- I mean,
15 maybe not economical. If you calculate the
16 collateral damage of clearing, the outcome of the
17 computation may be very different.

18 MR. G. BENNETT: No, we've looked
19 at greenhouse gases. We've looked at
20 methylmercury. We understand that there are
21 potential issues with respect to leaving certain
22 areas in the riparian zone without trees for a long
23 period of time. It has implications on fish
24 habitat. It has implication for wetland birds.

25 So there are a number of

1 considerations associated with the reservoir
2 clearing exercise, and they had to be considered in
3 concert.

4 MR. TRELA: What's your ---

5 CHAIRPERSON GRIFFITHS: May I ask
6 you for one more question?

7 MR. TRELA: My feeling is that in
8 the short term -- I mean, it will take how many
9 years to complete in the best-case scenario when
10 you think the first power can be sent in?

11 MR. G. BENNETT: We would be
12 looking for first power in late 2016, early 2017.

13 MR. TRELA: So my concern is that
14 before this, I mean, we'll still have Holyrood
15 polluting the local environment and at the same
16 time, the application for the power -- with power
17 which, as you said, cannot entirely replace but at
18 least can take off some of the load from this are
19 being rejected like in Argentia, and the reason
20 being is that there is no demand for electricity in
21 the Island in summer.

22 So I think my concern is that
23 we're putting all our eggs in one big macro project
24 over there at the same time when we could already
25 start developing wind power here first to relieve

1 some of the emissions from Holyrood, and then once
2 we get -- and maybe first get the connection to
3 Nova Scotia alley before, because then we can avoid
4 this bottleneck with having no way to sell the
5 energy from wind in summer, and then we can send it
6 to Nova Scotia.

7 But my concern is that we're
8 putting so much attention, so much money, so much
9 political interest over there, that we're
10 forgetting things which can be done in a shorter
11 term or they start paying dividends much before
12 this.

13 MR. G. BENNETT: It is
14 challenging, but the maritime connection, the
15 Labrador-Island link and Muskrat Falls, that first
16 phase of the Lower Churchill, all come in service
17 at about the same time. So there is a -- I would
18 say that it's more economic, technical in
19 engineering than political. I mean, the projects
20 are lined up to come in service at about the same
21 time.

22 And I think the difficulty is the
23 longer term business case for the wind development
24 doesn't look as attractive when it's competing with
25 Muskrat Falls and Muskrat is in service. So you

1 might save a little bit, but you'll be paying more
2 than the cost of Muskrat in the latter part of the
3 life of the wind development.

4 MR. TRELA: I mean, I thought that
5 you were saying that actually ---

6 CHAIRPERSON GRIFFITHS: Excuse me
7 ---

8 MR. TRELA: --- Muskrat -- just
9 last -- this is the last one.

10 CHAIRPERSON GRIFFITHS: The very
11 last, please. I need to move to the next
12 questioner.

13 MR. TRELA: Muskrat will help
14 increase the penetration of the wind. So actually,
15 I would think that actually will help the wind
16 because it will smooth out the picks and fall ---

17 MR. G. BENNETT: It helps
18 technically, but it still has to compete
19 economically. I guess that's the second side of
20 the challenge.

21 MR. TRELA: Thank you.

22 CHAIRPERSON GRIFFITHS: Okay.
23 Thank you very much.

24 I would just like to remind
25 everyone that if you in fact want to come forward

1 and make a statement and you're not already
2 registered, please speak to the Secretariat and
3 we'll see what we can do to fit you in, a five-
4 minute statement or so.

5 Yes, in the front row. No, I'm
6 sorry, it was the gentleman in the blue shirt first
7 and then I will go to you afterwards.

8 MR. BORLASE: Thank you very much,
9 Chair, and thank you, Mr. Bennett, for your
10 presentation.

11 My name is Harry Borlase. I'm
12 originally from Lake Melville and I guess I
13 symbolize a large portion of young Labradoreans who
14 are sort of sitting on the fence about this whole
15 project.

16 I understand the economic benefits
17 and how actually convenient this is for the
18 province nationally, internationally potentially.

19 I also don't understand this part
20 of the river as a project. For me, this is a very
21 important location. It's beautiful, and putting a
22 name on it like "project" makes me wonder what this
23 is all about and the financial benefits.

24 But I just wanted to say that I'm
25 not sold after the presentation. I came here

1 potential for a variety of large-scale developments
2 to happen in western Labrador.

3 So we look at this project as
4 being a catalyst for future development. I think
5 it's difficult to look at one undertaking by itself
6 and say it's going to deal with every issue.

7 MR. BORLASE: M'hm.

8 MR. G. BENNETT: But what we do
9 see here is a significant investment in
10 infrastructure, so the expenditure of \$6 to \$7 to
11 \$10 billion in Labrador over time, the possibility
12 and the expectation that further developments will
13 take place, the idea that we have a trained
14 workforce, the notion that we've developed a base
15 of skills and expertise that's available for other
16 activities that are relevant in the sector, and
17 then finally the ability to have a block of energy
18 available in Labrador. That can drive other
19 developments.

20 MR. BORLASE: M'hm.

21 MR. G. BENNETT: So we look at
22 this as a stepping stone.

23 MR. BORLASE: I guess my concern
24 is, though, that these are all dependent on
25 resource development and not necessarily economic

1 diversification. And for me, that kind of propels
2 this whole potential boom and bust that people
3 within Lake Melville who live there know it's a
4 reality. Resource development within the area,
5 we're familiar with, and just guaranteeing more
6 resource development from this project and the
7 energy that can be used and generated isn't an
8 answer for me. It's not long term.

9 A wooding industry or a uranium
10 mine or whatever is just more of the same, I guess.

11 So I would highly look at and
12 maybe ask the panel to consider maybe some
13 diversification in the way that the money and the
14 power and the generation and all this interest in
15 Labrador can be used outside of just resource
16 development because, honestly, it's getting a
17 little tiring.

18 CHAIRPERSON GRIFFITHS: Thank you
19 very much, Mr. Borlase.

20 And the gentleman behind you. And
21 I think this is our last question in this.

22 MR. ANGER: I am Claude Anger with
23 Geostorage Associates. I have two questions for
24 Nalcor.

25 The small wood reservoir about

1 7,000 square kilometres is important for the flow
2 downstream at Churchill Falls.

3 Do you have any control on how
4 much water is taken out of the reservoir?

5 If Hydro Quebec wants to generate
6 electricity in summer to sell to New York, will
7 there be left for winter, more than for some days
8 in winter, more than the 475 cubic metres that are
9 guaranteed?

10 MR. G. BENNETT: There is a water
11 management agreement that is in place between
12 Nalcor and Churchill Falls, or Churchill Falls
13 Labrador Corporation as it's historically been
14 known, that would require that the Lower Churchill
15 facilities be operated in an integrated manner with
16 the facility at Churchill Falls. And that is one
17 important step that mitigates the variations in
18 Churchill Falls production requirements against
19 those of the Lower Churchill facilities.

20 So that agreement is a result of
21 legislation that was introduced by our province a
22 couple of years ago through the amendments in the
23 *Electrical Power Control Act*, was then followed
24 through with water management regulations, and then
25 finally with a proceeding at our public utilities

1 board that now sees a water management agreement in
2 place between the two Lower Churchill facilities
3 and the existing operation of Churchill Falls.

4 So on that basis no, we're not too
5 concerned about variations in output as a result of
6 Hydro Quebec's demands.

7 MR. ANGER: So the agreement is
8 satisfactory for you?

9 MR. G. BENNETT: Yes, it is.

10 MR. ANGER: Okay, you expect the
11 electric heating market share to reach 70 percent
12 in some years. Will this increase the consumption
13 of electricity in winter where the consumption is
14 already much higher than in the summer?

15 MR. G. BENNETT: Generally
16 speaking, our electricity system here within the
17 entire province peaks in the winter.

18 MR. ANGER: Yes, I know, but
19 actually it's how you rule that for it to work ---

20 MR. G. BENNETT: Right.

21 MR. ANGER: --- 100 percent and
22 only 10 percent in summer.

23 MR. G. BENNETT: Right.

24 MR. ANGER: So is there is an
25 unbalance that risk it to be increased with the ---

1 MR. G. BENNETT: That situation is
2 incorporated into our demand forecasts and that's,
3 you know, we're planned for that.

4 MR. ANGER: You expect to produce
5 -- Muskrat Falls to generate more electricity in
6 Muskrat Falls in winter than in summer?

7 MR. G. BENNETT: Then energy
8 production for Muskrat Falls, if you look at the
9 facility itself, if you look at Hydro Quebec today
10 and their general mode of operation where they
11 generally do generate more energy in the winter,
12 the downstream flows would line up with that.

13 But in terms of having available
14 water, we're also interested in making sure that we
15 have enough water in our existing reservoirs on the
16 island.

17 It's important that we have an
18 interconnection and the ability to import from
19 Labrador, to also be able to use the -- both
20 Muskrat Falls and the other capacity that we have
21 available on the system, from Churchill Falls for
22 example.

23 So, you know, those are all parts
24 of our planning model, they're all incorporated
25 into our forecasts and we're pretty familiar with

1 the high demand that's on the system during the
2 winter.

3 CHAIRPERSON GRIFFITHS: Thank you
4 very much for your question, Mr. Anger.

5 I'm now just going to check with
6 my colleagues to see if there are any follow up
7 questions for Nalcor at this point?

8 No, we're good at the moment.

9 So thank you for your presentation
10 Mr. Bennett.

11 And now I'm going to call on our
12 next presenter, Dr. Ken LeDez.

13 No? Mr. LeDez is not in the room?

14 Our next presenter is Bruno
15 Marcocchio, Sierra Club Atlantic, and I don't see
16 Mr. Marcocchio.

17 Ms. Benefiel, you bring us news of
18 ---

19 MS. BENEFIEL: News of a broken
20 strut on the Trans-Labrador Highway.

21 CHAIRPERSON GRIFFITHS: Trans-
22 Labrador?

23 MS. BENEFIEL: Yes.

24 CHAIRPERSON GRIFFITHS: Oh dear,
25 oh dear. He hasn't provided his presentation to

1 you? You're unable to give that.

2 Well, looks like we're going to
3 have plenty of time for questions a little later
4 on. So you can start thinking up some more
5 questions.

6 Well, I guess, Mr. Ruffman and Mr.
7 Anger, are you ready to proceed? That's bumping
8 you up rather a lot, but I'd be very grateful if
9 you would make your presentation now.

10 I should perhaps just mention
11 again, I've been a bit forgetful in my opening
12 remarks, but in general sessions we ask presenters
13 to keep their presentations within about 15
14 minutes.

15 --- PRESENTATION FROM GEOSTORAGE ASSOCIATES BY MR.
16 CLAUDE ANGER AND MR. ALAN RUFFMAN:

17 MR. RUFFMAN: Panel Members, my
18 name is Alan Ruffman. The two presenters are
19 Claude Anger and Alan Ruffman of Geostorage
20 Associates in Halifax.

21 Geostorage is a registered
22 partnership of Alan Ruffman and Claude Anger, or
23 rather of Consultants of AGREN Canada. Claude
24 Anger is the president of Consultants of AGREN
25 Canada.

1 Our two vitaes were put into the
2 panel well in advance of this hearing.

3 I think it's important to realize
4 that we are speaking as two partners of Geostorage
5 Associates who hold a map-stake mineral license
6 4873M, which is just somewhat south of -- southwest
7 -- southeast of Stephenville.

8 This salt structure straddles the
9 TransCanada Highway and the 138 kilovolt AC
10 overhead transmission line and the line that runs
11 from Bottom Brook down to Port aux Basques.

12 We did not stake this property in
13 1996, 1,950 hectares for salt, though usable salt
14 may well be produced when the deposit is developed.
15 Rather, we staked this property in the firm belief
16 that it will play a major role in the development
17 of the Island of Newfoundland when natural gas is
18 brought ashore from the large known discoveries in
19 the Grand Banks of Newfoundland not far east of the
20 Avalon Peninsula.

21 Caverns leaching the salt at
22 varying depths, hence varying pressures will be
23 essential to the use of natural gas in
24 Newfoundland. Such caverns and salt or
25 occasionally storage facilities and depleted

1 underground gas reservoirs are used in every
2 natural gas market in the world, Sainte-Flavie in
3 Quebec, Southwest Ontario, Saskatchewan, Alberta,
4 Finger Lakes of Upper State New York, throughout
5 the United States, Holland, Germany, et cetera,
6 throughout the world.

