MANITOBA PUBLIC UTILITIES BOARD

Re: MANITOBA HYDRO

       NEEDS FOR AND ALTERNATIVES TO

       REVIEW OF MANITOBA HYDRO'S

       PREFERRED DEVELOPMENT PLAN

       Regis Gosselin   - Chairperson

       Marilyn Kapitany   - Board Member

       Larry Soldier   - Board Member

       Richard Bel   - Board Member

       Hugh Grant   - Board Member

HELD AT:

       Public Utilities Board

       400, 330 Portage Avenue

       Winnipeg, Manitoba

       April 29, 2014

       Pages 9090 to 9364

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 1                    APPEARANCES

 2  Bob Peters        (np)          )Board Counsel

 3  Sven Hombach                    )

 4

 5  Patti Ramage      (np)          )Manitoba Hydro

 6  Marla Boyd        (np)          )

 7  Douglas Bedford                 )

 8  Helga Van Iderstine (np)        )

 9  Jennifer Moroz    (np)          )

10  Odette Fernandes (np)           )

11  Janet Mayor                     )

12  Jack London       (np)          )

13

14  Byron Williams                  )CAC

15  Meghan Menzies                  )

16  Aimee Craft       (np)          )

17

18  William Gange                   )GAC

19  Peter Miller                    )

20

21  Antoine Hacault   (np)          )MIPUG

22

23  George Orle                     )MKO

24  Michael Anderson (np)           )

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 1                    APPEARANCES (Con't)

 2

 3  Jessica Saunders (np)            )MMF

 4  Corey Shefman    (np)            )

 5

 6  Christian Monnin                 )IEC

 7  Michael Weinstein (np)           )

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1   LIST OF EXHIBITS (Con't)

2   NO.   DESCRIPTION   PAGE NO.

3   MH-186   Manitoba Hydro's Book of Documents 9268

4   MH-187   Literature called, "Sustainability

5   Assessment: Pluralisms, Practice,

6   and Progress"   9320

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 1                    UNDERTAKINGS

 2  NO.              DESCRIPTION                PAGE NO.

 3  129         CAC to file the report in which

 4             Dr. Gunn relies upon for the

 5             suggestion that there has been

 6             evidence presented by the KHLP

 7             suggesting that the region has

 8             already been substantially

 9             altered                          9336

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 1   --- Upon commencing at 9:00 a.m.

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 3                THE CHAIRPERSON:   Good morning.  If

 4   people get into position, we will start the morning's

 5   proceedings.

 6

 7                     (BRIEF PAUSE)

 8

 9                THE CHAIRPERSON:   Good morning.  I

10   believe that everybody is in position, so we will start

11   the proceedings.  I hope everybody had a good evening

12   last night.  I'll turn the microphone over to you, Mr.

13   Hombach.

14                MR. SVEN HOMBACH:   Yes, good morning,

15   Mr. Chairman.  Good morning, members of the panel.

16   Today is reserved for the evidence of Jill Gunn on

17   macroenvironmental matters, as well as Kyrke Gaudreau

18   and Bob Gibson on sustainability issues.  All three (3)

19   are witnesses on behalf of the Consumers' Association

20   of Canada.

21                Before we get started and have Mr.

22   Williams get the witnesses sworn and qualified, I'm

23   advised by My Friend opposite, Ms. Mayor, that Manitoba

24   Hydro has some undertakings to speak to.

25                THE CHAIRPERSON:   Good morning, Ms. --
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1 Ms. Mayor.

2   MS. JANET MAYOR: Good morning.   We

3 just have one (1) answer to an undertaking.   Yesterday,

4 Mr. London undertook to provide a copy of an article

5 entitled, "First Nations Candidacy and On-reserve

6 Voting in Manitoba", and we have provided copies to

7 everyone.   That will be Manitoba Hydro Exhibit 184.

8

9 --- EXHIBIT NO. MH-184:   Article: First Nations

10   Candidacy and On-reserve

11   Voting in Manitoba

12

13   MR. KURT SIMONSEN: Thank you.   So

14 noted.

15   THE CHAIRPERSON: Thank you, Ms. Mayor.

16 Mr. Williams, good morning.

17   MR. BYRON WILLIAMS: Good morning, Mr.

18 Chair and members of the panel.   I'm sure you're

19 surprised to see me back here again today.   In just a

20 moment I'll be introducing the -- the good doctors.

21   I did want to introduce two (2) new

22 exhibits: CAC Exhibit 74, which would be the

23 PowerPoint presentation of Dr. Gaudreau and Dr. Gibson.

24

25 --- EXHIBIT NO. CAC-74:   PowerPoint presentation of

9099
 1   Dr. Gaudreau and Dr. Gibson

 2

 3   MR. BYRON WILLIAMS: CAC-70 -- CAC-

 4 75, which would be the PowerPoint presentation of Dr.

 5 Gunn.

 6

 7 --- EXHIBIT NO. CAC-75:   PowerPoint presentation of

 8   Dr. Gunn

 9

10   MR. BYRON WILLIAMS: And we're also

11 hoping, during their presentation, Dr. Gaudreau and Dr.

12 Gibson may be making reference to an older exhibit, CAC

13 Exhibit 57. I -- and I think everyone -- that was

14 distributed previously. I think there are some of them

15 on the panels -- in front of the panel. And I would

16 just note that the ever-organized Ms. Fast has -- who's

17 right -- immediately behind me, has additional paper

18 copies, if anyone wants one.

19   With that, Mr. Chair, and assuming those

20 are satisfactory exhibit numbers, I'd ask Mr. Simonsen

21 to affirm or swear the witnesses.

22

23 CAC MACROENVIRONMENTAL AND SUSTAINABILITY PANEL:

24   KYRKE GAUDREAU, Affirmed (Qual.)

25   ROBERT GIBSON, Affirmed (Qual.)

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 1   JILL GUNN, Affirmed (Qual.)

 2

 3 QUALIFICATION OF WITNESSES:

 4   MR. BYRON WILLIAMS: Thank you, Mr.

 5 Simonsen. Mr. Chair, we are ready to proceed when the

 6 -- the panel's ready.

 7   In terms of qualifications, perhaps

 8 we'll start with you, Dr. Gunn. You are the primary

 9 author of "Macroenvironmental Impact Assessment

10 Guidance," which was filed in this proceeding in

11 February of 2014?

12   DR. JILL GUNN: That's correct.

13   MR. BYRON WILLIAMS: It was prepared

14 under your care and control?

15   DR. JILL GUNN: Yes, it was.

16   MR. BYRON WILLIAMS: And to the best of

17 your knowledge and ability, it is accurate?

18   DR. JILL GUNN: Yes, it is.

19   MR. BYRON WILLIAMS: And in preparing

20 your report, would it be fair to suggest you relied

21 upon your academic and professional practice expertise

22 in natural resources management?

23   DR. JILL GUNN: That's correct.

24   MR. BYRON WILLIAMS: In addition, you

25 relied upon your academic and professional practice

9101

1 expertise in environmental impact assessment?

2   DR. JILL GUNN: Correct.

3   MR. BYRON WILLIAMS: And your core area

4 of research in environmental assessment relates to

5 strategic environmental assessment and cumulative

6 effects assessment.

7   DR. JILL GUNN: Yes.

8   MR. BYRON WILLIAMS: Would that be

9 fair?

10   DR. JILL GUNN: Yes, that's right,

11 yeah.

12   MR. BYRON WILLIAMS: You hold a

13 master's of science degree in natural resources

14 management?

15   DR. JILL GUNN: Yes, I do.

16   MR. BYRON WILLIAMS: And the subject

17 matter of your thesis, which sounds very entertaining,

18 was a conceptual framework for integrated resource

19 management of electric utility transmission right-of-

20 ways?

21   DR. JILL GUNN: Correct.

22   MR. BYRON WILLIAMS: And you hold a

23 doctor of philosophy in environmental assessment?

24   DR. JILL GUNN: Yes, I do.

25   MR. BYRON WILLIAMS: And the subject

9102

1 matter of that thesis was integrating strategic

2 environmental assessment and cumulative effects

3 assessment?

4   DR. JILL GUNN: That's right.

5   MR. BYRON WILLIAMS: And in your spare

6 time you're an assistant professor in the Department of

7 Geography and Planning at the University of

8 Saskatchewan?

9   DR. JILL GUNN: Yes, I am.

10   MR. BYRON WILLIAMS: And you're cross-

11 appointed to the School of Environment and

12 Sustainability?

13   DR. JILL GUNN: Yes, I am.

14   MR. BYRON WILLIAMS: In terms of your

15 work in hydro-related matters, Dr. Gunn, would it be

16 fair to say that for six (6) years, between 1997 and

17 2003, you were a consultant to British Columbia Hydro

18 on integrated resource management for electri --

19 electric utility transmission rights-of-way in the

20 northern region of British Columbia?

21   DR. JILL GUNN: Yes, I was. That's

22 right, yeah.

23   MR. BYRON WILLIAMS: And your work

24 there focussed on documenting a decade-long informal

25 program to address a wide variety of environmental,

9103

1 social, and economic management imperatives.

2   Would that be fair?

3   DR. JILL GUNN: Yes.

4   MR. BYRON WILLIAMS: And in the course

5 of that assignment, you prepared roughly ten (10)

6 reports under contract for BC Hydro?

7   DR. JILL GUNN: That sounds about

8 right. I haven't counted, but --

9   MR. BYRON WILLIAMS: Okay.

10   DR. JILL GUNN: -- I'll trust you.

11   MR. BYRON WILLIAMS: You'll accept

12 that, subject to check?

13   DR. JILL GUNN: Yes.

14   MR. BYRON WILLIAMS: And if I

15 simplistically defined the term 'cumulative effects' to

16 be a change in the environment caused by multiple

17 interactions among human activities and natural

18 processes that accumulate across space and time, would

19 that be a definition you could work with?

20   DR. JILL GUNN: Yes.

21   MR. BYRON WILLIAMS: And you, with Dr.

22 Bram Noble, co-authored the expert report, "Critical

23 Review of the Cumulative Effects Assessments undertaken

24 by "Manit -- "Manitoba Hydro for Bipole III"?

25   DR. JILL GUNN: That's right, yeah.

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 1                    MR. BYRON WILLIAMS:   And that was

 2  provided as expert evidence to the Clean Environment

 3  Commission in 2012?

 4                    DR. JILL GUNN:   M-hm, yes, it was.

 5                    MR. BYRON WILLIAMS:   Okay.  And as a

 6  central aspect of this report, you and Dr. Noble

 7  recommended a regional cumulative effects assessment be

 8  taken of the Nelson River watershed?

 9                    DR. JILL GUNN:   Yes, we did.

10                    MR. BYRON WILLIAMS:   And without

11  attributing any credit -- or any particular credit to

12  you or Dr. Noble, is your understanding that in making

13  the recommendation to license Bipole III, the Clean

14  Environment Commission also recommended that the

15  province undertake a regional cumulative effects

16  assessment of the Nelson River watershed prior to the

17  licensing of additional hydroelectric projects on the

18  Nelson River system?

19                    DR. JILL GUNN:   Yes, that's my

20  understanding.

21                    MR. BYRON WILLIAMS:   You and Dr. Noble

22  also provided an expert review to the Clean Environment

23  Commission with regard to the cumulative effects

24  assessment relating to the Keeyask hydroelectric

25  generating station?
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1   DR. JILL GUNN: Yes, we did. Yep.

2   MR. BYRON WILLIAMS: And you were a co-

3 author of "Institutional Considerations in Watershed

4 Cumulative Effects Assessment and Management"?

5   DR. JILL GUNN: Yes.

6   MR. BYRON WILLIAMS: And that was

7 published in "Impact Assessment and Project Appraisal"?

8   DR. JILL GUNN: I believe it was, yep.

9   MR. BYRON WILLIAMS: And in 2014, you

10 co-authored for the Canadian Council for Ministers of

11 the Environment, "Definitions for Cumulative Effect,

12 Cumulative Effects Assessment, and Cumulative Effects

13 Management"?

14   DR. JILL GUNN: Yes.

15   MR. BYRON WILLIAMS: So that's why that

16 definition I gave to you was familiar?

17   DR. JILL GUNN: Yeah, correct. That's

18 the most recent definition -- or set of definitions in

19 Canada.

20   MR. BYRON WILLIAMS: And also for the

21 Canadian Council of Ministers of the Environment you

22 provided guidance on a regional strategic environmental

23 assessment?

24   DR. JILL GUNN: Yes, we did. Yep.

25   MR. BYRON WILLIAMS: And your repo --

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 1 report served as a basis for the Alberta Government's

 2 innovative land use framework?

 3   DR. JILL GUNN: Yes, it has in the Wood

 4 Buffalo region.

 5   MR. BYRON WILLIAMS: Okay. And you

 6 have prepared reports for Fisheries and Oceans Canada,

 7 as well as the Canadian Environmental Assessment Agency

 8 on matters relating to strategic environmental

 9 assessment and regional assessment?

10   DR. JILL GUNN: Yes.

11   MR. BYRON WILLIAMS: And you have

12 published a number of peer-reviewed articles and book

13 chapters on related subjects, including the chapter

14 "Strategic Environmental Assessment" in Hanna,

15 "Environmental Impact Assessment: Practice and

16 Participation"?

17   DR. JILL GUNN: Yes, that's correct.

18   MR. BYRON WILLIAMS: And just a couple

19 more questions. I know you'll be going into more

20 detail in your direct evidence, but would it be fair to

21 say that one form of strategic environmental assessment

22 is known as policy appraisal?

23   DR. JILL GUNN: Yes, it is.

24   MR. BYRON WILLIAMS: And an important

25 aspect of this type of analysis is to appraise the

9107

1 strengths and weaknesses of various policy options by

2 exploring how they measure up to key performance

3 indicators?

4   DR. JILL GUNN: Yes, that's right.

5   MR. BYRON WILLIAMS: And those

6 performance indicators could include biophysical change

7 and their associated environmental, human, and economic

8 consequences?

9   DR. JILL GUNN: Yes, they could.

10   MR. BYRON WILLIAMS: Okay. Dr.

11 Gaudreau, good morning, sir.

12   DR. KYRKE GAUDREAU: Good morning, sir.

13   MR. BYRON WILLIAMS: You are co-author

14 of "Framework for Sustainability Assessment for the

15 NFAT", which was filed in February of 2014?

16   DR. KYRKE GAUDREAU: That is correct.

17   MR. BYRON WILLIAMS: It was prepared

18 under your control and under Dr. Gibson's care and

19 control?

20   DR. KYRKE GAUDREAU: Yes, that is

21 correct.

22   MR. BYRON WILLIAMS: And to the best of

23 your knowledge and ability, sir, it is accurate?

24   DR. KYRKE GAUDREAU: Yes.

25   MR. BYRON WILLIAMS: And in preparing

1 your report, you relied upon your academic and

2 professional practice expertise in sustainability,

3 theory, and -- and practice.

4   Would that be fair?

5   DR. KYRKE GAUDREAU: Yes, that is fair.

6   MR. BYRON WILLIAMS: And with regard to

7 sustainability theory and practice, you hold particular

8 expertise in its application to complex system,

9 including ener -- the energy sector?

10   DR. KYRKE GAUDREAU: That is correct.

11   MR. BYRON WILLIAMS: You hold a

12 bachelor of civil engineering, with a minor in

13 environmental engineering?

14   DR. KYRKE GAUDREAU: Yes.

15   MR. BYRON WILLIAMS: And a master's of

16 environmental and natural resources study, where you

17 had a research focus on energy and environmental

18 accounting?

19   DR. KYRKE GAUDREAU: Yes, that is

20 correct.

21   MR. BYRON WILLIAMS: And you hold a

22 doctorate of social and ecological sustainability, with

23 a research focus in the sustainability assessment of

24 energy systems?

25   DR. KYRKE GAUDREAU: Yes.

9109

 1   MR. BYRON WILLIAMS: And as part of

 2 that research, sir, you examined energy systems in

 3 Senegal and biodiesel generation in Barbados, and sure

 4 -- sugarcane ethanol in Brazil?

 5   DR. KYRKE GAUDREAU: Yes, that is

 6 correct.

 7   MR. BYRON WILLIAMS: And you currently

 8 serve as the sustainability manager for the University

 9 of Northern British Columbia?

10   DR. KYRKE GAUDREAU: Yes, I do.

11   MR. BYRON WILLIAMS: And, sir, would it

12 be fair to say that you've consulted on various

13 strategic environ -- and environmental assessments of

14 energy systems in Canada?

15   DR. KYRKE GAUDREAU: Yes, that is

16 correct.

17   MR. BYRON WILLIAMS: And one of these

18 was a sustainability assessment of the Ontario Power

19 Authority's Integrated Power Resource Plan?

20   DR. KYRKE GAUDREAU: Integrated Power

21 Systems Plan, yes.

22   MR. BYRON WILLIAMS: Okay. Thank you.

23 And you played a role in that sustainability assessment

24 with a particular focus on its application for

25 agriculture and bioenergy?

1   DR. KYRKE GAUDREAU: Yes, that is

2 correct.

3   MR. BYRON WILLIAMS: And you are a co-

4 author of "Implications of Sustainability Assessment

5 for Electricity System Design: The Case for the Ontario

6 Power Integrated Power System Plan."

7   Is that right?

8   DR. KYRKE GAUDREAU: Yes, that is

9 right.

10   MR. BYRON WILLIAMS: And also with

11 regard to Ontario Power Generation's proposed deep

12 geological repository, you assessed the cumulative

13 effects and socioeconomic impacts on behalf of the

14 Canadian Environmental Law Association?

15   DR. KYRKE GAUDREAU: Yes, that is

16 correct.

17   MR. BYRON WILLIAMS: And you co-

18 authored "A Framework for Sustainability-based

19 Assessment," a report for the Manitoba Clean

20 Environment Commission in proceedings related to the

21 Keeyask generating station?

22   DR. KYRKE GAUDREAU: Yes, I did.

23   MR. BYRON WILLIAMS: And in the course

24 of this proceeding, sir, you have provided additional

25 advice to CAC (Manitoba) and through CAC (Manitoba) to

9111

1 the Board on possible definitions of

2 'macroenvironmental'?

3   DR. KYRKE GAUDREAU: Yes, I did.

4   MR. BYRON WILLIAMS: And finally, in

5 terms of the -- your peer-reviewed or selected peer-

6 review articles, one of them is the very enticingly

7 titled, "The Tenuous Use of Exergy as a Measure of

8 Resource Values or Waste Impact"?

9   DR. KYRKE GAUDREAU: Yes, that is

10 correct.

11   MR. BYRON WILLIAMS: And you have

12 published an article in a peer-review journal on

13 "Illustrated Integrated Sustainability and Resilience

14 Based Assessments: A Small-scale Bio" -- "Biodiesel

15 Project in Barbados"?

16   DR. KYRKE GAUDREAU: Yes, that is

17 correct.

18   MR. BYRON WILLIAMS: And that was voted

19 best paper of 2010 for impact assessment and project

20 appraisal?

21   DR. KYRKE GAUDREAU: Correct.

22   MR. BYRON WILLIAMS: And along with co-

23 authors, you wrote "The Characteristics of the Exergy

24 Reference Environment and Its Implications for

25 Sustainability-based Decision-making"?

9112

 1   DR. KYRKE GAUDREAU: Correct.

 2   MR. BYRON WILLIAMS: Okay. Dr. Gibson,

 3 sir, good morning.

 4   DR. ROBERT GIBSON: Good morning. Good

 5 morning.

 6   MR. BYRON WILLIAMS: You are co-author

 7 of "The Framework for Sustainability Assessment," filed

 8 in this proceeding?

 9   DR. ROBERT GIBSON: I am.

10   MR. BYRON WILLIAMS: It was prepared

11 under your and Dr. Gaudreau's care and control?

12   DR. ROBERT GIBSON: Yes.

13   MR. BYRON WILLIAMS: It is accurate to

14 the best of your knowledge and ability?

15   DR. ROBERT GIBSON: Yes.

16   MR. BYRON WILLIAMS: And in preparing

17 your report, you relied upon your academic and

18 professional expertise in sustainability assessment

19 principles, criteria, process design, and

20 implementation at the str -- strategic and project

21 level?

22   DR. ROBERT GIBSON: Yes.

23   MR. BYRON WILLIAMS: As well as your

24 expertise in advanced environmental assessment and

25 strategic environmental assessment?

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 1   DR. ROBERT GIBSON: Yes.