7 Underground storage of natural gas
8 is much more economical and generally safer than
9 above ground storage.

10 Since the late 1980s caverns and
11 salt have served to provide compressed air energy
12 storage, CAES, C-A-E-S, most notable in Huntorf,
13 Germany and McIntosh, Alabama. CAES serves to
14 retime energy produced either from renewable
15 resources or from operating generators at times
16 when electrical energy is cheap, EG at night or
17 when turbine has stored compressed air and the
18 electrical energy can be sold at higher prices, EG
19 peaking power.

20 When one looks at -- when one has
21 a mineral license you've got to spend money on it,
22 we've been spending money on this, or optionees
23 have been spending money on this property, and
24 we've spent in the order of \$2.5 million on this
25 licence since 1996.

1 Our two part assessment report of
2 April 21, 2009 -- these are reports you must put
3 into government to maintain your acreage -- we
4 detailed an alternative energy project for the
5 island of Newfoundland using natural gas from the
6 Grand Banks.

7 The electronic copy of this two
8 part report was submitted to the panel and I
9 believe is in the public record. We've released it
10 a year before its confidential period expires
11 because we think that analysis is perhaps important
12 for you to look at and be aware of, and we've
13 certainly reassessed it in terms of the project
14 being reduced to one dam at the present time at
15 Muskrat Falls.

16 We are talking about our self-
17 interest with respect to the license 4873. But we
18 are, in fact, talking about much, much more. We're
19 talking about producing electrical energy on the
20 island of Grand -- on the island -- on island from
21 the Grand Banks natural gas at a price that would
22 be significantly cheaper than the hydro energy
23 produced from the Lower Churchill.

24 The use of Newfoundland and
25 Labrador's own gas for the turbinng of electricity

1 on shore will also make natural gas available in
2 the key industrial areas of the island, especially
3 the Avalon Peninsula and Western Newfoundland, and
4 will be much cheaper fuel Btu wise, and much more
5 stable fuel price wise, available to the citizens
6 in the island of Newfoundland.

7 Two main objectives of the
8 agreement signed November 18th between Nalcor and
9 Emera for the Lower Churchill were stated to be
10 avoid the volatility of the world price of oil and
11 to increase the percentage of renewable energy
12 consumed in Newfoundland and Labrador and reduce
13 the greenhouse gases produced.

14 Claude will now address the
15 volatility of world oil prices.

16 MR. ANGER: Yes, the price of oil
17 is very volatile because transporting crude oil in
18 the big super tankers is so inexpensive, less than
19 50 cents per million Btu over 20,000 kilometres to
20 the -- that every event that occur in the world has
21 immediately an influence on the cost of the oil,
22 for example the wars, the revolution, a lot of
23 events of course that change the price of oil.

24 Now about Newfoundland and
25 Labrador, a few people know that the oil that is

1 produced off the Grand Banks does not come to this
2 island it is exported to foreign countries. They
3 come by chance to the refinery as to process some
4 crude oil that is fit to the equipment.

5 So this certainly doubles the
6 velocity, you have to find a market to sell the oil
7 and to find another market just to buy some
8 different oil as the price of oil can vary.

9 The market for natural gas is
10 completely different. Compressing natural gas is
11 less sufficient then pumping liquid, and since the
12 density of liquid is higher than that of gas, oil
13 yields a higher Btu content for a given volume.

14 It is three times as expensive
15 Btu-wise to transport natural gas in the pipeline
16 as it is to transport liquid oil.

17 At sea the problem is still worse
18 for gas. Liquefied natural gas, LNG, ship
19 transportation is 10 to 12 times as expensive as
20 oil super tanker transportation.

21 Compressed natural gas, CNG, is
22 more economical but for distances that are less
23 than 1200 or 1500 kilometres.

24 So there are three markets in the
25 world for natural gas, Europe, the Far East and

1 North America. So the Province of Newfoundland has
2 to take care of the market in North America.

3 So the natural gas market in North
4 America is changing dramatically right now. So the
5 U.S. gas producers have recently begun to produce a
6 large amount of unconventional gas called benzene,
7 tight sands and shale gas.

8 In the Appalachian basin the
9 Marcellus shale alone is expected to produce by
10 2014; that is to say well before the Muskrat Falls
11 electricity can reach the U.S. market between four
12 and six billion cubic feet of gas per day. That's
13 a low break even cost of \$4 or \$5 per Mcf, Mcf
14 means 1,000 cubic feet.

15 So production of unconventional
16 gas in such large quantities at the very
17 competitive price will certainly make the United
18 States self-sufficient in gas for decades. And I
19 don't have to mention that one Bcf per day of gas
20 could -- in gas turbines could generate about 6,000
21 megawatts. So it will be big deal.

22 In Newfoundland and Labrador
23 they're already proven reserves at Hibernian and
24 Whitehorse of five Tcf, trillion cubic feet. This
25 is enough to generate 2,750 megawatts of

1 electricity using big turbines, gas turbines, 24
2 hours per day. That is to say 23 terawatt for a
3 period of 35 years. That is the duration of the
4 Emera and Nalcor agreement.

5 The price of the Grand Banks gas
6 should have to follow the North American price, \$4
7 to \$5 per Mcf.

8 Now gas cap -- encasing gas, gas
9 cap is as they are gas is less than certain oil and
10 less than certain water. Generally in an oil pool
11 you have the gas at the top, then the oil, so the
12 gas cap is a part of the gas which is above the
13 oil. You have also gas which is dissolved in the
14 oil. You can have a very large amount of gas
15 dissolved in fuel. It could go up to 100 cubic
16 metres for cubic metres of oil.

17 At Hibernia and Whitehorse as
18 Nalcor says is presently being re-injected into the
19 reservoirs to maintain the high pressure and to
20 ensure a good final recovery. But this gas will
21 have to be produced when the oil is depleted, which
22 will occur at Whitehorse in 2026 and at Hibernia,
23 including Hibernia south, in 2037.

24 So both dates are before the end
25 of the 35-year long agreement between Emera and

1 Nalcor.

2 However, at Whitehorse the north
3 compartment which is limited by a geological fold
4 contains only natural gas which is not in contact
5 with oil and this resource could be produced
6 immediately if the necessary equipment were
7 available.

8 Let us note that the gas of the
9 Grand Banks basin as a valuable additional easy
10 content which increases its Btu value and improves
11 its formation factor so that more of this gas can
12 be compressed in the same stretch volume as would
13 be the case of pure methane. This would be very
14 good for compressed natural gas transportation.

15 CHAIRPERSON GRIFFITHS: Excuse me.
16 I'm going to just interrupt you for a second. I'm
17 a little concerned that it's a long paper, a
18 detailed paper and you are basically reading
19 through it.

20 I'm certainly prepared to give you
21 20 minutes rather than 15 minutes but ---

22 MR. RUFFMAN: We have gone through
23 and edited significantly.

24 This part we think is quite
25 important and ---

1 CHAIRPERSON GRIFFITHS: Okay.

2 MR. RUFFMAN: --- that's why it's
3 being read, but there's big chunks that won't be
4 read at all.

5 CHAIRPERSON GRIFFITHS: That's all
6 right. I just wanted to be sure. So we'll --
7 you've got about another eight minutes or so.

8 MR. ANGER: Okay. So we believe
9 that the volatility of natural gas does not exist
10 or this should be a chief commodity for quite a few
11 years.

12 Now about -- I will go a little
13 bit to pages 9 about the reduction of the
14 greenhouse gas. First, the carbon dioxide will
15 perhaps be sequestered quite efficiently in some
16 time. They're already sequestration of carbon
17 dioxide in Saskatchewan, even in the middle of the
18 desert in the northern sea. So getting rid of
19 carbon dioxide is not perhaps a priority.

20 Now the alternative we propose
21 would involve compressed air energy storage that
22 would have a heat rate of about 4,000 Btu's per
23 kilowatt hour which is much less, for example, of a
24 -- now about GH gas, you have to consider the whole
25 situation, you know.

1 If natural gas is used to generate
2 electricity in the island this will open the door
3 to the distribution of natural gas in many other
4 areas of the island and saving a lot of natural gas
5 in cars or fishing boats, truck, there is a lot of
6 industry so the final balance will be quite good
7 for introducing natural gas to this province.

8 MR. RUFFMAN: I realize that you
9 are expecting the two of us to be in 15 minutes,
10 aren't you?

11 CHAIRPERSON GRIFFITHS: Yes.

12 MR. RUFFMAN: Whereas our
13 application to the panel we understood it to Mr.
14 Michaud that it would be 15 minutes each.

15 We've got a problem there. And if
16 that's -- if we're held to 15 minutes I will close
17 and ask that you please do read the whole document.

18 CHAIRPERSON GRIFFITHS: We'll work
19 something out, Mr. Ruffman, and we certainly are
20 going to read the whole document, be assured of
21 that.

22 But no, I'm sorry this was not the
23 information that came forward to me. I was
24 understanding you were making a joint presentation.

25 What do you need to give us the --

1 to really convey the main points of your
2 presentation? How much more time do you think you
3 need?

4 MR. RUFFMAN: Maybe what you would
5 like to do -- okay ---

6 MR. ANGER: Perhaps we should ---

7 MR. RUFFMAN: I think what we ---

8 MR. ANGER: So can I complete?

9 MR. RUFFMAN: Would it make sense
10 that you take your break and we just have seven
11 minutes after you come back to pick up the pieces
12 we really feel are most important to sum up -- sum
13 up with?

14 CHAIRPERSON GRIFFITHS: I'm
15 prepared to give you 10 minutes now, Mr. Ruffman,
16 will that work or do you want -- or do you want to
17 confer and which case we could take a break?
18 Whatever works for you.

19 I just want to make sure we get
20 your main message and we will of course read the
21 report.

22 Would you like us to take the
23 break and then you can -- come back for 10 minutes,
24 is that the best thing?

25 MR. RUFFMAN: I think that would

1 be best. We've been caught off guard. We
2 apologize. Our understanding with the staff --
3 with our initial letter is obviously different than
4 yours.

5 CHAIRPERSON GRIFFITHS: Yes, and I
6 apologize from our end if there's been confusion
7 there.

8 But I think that will work fine.
9 So we will -- it is now almost half past, we'll
10 resume at quarter to and we'll come straight back
11 to Mr. Ruffman and Mr. Anger to -- who will finish
12 their presentation.

13 --- Upon recessing at 8:27 p.m.

14 --- Upon resuming at 8:46 p.m.

15 CHAIRPERSON GRIFFITHS: Ladies and
16 gentlemen, we'll now resume our session.

17 I'll just mention that the
18 photographs that were being taken then were by
19 special permission and we don't -- no photographs
20 or video filming are allowed in any of our sessions
21 as they're proceeding. Just to make that clear.

22 So, apologies to Mr. Ruffman and
23 to Mr. Anger for the confusion around how much time
24 they required.

25 However, I hope that the 15-minute

1 and some coffee was perhaps helpful to you and so,
2 please, do resume and I'll give you another 10
3 minutes, if that's fine and ---

4 MR. RUFFMAN: Let's try that,
5 Madam Chair. We appreciate the opportunity to
6 collect our thoughts.

7 Very important to both the Emera
8 and the Nalcor Proponents of this project that the
9 renewables are brought into the system. But in
10 fact we find that the renewables are obviously
11 different in some extent in Nova Scotia.

12 Nova Scotia has a lot of tidal
13 energy. We don't consider tidal energy in the
14 research stage. There's been a lot of work being
15 done in Europe.

16 In fact, it'll be a fairly short
17 period of time when we see Emera pulling -- not
18 pulling its machine out of the water with broken
19 blades and will be generating power.

20 Wind is the other one. Wonderful
21 wind resources in Nova Scotia, tremendous wind
22 resources in Newfoundland, almost every part, and
23 certainly Labrador.

24 The problem happens with this
25 project is the transportation of electricity over a

1 huge distance. In fact, the cost of the electrical
2 line, the HDDC line to get the bottom -- to -- is
3 more than the dam itself and in fact moving
4 electricity in wires is one of the most expensive
5 ways of moving energy in the world. Almost every
6 other way of moving energy, be it coal trains, oil
7 trains, LNG tankers is cheaper.