 2   MR. BYRON WILLIAMS: And you are a

 3 professor in the Department of Environment and Resource

 4 Studies at the University of Waterloo?

 5   DR. ROBERT GIBSON: Yes.

 6   MR. BYRON WILLIAMS: You've taught

 7 there since 1981?

 8   DR. ROBERT GIBSON: Yes.

 9   MR. BYRON WILLIAMS: And over the past

10 decade, you have focussed on integrating sustainability

11 in -- in a variety of areas, as well as on

12 environmental assessments at the project -- project and

13 strategic level?

14   DR. ROBERT GIBSON: Yes.

15   MR. BYRON WILLIAMS: And your most

16 recent projects focus on application of the principles

17 set out in your book "Sustainability Assessment," which

18 was published in 2005?

19   DR. ROBERT GIBSON: Yes.

20   MR. BYRON WILLIAMS: And among your

21 selected publications are "Why Sustainability

22 Assessment?" and "Sustainability Assessment in Canada,"

23 which was published in a book by Bond et al?

24   DR. ROBERT GIBSON: Yes.

25   MR. BYRON WILLIAMS: And you wrote with

9114

1 a number of other authors "An Introduction to

2 Environmental Law and Policy in Canada," dated 2008?

3   DR. ROBERT GIBSON: Yes.

4   MR. BYRON WILLIAMS: And with Dr.

5 Gaudreau and others, you prepared an analysis of the

6 Ontario Power Authority's consideration of

7 environmental sustainability in electricity system

8 planning?

9   DR. ROBERT GIBSON: Yes.

10   MR. BYRON WILLIAMS: And with others,

11 Dr. Gibson, as well you prepared "Options for Strategic

12 Environmental Assessment in Canada" for CEAA, or the

13 Canada -- Canadian Environmental Assessment Agency?

14   DR. ROBERT GIBSON: Yes.

15   MR. BYRON WILLIAMS: And you are the

16 author of the "Sustainability-based Assessment Criteria

17 and Associated Frameworks for Evaluations and

18 Decisions, Theory, Practice, and Implications" for the

19 Mackenzie Gas Project Review?

20   DR. ROBERT GIBSON: Yes.

21   MR. BYRON WILLIAMS: And that was a

22 report commissioned by and prepared for the Joint

23 Review Panel for the Mackenzie Gas Project.

24   Is that correct, sir?

25   DR. ROBERT GIBSON: Yes.

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 1   MR. BYRON WILLIAMS: In addition, you

 2 have prepared a monograph for the CEAA in terms of

 3 specification of sustainability-based environmental

 4 assessment decision criteria and implications for

 5 determining significance in environmental assessment?

 6   DR. ROBERT GIBSON: Yes.

 7   MR. BYRON WILLIAMS: And just to finish

 8 up with some regulatory proceedings, you played a

 9 significant advisory role with the Joint Review Panel

10 related to the Canadian Mackenzie Gas Project?

11   DR. ROBERT GIBSON: Yes.

12   MR. BYRON WILLIAMS: And for the

13 purposes of its analysis in that proceeding, the review

14 panel adopted a monoti -- a modified version of the

15 sustainability criteria which you had recommended?

16   DR. ROBERT GIBSON: Yes.

17   MR. BYRON WILLIAMS: And in 2006 you

18 served as a member of the Ontario Power Authority

19 advisory committee on its Integrated Power System Plan?

20   DR. ROBERT GIBSON: I did.

21   MR. BYRON WILLIAMS: And from 2007

22 through 2009, you served as an advisor to the Green

23 Energy Coalition and offered in evidence on the efforts

24 by the Ontario Power Authority to integrate principles

25 of sustainability and elements of your criteria into

 1 the Ontario Integrated Resource Plan?

 2   DR. ROBERT GIBSON: Yes.

 3   MR. BYRON WILLIAMS: And with regard to

 4 the Cite C Joint Review Panel in British Columbia, you

 5 have provided evidence on behalf of the Peace River

 6 Landowners Association to the Joint Review Panel?

 7   DR. ROBERT GIBSON: Yes.

 8   MR. BYRON WILLIAMS: And in the Keeyask

 9 proceeding, which I spoke of with Dr. Gaudreau, you

10 appeared before the Manitoba Clean Environment

11 Commission and provided a proposed framework for

12 sustainability assessment?

13   DR. ROBERT GIBSON: Yes. I appeared

14 virtually.

15   MR. BYRON WILLIAMS: Oh, you appeared,

16 yes, by -- oh, by video conference.

17   DR. ROBERT GIBSON: Yeah.

18   MR. BYRON WILLIAMS: And that analysis

19 has been enriched and modified for the purposes of the

20 NFAT?

21   DR. ROBERT GIBSON: Yes.

22   MR. BYRON WILLIAMS: Mr. Chair and

23 members of the panel, I -- I thank you for your

24 patience. We ask that Dr. Gunn be qualified as an

25 expert in natural resources management and

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1 environmental impact assessment, including strategic

2 environmental assessment and cumulative effects

3 assessment.

4   We ask that Dr. Gaudreau be qualified as

5 an expert in sustainability theory and practice as it

6 relates to complex systems, including energy sector

7 applications.

8   And we ask that Dr. Gibson be qualified

9 as an expert on sustainability assessment principles,

10 criteria, process design, and implementation at the

11 strategic and project levels. We also ask that Dr.

12 Gibson be qualified as an expert in advanced

13 environmental assessment and strategic environmental

14 assessment. Thank you.

15

16   (BRIEF PAUSE)

17

18   THE CHAIRPERSON: Thank you. I'll

19 canvass the Intervenors, starting with you, Mr. Gange.

20   MR. WILLIAM GANGE: Green Action Centre

21 has no objection to these witnesses being qualified as

22 Mr. Williams has set out.

23   THE CHAIRPERSON: Thank you, Mr. Gange.

24   Mr. Orle, please...?

25   MR. GEORGE ORLE: MKO has no objection

 1 to the qualifications of the witnesses as experts.

 2 Thank you.

 3   THE CHAIRPERSON: Thank you, Mr. Orle.

 4   Me. Monnin, s'il vous plait?

 5   MR. CHRISTIAN MONNIN: Merci, M.

 6 President. We have no questions.

 7   THE CHAIRPERSON: Merci, Me. Monnin.

 8   On behalf of Manitoba Hydro, Ms. Mayor,

 9 please.

10   MS. JANET MAYOR: Thank you. Mr.

11 Bedford and I will be dividing and conquering this

12 morning. I will be in charge of questions for Dr.

13 Gunn. And so I have a few questions for her right now.

14   A good portion of your report focusses

15 on the description of each of the technologies used and

16 the various alternatives for power generation: so

17 hydroelectric, natural gas, wind, and solar.

18   That information was obtained by you

19 from academic literature reviews?

20   DR. JILL GUNN: Yes. You're talking

21 about the macroenvironmental impacts of those? Yes,

22 from academic literature. Yes.

23   MS. JANET MAYOR: Am I correct in

24 saying that you're not an expert, nor are you holding

25 yourself out to be an expert, on each of those

9119

1 technologies?

2   DR. JILL GUNN: Correct.

3   MS. JANET MAYOR: In terms...

4

5   (BRIEF PAUSE)

6

7   MS. JANET MAYOR: In terms of studying

8 the impacts of a project on the environment, having

9 local knowledge of the affected rivers and ecosystems

10 or having lived in the region for several years, like

11 many of our Cree partners who were involved in

12 developing the Keeyask environmental impact statement

13 and their evaluation reports, that type of local

14 knowledge and experience would be invaluable, would it

15 not, in studying and determining the environmental

16 effects of a project?

17   DR. JILL GUNN: Absolutely, yeah.

18   MS. JANET MAYOR: And being involved in

19 field studies over a period of ten (10) to twenty (20)

20 years, like those partners were, would also be

21 invaluable, would it not, in -- in conducting an

22 environmental impact study?

23   DR. JILL GUNN: Absolutely, yes.

24   MS. JANET MAYOR: On page 8 of your

25 report, you indicate that you have both academic and

9120

1 professional practice experience in natural resource

2 management and environmental assessment.

3   DR. JILL GUNN: Yes.

4   MS. JANET MAYOR: And the practical

5 experience that you cite was in British Columbia?

6   DR. JILL GUNN: Yes.

7   MS. JANET MAYOR: And that was as a

8 consultant focussed on vegetation management practish -

9 - practices in transmission right-of-ways?

10   DR. JILL GUNN: Correct, yes.

11   MS. JANET MAYOR: So from reviewing

12 your report and the various CVs that you've provided to

13 us over the years at our various hearings, it does not

14 appear that you've had the opportunity to actually

15 carry out an environmental impact assessment or carry

16 out an accumulative effects assessment on behalf of a

17 proponent.

18   Would that be correct?

19   DR. JILL GUNN: Yes. As an academic,

20 my expertise is primarily in process, good process from

21 an academic perspective, from a procedural perspective.

22 And environmental impact assessment, as we all know, is

23 done by huge teams of people. So it would never fall

24 upon sort of one (1) person to carry out such a thing.

25   So I've had, you know, other types of

9121

 1 involvement, in terms of developing process, doing some

 2 research pieces here and there, yes.

 3   MS. JANET MAYOR: Okay. Am I also

 4 correct in stating you've not had the opportunity to

 5 visit the Nelson River watershed region?

 6   DR. JILL GUNN: Byron didn't take me

 7 there, so I -- I don't know if it's a budget problem,

 8 but, no.

 9   MS. JANET MAYOR: We have lots of

10 problems with Byron, so, you know, I'm with you.

11   DR. JILL GUNN: He didn't invite me,

12 so, yeah.

13   MS. JANET MAYOR: Manitoba Hydro does

14 not object to Dr. Gunn being qualified as an academic

15 expert on environmental assessment and cumulative

16 effects assessment, but we would narrow it to academic

17 expert as opposed to a practitioner. Thank you.

18

19   (BRIEF PAUSE)

20

21   MS. MARILYN KAPITANY: Mr. Williams,

22 can I just clarify with you? When you were speaking of

23 Dr. Gunn's credentials, did you want her qualified as a

24 practitioner or as an expert in natural resource

25 management and environmental assessments?

9122

 1   MR. BYRON WILLIAMS: The proposed

 2 qualification was as an expert in natural resource

 3 management and environmental impact assessment,

 4 including strategic environmental assessment and

 5 cumulative effects assessment. And we certainly stay -

 6 - stand by that -- that position.

 7   THE CHAIRPERSON: Mr. Bedford, good

 8 morning.

 9   MR. DOUGLAS BEDFORD: Good morning. No

10 objections to Drs. Gibson and Gaudreau as qualified.

11   THE CHAIRPERSON: Thank you, Mr.

12 Bedford. Just a moment, please.

13

14   (BRIEF PAUSE)

15

16   THE CHAIRPERSON: Excuse us for a

17 second. We'll -- we will caucus and come back. Thank

18 you.

19

20 --- Upon recessing at 9:26 a.m.

21 --- Upon resuming at 9:30 a.m.

22

23   THE CHAIRPERSON: The panel has had the

24 opportunity to deliberate and has concluded that it

25 will accept Drs. Gibson, Gaudreau, and Gunn as expert

 1 witnesses for the areas of expertise that have been

 2 outlined by Mr. Williams.

 3   So with that, I will turn the microphone

 4 back to you, Mr. Williams.

 5

 6 EXAMINATION-IN-CHIEF BY MR. BYRON WILLIAMS:

 7   MR. BYRON WILLIAMS: Thank you. And,

 8 Dr. Gibson, I wonder if I could get you to turn to CAC

 9 Exhibit 74 and -- and invite you to proceed. I'll just

10 remind all the witnesses that, for the purposes of

11 those reading the transcript, it's helpful if you cite

12 the -- the page number of the slides.

13   DR. ROBERT GIBSON: Thank you.

14 Greetings to the panel. Thanks for the invitation.

15 I'm happy to come here in actual person this -- to this

16 event. I understand that you have available to you the

17 presentation in a paper version as well as what you get

18 on the screen and that you have a copy of the table

19 from the report that has the criteria set in it.

20   We'll be talking about those criteria

21 chiefly. This will be a joint presentation. I do not

22 believe we would claim to divide and conquer here.

23 It's closer to a dog and pony show, I suppose. In any

24 event, I will begin and I will go through my portion as

25 quickly as I can, fearing getting into the three (3)

 1 hour lecture mode. But if there are things that I pass

 2 over too quickly or too obscurely, I'm happy to be

 3 interrupted by the panel if you have questions or

 4 clarifications.

 5   So slide 2, we have submitted a report,

 6 which you have seen. It is centred on providing a

 7 comprehensive sustainability based framework for review

 8 and evaluation of the options before you. The

 9 framework is presented as a set of criteria, and the

10 core bit is Table 6 on page 28 that's in your handout.

11 That's the set of criteria that we have specified for

12 this case.

13   So the intent of this exercise is to

14 provide the Board with the framework and, through that,

15 to ensure that no key considerations are neglected.

16 And we will make argument about what is key.

17   Slide 4, our submission is about the

18 framework. It is about its rationale and its

19 substance. We reiterate that we have not applied this

20 framework to reviewing the Preferred Development Plan

21 submitted by Manitoba Hydro. We have not applied it to

22 examine any of the alternatives, and we are not in a

23 position -- we do not take a position on which of the

24 options presented or potential best satisfy the

25 criteria.

9125

1   Our presentation will nonetheless

2 provide some illustrative examples of how the criteria

3 may have significant implications in this case. And we

4 will provide a high-level comparison of the approach

5 taken, or implied by our framework as opposed to the

6 multiple accounts benefit-cost analysis in Chapter 13

7 of the Manitoba Hydro submission, and, more generally,

8 of the approach taken by Manitoba Hydro.

9   So this sustainability-based criteria

10 set is meant to be comprehensive and integrated,

11 covering the full suite of economic, social,

12 ecological, and other considerations that are required

13 for progress towards sustainability, by which we mean

14 essentially long as well as short-term well-being.

15   And the set, as I have mentioned, is

16 specified for this particular case. I -- I'll go into

17 some brief detail about that. And this is a -- a

18 criteria set that builds on a -- a variety of previous

19 efforts, some of which are mentioned in the slide

20 there. And there are others, because we've worked on

21 other dams, for example.

22   In our view, taking this approach is at

23 very least consistent with the mandate that the Board

24 has with its terms of reference, and more generally

25 with the obligations facing public organizations,

1 boards, and indeed Crown corporations to serve the

2 broad public interest. And there are some specifics

3 drawn from the -- the terms of reference about

4 reasonable thoroughness and soundness and attention to

5 risks and benefits, et cetera, in alignment with the

6 principles of sustainable development.

7   In our view, it is necessary to have a

8 comprehensive and integrated basis for evaluating the

9 options here concerning need and alternatives to

10 determine the preferable long-term energy development

11 option for Manitoba.

12   Slide 7 is just to point out that

13 sustainability assessment, while not a entirely

14 conventional approach to decision-making in most

15 jurisdictions, is nonetheless becoming much more

16 common, much more widely used around the world, so much

17 so that friends of ours who have been -- try to do a

18 handbook on sustainability assessment globally have

19 been trying for ten (10) years to keep their book

20 enough up to date that the publisher will publish it

21 and have failed so far.

22   So the expanding range of applications

23 is quite impressive. It is certainly not limited to

24 environmental assessment, even with 'environment'

25 broadly defined. And it's not all one in one (1) way.

9127

1 Certainly the approach that we're taking is meant to be

2 as advanced as possible, and it is -- various versions

3 similar to it are being used. But it's not typical,

4 shall we say, of all the ones that are out there.

5 There have been applications in Canada as well as

6 internationally.

7   The slide 8 considers the basic factors

8 involved here. The centre of it is that we're talking

9 about a positive contribution to sustainability as the

10 essential test on whether proposed undertakings are

11 worthy of approval. And that generally is applied --

12 is best applied to the comparative evaluation of

13 options to find out which is superior.

14   The positive contribution to

15 sustainability is what is going to deliver the best

16 prospect for long as well as short-term well-being. So

17 it's essentially, in our view, what is before the --

18 the Board here. We're looking for the best option and

19 recognizing the interrelationships among the various

20 considerations and effects, mutually reinforcing fairly

21 distributed adaptive and lasting gains, while avoiding

22 significant adverse effects. That means giving

23 integrated -- actually integrated attention to all the

24 core issues and their interrelationships, as well as

25 avoiding long-lasting damage. It's important also to

9128

1 have explicit attention to tradeoffs.

2   So the application of these

3 considerations, of the framework we've talked about, is

4 not solely for reviews of the kind that you are

5 undertaking. It applies appropriately through the full

6 planning process and the review of what happens after

7 an undertaking is approved and implemented.

8   So this is merely a list of the various

9 stages at which these criteria ought to be applied.

10 Ideally, by the time something comes to the Public

11 Utilities Board or an equivalent in another

12 jurisdiction, that undertaking would already have been

13 subject to planning from this. And all that would be

14 needed at the review stage is to check on adequacy. In

15 some ways, that's not far from what we have in this

16 case, frankly.

17   So the criteria meant to be focussed on:

18 What is needed to move us towards sustainability. You

19 may be familiar with triple bottom line approaches to

20 sustainability, which say there's a -- an economic and

21 a ecological and a social bottom line that we should be

22 doing. And that does recognize that those factors

23 matter.

24   But there's nothing in that approach

25 that automatically says, What is making the most

9129

1 positive contribution to sustainability. And there's

2 nothing in that approach that automatically says, We

3 will integrate these considerations. Typically, the

4 integration is done with a stapler. We have those

5 separate bottom lines.

6   So what we're looking for are

7 requirements for moving towards sustainability that are

8 not in this list; particularly economic, ecological, or

9 social. For sustainability we have to all three (3) of

10 those moving in the same direction.

11   And so you'll see that the bullet points

12 on this slide, number 10, aren't particularly economic

13 or ecological or social. They are about what we need

14 to move from where we are now to something that would

15 be sustainable in the long run. And I'm happy to go

16 through those in -- into nauseous detail if you'd like,

17 but in the interest of time I'll pass along.

18   One of the key areas of concern that

19 often comes up in these discussions and that arises

20 here probably inevitably is: What does this mean for

21 growth which we have typically assumed as a good thing?

22 And the answer is not simple. At the basic level, it's

23 intuitively obvious, one would hope, that infinite

24 growth of energy and material, demand, use, and the

25 associated effects is not potentially viable on a

9130

1 single planet.

2   Indeed, there is good evidence that we

3 are beyond the level of takings of demand for energy

4 and material, and use thereof, than the biosphere can

5 now handle. There's lots of well-documented evidence

6 about that. At the same time, there's lots of people

7 who do not have enough. The numbers of people globally

8 who are malnourished approaches a billion, for example,

9 is a substantial number of people who do not have

10 enough.

11   So both of those elements point to

12 current trajectories towards ever-deeper

13 unsustainability. That's just not viable in the long

14 run. But to deal with it, we also need to improve

15 opportunities and well-being for a whole lot of people.

16 So is growth still necessary? Certainly. Is it still

17 possible? Also certainly, but it's a different kind of

18 growth. It's a kind of growth that is also beneficial

19 to reducing our impact on the biosphere, for example.

20   Can that be done? Well, yes. There's

21 enormous detailed literature about this now, about how

22 much greater efficiency we could get out of the use of

23 individual units of resources, for instance. But it

24 means a different kind of growth, different measures,

25 different attitude. This is a different set of

9131

1 obligations than is the -- following the current path.

2   So slide 12, our criteria set takes into

3 account, is based initially upon, the generic criteria

4 for moving towards sustainability that apply

5 everywhere. And we have attempted within our limited

6 abilities to specify these criteria of the particular

7 case. The criteria would have to be applied more or

8 less differently to different context.

9   My colleague, Dr. Gaudreau, has worked

10 in Senegal. You don't do the criteria the same way in

11 Senegal as you do in Manitoba, for obvious reasons. So

12 you have to specify for the context. We have attempted

13 to do that. We've taken regard for the latest thinking

14 on energy systems and energy system planning, and we've

15 tried to understand Manitoba as -- as one might try to

16 do when one doesn't actually live there.

17   And we have done that in the Keeyask

18 case, and we've changed it somewhat to do it for this

19 particular broader review. So our method is basically

20 we take the gener -- the generic criteria. We've

21 applied such as we can understand from the particular

22 context. We have relied on Manitoba Hydro and other

23 sources for our information on these things. And we

24 sought a review by a number of colleagues that we

25 thought would know better than we do on a variety of

9132

1 these parameters.