8 And what we find when we start
9 thinking about wind, we find the statement -- just
10 following my notes here -- we find the statement
11 from Nalcor, quote:

12 "Estimates under present
13 conditions, the island system
14 can accommodate an upper
15 limit of 80 megawatt of wind
16 generation with minimum
17 adverse economic effect."

18 This is assuming they are going to
19 just simply integrate without any special
20 provisions, that wind energy into their system and
21 they can only accommodate 80 megawatts.

22 We think that is absolutely wrong.
23 They have not -- you will not even see the word or
24 very seldom see the word, either at Emera or at
25 Nalcor "retiming" and that's what CAS or CAESSI or

1 CASH, all these variations that use salt domes or
2 other storage are talking about is retiming energy.

3 Storing energy, retiming energy,
4 included in that are things like pump storage but
5 pump storage will not be as significant as
6 compressed air energy storage in caverns.

7 The salt domes that we have in
8 Newfoundland are one and we happen to be sitting on
9 it and that's why we've sat on it for 15 years.

10 At least 30 to 40 caverns can be
11 made in that salt dome and in fact there's more
12 than a wonderful opportunity for that salt dome to
13 in fact become not only the way of retiming energy
14 with CAS but also providing winter storage for
15 natural gas -- seasonal storage for natural gas.

16 We will have to have that in Nova
17 Scotia at some point. In fact, there's working
18 being done in Stewiacke for that very same purpose.

19 Nova Scotia is blessed with about
20 five different set of entry basins, all which have
21 salt in it. Newfoundland only has one and it has
22 so far not paid very much attention to it.

23 The scheme that we're talking
24 about would not only allow gas to be stored in salt
25 domes and retiming of wind energy by CAESSI, far,

1 far above -- if I say three times I'm being
2 conservative, that 80 megawatts that Nalcor says
3 they are -- don't think they can handle anything
4 more of.

5 It's certainly not limited to 80
6 megawatts by any means.

7 The other thing that can you do
8 with natural gas, if you don't use the natural gas
9 that's out there eventually Husky and Mobil will
10 figure out ways of using it somewhere else. It
11 will just pass Newfoundland by. It will not stop
12 if we aren't ready to use it.

13 Producing electricity at, for
14 example, Argentina, to replace Holyrood with
15 combined cycle single shaft off-the-shelf turbines
16 will in fact give a market for gas and give a
17 reason for gas to come to Newfoundland and to start
18 staying and building gas distribution and in fact
19 electricity for gas, as we've pointed out, for 30
20 or 40 years without too much trouble at all.

21 And there's more gas, in fact, to
22 be found and in fact there's more gas known if you
23 go up to Labrador.

24 So -- watching my clock -- we
25 think the province should take the -- the owners of

1 Husky -- maybe we should not mention a company --
2 the owners of the White Rose field have so little
3 inclination to produce the White Rose gas, and we
4 said there's a danger it will just pass us by.

5 Our suggestion is that the
6 province take the initiative and develop an
7 approach to use the natural gas on the island and
8 then use its not inconsiderable power along with
9 that of Canada through the Canada, Nova Scotia,
10 Newfoundland Offshore Petroleum Board to require
11 the production of Newfoundland's gas using CNG
12 shuttle vessels to feed the facilities at Argentia
13 and Fischell's Brook.

14 To build a CNG distribution system
15 from scratch, you've got to have those big users in
16 the beginning, and the big users will be the gas
17 turbines that in fact replace, in part, Holyrood.

18 The stranded gas deposits have
19 been a thorn in the side of Newfoundland for a long
20 time. If you can start getting that gas coming to
21 Newfoundland, you not only begin to build a natural
22 gas industry and produce electricity by turbines
23 and avoiding that 1,100 kilometre long HVDC line
24 from Labrador, you also begin to get royalties from
25 that gas, both at the federal and the provincial

1 level, and you also, the moment you begin -- the
2 thing to remember about this project that was being
3 proposed by the Proponent is you don't get a single
4 spark of electricity at Soldiers Pond or at Lingan,
5 Nova Scotia until you've built the whole damn
6 thing. All \$6.2 billion have to be spent.

7 The nice thing about gas is that
8 integrated integral program. The moment you begin
9 to get the first gas coming ashore, you've got
10 markets; you're getting revenue. You'll never run
11 up that \$6.2 billion worth of debt. You won't have
12 to finance anything and Newfoundland knows better
13 than any other province that when you take on too
14 big a project, you can get burned, as Mr. Smallwood
15 did, and we're going to live with that problem
16 until 2041.

17 So let's just close off and then
18 I'll see what I've forgotten and let Claude speak.

19 Our conclusions are that the four
20 proposed uses of Muskrat Falls electricity
21 mentioned in the Nalcor-Emera November 18th
22 agreement by no means considered the cheaper
23 options available using renewables such as wind,
24 especially wind, along with Newfoundland's own
25 natural gas which is presently known; it's proven;

1 it's available and it just ain't being produced.

2 We urge the Joint Panel to require
3 Nalcor Energy to really look at the alternatives to
4 the very expensive Lower Churchill project.

5 Nalcor seems to be content to
6 interpret its mandate required in the EIS process
7 to look at alternatives simply to look at
8 alternatives of how to build their chosen project
9 rather than studying a real alternative to the
10 project. We have not heard that from Nalcor.

11 I think I've hit that. Claude, is
12 there anything I've really forgotten?

13 MR. ANGER: Actually, what I would
14 like to say is that compressed air energy storage
15 is much more efficient to work with wind energy
16 which is intermittent, you know, to follow the load
17 that is quite variable or to generate energy when
18 there is no wind, that's the big boilers at
19 Holyrood. Compressed air energy storage can
20 respond in a few seconds to change the load in the
21 grid and you can, when there is too much energy,
22 store it for some time.

23 Now I think in Fischell's Brook
24 the currents can be reached at all the depths from
25 400 metres to more than 1,000 metres deep so that

1 you could have compressed air energy to be built
2 around 500 metre depths or reasonable storage that
3 has to be much deeper, around 1,000 metres.

4 So there is only one salt dome,
5 but it could be -- it is very big, about 2 billion
6 tonnes of salt. It is a huge salt dome. There
7 could be at least 30 or 40 caverns, and it would be
8 good enough for all the southwest of -- a quarter
9 of the island at least.

10 MR. RUFFMAN: So finally,
11 Newfoundland and Labrador has done very well to
12 date both negotiating its offshore accord, in
13 recovering royalties, investing in several of the
14 offshore fields, and we have full confidence that
15 if the province is directed by this joint panel to
16 turn its head towards claiming the opportunity that
17 natural gas offshore on the Grand Banks offers,
18 along with that of the province's rather attractive
19 wind potential, along with CAS gassy cache seasonal
20 storage, pump storage, Newfoundland and Labrador
21 can and will show the rest of Canada how it can be
22 done.

23 And I should just give
24 acknowledgements, if I may, to the staff of the
25 Department of Natural Resources, to Nalcor's own

1 staff, to people at the panel in Ottawa and Emera
2 for assisting us to find certain data, and I would
3 like to actually recognize the encouragement and
4 support of the volunteers at the Grand Riverkeeper
5 Labrador in Happy Valley-Goose Bay, as well as my
6 own staff in typing something up.

7 We're sorry we didn't quite
8 understand where we were headed, but we hope that
9 you will take and your staff will take what we've
10 written into account and think about it.

11 CHAIRPERSON GRIFFITHS: Yes, well,
12 thank you very much, Mr. Ruffman and Mr. Anger.
13 Again, sorry for the confusion, but if I may make
14 an observation, sometimes less is more in terms of
15 actually being able for people in the room to
16 understand a very complicated matter, especially as
17 most people don't have their paper with them.

18 So I think that in fact your break
19 was very helpful in getting across the main points
20 of your presentation and we will certainly read
21 your report.

22 I've just got to remind you the
23 mic is live, so we pick up if you're talking at the
24 same time.

25 MR. G. BENNETT: And so is the

1 water.

2 CHAIRPERSON GRIFFITHS: So now we
3 are going to have some -- I know the panel has some
4 questions for you.

5 I'm just going to ask a couple of
6 quick questions before I go to my colleagues.

7 --- QUESTIONS BY THE PANEL:

8 CHAIRPERSON GRIFFITHS: My first
9 one is a point of clarification. So I understand,
10 Mr. Anger, what you're saying is that compressed
11 air energy storage in fact can respond faster to
12 load changes than hydro can.

13 Is that your ---

14 MR. ANGER: Not hydro, than
15 Holyrood.

16 CHAIRPERSON GRIFFITHS: At
17 Holyrood, not hydro.

18 MR. ANGER: Yes.

19 CHAIRPERSON GRIFFITHS: Is it
20 equivalent in terms of ---

21 MR. ANGER: Hydro can respond
22 fairly quickly. Pumped hydro storage would be a
23 very good means to respond to any load change.
24 Compressed air energy storage is much better than
25 even a gas turbine because the compressor is

1 separated from the turbo expander. So even the
2 heat rate of the compressed air energy storage
3 would remain pretty constant even at low load.

4 So the compressed air energy
5 storage is a very good ---

6 CHAIRPERSON GRIFFITHS: All right.

7 Yes, thank you.

8 My second question is about the
9 salt in the salt caverns. I don't know much about
10 salt caverns.

11 In order to create the salt
12 cavern, do you have to produce the salt for a
13 purpose, if necessary? Do you ---

14 MR. ANGER: No, actually, the
15 salt, you have to, with the water, melt the salt
16 into a brine that you take out of the cavern.

17 Now the brine very often is
18 disposed of in some good natural conditions, but
19 the brine could be also evaporated.

20 And actually, even in one of our
21 assessment reports we propose a combination of salt
22 brining with compressed energy storage.

23 MR. RUFFMAN: Certainly the
24 Province of Newfoundland would like the salt to be
25 produced rather than pumped to the ocean as waste,

1 but in many of the salt caver operations, for
2 example, in south-western Ontario, they literally
3 put it in a tanker and bring it down to the Gulf of
4 St. Lawrence, dump it and go back and collect some
5 more.

6 So it depends upon where you can
7 market the salt.

8 CHAIRPERSON GRIFFITHS: Okay.

9 MR. ANGER: The market in
10 Newfoundland is only 200,000 tonnes per year, and
11 even of rock salt and evaporated salt. So this
12 would mean leaching perhaps one cavern per year.
13 So you would have to go perhaps slowly to get the
14 caverns.

15 CHAIRPERSON GRIFFITHS: Okay.

16 MR. ANGER: We should begin right
17 now.

18 CHAIRPERSON GRIFFITHS: Okay.
19 Thank you. I don't need to go too far down that
20 line, but presumably there are -- there would be --
21 there are environmental matters to be considered
22 with respect to this technology.

23 MR. ANGER: Yes, to evaporate the
24 brine.

25 CHAIRPERSON GROFFITHS: Okay. Let

1 me ask my colleagues.

2 CHAIRPERSON CLARKE: Thank you.

3 Yes, I have one question that may be for Dr.
4 Ruffman, but whoever. It has to do with the
5 natural gas. I'm aware that there are national --
6 natural gas reserves associated with the oil
7 developments offshore and also offshore on the
8 Grand Banks, but also off Labrador. I'm also aware
9 that there's been some studies in past years with
10 respect to development of that gas.

11 And I'm just wondering if you have
12 yourself some idea or information about what the
13 timeframe would be involved -- what kind of -- the
14 cost of the capital of the project you're talking
15 about. You're talking about CNG, and I just would
16 like to know a little bit more about that from a
17 practical point of view in terms of the timeframe
18 and the costs and the economics.

19 MR. ANGER: Okay. I was involved
20 in a very small project about transporting
21 compressed natural gas by truck in the parts of
22 Quebec for producing the gas pool. It was a tiny
23 operation, but in a way I could understand all that
24 was concerning this. I was in St. John's about 12
25 years ago and I told NOIA, at that time Dale

1 Robinson and Paul Adams, that they should look at
2 the possibility of transporting compressed natural
3 gas by ship instead of by truck.