2   And so we have a criteria framework

3 that's in your table, which you may wish to take a look

4 at. This is the Exhibit 57. And you'll see that

5 there's, in bold face, six (6) major categories. There

6 is, in italics, thirty-one (31) specific criteria issue

7 areas, and they are subdivisions of the bold-faced

8 categories. There are a bunch of particular points.

9   My slide is inaccurate, referring to

10 these as questions, but they could be referred to as

11 questions. They're particular factors under the

12 various categories. It adds up to quite a few, roughly

13 ninety (90) particular questions. And you will see, if

14 you look at individual items, that each one of them, or

15 at least many of them, could be further subdivided. If

16 we look on the first page, for example, the first

17 bullet point refers to direct, indirect, and induced

18 effects. Well, that's a large category of different

19 things.

20   So there's further -- so this stuff is

21 complex. There are many different things to consider.

22 But you have before you from the Manitoba Hydro

23 submission a document that is also complex, deals with

24 a great number of issues and has many pages, as I have

25 noticed.

9133

1   So basically, what can be done here is

2 apply each of these factors in the evaluation of each

3 of the options that are before you to get a better

4 sense of what is likely to be the most reasonable

5 option. This is an approach that, as we will say, is

6 different from what was done in the Manitoba Hydro

7 submission but, we will argue, at least complementary.

8   So what we want to see in the end is

9 what is the option that has the greatest positive

10 sustainability effects and where the option in question

11 is uncertain, what effects it'll have, if there are

12 mixed effects or whether those effects are negative,

13 and we get at least a broad picture of desirability out

14 of that.

15   Slide 14, just for convenience, presents

16 the -- the major categories under which these have been

17 organized because they're spread through the -- through

18 the table. You will see again that none of these

19 categories is particularly economic or particularly

20 social or particularly ecological. We are attempting

21 through the categories themselves to take an integrated

22 approach.

23   MR. BYRON WILLIAMS: Dr. Gibson, if I

24 could just stop you just for a second. And I promise

25 not to interrupt very often.

9134

1   But these criteria, have they been

2   applied practically by a regulator, to your knowledge,

3   or a decision-making body?

4   DR. ROBERT GIBSON: These criteria are

5   specified for this particular case alone and have never

6   been applied by anyone. The Board would be the one to

7   do it if anyone was to do it, and no one else has had

8   that opportunity or the mandate.

9   Similar criteria specified for

10 particular cases have been applied in various ways by

11 various official and unofficial bodies. The Mackenzie

12 one is the one that I have mentioned. There are

13 others. And there are specified versions of our

14 criteria framework that I'm just learning about and

15 didn't know they were going on. There's one (1) that

16 was apparently done in water management in Costa Rica

17 that I found about last week.

18   So I don't know the answer broadly about

19 how many of these have been applied officially, but

20 these have never been applied by anyone anywhere

21 because they're specified for this case.

22   MR. BYRON WILLIAMS: Thank you.

23   THE CHAIRPERSON: Never been applied

24 any -- by anyone anywhere because...?

25   DR. ROBERT GIBSON: They're specified

9135

1 for this case.

2   THE CHAIRPERSON: Okay.

3   DR. ROBERT GIBSON: This is a set that

4 is specified particularly for this particular

5 proceeding, at least for this particular case. And if

6 we were looking at a similar dam, we've specified

7 criteria for the Site C dam considerations in British

8 Columbia, those criteria are not the same. They

9 overlap in important ways, but they're different, for

10 obvious reasons.

11   So this is my last slide. And I will

12 then hand it over to Dr. Gaudreau. And this is the

13 humility slide. We have done our best to specify our

14 criteria for the particular context. We are, neither

15 of us, Manitobans, and so it's entirely possible that

16 we have missed some important things or have phrased

17 things imperfectly.

18   We are happy to leave it to the Board to

19 correct our error there. You've heard much more

20 evidence than we have, and that's as it should be. We

21 should also note that these are not criteria that can

22 simply quantified and applied to each option in a way

23 that would allow you to add up the numbers and say,

24 Okay, this is the one (1) that has the highest number

25 of positives, and therefore, it's the one we should

9136

1 choose. That would be highly convenient, but we can't

2 do that. In part, because many of the considerations

3 do not lend themselves to numerical indicators. And

4 where they do, those numerical indicators are not

5 easily monetized, or -- or otherwise turned into a

6 single comparable unit.

7   Also, you will notice very quickly that

8 many of our criteria overlap in various ways. And we

9 have not weighted any of them. We've not said that

10 this one is more important than another one. And if we

11 were to do a properly quantified thing, of course, we

12 would -- would want to take into account overlaps, and

13 weighting, and have indicators. We can't provide that

14 here.

15   So, this is a basis for applying what

16 amounts to a reasoned argument approach. It's not

17 tidy. We can't deliver tidy. Frankly, I don't think

18 the world delivers tidy and we have to live in this

19 world. So there are inconveniences about this for

20 which we do not claim responsibility. We think this is

21 a realistic approach to being comprehensive and far-

22 sighted.

23   And with that I'll turn the -- I'll turn

24 the entire computer, actually, over to my learned

25 colleague who will take you through some of the

9137

1 specifics.

2

3   (BRIEF PAUSE)

4

5   DR. KYRKE GAUDREAU: Thank you, Dr.

6 Gibson. And good morning, Mr. Chair and members of the

7 panel. Thank you for taking the time to listen to me

8 today.

9   I'm going to spend some time walking

10 through two (2) key considerations of our framework.

11 I'll begin by discussing need, which is at the heart of

12 the NFAT process, and then I will turn to alternatives.

13   Oh, sorry, slide 16. There are some

14 general considerations of need in sustainability

15 assessment and I'll touch on three (3) here. First, we

16 must base need on an understanding of the -- of the

17 desired future and goals and how we are to get there.

18 And this works at both the instrumental as well as at

19 the societal level. This also includes rejecting the

20 assumption that we need to meet continuously,

21 increasing energy demand.

22   Second, when assessing need we must make

23 values explicit and use an open public process.

24   And third, we recognize that there are

25 tradeoffs. Some social needs may be compromised to

9138

1 meet other social needs. It is important to try to

2 facilitate attention to these well being tradeoffs in

3 an open and explicit manner.

4   In the next four (4) slides I will

5 elaborate on these points a bit by discussing end use

6 matching and back casting.

7   Slide 17. So in order to determine the

8 need for energy, it's important to recognize that

9 energy and electricity are ultimately means to a social

10 end. People don't want energy, and nor do they want

11 electricity. They want the services that these

12 provide. And this may include comfortable homes,

13 personal transportation, entertainment, light, cold

14 food, hot food, and so on. And this is something that

15 Ken Klassen noted in his presentation before the panel

16 as well.

17   Focussing on energy as a means to an end

18 is an instrumental approach and it promotes the

19 examining of tasks and the posing of two (2) basic

20 questions. First, is this task worth doing?

21   And second, what is the most elegant,

22 effective, and efficient way to accomplish this task?

23 In other words, in terms of energy, how do we motch --

24 sorry, how do we match the quality of the energy supply

25 to the quality of the end us that we are trying to

9139

1 accomplish.

2   And for the time being I will focus on

3 the second question, and this is commonly referred to

4 as end use -- end use matching. Proponents of end use

5 matching argue that the approach is far more efficient

6 and is a more effective means of achieving goals than

7 simply focussing upon supply management. End use

8 matching also attempts to reduce the losses due to --

9 to energy conversions wherever possible.

10   Furthermore, end use matching fits well

11 with the focus on conservation and efficiency, as noted

12 by Philippe Dunsky. Next slide.

13   Slide 18. Perhaps the most commonly

14 cited example of end use matching relates to heating.

15 And as the Manitoba Clean Energy Strategy notes:

16   "Using electricity, a high-value form

17   of energy, to raise air or water

18   temperatures by only a few degrees is

19   considered a wasteful way to create

20   heat."

21   It is often termed 'using a chainsaw to

22 cut butter'. As a result the conversion of buildings

23 heated all electrically, many of which are in a -- many

24 of which are in rural areas, to use geothermal heat --

25 geothermal heat pumps, biomass, or solar sources of

1 renewable energy can produce multiple benefits, such as

2 lowering energy costs, creating new jobs, freeing up

3 more electricity for Manitoba Hydro exports.

4   In this instance, we can see that there

5 are needs, such as for low-ambient heat, currently

6 being met by -- by high-quality electricity. And when

7 low quality -- sorry -- when a low-quality energy

8 source might be much better suited. This is a quality

9 mismatch.

10   Given the anticipated expansion in

11 energy demand in Manitoba, it's important to ensure

12 that -- that appropriate end use matching is promoted.

13 Likewise, we also see there is a need to plan for the

14 necessary change to ensure that, for example, that --

15 that new building stocks are not locked into an

16 undesirable form of heating.

17   End use matching is as -- is as valid in

18 industry and commercial areas as it is in the

19 residential sector. Likewise, end use matching is not

20 limited to the energy sector. It's been applied in

21 water -- it's been applied in water strategy as well

22 under the rubric of the water soft pack.. Ultimately,

23 this approach fits with the more basic approach to

24 sustainability by helping us figure out what it is that

25 we need and the steps we need to get there.

9141

1   Slide 19. In the previous two (2)

2 slides, I focussed more on an instrumental approach to

3 working backwards from end goals. We can apply the

4 same kind of thinking at the societal level, and this

5 is known as backcasting. Backcasting is effectively a

6 means of developing positive visions of the future and

7 then determining the necessary policy steps to reach

8 that future state.

9   Backcasting is different from

10 forecasting. Forecasting focuses on trying to predict

11 the most likely future, oftentimes by projecting from

12 past trends. Given that many of our current forecasts,

13 such as that by the IP -- by the Intergovernmental

14 Panel on Climate Change, current forecasts are based on

15 -- based on business as usual, predict an undesirable

16 future. It is important not to accept these most

17 likely futures, but rather to decide now what future we

18 wish to have.

19   Regarding energy strategy, there are

20 several benefits to backcasting, including, first, it

21 promotes par -- participation, as we must collectively

22 define our goals. Second, it's explicitly value based

23 and it recognizes that we are making important value

24 laden decisions. This avoids having these decisions

25 being made by default.

9142

1   As Dr. Gunn noted in her report, there

2 is a need for clarity around core issues, values, and a

3 shared vision for the future. In fact, I think Dr.

4 Gunn's report really highlights the importance of

5 looking forward and deciding what we want for the

6 future. Third, backcasting helps to avoid overstated

7 demand.