4 So I think they did some work, and
5 after several years the centre for marine
6 compressed natural gas was created by Memorial
7 University. Actually, we were associated members
8 in this CMCNG because I brought my experience in
9 the CNG trucking, you know. And CMCNG has done
10 already some work, for example, to regulate the
11 transportation. Llyod Bureau Veritas, Det Norsk
12 Veritas, all of these companies have agreed to set
13 regulations which would be as good as LNG
14 regulations for transporting this gas.

15 Now, there are about four
16 companies that could propose CNG ships. Two are
17 Canadians, TransCanada PipeLines that could propose
18 a boat about 400 billion cubic feet capacity.
19 KOSEL, who is a bundle of tubes, and NRC in the
20 states, in Houston that has some agreement with a
21 Korean shipyard, and I think the best are the
22 Norwegians that could propose a simple vessel that
23 would say, you know, keep it stupidly simple, you
24 know, a bunch of tubes that are about 60 metres
25 because they have already studied the fatigue of

1 the metal. I believe they would be ready.

2 Now you have to load the ship. So
3 the CMCNG, Craig Young has prepared the report
4 about how to load a CNG ship at sea. Loading a gas
5 into a ship is a little more complicated than
6 loading oil in the tankers that come to what is for
7 transshipment. But the technique has really -- now
8 to unload the ship, the best way is to find a
9 buffer storage to unload very quickly the ship, you
10 know. A CNG ship is very costly. It's about six
11 times as expensive as an LNG ship, but if you have
12 a very good shuttle of ships, you can do the job.

13 CHAIRPERSON CLARKE: So you
14 haven't done the specific kind of analysis that I'm
15 talking about, but you're requesting that the panel
16 ask the government and the Proponent to do that.
17 Is that correct?

18 MR. RUFFMAN: No, I don't think
19 that we'd ask the panel to do that. We think that
20 indeed a lot of work has been done and is available
21 in reports from the Centre for Marine
22 Transportation of CNG.

23 In effect, it would be Husky or
24 Mobil that would make the final decisions of what
25 method to use and where to try and market it.

1 But as we pointed out, the north
2 compartment of Husky's White Rose Project is
3 available right now. It needs a political
4 decision, I think, to make that start happening.

5 I know that Husky has been vaguely
6 thinking about -- it's not public, I don't think,
7 and I'm not making it public -- but they've been
8 vaguely thinking about can they produce LNG on the
9 rig and ship it somewhere else, not at all at the
10 prices of gas at the present time.

11 And the possibility of bringing a
12 pipeline to shore leaves you susceptible to
13 icebergs that drag their keels. That's why
14 Hibernia is not being produced by a pipeline to
15 shore and I don't think that natural gas will take
16 the risk of being broken by bottom-scouring
17 icebergs.

18 So there's a number of issues
19 there and they -- what's being done inside the
20 companies, we're not privy to.

21 CHAIRPERSON CLARKE: Thank you.

22 MEMBER DOELLE: Yes, thank you for
23 your presentations.

24 You've covered a number of areas,
25 and some of which we've had extensive discussions

1 on, such as wind, for example, so I won't get back
2 to those.

3 But with your permission I would
4 like to ask Nalcor to respond to a number of the
5 ones that we haven't had time to discuss. And I'd
6 like to get your reaction to, specifically, the
7 particular natural gas scenario that's been
8 outlined, as well as the pump water storage
9 technology and the compressed air storage scenario
10 that's been proposed.

11 MR. G. BENNETT: Well, I was going
12 to ask a question on natural gas as well. And I
13 guess the question that begs itself is that if
14 ExxonMobil and Husky don't have a business case and
15 haven't brought one forward, what's your basis for
16 asserting that there is one?

17 MEMBER DOELLE: I'm wondering
18 whether before -- I'm happy to have this kind of an
19 exchange, but I was hoping that initially you'd
20 give us a bit of an overall reaction ---

21 MR. G. BENNETT: Sure, okay.

22 MEMBER DOELLE: --- at least to
23 those three areas.

24 MR. G. BENNETT: Because I think
25 where I was going was we have the same question. I

1 mean, if the business case is not there then, you
2 know, I think we would agree that we don't think --
3 we don't see the business case either.

4 I mean, if you look at it from the
5 perspective of a developer, there is gas. There's
6 gas in Labrador offshore. There's gas in the
7 Jeanne d'Arc Basin, and neither of the operators of
8 those fields have seen fit to bring forward a
9 development plan to either export via LNG or some
10 other method to either the North American or the
11 European market.

12 So I would generally agree that
13 that's a problem.

14 MR. ANGER: Actually, the venture
15 of gas and resources of the United States is quite
16 recent, you know.

17 Now, there is a problem to sell
18 this gas to New England due to the low, low price
19 that will seem to last for a few decades.

20 Now, yes -- Husky, I do not think
21 will find another market than Newfoundland and
22 Labrador itself. To sell the gas in foreign
23 markets now will be quite difficult, you know.
24 There are huge discoveries in the world, for
25 example, 120 trillion of cubic feet, this is about

1 24 times the resources of Nova Scotia. Now, even
2 Israel has discovered Leviathan which is 16
3 trillion of cubic feet.

4 They will not be able to sell any
5 gas to Europe. They will not be able to sell any
6 gas to South Africa or to South America or to
7 Africa. Nigeria has plenty of gas.

8 Now, can they remain on standby
9 for so long? I think it will be their death, you
10 know the price of gas they have even at \$3 per Mcf
11 is already a lot of money. You know, there are \$15
12 billion of gas in this province. So what do you do
13 with it; do you leave it in the ground forever?

14 MR. RUFFMAN: Can I just add, if I
15 might, Meinhard, you're right, they haven't brought
16 a business face forward, and in fact if you look at
17 the press release of Husky, just as they're
18 announcing the production of oil at White Rose, the
19 President of Husky says we could be producing --
20 I'm not quoting him -- I haven't got it in front of
21 me but it's in that report that's online -- says --
22 and the actual press release is there -- that we
23 could be producing gas very shortly.

24 In fact, the market didn't come to
25 where he hoped it would. The market just isn't

1 there in the United States, and it ain't going to
2 be there because of what's happening with
3 unconventional gas.

4 In all the material that you read,
5 and I don't think they're overestimating, there is
6 some concern about fracking, but in fact, the
7 United States alone, in its own territories has got
8 probably enough gas to be self-sufficient.

9 So Husky isn't going to market it
10 there. It can't afford to liquefy it and take it
11 to Europe. In fact, you are the only market for
12 that gas on the Grand Banks at the present time.

13 Once they remove the -- the
14 Hibernia platform is removed they won't put another
15 one in place for gas alone. The best time to
16 produce that gas is very shortly and I would
17 suggest that the political decision has to be made
18 in Newfoundland to start encouraging them to do
19 that.

20 I will also say that, if you will
21 permit me, the former name of Nalcor was Hydro,
22 Newfoundland Hydro, and most of your projects were
23 hydro and very few -- there were a few turbines
24 because you had to put something at Holyrood to
25 take care of the seasonal aspects of the Avalon

1 Peninsula, but in fact we're encouraging you, we
2 think there's the ability in Newfoundland to think
3 about gas and to use it innovatively with all those
4 other resources you have, be it wind and the
5 storage capacity in Western Newfoundland.

6 Sorry, Meinhard.

7 MEMBER DOELLE: I'd still like you
8 to get back to the other two technologies. But the
9 one thing perhaps that would be helpful to me -- I
10 realize that we don't have the Proponent of natural
11 gas in the Grand Banks in the room so some of these
12 questions are probably not going to get answered
13 here, but perhaps you can comment a bit on whether
14 you had any discussions with any of the developers
15 about the ability to bring natural gas to shore at
16 prices that would allow you to consider natural gas
17 as an alternative to this project.

18 MR. G. BENNETT: And I think Mr.
19 Bown, when he presented a couple of weeks ago just
20 touched on the issues with natural gas, and the
21 significant challenge is that we don't have a
22 market, we don't have a big market here.

23 I mean, the demand for natural gas
24 here on the island is very limited. I mean, you've
25 got us potentially, you've got the refinery, and

1 that's about it.

2 So now you have the opposite
3 problem, you have a very small market and a
4 significant cost of development and you have to ask
5 yourself as a developer whether it makes sense to
6 make that investment.

7 I think, you know, Mr. Bown spoke
8 to that when he presented and talked about that
9 issue. And so now we have the opposite problem, we
10 don't have a market that's big enough to justify
11 the investment.

12 Pump storage, pump storage is
13 interesting and it's good for dealing with issues
14 on a day-to-day basis. Most pump storage systems
15 have a relatively small reservoir and it's useful
16 for taking production from off peak at night and
17 moving it to the day.

18 Our challenge is a seasonal one;
19 that if we were going to store energy we'd want to
20 store energy from the summer and have it available
21 for the winter, and I guess to the extent that our
22 reservoir capacity is already, you know, fully
23 utilized over that seasonal basis, pump storage
24 doesn't do a whole lot for us.

25 So you look at whether you look at

1 pump storage or integrating with wind you get back
2 to the same larger longer term storage issue that
3 precludes successful integration until we really
4 grow the market.

5 MR. RUFFMAN: And compressed air,
6 the same answer?

7 MR. G. BENNETT: The same deal,
8 yeah. And I'm not aware of any compressed air
9 system that could take 200 megawatts and store it
10 for several months and say I want five months of
11 production back. I mean, that's a massive amount
12 of storage.

13 CHAIRPERSON GRIFFITHS: I think
14 that -- do you want to make a brief response to
15 that?

16 MR. ANGER: About the market, it
17 will be much easier right now to build a market in
18 Newfoundland because the Btu value of gas is only
19 about right now 30 percent of the Btu value of oil
20 so people should think about this problem. This is
21 much, much cheaper.

22 And I tell you, I believe it will
23 stay for at least a couple of decades.

24 MR. G. BENNETT: We don't see it
25 that way.

1 MR. RUFFMAN: In that report
2 that's online we thought a little bit about
3 additional markets, not only the possibility of
4 Newfoundland burning gas in turbines to effectively
5 replace Holyrood, but depending upon the storage.

6 And in the Magdalen Islands
7 they're making electricity at fixed rates that are
8 mandated by government from offshore imported oil
9 and in fact they have salt domes underneath, so in
10 fact the market -- there is a market for gas in the
11 Magdalen's, tiny but there.

12 We think -- we do think that it is
13 possible that you could reach PEI with the CNG
14 shuttle ships, and in fact there are salt domes in
15 PEI for seasonal storage of gas and in effect along
16 the way someone will stop in and figure out how to
17 store gas in St. Pierre et Miquelon.

18 MR. G. BENNETT: I guess the
19 question that begs itself ---

20 MR. RUFFMAN: But the thing is
21 there's been no study done, sir. And this is
22 really important. The last study done for gas
23 marketing in Newfoundland was done in the year 2000
24 by a company called ICF Incorporated. It's time to
25 do another one. That may be something to

1 recommend.

2 CHAIRPERSON GRIFFITHS: Yes, thank
3 you, Mr. Ruffman.

4 I'm not actually going to ask
5 Nalcor, it's your opportunity if you have questions
6 to ask of the presenters because I know you were
7 speaking in answer to Dr. Doelle's question. So do
8 you have questions for the presenter?

9 MR. G. BENNETT: I think we've
10 probably explored most of the questions that I was
11 interested in.

12 I think what I'm hearing is, you
13 know, less of an alternative to the project and
14 more of a set of ideas that could be explored.

15 But I don't have too many specific
16 points at this stage.

17 CHAIRPERSON GRIFFITHS: Okay.
18 Thank you.

19 I'd like to provide an opportunity
20 if there are other people in the room who have
21 questions for Mr. Ruffman and Mr. Anger on their
22 presentation. Are there any questions?

23 Yes, sir.

24 --- QUESTIONS BY THE PUBLIC:

25 MR. TRELA: Piotr Trela.

1 A comment about -- because I mean
2 I think you glossed over about the greenhouse
3 emissions; the captures for us I understand is
4 still quite early, even though there's a plan in
5 Saskatchewan that's why the federal government is
6 spending billions to try and make it work. There
7 are still many questions not answered, how long,
8 how effective, it is where there's a leakage, how
9 much it will cost. So it's not a trivial thing and
10 not done deal as in my understanding.

11 MR. RUFFMAN: There are something
12 like 70 gas storages in the United States and the
13 ones we mentioned in Canada ---

14 MR. TRELA: I'm talking about the
15 CO2 capture.

16 MR. ANGER: What are you talking -
17 --

18 MR. TRELA: The CO2 capture.

19 MR. ANGER: The CO2.

20 MR. TRELA: Because you were
21 saying that there's ---

22 MR. ANGER: CO2 sequestration.

23 MR. TRELA: Yes.

24 MR. RUFFMAN: Okay. I'm sorry.

25 MR. ANGER: This is okay.

1 Yes, we are ---

2 CHAIRPERSON GRIFFITHS: Excuse me.

3 Just so that we get it clear so it's clear for the
4 translators and it's clear for the record, can you
5 make sure you basically ---

6 MR. ANGER: Yes, okay.

7 CHAIRPERSON GRIFFITHS: I know
8 nobody likes turning their back on a questioner,
9 but if you can address the panel and speak into the
10 mike it'll come across much more clearly.

11 MR. ANGER: Actually carbon
12 dioxide sequestration was a new -- in a way
13 somebody had complained that there was a leakage of
14 carbon dioxide when they are trying to store it to
15 sequestrate in a way around an old pool, so this is
16 being studied right now on a ---

17 MR. RUFFMA: In fact, I think that
18 they've -- the company at any rate who is being
19 accused of somehow losing their gas I think has
20 established that the bubbling in this farmer's
21 field was not CO2 and not their CO2, but it is an
22 issue, sir.

23 MR. TRELA: Okay. And maybe a
24 question because it came about the storage and the
25 argument from Nalcor was that it's only in the case

1 of compressed air; it's only a matter of maybe
2 days, it's not season.

3 But would -- how much of the
4 capacity of the hydro would have in the Lower
5 Churchill compared to the compressed air storage
6 for, let's say, seasonal?

7 Because the main problem here is
8 that the problem is that we have too much energy in
9 summer, not enough energy in the winter.

10 MR. G. BENNETT: With water
11 management and access to Churchill Falls.

12 MR. TRELA: That's the question
13 that spans both -- both the speakers and
14 Proponents.

15 CHAIRPERSON GRIFFITHS: Yes.
16 Okay, Mr. Bennett. Then -- Mr. Bennett then I'm to
17 a last -- not the last word -- a last word to the
18 presenters and then I am going to have to move on
19 to the next presenter because of our time.

20 So first of all Mr Bennett was
21 going to speak.

22 MR. G. BENNETT: With the storage
23 passage in Churchill Falls, in that reservoir,
24 combined with our other assets you can look at
25 months to years of storage for hundreds of

1 megawatts.

2 MR. RUFFMAN: This is both Muskrat
3 Falls and Gull Island?

4 MR. G. BENNETT: Well, the point
5 I'm trying to get ---

6 CHAIRPERSON GRIFFITHS: Mr.
7 Bennett, you make the statement and then we'll
8 close that off. I will then ask if you want to
9 make one or two words.

10 Are you getting your question
11 answered?

12 MR. TRELA: Hopefully, yes.

13 CHAIRPERSON GRIFFITHS: Hopefully,
14 yes.

15 MR. TRELA: So I get some answer
16 from here maybe the ---

17 CHAIRPERSON GRIFFITHS: Yes, okay.
18 Mr. Bennett then Mr. Anger and Ruffman.

19 MR. G. BENNETT: Thank you, Madam
20 Co-Chair.

21 The production at Churchill Falls,
22 as well as at Gull Island, the Muskrat Falls has to
23 be coordinated. So when you look at the entire
24 river system we have access to storage at Churchill
25 Falls as well so it's not simply the reservoir

1 capacity at the two downstream facilities that can
2 be considered in this light.

3 MR. ANGER: Yes. The reservoir,
4 just one reservoir I believe can take one year --
5 yes, it would be a one year reservoir. Two years
6 it would be perhaps on the precipitation of the
7 area, the catchment area.

8 A compressed energy storage is not
9 a seasonal reservoir, it should be combined with a
10 self-storage for gas which is quite easy. A
11 seasonal reservoir for gas it can be leached in for
12 -- you would need probably about three gallons to
13 have enough gas for matching the capacity of
14 Holyrood so this would not be a big deal.

15 MR. RUFFMAN: We do have natural
16 gas storage for seasonal storage. I've seen the
17 year-long curves for southern Ontario; there's a
18 tremendous variation of the amount of gas you have
19 in storage at one time. You want a lot in storage
20 as winter begins and that's why you want a number,
21 in this case they have seven different reservoirs
22 in south-western Ontario that they fill with gas in
23 the summer months when gas is cheap and then they
24 are able to live on that and bleed them down during
25 the winter as it's needed.

1 That in fact is extremely --
2 absolute possible ---

3 MR. G. BENNETT: Right.

4 MR. RUFFMAN: --- in Newfoundland
5 with gas.

6 But in terms of compressed air,
7 no, we're not suggesting compressed air gives you
8 any sort of that long-term, it gives you that
9 immediate response to the change in the wind.

10 Compressed air energy storage is
11 the way you will load balance with wind.

12 CHAIRPERSON GRIFFITHS: I think I
13 am going to have to close off this discussion, your
14 reasonable answers there because of the time, we
15 have two more presenters.

16 I want to thank you, Mr. Ruffman,
17 and Mr. Anger, for your presentation and for
18 answering questions we really appreciate you coming
19 forward and yes, we have your written material and
20 we'll be giving it full consideration. So thank
21 you very much.

22 MR. RUFFMAN: Thank you very much.

23 CHAIRPERSON GRIFFITHS: Our next
24 presenter is on behalf of the St. John's Board of
25 Trade, not Craig Ennis as I previously mentioned

1 but it's Paul Thomey, if he could come forward,
2 please.

3 --- PRESENTATION FROM ST. JOHN'S BOARD OF TRADE BY
4 PAUL THOMEY:

5 MR. THOMEY: Thank you, Madam
6 Chair and panel. Thank you for the opportunity to
7 speak to the panel today.

8 Hopefully you are having success
9 in your topic-specific, community and general
10 meetings across the province and hopefully you are
11 getting a better sense of what this project will
12 mean to a variety of stakeholders in a variety of
13 ways.

14 Canada's electricity prices have
15 historically been low, among the cheapest in the
16 34-member OECD because the majority of the
17 country's power comes from hydroelectric plants
18 that were built and paid off years ago.

19 But those power plants are aging
20 and no longer able to meet Canada's needs. As
21 you're aware I'm sure, the National Energy Board
22 predicts that power consumption will rise 23
23 percent by 2020.

24 Between now and 2020 however, more
25 than 100 new power plants are slated to be built

1 and thousands of kilometres of new transmission
2 lines erected. The cost will be borne by consumers
3 and the average household electricity bill will
4 rise to more than \$150 per month.

5 The St. John's Board of Trade is
6 not a consumer advocacy group, but we are made up
7 people who pay bills and we do represent businesses
8 which will need to compete on price.

9 The business community in this
10 province is already at a disadvantage in many ways
11 because we have to bring so many goods into our
12 province and the transportation routes are limited.

13 And if you want to compete in
14 exports we have to add that price back on. We need
15 whatever advantages we can get and stable
16 electricity rates should be advantageous.

17 This project as conceived and
18 articulated will cost consumers and businesses more
19 in the short term. We understand that. It's not
20 something to be pleased about but if the cost
21 projections and economic models are accurate then
22 we will accrue benefits in the long-term, that's
23 something we can live with.

24 For our 800-plus members, having
25 electricity rates jump in the second-half of this

1 decade but even out -- but then even out once we
2 get past 2020 is some bad news and some good news.

3 We are not inclined to advocate
4 for price breaks or measures that will pervert the
5 free market that will dictate prices.

6 We do have to raise concerns and
7 we have to be sure that the economic pain is
8 temporary.

9 We're also not inclined to accept
10 what some other provinces are doing; introducing
11 time of day electricity pricing that would try to
12 manage demand by making it more expensive during
13 peak times.

14 Effective macro supply and
15 management will help us avoid this unnecessarily
16 overregulated situation.

17 Muskrat Falls can supply -- can
18 support the supply side of the equation because the
19 demand side can only bear so much additional
20 burden.

21 More discussion of the direct
22 financial implications to businesses needs to
23 happen. There's been some communication about the
24 residential impact and benefits but commercial and
25 industrial customers need to know more specifically

1 where they stand as well.

2 That being said, Muskrat Falls
3 does present some opportunities, perhaps the most
4 important opportunity is adding an option to our
5 power system. Options give us flexibility and
6 that's important, not only for end users but also
7 for other existing power generators and those
8 systems that could potentially come online in the
9 future.

10 What essentially amounts to a
11 second route out of the province gives Newfoundland
12 and Labrador some leverage.

13 Two trading partners denies the
14 crippling and counterproductive monopoly situation
15 which is what we have now. Two potential routes
16 into the United States market will mean a great
17 deal to this province and its partners, Nova
18 Scotia, New Brunswick and Quebec, well into the
19 future.

20 Labrador power could easily flow
21 into the United States through dual entry points,
22 close to the largest two markets in the east, New
23 York and Boston.

24 For a power importer like the U.S.
25 having two entry points rather than a dominant

1 monopoly provider would be advantageous, both from
2 the competitive and technical perspective.

3 Of course the U.S. is going to
4 like the idea of another renewable environmentally
5 friendly large-scale generating project coming on-
6 stream.

7 There was a strong desire for
8 cleaner energy in the U.S. and we have that
9 resource in plentiful supply. That's not to say
10 that there are no environmental drawbacks to
11 Muskrat Falls; with any project of this size there
12 will be drawbacks.

13 The reservoir will have an area of
14 101 square kilometres. This will be approximately
15 1,100 kilometres of transmission lines, the sub-sea
16 crossings will total just over 200 kilometres, this
17 is a project of some size.

18 But comparing the construction and
19 the placement of infrastructure to keeping the
20 current supply does show some benefit. In addition
21 to lowering greenhouse gases and air emissions and
22 enhancing the natural economic landscape, cleaner
23 energy such as hydro can reduce dependency on
24 fossil fuel base generation.

25 The Board of Trade is pleased that

1 because of Muskrat Falls Newfoundland and Labrador
2 will have an electricity system that will be
3 greater than 98 percent carbon-free. The
4 development of Muskrat Falls would avoid
5 approximately 96 million tonnes of emissions by
6 2065, that's a significant number for a province of
7 our size and puts us in a good leadership position
8 for clean energy.

9 The other "E" that goes with
10 environmental is "economical". We talked about
11 micro-economics a few minutes ago in terms of
12 direct consumer and business pricing of
13 electricity, but let's discuss a few macro
14 concepts.

15 On a positive note, the ability to
16 support industry such as manufacturing, mining and
17 other heavy energy users is a great economic
18 strength.

19 We have seen the contributions
20 that cheap electricity has made to Quebec industry.
21 It has essentially been responsible for building a
22 manufacturing base in that province. It is our
23 time to have that advantage.

24 In 2003, central Canada and the
25 northeastern United States were badly hit by a

1 blackout caused by disruption in the U.S.
2 electricity system. One consultant's report has
3 the economic cost estimated between \$6 and \$10
4 billion.

5 Eight years later, there have been
6 no substantial steps taken by Canada in order to
7 alleviate this, but Muskrat Falls is one
8 opportunity to take a step forward.

9 It is suggested that statistically
10 a blackout like that in 2003 will occur every 25
11 years. We have passed approximately one-third of
12 that timeline and we're still in the project
13 consultation phase for Muskrat Falls.

14 If all goes according to plan, we
15 could be about halfway through to the next major
16 blackout by the time the energy comes online.

17 Unless something drastically
18 changes, our oil production is going to be
19 significantly on the downward slope when Muskrat
20 Falls starts to produce electricity. A \$6 to \$10
21 billion blackout obviously has significant economic
22 consequences which we should be able to avoid.
23 With our resources, we should be able to avoid it.

24 Speaking of energy outside of our
25 own borders, there is a lot to be said about the

1 regional aspects of this project. We hope there
2 will be more said about the national aspects soon
3 as well.

4 In June 2005, the National Energy
5 Board recognized that the conditions are ripening
6 for investment in the electricity grid on a
7 national scale:

8 "Inter-provincial cooperation
9 in providing generation and
10 transmission infrastructure
11 will allow for increased
12 access to large- and small-
13 scale renewable electricity
14 sources across the country,
15 reducing emissions and
16 reliance on fuel generation,
17 diversification of supply by
18 generation type and by
19 geographic site, reduced
20 capacity requirements
21 resulting from the increased
22 regional coordination,
23 planning and increased
24 security and reliability."