8   Slide 20. In the energy sector we -- we

9 note that the World Commission on Dams recognizes the

10 perils of forecasting and how it may lead to

11 overstating demand. And I'd like to read out the

12 quote:

13   "Overstating future demand has led to

14   a perceived need for -- for a large

15   incremental response to meet rapidly

16   growing needs. In many

17   circumstances, this is militated

18   against a gradual approach of

19   adopting smaller, non-structural

20   options, and has pushed decision

21   makers into adopting large-scale dam

22   projects because they seem to be the

23   only adequate response to the large

24   gap between existing supply and

25   forecast demand.:

9143

1   Proper backcasting is aided by an

2 explicit set of sustainability criteria by which the

3 various desirable features can be compared and

4 assessed. In Section 4 of our report, and also Exhibit

5 CAC-57, we propose such a set of criteria that may be

6 used to help with backcasting.

7   Slide 21. Thank you. So moving from

8 need, I'd like to just briefly discuss alternatives,

9 which is the second area that highlights the

10 differences between our approach and what was

11 undertaken in Manitoba Hydro's submission.

12   In general, there are several key

13 considerations regarding alternatives within a

14 sustainability assessment approach. First,

15 alternatives must be identified and developed in light

16 of the critical understanding of our need and a wide --

17 and a widely agreed upon definition of 'well-being'.

18   In this case, once again the

19 sustainability criteria set provides one means of

20 elucidating what we -- what we mean by 'well-being and

21 the public interest'. The -- to this end, we believe

22 this criteria set, or its substantive equivalent,

23 should be used to assess alternatives.

24   Second, alternatives should be assessed

25 in a portfolio approach. In the energy sector,

9144

1 different alternatives may play different roles in the

2 power system. It is important not to unduly screen out

3 an alternative that, while individually may not seem

4 ideal, but -- but as part of a broader power system in

5 a time may have several important benefits. Dunsky

6 talked about using portfolios in -- in his report and,

7 I believe, in his presentation as well.

8   Third, it is important to favour

9 alternatives that are mutually reinforcing and that

10 have lasting benefits.

11   Slide 22. To build on the previous

12 slide, in the context of energy strategy in Manitoba, a

13 sustainability assessment approach to alternatives

14 would focus more specifically upon, first, a general

15 preference for demand reduction and load growth

16 avoidance. In other words, conservation and demand-

17 side management options should be prioritized. Both

18 the work of La Capra and Dunsky support this viewpoint.

19   Second, a recognition that all energy

20 sources have negative impacts, and a favouring of --

21 and a favouring of less-bad options over clearly

22 unacceptable ones. For example, as noted in the Clean

23 Energy Strategy, coal is no longer considered an

24 acceptable form of power in Manitoba, except under

25 emergency conditions.

9145

1   Third, there is a need to ensure

2 equitable -- equitable distribution and redistribution.

3 This is important for future generations, as well as

4 between present generations, in making amends for

5 previous impacts.

6   Fourth, there is a recognition of the

7 importance of assessing cumulative impacts,

8 particularly on currently stressed systems.

9   And finally, there is a need to consider

10 energy bridges, which may help ease the transition from

11 our current overconsumption of nonrenewable resources

12 to renewable supplies.

13   Slide 23. One important theme worth

14 touching on when considering alternatives is that of

15 lock-in. There is tremendous uncertainty about the

16 future, both regarding our energy systems and more

17 broadly in society. Flexibility is required, and

18 undesirable lock-in must be avoided. And there's

19 several considerations regarding lock-in.

20   It's important to allow for

21 technological development in fertile areas.

22 Conservation and demand-side management, wind, and

23 solar all appear to be areas that have bright options

24 right now, and the future appears even more positive.

25 And even if we do not know where the -- even if we do

9146

1 not always know what the next innovation will bring, it

2 is fair to plan for that continued innovation and

3 development. This is particularly the case for

4 conservation and demand-side management.

5   Second, it is important to -- to avoid

6 both unduly locking in to certain pathways, as well as

7 locking out other pathways and technologies. Large

8 resource projects, such as hydro dams, can lock out

9 other options by diverting resources, altering planning

10 horizons, and excluding options that may be able to

11 deliver benefits more quickly. This is something that

12 the World Commission on Dams has highlighted several

13 times.

14   Slide 24. As a general summary about

15 alternatives, some points that we would like to

16 highlight are that a sustainability framework is likely

17 to affect the inclusion and design of portfolios and

18 the assessment of their relative strengths and

19 limitations. Partic --

20

21 CONTINUED BY MR. BYRON WILLIAMS:

22   MR. BYRON WILLIAMS: Dr. Gaudreau, are

23 you going to come to an example right now?

24   DR. KYRKE GAUDREAU: Yes.

25   MR. BYRON WILLIAMS: Okay. And then

1 I'll ask --

2   DR. KYRKE GAUDREAU: Okay.

3 Particularly, there would be more ambitious

4 conservation and demand-side management options, and a

5 preference for dynamic and flexible supply options that

6 -- that can be brought on in a more modular fashion.

7   MR. BYRON WILLIAMS: And just I'm not

8 particularly familiar with the portfolio concept. And

9 I'm -- I'm not saying for the specific hearing, but

10 could you just give me an idea of what -- what

11 different -- a different type of portfolio, what kind

12 of mix you're -- not what you're recommending, but just

13 an illustrative example?

14   DR. KYRKE GAUDREAU: All right. So,

15 for example, as noted in the Clean Energy strategy,

16 hydro storage can -- can help, sorry, the -- the

17 intermittency of renewable technologies, such as wind

18 and solar, can be smoothed out by -- by hydro power

19 storage. And to the best of my knowledge, I believe

20 that Manitoba Hydro currently helps do that down in the

21 States.

22   But in -- in other areas, different

23 types of conservation and demand-side management

24 options can both smooth out the -- the load profile.

25 And, for example, options, such as with a smart meter

9148

1 and -- and smart technologies, certain energy-consuming

2 devices can be turned off during times of high load.

3 And that is generally much cheaper than paying for the

4 generation of electricity in those same times. Is that

5 okay?

6   MR. BYRON WILLIAMS: That's up to the

7 panel whether it was okay.

8   DR. KYRKE GAUDREAU: Oh, sorry.

9   MR. BYRON WILLIAMS: But it was fine by

10 me.

11   DR. KYRKE GAUDREAU: Okay. Thank you.

12 Second, in all cases, there is a need to apply the full

13 suite of sustainability criteria and avoid focussing on

14 only one (1) factor. As mentioned before, uncertainty

15 and precaution flabour -- favour flexibility so as to

16 avoid a lock-in. But at the same time, we must not

17 forget equity considerations, ecological impacts, boom

18 and bust cycles, and other important considerations.

19   And finally, a sustainability framework

20 and the sustainability criteria set are, therefore,

21 important to -- to ensure that the full suite of

22 requirements for progress towards sustainability are

23 considered in a fair and open manner. Thank you.

24   MR. BYRON WILLIAMS: Dr. Gibson, I know

25 you're raring to go. And -- but I guess one could --

1 could criticize -- one could criticize sustainability

2 assessment from -- from afar as idealistic and utopian.

3   Is that a fair characterization, or is

4 it -- or is it more consistent with just good

5 integrated resource planning?

6   DR. ROBERT GIBSON: There's two (2)

7 answers to that. Maybe there's four hundred (400), but

8 I'll limit myself to two (2). Sustainability

9 assessment comes up because we've been talking about

10 sustainability for the last twenty (20) years in some

11 circles and the last forty (40) in some others.

12   And we talk about sustainability only

13 because there are worries about the unsustainability of

14 what we're currently doing. And that's a very

15 practical matter. It's not pie in the sky questions of

16 -- of utopian thinking. It is: We've got a problem

17 and how do we deal with.

18   So at one level, considering how to move

19 to a more viable future is one of those global

20 necessities that we're wrestling with and having

21 trouble with because it means we have to do things

22 quite differently from how we have normally organized

23 their selves to think and do. So it's hard. But it's

24 not idealism; it's necessity. It's a question of how

25 quickly we face it and how much trouble we're in by the

9150

1 time we figure we have to act. So that's answer number

2 1.

3   Answer number 2 is that we should always

4 be trying to move towards desirable futures. We should

5 always be trying to figure out where we want to go, as

6 opposed to be driven by the dynamics of whatever path

7 we're currently on. There's lot of historical evidence

8 that people following a path will fall over the cliff

9 in various ways. We'd rather not do that. It may not

10 affect me. It may not even affect the relatively young

11 people on the panel. But it's certainly going to

12 affect our grandchildren, so we care about that.

13   So that's -- in a way, all it is, is

14 saying, What do we want to get to and how do we best

15 get there and, in the course of that, avoid the perils

16 of the current trajectory? So there's a simple

17 positive this is -- we should think carefully about

18 where we're trying to get to and simply assume that the

19 current path is going to take us to something that we

20 want.

21   MR. BYRON WILLIAMS: Thank you.

22   DR. ROBERT GIBSON: So I think you can

23 play it either way and they lead you to the same place.

24   MR. BYRON WILLIAMS: Thank you, and

25 please proceed.

9151

1   DR. ROBERT GIBSON: I promised at the

2 beginning that we would have a little section

3 attempting to compare the approach embodied in the

4 sustainability assessment criteria set with the -- the

5 approaches taken by Manitoba Hydro in its submission.

6 That's a complex undertaking, because there's a lot in

7 the Manitoba Hydro submission.

8   So to simplify, perhaps slightly

9 unfairly, this is a quick look at the relative

10 strengths and limitations of our approach relative to

11 multiple accounts best -- or benefit-cost analysis that

12 is featured in Chapter 13 of -- of the Manitoba Hydro

13 NFAT submission. At least it was an interesting

14 exercise for me going through this.

15   The multiple accounts approach is based

16 on the idea that it would nice to be able to quantify a

17 comparative analysis of -- of options. And for that,

18 you need some basis for judging what is to be valued.

19 These are both heavily value-ladened (sic) approaches.

20 It's inevitable. So the case of -- of multiple

21 accounts it's, where possible, willingness to pay, or

22 some equivalence that allow monetization of -- of the

23 conclusion.

24   And so there's assumptions. And -- and

25 one of them is essentially that rational economic

9152

1 individuals making financial or consumer choices are

2 the best available source of information on public

3 interest choices. Those are public choices, so they're

4 fairly tangible, and you can draw some conclusions with

5 them.