25 That was six years ago and the

1 benefits of interprovincial cooperation, which
2 include projects like Muskrat Falls, were well
3 documented at that time.

4 Looking at those benefits, these
5 are themes emerging and those themes are
6 reliability and redundancy. It talks about
7 diversifying supply by type and location. It talks
8 about coordination leading to reduced need for
9 isolated supply and distribution that keeps people
10 and businesses separate from good energy, and it
11 talks about security and reliability.

12 Businesses and residents will look
13 for stable energy for different reasons most times,
14 but stability is vital. Reliable energy that comes
15 from integrated energy across regions and sources
16 is vital to providing that business and consumer
17 stability.

18 Let me finish by saying this on
19 behalf of The Board of Trade.

20 Canada has a strong stock of
21 energy resources, we are blessed, and that includes
22 clean power in various forms such as Muskrat Falls
23 and Gull Island as well.

24 Right now, most of the more easily
25 accessible oil, natural gas and hydro resources

1 have been developed. The low-hanging fruit is
2 essentially gone. That means that much of Canada's
3 future energy potential is located in less
4 successful areas such as the north and offshore.

5 Pursuing these supplies are likely
6 more costly and riskier. There are already
7 existing assets that can support Muskrat Falls.
8 There is already existing expertise. There is
9 certainly interprovincial cooperation and there is
10 certainly an identified need to bring more energy
11 on-stream in a cleaner way.

12 This isn't the perfect project
13 from our point-of-view, but it gives us options for
14 our own use and for exporting. It makes sense
15 environmentally and it makes sense in the long-term
16 economically.

17 So it's a good project and we hope
18 to see it move forward in a timely fashion.

19 Thank you for your time.

20 CHAIRPERSON GRIFFITHS: Thank you
21 very much for your presentation, Mr. Thomey.

22 I think a few questions and maybe
23 some from the panel. I would like to ask one to
24 begin with.

25 --- QUESTIONS BY THE PANEL:

1 CHAIRPERSON GRIFFITHS: Somewhere
2 closer to the beginning of your presentation -- I
3 didn't write the exact quotation down -- but you
4 made reference to feeling that there needed to be
5 more attention paid now to the supply side because
6 I gathered -- your implication was that you feel
7 that the demand-side management has been -- perhaps
8 you can remind me exactly what you said, and that
9 is what I would like to explore with you.

10 To what extent -- why is it you
11 feel -- if indeed it is true that you feel -- or
12 the Board of Trade feels that there's not a great
13 deal more to be done on demand-side management
14 initiatives with respect to business?

15 And you also made a reference to
16 wanting to avoid the spectre of time-of-day
17 pricing. And I would like to ask you about that.
18 What is the position of the Board of Trade on time-
19 of-day pricing and whether -- or what are the
20 problems from your perspective?

21 MR. THOMEY: I can just repeat the
22 segue ---

23 CHAIRPERSON GRIFFITHS: Yes,
24 please.

25 MR. THOMEY: --- that:

1 "We are also not inclined to
2 accept what some other
3 provinces are doing,
4 introducing time-of-day
5 electricity pricing that
6 would try to manage demand by
7 making it more expensive
8 during peak times. Effective
9 macro supply management will
10 help us avoid this
11 unnecessarily over-regulated
12 situation. Muskrat Falls can
13 support the supply side of
14 the equation because the
15 demand side can only bear so
16 much additional burden."

17 And I guess from a business
18 perspective, the majority of business does operate
19 during the daytime which would be the high demand
20 and, obviously, if you're going to have increased
21 pricing during that period of time, we would see an
22 adverse effect on the people that we represent, the
23 general business customer in the province.

24 CHAIRPERSON GRIFFITHS: And can
25 you say anything about how -- to what extent

1 business has been involved in trying to reduce
2 demand?

3 MR. THOMEY: I think we're seeing
4 a lot more conscious effort on the part of business
5 as we are on the residence side with people
6 attempting to conserve energy, and I'll think
7 you'll continue to see that because it's a cost
8 that continues to hit the bottom line of a business
9 and there is a sincere desire if for no other
10 reason to keep your costs down.

11 So you will see business look at
12 every means possible to reduce their use of
13 electricity wherever they can, and obviously having
14 a stable supply that has a stable cost is something
15 that will also help them manage that demand.

16 CHAIRPERSON GRIFFITHS: Is the
17 Board of Trade taking a position on demand-side
18 management in terms of perhaps more extensive
19 efforts to pursue that?

20 MR. THOMEY: We don't have a
21 specific position on our books right now, but it is
22 obviously something that's in discussion at our
23 committee levels.

24 CHAIRPERSON GRIFFITHS: M'hm,
25 okay, thank you.

1 MEMBER DOELLE: Yes, thank you for
2 your presentation.

3 You talked a bit in your
4 presentation about the economic opportunities you
5 see with this project, and I'm wondering if you
6 could tell me a bit about kind of the baseline that
7 you use to identify those opportunities?

8 So what's the assumption of what
9 will happen if this project doesn't go ahead? What
10 -- did you compare it to other ways of producing
11 energy? Was it compared to having less energy
12 available? Can you just give me a general sense of
13 how you identified the economic opportunities
14 compared to other scenarios?

15 MR. THOMEY: Unfortunately, the
16 Board of Trade doesn't have the resources at its
17 disposal to do the in-depth studies and a lot of
18 what we do is based on the surveys of our members
19 and asking them for their views and their feelings
20 on it.

21 We have looked at some industries
22 and we do believe that a -- and I guess what our
23 members are telling us, that a stable source of
24 energy is a way that will give them new
25 opportunities to perhaps look at new projects and

1 look at new opportunities.

2 We are this year, in particular,
3 interested in looking more closely and presenting
4 opportunities for our members in the mine industry
5 in Labrador which we're being told is a real growth
6 area.

7 So obviously we want to see our
8 members being able to take advantage of that and
9 stable power, hopefully, will increase that mining
10 opportunity, but specific studies, no, we have not
11 done them.

12 MEMBER DOELLE: Okay. And so in
13 terms of the factors that you looked at, you
14 mentioned price stability, you mentioned more
15 power, having more power available.

16 Were there any other kind of
17 factors that went into your consideration?

18 MR. THOMEY: I think those would
19 be the two main ones, that obviously having a
20 stable source of power and lots of it that would be
21 available to the business community not only in the
22 province, but to the markets that we might be able
23 to attract and the opportunities that we might
24 attract.

25 Obviously, the other

1 considerations would have to come in play such as
2 environmental and the business case and that sort
3 of thing.

4 MEMBER DOELLE: Okay, thank you.

5 CHAIRPERSON GRIFFITHS: I'll turn
6 that to Nalcor. Do you have any questions for Mr.
7 Thomey?

8 MR. G. BENNETT: No, we're good.
9 Thank you, Madam Co-Chair.

10 CHAIRPERSON GRIFFITHS: Okay,
11 thank you. Other questions from the floor for Mr.
12 Thomey and his presentation?

13 Well, then, thank you very much,
14 Mr. Thomey ---

15 MR. THOMEY: Thank you.

16 CHAIRPERSON GRIFFITHS: --- for
17 coming and presenting to us from the Board of
18 Trade.

19 MR. THOMEY: And we do have hard
20 copies of the presentation for you.

21 CHAIRPERSON GRIFFITHS: Okay,
22 thank you. You can give those to the secretariat.
23 That's great.

24 Our final presenter for the
25 evening is Robert Cadigan from the Newfoundland and

1 Labrador Oil and Gas Industries Association.
2 --- PRESENTATION FROM NEWFOUNDLAND AND LABRADOR OIL
3 AND GAS INDUSTRIES ASSOCIATION BY MR. ROBERT
4 CADIGAN:

5 MR. CADIGAN: Good evening, Co-
6 Chairs and panel members.

7 Actually, I was getting quite
8 excited when we were talking about development of
9 natural gas a few minutes ago.

10 Thanks for the opportunity to
11 speak to you today, and we believe the importance
12 of this project, Newfoundland and Labrador, is
13 really paramount to see it get done and get done on
14 time.

15 Just to let you know, we are known
16 as Newfoundland and Labrador Gas Industries
17 Association, and while the total reflects, you
18 know, a focus on oil and gas, the reality is energy
19 and industrial projects of all sorts, including
20 mining and others, are important to remember, so
21 obviously that's one of the reasons we're here
22 today.

23 We have about 500 members, and
24 many of our members are international companies.
25 Some of the members are solely focused on oil and

1 gas, but the majority are actually involved in
2 fabrication, construction and many of the other
3 aspects of development of a resource like the Lower
4 Churchill.

5 The National Energy Board's ranked
6 Muskrat Falls and Gull Island, as we saw in one of
7 Nalcor's charts, as one of the top five hydro
8 projects in North America since 1992. And bringing
9 that power to market has the potential to provide
10 significant benefits for the people of Newfoundland
11 and Labrador and the people of Canada as a whole.

12 So we support this project as a
13 key action of the province's energy plan, the
14 reinvestment of provincial government revenues for
15 non-renewable resources into the construction of
16 renewable energy infrastructure.

17 So we believe that we must
18 reinvest that value that we receive from the oil
19 and gas non-renewable sector to ensure our
20 prosperity today and into the future.

21 One of the main drivers for the
22 development of the Lower Churchill, in our view, is
23 the capacity deficit that's going to arise, and
24 certainly the reliability of the system, of the
25 electrical system.

1 As a result, we believe we need to
2 take appropriate action now to ensure a stable
3 supply of energy and stable pricing into the
4 future.

5 Additionally, we believe there is
6 a need to replace the generating station at
7 Holyrood, and again, this was one of the measures
8 in the province's energy plan released a few years
9 back.

10 The business case for the Lower
11 Churchill, from our point of view, it will generate
12 long-term stable revenue to the people of
13 Newfoundland and Labrador while providing access to
14 clean and stable source of domestic electricity.

15 Our Board has reviewed the
16 materials and has had a briefing on the options
17 available, the isolated island process, Gull Island
18 or Muskrat Falls, and based on our review, from a
19 business perspective we see that Muskrat Falls is,
20 in our view, the best alternative and provides the
21 least cost, most environmentally friendly solution
22 to meet the energy needs of the province going into
23 the future.

24 The monetization of the value of
25 the surplus power further enhances the viability of

1 the development and makes this approach the most
2 economical solution over time from our point of
3 view.

4 It does also create the ability to
5 export power, to start exporting renewable hydro
6 and potentially wind resources as well.

7 The project will provide
8 opportunities in Newfoundland and Labrador for
9 future industrial activities that require large
10 quantities of reliable and predictably priced
11 electricity. Some of the industrial fabrication
12 needed certainly to support the offshore industry,
13 Vale Inco smelter and Long Harbour, among others.

14 So the infrastructure and capacity
15 building that result from the Lower Churchill
16 project will further strengthen Newfoundland and
17 Labrador's industrial appeal.

18 So with the available electricity
19 infrastructure, an experienced, skilled workforce
20 will be able to capitalize on new opportunities and
21 industries, and certainly we've heard a little bit
22 of discussion about the use of natural gas to
23 produce electricity and, you know, it is a
24 technology that works. It is a technology that's
25 viable.

1 One of the problems of
2 Newfoundland and Labrador is certainly the location
3 of our resources and the size of those offshore
4 resources and the difficulty to get those to shore.

5 And while we want to see
6 development of oil and gas resources, certainly the
7 project that feeds the supply need and provides
8 stable pricing into the future is probably the most
9 important thing for all of us. So we're -- while
10 we do want to see development of our natural gas
11 resources, we certainly don't see that as a
12 competition with Muskrat Falls.

13 Hopefully, in the future we'll
14 have sufficient capacity to export power, perhaps a
15 deal with the Province of Quebec that's viable, and
16 at some future point possibly the use of gas to
17 wire and the marketing of that or export of
18 electricity is certainly a possible option at some
19 point in the future.

20 We know basically and support the
21 environmental benefits. You know, we'll be one of
22 the few provinces or few states internationally
23 that produce 98 percent of their power from carbon-
24 free resources.

25 So the Lower Churchill

1 development, from our point of view, will displace
2 the greenhouse gas emitting resources and the aging
3 infrastructure of Holyrood and, again, it will
4 provide environmental improvements in Atlantic
5 Canada by displacing oil and coal-fired generation.

6 From an economic standpoint, the
7 project will contribute to the province's economic
8 and social transformation that's already began due
9 to the revenue we've derived from our offshore
10 energy resources.

11 Mining the minerals will also
12 help, certainly, in terms of one of the young
13 questioners earlier. We believe that the province
14 has to use our resource potential to try to attract
15 other industries over time to get economic
16 diversification, but some of the realities are we
17 have a relatively small population, geographically
18 dispersed, and certainly industrial activity that's
19 derived from natural resources, I don't think
20 there's any crime in us making our living from
21 that.

22 So basically, we see an economic
23 diversification from the employment side. The
24 project will provide opportunities for employment
25 during the construction phase, more limited

1 opportunities in the operational phase, but an
2 entity the size of Nalcor with Muskrat Falls and
3 other resources added will certainly create
4 economic opportunity for the people in Labrador in
5 terms of supplying the operation as well.

6 One of the most important
7 benefits, I guess, in our view, is that the
8 engineering for the Lower Churchill project will
9 substantially be completed in Newfoundland and
10 Labrador. And that's extremely important.

11 Most of the industrial projects we
12 have had have had varying degrees of engineering
13 completed here, and it's probably the key element
14 that allows the local supply and service community
15 to take full advantage of the opportunities
16 available.

17 So we have to applaud Nalcor on
18 that decision.

19 With major projects such as the
20 Vale Inco smelter and Long Harbour, Hebron and now
21 the Lower Churchill, there will be a greater and
22 sustainable long-term opportunities for employment
23 arising from these projects.

24 The addition of the Lower
25 Churchill project in Newfoundland and Labrador's

1 energy warehouse helps improve security for the
2 local labour force and repatriation of labour
3 deployed elsewhere in Canada.

4 Many people working out of
5 province are less likely to return for a single
6 project, but with multiple projects stacked up into
7 the future, certainly it will help attract the
8 resources we need to develop Lower Churchill and
9 some of these other projects.

10 And while people look at project
11 work as, you know, you do the work and then the
12 work's gone and you go back to a lower level, we
13 don't see it that way.

14 We believe we have many additional
15 projects, certainly in terms of the offshore. We
16 have up to 60 TCFs of gas potentially left to
17 discover, about six billion barrels of oil, so we
18 do have some significant opportunities in terms of
19 offshore oil and gas, additional opportunities in
20 terms of hydro and certainly opportunities in the
21 oil and gas industry.

22 So we believe this project will
23 benefit the province, will benefit the people of
24 Labrador and will support economic activity out
25 into the foreseeable future.

1 It is important as well, I think,
2 that we can't -- while we'd love to see Gull Island
3 and Muskrat Falls be developed together, we
4 recognize that for our protected power needs, this
5 project is really right sized. It supports our
6 neighbours' renewable energy needs and requirements
7 and it's right sized for the available transmission
8 capacity to the U.S. market.

9 So we believe it to be a good
10 project. We believe that it will stabilize our
11 energy needs in terms of electricity and provide
12 great economic opportunity for NOIA members and for
13 Newfoundland and Labradoreans in general.

14 Thank you.

15 CHAIRPERSON GRIFFITHS: Thank you
16 very much, Mr. Cadigan, for your presentation.

17 Are there any questions from the
18 panel?

19 Cathy?

20 --- QUESTIONS BY THE PANEL:

21 MEMBER JONG: Mr. Cadigan, I'm not
22 too familiar with the NOIA -- the types of
23 companies that are in NOIA.

24 MR. CADIGAN: Sure.

25 MEMBER JONG: But you did mention

1 there were a fair number of construction companies.

2 MR. CADIGAN: M'hm.

3 MEMBER JONG: I'm wondering if
4 you've got any -- or you can give me a sense of
5 what percentage of your members are going to
6 benefit -- or you feel are potentially going to
7 benefit directly from this project in terms of
8 participating and what that might look like job-
9 wise or ---

10 MR. CADIGAN: Sure. Well, the
11 employment numbers we've seen and they're included
12 in Nalcor's presentation, and we do believe that
13 many of our firms -- we have companies involved in
14 heavy civil. We have engineering companies,
15 companies involved in fabrication, industrial
16 supply, a full cross-section, I guess, of the type
17 of support that a project like this would need.

18 And we've -- for our members, I
19 guess, we've gone from project to project with --
20 you know, we start with Hibernia; we have a major
21 gap. We have another project; we have a major gap.

22 So we're looking now into a future
23 where for the next, say, 10 years out we can see
24 consistency in the amount of activity, and to have
25 a problem of having sufficient labour actually meet

1 the needs of the projects is a pretty unique
2 position for Newfoundlanders to be in.

3 So our members see this project as
4 another source of potential to take full advantage
5 of the opportunities in front of them. You know,
6 certainly many of the construction activity would
7 be performed by NOIA members. Any of the
8 fabrication would be performed by NOIA members,
9 right down through the industrial supply chain.

10 So there is a fair amount of
11 activity and it will create a fair amount of
12 opportunity for our members and employment as well.

13 You know, if we look at the oil
14 and gas community alone, it creates about 10,000
15 jobs if you take them direct from Newfoundland and
16 Labrador, and these are fairly high paying jobs, as
17 are the jobs in the development phase of the Lower
18 Churchill.

19 And certainly even though the
20 number of jobs in the long term is smaller with
21 this kind of a project, they certainly again are
22 well paying and long-term important jobs for the
23 province.

24 MEMBER JONG: So NOIA members then
25 really -- these large-scale projects are a

1 necessity or a very good-news story?

2 MR. CADIGAN: Yes, very much so.

3 MEMBER JONG: Yes. Okay. Thank
4 you.

5 CHAIRPERSON CLARKE: Thank you,
6 Mr. Cadigan.

7 My question is going to come back
8 to natural gas ---

9 MR. CADIGAN: Sure.

10 CHAIRPERSON CLARKE: --- but I
11 wanted to give you a little bit of a background
12 first.

13 We've just come off nearly a full
14 month of hearings in Labrador, and on a number of
15 occasions we heard representations from people who
16 are very concerned about the negative impacts that
17 they feel if the project goes ahead would have with
18 respect to the river and the youth of the river,
19 and also with respect to negative impacts on the
20 terrestrial and aquatic environment and social and
21 cultural environment, et cetera.

22 And they're saying are there any
23 alternatives really to this project in terms of
24 supplying the needs of the province with respect to
25 energy, particularly the Island part of the

1 province.

2 So I'll come back to natural gas.

3 And I understand the ---

4 MR. CADIGAN: Right.

5 CHAIRPERSON CLARKE: --- business
6 case where if the developers of the -- if the
7 owners of the oil and gas project look at the
8 business case for natural gas in terms of how much
9 can we produce to justify a pipeline down into the
10 U.S. and with the low prices of natural gas and
11 that kind of stuff. Obviously you might get one
12 kind of an answer in terms of what's economic and
13 what's not economic.

14 MR. CADIGAN: Right.

15 CHAIRPERSON CLARKE: On the other
16 hand, if you're looking at a relatively modest
17 amount of natural gas that could come ashore in
18 Newfoundland just to basically replace or displace
19 Holyrood, and there you wouldn't be talking about
20 the world price of natural gas; you'd be looking at
21 the prices that would -- your alternate price of
22 the cost of Muskrat Falls or the cost of oil fired
23 at Holyrood, and you might get quite a different
24 answer there.

25 So my question is related to

1 whether or not the NOIA members have looked at
2 small scale -- well, development of small scale use
3 of natural gas? I know there's natural gas getting
4 flared out there. There's other gas available
5 that's not really required for re-injection.

6 MR. CADIGAN: Right.

7 CHAIRPERSON CLARKE: But I don't
8 know -- and maybe Nalcor will tell us sometime ---

9 MR. CADIGAN: Sure.

10 CHAIRPERSON CLARKE: --- but I
11 don't know how much natural gas would be required,
12 say, just to replace the requirement just of
13 Holyrood and whether or not there's a business case
14 there.

15 So I know your members are
16 involved in that kind of activity, and I was
17 wondering if you would like to make some more
18 comments along those lines?

19 MR. CADIGAN: I think from a NOIA
20 perspective we've done -- and I think the two
21 gentlemen presenting from Geostorage earlier
22 mentioned we had done a study in monetizing natural
23 gas back in 2000, I think was the latest study.

24 Those studies really didn't look
25 at particularly sized projects. I mean, it looked

1 at monetization in the general sense. And
2 certainly some of the difficulties in the costing
3 involved in sort of any kind of scheme to extract
4 the gas and get the gas to shore would seem to be
5 prohibitive for smaller volumes.

6 Now, what's a smaller volume? I
7 guess that's the tough question, and I don't have
8 the answer to that.

9 But certainly, you know, you're
10 talking investments probably in a similar or higher
11 number than the numbers that need to be used for
12 the Lower Churchill, the investment required.

13 And in terms of that feasibility,
14 I think -- you know, I believe that the province
15 and Nalcor have looked at a global -- from a global
16 perspective or high level at the opportunities
17 available, and I would be surprised if it was an
18 economically viable source to replace electric
19 generation from Holyrood.

20 CHAIRPERSON CLARKE: Are you aware
21 of any cases where the electricity is generated
22 right offshore instead of flaring the gas or re-
23 injecting it for storage, that it's used to produce
24 electricity and then electricity transported?

25 MR. CADIGAN: Yeah, I think there

1 are a few examples, I guess, but generally it's the
2 gas is piped to shore and then the electricity is
3 generated onshore. I'm not aware of any offshore
4 gas installations personally.

5 CHAIRPERSON CLARKE: Thank you.

6 MR. CADIGAN: Okay.

7 CHAIRPERSON GRIFFITHS: Mr.
8 Igloliorte has a follow-up for that.

9 MEMBER IGLOLIORTE: Yes, just in
10 addition to the question asked by the Co-Chair, for
11 Labrador specifically where we've heard on several
12 occasions that one of the opportunities might be
13 the development of storage for natural gas,
14 realistically, how far out in years are we looking
15 before any of that comes to shore?

16 MR. CADIGAN: You know, that's a
17 question, if I had the answer, I'd probably be a
18 very popular man, but I think we're --
19 realistically, we keep looking and we look at sort
20 of 10 years out, 15 years out. I mean, we do have
21 a lot of natural gas in the U.S. They've got
22 potentially 100-year supply if all of the shale
23 gas, the non-conventional gas actually proves up.

24 So the reality of it is we have
25 some issues in terms of markets and we have issues

1 in terms of the cost of development. So that's got
2 to come into balance.

3 And looking at prices around
4 \$4.50, \$4.30 or so right now, or as of today, you
5 know, I don't believe that those prices will put us
6 in a position to see development in the near
7 future. I think the reality of it is the prices
8 probably need to be in the \$6 plus range for sure.

9 But one of the issues, I guess, if
10 you look at the U.S. as well and Canada, I mean,
11 there is a great need for electricity. We do have
12 Gull Island. We also have 4.2 Tcf of gas offshore
13 in Labrador.

14 So at some point, potentially, a
15 gas wire to move that electricity elsewhere, I
16 mean, it's about six times -- natural gas is about
17 six times better than coal in terms of greenhouse
18 gas emissions. So I think it's a valuable resource
19 that at some point we'll see developed, but
20 timeframes are really, really hard to predict.

21 MEMBER IGLOLIORTE: Thank you.

22 MEMBER DOELLE: Thank you for your
23 presentation, Mr. Cadigan.

24 You mentioned earlier in your
25 presentation that your association reached the

1 conclusion that Muskrat Falls is the most
2 economical, low-cost way of meeting energy --
3 electricity needs ---

4 MR. CADIGAN: Right.

5 MEMBER DOELLE: --- for the
6 Island.

7 MR. CADIGAN: M'hm.

8 MEMBER DOELLE: And I'm wondering,
9 it's an issue that we're quite interested in ---

10 MR. CADIGAN: Right.

11 MEMBER DOELLE: --- and we've
12 heard lots about it over the last month.

13 I'm wondering whether you did any
14 independent work on this, any independent research?
15 Can you just talk a bit about how you reached that
16 conclusion and whether you have any ---

17 MR. CADIGAN: Sure.

18 MEMBER DOELLE: --- information
19 you can share with us?

20 MR. CADIGAN: No, we didn't do --
21 we're much like the Board of Trade, we're a
22 relatively small organization with relatively
23 limited resources to take on that kind of research,
24 but we've met with the folks at Nalcor, we've asked
25 questions.