6   And so the approach is to quantify and

7 monetize where you can. Our approach is different

8 fundamentally insofar as we're starting with a

9 different premise. We're looking at what is needed to

10 get to the desirable future in a long-term collective

11 interest.

12   And as Dr. Gaudreau has suggested, it's

13 best if we have done some backcasting. So there's an

14 explicit future to go for, which we don't have in this

15 case at the moment. But we can probably agree on broad

16 parameters of what we'd like. And our generic criteria

17 for moving toward sustainability essentially is an

18 effort to do that.

19   So we look at what are the requirements.

20 And our approach then has to rely on a variety of

21 different sources of information, all of them

22 individually probably imperfect. And some of it is

23 broad global understanding. Some of it is historical

24 lessons. Some of it is in the academic literature.

25 Some of it raw experience. Some of it is case

9153

1 specific. And as I mentioned before, because of the

2 weighting and overlapping questions, it's not an easily

3 quantitative process. And it's a basis for a reasoned

4 argument approach.

5   The multiple accounts approach has some

6 very clear advantages, including that it is an

7 extension from relatively conventional economic

8 analysis practice. There's use of available data, at

9 least where they are available. And you get some

10 quantified comparisons, at least on some important

11 considerations.

12   There are difficulties as well. Current

13 willingness to pay is not a really good way of figuring

14 out what is in the best interest of future generations.

15 Individual choices on willingness to pay don't

16 necessarily add up to what collective interest might

17 be. People don't necessarily look at their long-term

18 interest very well in those choices. And their choices

19 may not be very well informed.

20   So drawing from a whole variety of

21 different sources of information might be a lot more

22 reliable than relying on what people choose. I know

23 lots of consumer decisions that I make are variations

24 of idiocy, I think, in retrospect. So I include myself

25 among those criticized.

9154

1   And because of the focus on

2 quantification, where you can, either you fail to

3 quantify or you ignore things that are not in that

4 category. So there are some of those limitations that

5 favours continuation along the current path because

6 that's what consumer choices typically are centred and

7 encouraged to do. And the non-quantified components

8 are vulnerable to -- to being marginalized.

9   So there are some evident limitations.

10 And those are quite -- well, at least some of them are

11 quite well recognized in what is done in Chapter 13 in

12 -- of that analysis. There is clear recognition that

13 there's lots of things that cannot be very well

14 monetized. And so in the -- in the concluding table

15 looking at what could be quantified and not and

16 presented for comparing the four (4) options that were

17 examined, only five (5) of the twelve (12) topics

18 admitted monetization.

19   And there was some accounting of other

20 things that I've described here as simplistic. We can

21 go into the details, but I think assuming that the

22 partner's willingness to participate means that there

23 are no major residual biophysical or socioeconomic

24 effects is a leap that I don't think is justified.

25 And, therefore, it's not -- it's not justified to claim

9155

1 that all significant costs are internalized in the

2 project's mitigation and compensation efforts.

3   There are some factors that are not

4 addressed. The -- the problem of boom and bust is not

5 addressed. And that may be softened by various

6 initiatives that are currently planned, but it's

7 certainly an issue that has been daunting resource

8 developments and high capital -- initial capital cost

9 projects that are mostly employing people in a intense

10 construction period and then the jobs of those kind

11 disappear. So there are boom-and-bust dynamics of that

12 kind that are typically important that - that don't get

13 addressed.

14   There's confidence about the mitigation

15 adequacy that has been debated before this panel. I

16 don't need to go into it. There's an assumption that

17 dams have a positive -- only a positive bequest value,

18 at least only positive bequest values are mentioned.

19 Certainly they are likely to have a positive -- a set

20 of positive effects, but my understanding is that the

21 dam or dams in the proposal have to be maintained in

22 perpetuity as part of the agreement to maintain the

23 flow regime that is established through those dams.

24   And maintaining something in perpetuity

25 is maintaining something a long time. So you would

9156

1 think that there's at least some concerns for the long-

2 term having to maintain those dams, perhaps beyond the

3 time when they're able to be used for generation

4 purposes. So there are some things that are neglected.

5 And, of course, it only covers four (4) options.

6   Our framework at slide 28 has some

7 advantages. And --

8   THE CHAIRPERSON: Excuse me, Dr.

9 Gibson, you mentioned the four (4) options. In this

10 sense you mean...

11   DR. ROBERT GIBSON: The four (4)

12 alternative packages that were compared --

13   THE CHAIRPERSON: I see.

14   DR. ROBERT GIBSON: -- in the Chapter

15 13 multiple accounts analysis is what I was talking

16 about.

17   Our list here of advantages is probably

18 longer because it's ours and we're biassed. But it is

19 true, I think, that focussing on desirable envir -- and

20 viable long-term futures is a distinguishing feature

21 and is -- is important.

22   I think we do a better job of being

23 comprehensive of the relative -- relevant

24 considerations that are related to lasting well-being,

25 and we are integrating a need for transformation to a

9157

1 more sustainable path. The value choices are probably

2 more explicit, though due credit to the Chapter 13

3 multiple accounts analysis that there was a clear

4 statement of what the basis of that approach are.

5   And as I mentioned we have some

6 difficulties about the complexity, not avoiding

7 uncertainties. It's not possible to quantify much of

8 what we want to do and it's not as conventional an

9 approach as multiple accounts. So there are some

10 similarities and differences.

11   Slide 29 set out some of those. The

12 overall scope, I think, is roughly similar. I think

13 we're more comprehensive in what we look at expressly.

14 I think the Manitoba Hydro submission taken broadly

15 beyond what is in simply Chapter 13 deserves credit for

16 covering in some degree a good deal of the -- of the

17 set of criteria that we've proposed, to some degree.

18 Perhaps not all the components, probably not directly,

19 but the distance is -- is not as great as one might

20 think, and certainly as we've seen in many other cases.

21 So there's a contrasting focus certainly. There's

22 contrasting specifics.

23   Slide 30 I'm suggesting that what we

24 have here are approaches that are in some ways

25 complementary. I think the Manitoba Hydro multiple

9158

1 accounts approach has provided useful information about

2 some options and some parameters that we would want to

3 adopt and incorporate in -- if we were doing an

4 application of our own set of criteria.

5   And the -- the details on some of those

6 parameters are crucial, certainly for what the Board is

7 facing. So I think that's to be recognized, indeed,

8 celebrated. There are contrasting approaches and

9 assumptions, but it doesn't mean that you can't combine

10 the strong aspects of -- of the two (2) approaches, in

11 my view.

12   I -- I note at the end that the multiple

13 accounts approach, at least as documented in Chapter

14 13, does not apply to the full suite of options, and my

15 understanding is that more options may have arisen due

16 to the discussions before the panel. And so ours

17 hasn't been applied to any of them directly, so there's

18 open field for application of both to a great extent.

19   Turning to some overall conclusions,

20 slide 31. As I've said, I think Manitoba Hydro has

21 adopted essentially the same overall scope. Has

22 addressed many of what we've identified as crucial

23 matters, and as I say in the small print under bullet

24 2, is not far from doing a sustainability-based

25 assessment. They did -- did sort of a sustainability-

9159

1 based assessment, though, I think there's some

2 limitations about how they did it.

3   Significant steps forward have been made

4 and the base for approaching it from a more

5 comprehensive version of sustainability assessment is,

6 I think, reasonably established. There are

7 differences, there are complexities, but the step

8 between theirs and ours is certainly not an impossible

9 step. So that, I think, is a largely positive

10 assessment, certainly in light of previous experience

11 in lots of other places with lots of other proposals.

12   A related slightly tangential point that

13 I'd like to emphasize on slide 32 is that this exercise

14 in doing long-term planning that Manitoba Hydro has

15 engaged in, and the Board is considering, is a -- I'm

16 tempted to say it's an unrecognized treasure. It is

17 something that is not done in all jurisdictions, and

18 those jurisdictions that don't do it or don't do it

19 anymore or don't do it in public are losing as a

20 result.

21   And I'm saying this in part because I do

22 live in Ontario, for my sins, and we have had various

23 exercises in long-term system planning in Ontario and

24 public reviews, and a gentle way of putting it is that

25 they have not been enormously successful for the

9160

1 proponent in getting approval for what is presented

2 because what is presented in public has not been

3 defensible.

4   I think we can look back on that

5 experience and find that the -- the savings that have

6 resulted from the failure of those things to go ahead

7 have been very extreme, very important and, by

8 themselves, justify the activities. But they have

9 made, at least the current government, very nervous and

10 it has withdrawn the last system plan and has not gone

11 public with a subsequent one and is going through

12 incremental decisions and individual project decisions,

13 which is, I think an enormous loss.

14   So, this is meant to give due credit to

15 all involved here in the fact that there is a public

16 review of a reasonably integrated system plan exercise.

17 And insofar as that exercise has deficiencies, it is

18 important to recognize the value of this kind of

19 exercise in identifying better ways of doing things

20 insofar as there's flaws in what has been done now.

21   So this takes me to slide 33, which is

22 about what we recommend is that our approach to

23 adopting a specified and comprehensive sustainability-

24 based criteria set is something that the Board ought to

25 adopt, in our view, for reasons that we've discussed.

9161

1 That it's appropriate. That it's justifiable in the

2 circumstances. That it is important to have an

3 explicit basis for those decisions.

4   We think the Board, essentially, has to

5 do this anyway and that we have provided criteria to

6 make the job easier and more defensible, recognizing

7 that we're not claiming what we have done is perfect.

8   So how to do this, there are various

9 steps. And we can go into this in detail if desired.

10 The criteria set probably needs to be adjusted in light

11 of further evidence and enlightenment that has been

12 presented before this Board, especially by people who

13 are Manitobans and know better than we do.

14   Secondly, you may choose to group the

15 criteria differently. The structure of it is -- is

16 adjustable as the set. The Mackenzie Panel took twelve

17 (12) criteria categories that I presented and turned

18 them into five (5) by reorganizing, and still addressed

19 all the things that were crucial. That was their call.

20 And they thought, I think, in retrospect, quite

21 reasonably, that it was more manageable and

22 comprehensible to their broader audience if they did

23 that. I defer to their wisdom.