1 We had a board of 12 folks engaged
2 in the oil and gas sector. We poked and prodded,
3 and all of the questions we've asked we've got
4 answers that we consider satisfactory, and based on
5 that I guess we see the Muskrat Falls as being the
6 most effective of the three alternatives really.

7 MEMBER DOELLE: Okay, thank you.
8 Oh, three alternatives? What's ---

9 MR. CADIGAN: Sorry, the islands
10 -- well, Gull Island as well.

11 MEMBER DOELLE: Right.

12 MR. CADIGAN: So, Gull and
13 Muskrat, Muskrat alone, or the ---

14 MEMBER DOELLE: Okay.

15 MR. CADIGAN: --- island solution.

16 MEMBER DOELLE: Okay, thanks.

17 MR. CADIGAN: Okay.

18 CHAIRPERSON GRIFFITHS: Okay,
19 thank you.

20 I'll turn to Nalcor; do you have
21 questions for the presenter?

22 MR. G. BENNETT: No, we don't
23 Madame Co-Chair, thank you.

24 CHAIRPERSON GRIFFITHS: Okay,
25 thank you.

1 Are there any questions -- yes,
2 Ms. Benefiel?

3 --- QUESTIONS BY THE PUBLIC:

4 MS. BENEFIEL: I'm sorry, I may
5 mispronounce your name I'm having a hard time
6 hearing. Mr. Cadigan, is it?

7 MR. CADIGAN: That's perfect.

8 MS. BENEFIEL: Oh good, I'm not as
9 deaf as I thought it was.

10 I have a couple of little
11 questions that are kind of leading up; first of
12 all, have you attended any of the hearings in Happy
13 Valley-Goose Bay?

14 MR. CADIGAN: No, I did not but
15 I've travelled to Labrador many, many times.

16 MS. BENEFIEL: Okay, so you're not
17 familiar -- have you maybe listened to some of the
18 hearings online?

19 MR. CADIGAN: Yes. Yes, I have.

20 MS. BENEFIEL: Okay. Have you
21 listened to some of the community hearings?

22 MR. CADIGAN: I've -- I have a
23 general understanding of what some of the issues
24 are.

25 MS. BENEFIEL: Okay. So what is

1 then your understanding of the idea of the
2 adjacency principle, and the idea of a cultural
3 connection to a land or to a river?

4 MR. CADIGAN: Sure. Well, in
5 terms of adjacency, I think Newfoundland and
6 Labrador has benefitted from that adjacency
7 principle, in terms of ---

8 MS. BENEFIEL: Excuse me -- I'm
9 speaking of Labrador.

10 MR. CADIGAN: Oh. Well, I have to
11 answer the question.

12 MS. BENEFIEL: Okay, sorry.

13 MR. CADIGAN: So we're very
14 familiar with the adjacency principle and the right
15 of the people that are closest to the resource to
16 benefit from the resource, and I think Newfoundland
17 and Labrador, as a province, has benefitted.

18 In terms of -- for the people of
19 Labrador, we believe that certainly they should be
20 the -- some of the primary beneficiaries of the
21 project and of the benefits.

22 MS. BENEFIEL: Well, those primary
23 beneficiaries, as it stands right now, Mr. Cadigan,
24 are first dibs on the jobs that will last for --
25 Muskrat only, which we're looking at right now --

1 possibly four to five years.

2 MR. CADIGAN: Sure.

3 MS. BENEFIEL: So just a
4 statement; you've said you had gaps between large
5 projects ---

6 MR. CADIGAN: M'hm.

7 MS. BENEFIEL: --- and that you
8 need this project to fill the gaps.

9 MR. CADIGAN: M'hm.

10 MS. BENEFIEL: The thing is, that
11 your people will go home after this project is
12 finished, the people who don't live in Labrador.
13 We have to live with what's left of the river.

14 MR. CADIGAN: Right.

15 MS. BENEFIEL: I want to say, too,
16 that if you would listen to all of the community
17 sessions you would know that this project,
18 unambiguously, every community in Labrador, has said,
19 "This project is not for us. It's killing our
20 river".

21 It's the largest river in eastern
22 Canada. It's actually the -- definitely the
23 largest river in Newfoundland and Labrador.

24 It really destroys our ability to
25 ever have an ecotourism potential, any ecotourism

1 potential, which is local, long-term jobs, and it's
2 currently marketed widely over here in Newfoundland
3 and you can see it in the marketing online.
4 Labrador itself is not marketed nearly as much.

5 So I just want to say that
6 basically, the communities in Labrador have already
7 said time and time again, "This project is not for
8 us. We're not going to let it happen".

9 Don't bet everything you have on
10 this project.

11 MR. CADIGAN: No, and I think
12 certainly those are comments probably more
13 correctly addressed to the panel than me
14 personally.

15 But having said that, we will all
16 benefit from these projects, and at the end of the
17 day certainly, from the people that I know in
18 Labrador, there is a mixture of views, there's no
19 doubt.

20 Any industrial project is bound to
21 cause concerns with the some people. Some people
22 want the economic benefits more than change and
23 some of the negative aspects, but that's all part
24 of it.

25 MS. BENEFIEL: But isn't it

1 actually time, Mr. Cadigan, for us to start
2 thinking about more sustainable communities and
3 more sustainable and gentler things to do with
4 environmental issues to sustain our communities,
5 rather than these mega-projects?

6 And I take you back to something
7 you said in your presentation about -- I think you
8 called it a stable -- a stable -- yes, well, what's
9 more stable than local small hydro projects, or
10 local small wind projects, where the people in the
11 community actually run the project and it provides
12 jobs forever, as long as the project's there,
13 instead of just for four or five years?

14 MR. CADIGAN: Well, it's not a
15 question but a statement, but I'll leave it ---

16 CHAIRPERSON GRIFFITHS: If you
17 wish to -- if you have another comment to make ---

18 MR. CADIGAN: No, I ---

19 CHAIRPERSON GRIFFITHS: --- Mr.
20 Cadigan, otherwise, that's fine.

21 MR. CADIGAN: I think it's ---

22 CHAIRPERSON GRIFFITHS: Thank you
23 for your question, Ms. Benefiel.

24 MR. CADIGAN: Yes. I think we
25 have benefitted in Newfoundland and Labrador from

1 many of the projects that haven been developed to
2 date and we'll benefit from some of the future
3 project, and I guess we'll collectively sort out
4 the issues that our friend brings up.

5 CHIARPERSON GRIFFITHS: Are there
6 any other questions for Mr. Cadigan?

7 I see Mr. Ruffman. Mr. Ruffman
8 first.

9 MR. RUFFMAN: Mr. Cadigan, one
10 thing that you said, you suggested that producing
11 gas in the Grand Banks would be similar to the cost
12 of the Muskrat Falls project.

13 MR. CADIGAN: I didn't say
14 similar. It may be similar.

15 MR. RUFFMAN: It may be. So you
16 don't ---

17 MR. CADIDAN: I don't know.

18 MR. RUFFMAN: You don't quite
19 know?

20 MR. CADIGAN: No.

21 MR. RUFFMAN: May I refer you to
22 -- and I'll just put this in the record, because I
23 did mention it in my -- there's a copy in this --
24 it's online and in front of the public, our 2009
25 Assessment Report, Part II.

1 On page 31 we have a copy of the
2 June 16th, 2004, Daily News Oil Bulletin article by
3 Pat Roche, entitled "'White Rose Gas Could
4 Ultimately Out-perform Oil,' Husky". They were
5 quoting Husky.

6 And in fact the 2.3 TCF that
7 they're talking about, they suggest might be --
8 Husky is suggesting it might be a \$2.3 billion
9 dollar project to produce 150 MMCF per day.

10 So it's not the price of -- we
11 don't know how they were thinking of doing that,
12 but it's maybe one-third at the size project that
13 Husky was talking about, so I just put that in the
14 record for the interest.

15 MR. ANGER: (off mic) ... gas, so
16 natural gas will be needed to replace Holyrood,
17 would be 113 million cubic feet per day in summer,
18 and 14 million cubic feet per day in winter. It's
19 a big figure and there's a small figure like
20 summer; 113 million cubic feet in winter; 14
21 million cubic feet in summer.

22 CHAIRPERSON GRIFFITHS: Yes, thank
23 you. And perhaps a final question?

24 MR. TRELA: Just two points.

25 In your calculation that the

1 market is too small, or the volumes are too small,
2 I mean it only addresses the energy part of the
3 production.

4 In theory, I mean some of the
5 greenhouse emissions and some of the energy
6 productions not at the scale of the Holyrood or
7 other places, but heating at home.

8 So if you replaced some of the
9 furnace oil with a gas which is more effective, it
10 will reduce things, so that market would be bigger
11 and some positive impact would be also bigger.

12 So this may -- I'm not sure
13 whether it makes a difference enough to go from --
14 it's not enough to make it worthwhile, to maybe
15 worth it's worthwhile.

16 The other question is, I mean, and
17 it's probably here as well to the Nalcor, if the
18 reason why it's not -- the prices -- I mean, you
19 said that it's not economic because the prices are
20 too low in the North America.

21 If the prices are too low, it
22 means that if you are in the States, and especially
23 if you have so much shale oil, shale gas, wouldn't
24 they build the power plant based on that shale gas
25 and they won't need our electricity, especially if

1 you go for the Gull Island, which pretty much would
2 have to go all to the export to the States?

3 If they take advantage of low
4 prices of gas, would this make a problem with us
5 selling even, I mean, what you get from Muskrat
6 Harbour(sic), but then the next thing Gull Island
7 would have entirely to go to the States to --
8 probably to -- so would this be a problem?

9 MR. CADIGAN: Well, it's a -- you
10 know, it certainly -- you know, electricity demand
11 in the U.S. and -- versus their ability to produce
12 power from -- produce sufficient electricity from
13 natural gas, you know, I have no idea what the
14 volumes are, what the demand is and how that
15 matches up.

16 MR. TRELIA: Because, I mean,
17 resources we know from the conventional gas, the
18 shale gas, are huge and that's ---

19 MR. CADIGAN: Yeah.

20 MR. TRELIA: It could be self
21 sufficient. So if they decide to put this gas into
22 the power generation, then at least the extension
23 element of the project may have problems with ---

24 MR. CADIGAN: Certainly the self
25 sufficiency in terms of the use of gas in the U.S.,

1 I mean, the measure of that often mentioned supply
2 when they talk about 100-year supply is against
3 current usage. It isn't against replacing all of
4 the electricity generation in the U.S. with natural
5 gas, for example.

6 So I don't know what that number
7 would turn out to be and, you know ---

8 MR. TRELA: Thank you.

9 CHAIRPERSON GRIFFITHS: Thank you
10 very much.

11 And I think that's it, so thank
12 you very much, Mr. Cadigan, for your presentation.

13 We have reached -- we are 15
14 minutes over 10:00 whereas the normal closing time.

15 We will be continuing this general
16 hearing tomorrow starting at 1:00. We have a
17 session from 1:00 to 5:00 and then again we start
18 up at 7:00 to 10:00, so I hope that some of you at
19 least, if you're interested, can return tomorrow.

20 And I think that's all we need to
21 do this evening, so I would like to thank all the
22 presenters. I'd like to thank everyone who's
23 participated in the questioning and everybody who
24 came as an observer this evening.

25 So thank you, and we will resume

1 again tomorrow for another general session at 1:00

2 p.m.

3 --- Upon adjourning at 10:14 p.m.

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C E R T I F I C A T I O N

I, Dale Waterman a certified court reporter in the Province of Ontario, hereby certify the foregoing pages to be an accurate transcription of my notes/records to the best of my skill and ability, and I so swear.

Je, Dale Waterman, un sténographe officiel dans la province de l'Ontario, certifie que les pages ci-hautes sont une transcription conforme de mes notes/enregistrements au meilleur de mes capacités, et je le jure.



Dale Waterman
Court Reporter / Sténographe