24   So adjustment. Certainly you can take

25 all those table 6 criteria individually and go through

9162

1 each of the end-result options that you think are

2 worthy of -- of comparison and -- for the alternatives

3 portions of this exercise and consider whether the

4 effects are likely to be strongly positive or strongly

5 negative or mixed or uncertain.

6   The Mackenzie Panel did a colour coding

7 approach to that. I notice that at one (1) point in

8 the Manitoba Hydro submission, they do a colour coding

9 version of it too with fewer criteria; that at least is

10 visually useful to get a picture of what the strengths

11 and weaknesses are.

12   Maybe doing some weighting of what you

13 think are the most crucial ones is also important. I

14 think that that probably would be normally a kind of

15 thing that can be done. It's not entirely simple.

16 There are a lot of criteria. On the other hand,

17 nothing of what you're doing is entirely simple, so I'm

18 happy to dump that in your lap. As long as all the key

19 considerations are addressed, everybody should be, if

20 they aren't, happy.

21   So slide 35. This is an immediate case.

22 But like all the cases that we've been involved in, it

23 is potentially precedent setting. It is something that

24 could be a model for other jurisdictions. I would like

25 to hope that Ontario looks a little bit westward and

9163

1 learns a few things from your work and that this

2 becomes a more commonly adopted and easily expected

3 approach.

4   Insofar as authorities like you adopted

5 approach as the expected standard that has to be

6 applied, it will be a standard applied from the outset

7 of planning by proponents, not just by boards of

8 review. And that, of course, is what we want. We want

9 this integrated from the outset of planning so that

10 review boards like yours simply have to check to ensure

11 they did the right job. And that's going to be a work

12 in progress. It is everywhere that we've done efforts

13 so far. But it's certainly a worthy enterprise.

14   With that, I think I'll stop. There's

15 some additional matters I could talk about, if you'd

16 like to see more birds of Manitoba on slides, but I'll

17 stop now and --

18   MR. BYRON WILLIAMS: Mr. Chair --

19   DR. ROBERT GIBSON: -- wait for

20 questions.

21   MR. BYRON WILLIAMS: -- if -- if I

22 might, I just have a couple of just final questions for

23 Dr. -- Dr. Gibson.

24   Perhaps, Diana, if you could pull up

25 Chapter 13, the origin -- from February of 2014 of the

9164

1 NFAT business case, page 29 of 74.

2

3   (BRIEF PAUSE)

4

5 CONTINUED BY MR. BYRON WILLIAMS:

6   MR. BYRON WILLIAMS: Perfect, right --

7 and, Dr. -- Dr. Gibson, you were asked a question by

8 the Chair in terms of the -- the four (4) factors that

9 were assessed -- options that were assessed, and am I

10 correct in suggesting to you that the options that you

11 were referring to are set out in Table 13.3?

12   DR. ROBERT GIBSON: Yes, I believe

13 that's the standard four (4) that were examined

14 throughout that chapter.

15   MR. BYRON WILLIAMS: And again if we

16 could pull up CAC Exhibit 57 for just one (1) moment.

17 Dr. Gibson, here we see an excerpt from your pre-filed

18 written evidence setting out the sustainability

19 criteria set.

20   Is that correct?

21   DR. ROBERT GIBSON: Yes.

22   MR. BYRON WILLIAMS: And I just want to

23 -- let's start with socio-ecological system integrity,

24 and let's go down three (3) bullets. And we see there,

25 sir, under that heading one (1) of the categories is:

9165

1   "Support traditional livelihoods that

2   depend on habitats and ecological

3   services."

4   And in a sentence or two (2) I just

5 wonder why -- how that fits into the inclusion into

6 your sustainability criteria.

7   DR. ROBERT GIBSON: Well, the larger

8 category here is maintaining the integrity of socio-

9 ecological systems, so that's people operating in

10 viable ecological systems in a viable way. And a good

11 deal of the potential impact I believe of some of the

12 options for this system plan set of choices involves

13 northern Manitoba, where there's lots of Aboriginal

14 involvement, lots of traditional activity.

15   And, so as a standard inclusion where

16 that kind of activity is important in the context, as

17 is here, that would be a particular case of integrity

18 of socio-ecological systems. It's not assuming that

19 there is always viable long-term behaviour in the -- in

20 traditional activities even.

21   But historically they've been pretty

22 good examples of -- and prehistorically they've been

23 pretty good examples of viable human environment

24 relations, socio-ecological systems that have

25 maintained integrity. So, those are clearly important

9166

1 systems. They are clearly important in Manitoba. They

2 seem to be appropriate for this case in context.

3   MR. BYRON WILLIAMS: Just if we could

4 scroll down on the same page, please, to under

5 'Livelihood, Sufficiency, and Opportunity' to the first

6 bullet there. Dr. Gibson, you'll see reference to

7 ensuring system capacity for reliable provision of

8 affordable energy. Just very briefly why this is a key

9 criteria.

10   DR. ROBERT GIBSON: Well, you'll notice

11 that the subset 2 has to do with services. The --

12 that's the italics above. I think it's clearly part of

13 the mandate of -- of the Board here, and clearly part

14 of a reasonable expectation anywhere that energy

15 provision -- this is not only about electricity here.

16 But electricity would be part of providing energy

17 services which are clearly fairly crucial components of

18 a modern economy and incorporated in traditional

19 economies to a very significant stand, as well.

20   So as a means to an end, I suppose we

21 are talking about means rather than an end here, but

22 it's as a means to an end. I suppose we were talking

23 about means rather than an end here, but it -- it means

24 it's not a bad proxy for the well-being considerations

25 that are associated with that. I think it's a sensible

9167

1 thing to include in this particular context, certainly.

2   MR. BYRON WILLIAMS: And finally, if we

3 could turn to page 31 of this exhibit, Diana. Thank

4 you. And what page are we on here... Okay, 31 and

5 scroll towards a -- a third of the way down from the

6 top, if you could, of this page. That's good.

7   And first of all, under the larger

8 heading of "Resource Maintenance and Efficiency,"

9 you'll see as well here, Dr. Gibson, a subheading,

10 "Developing" -- just one (1) second. Scroll down a bit

11 more, Diana. Oh, scroll up a little bit more. I

12 apologize. Keep scrolling.

13   Yes, you'll see, "Developing Renewable

14 and Adaptable Energy Systems."

15   Do you see that, sir?

16   DR. ROBERT GIBSON: Yes.

17   MR. BYRON WILLIAMS: And under there

18 you speak of favouring options that are minim --

19 minimally vulnerable to possible and unexpected future

20 changes and able to take advantage of emerging

21 opportunities. And just perhaps for a sentence or two

22 (2), discuss why that was included in the criteria?

23   DR. ROBERT GIBSON: Well, this is a

24 reasonably standard criteria that arises out of

25 resilience, system resilience thinking, and energy, and

1 other applications. And so because there is a good

2 deal of uncertainty about future factors, including

3 technological change and the prices associated with

4 various options, and also the problems that may arise

5 in the application of various options. It's useful in

6 an uncertain context to have flexibility in adjusting

7 from one approach to another if need be.

8   Dr. Gaudreau was earlier mentioning an

9 modular approach, where you can add modules, large

10 chunks. And so that's a -- a standard thing that would

11 probably be in a set of criteria for energy system

12 planning in any jurisdiction. But as a general point,

13 that's a problem -- a challenge faced in most cases

14 where there are likely changes in the technology and

15 the economics that are associated with that. And those

16 changes represent opportunities to do things better, or

17 cheaply, or with better distribution, or with better

18 associated social and ecological effects.

19   So we had taken that flexibility to deal

20 with change over time as important, and especially when

21 we're talking about long-term system planning, as we

22 are here. If you think of what's changed in the last

23 twenty (20) years, think of what's going to change in

24 the next twenty (20) years, and you wouldn't want to

25 bet your pension on predicting it accurately.

9169

 1   MR. BYRON WILLIAMS: Thank you. And,

 2   Mr. Chair, I have no further questions.

 3   THE CHAIRPERSON: Thank you, Mr.

 4   Williams. I believe it's probably an appropriate time

 5   to take a break, so why don't we take ten (10) minutes?

 6

 7   --- Upon recessing at 10:39 a.m.

 8   --- Upon resuming at 10:56 a.m.

 9

10   THE CHAIRPERSON: I believe that -- I

11   believe that the -- we're ready to resume the

12   proceedings. Before we continue, we have some

13   undertakings we should probably address immediately.

14   Ms. Mayor, please.

15   MS. JANET MAYOR: I will just make

16   reference to them, and I believe Mr. Wojczynski would

17   like to comment on them, so. I'm the technician; he's

18   the substantive expert on these. The first one in a

19   package that we've provided is an update to Manitoba

20   Hydro Exhibit 104-15, which is some information on Plan

21   4 with Level 2 DSM added.

22

23   --- EXHIBIT NO. 104-15 REVISION-2:

24   Manitoba Hydro update to Exhibit

25   129-7, page 2

9170

1   MS. JANET MAYOR: The second document

2 is an update to Manitoba Hydro Exhibit 104-16, also in

3 relation to Plan 4.

4

5 --- EXHIBIT NO. 104-16 REVISION-2:

6   DSM total resource cost view economic

7   summary relative to gas-base DSM

8

9   MS. JANET MAYOR: The third document is

10 an update to Manitoba Hydro Exhibit 171, again in

11 relation to Plan 4.

12

13 --- EXHIBIT NO. MH-171 REVISION-3:

14   Economics of DSM scenario assumptions

15

16   MS. JANET MAYOR: And I'm not -- I

17 don't believe we need to file these as new exhibits.

18 They'll just simply be updates to the existing ones.

19 And then the last document will in fact be a new

20 exhibit, Manitoba Hydro Exhibit 185. And this is a

21 document that relates to the April 25th GAC questions

22 of Manitoba Hydro and its response relating to a social

23 benefit of greenhouse gas emission reductions

24

25 --- EXHIBIT NO. MH-185:   April 25th GAC questions of

9171

1   Manitoba Hydro and its

2   response relating to a

3   social benefit of

4   greenhouse gas emission

5   reductions

6

7   MS. JANET MAYOR: And I'll turn it over

8 to Mr. Wojczynski for comment.

9   MR. ED WOJCZYNSKI: Yeah, I'll be

10 brief. If you turn to 104-15, page 2, which is a --

11 it's a revision 2 of this as per the request from the

12 Public Utilities Board. We have added Plan 4, which is

13 Keeyask19 and the 250 megawatt interconnection with --

14 followed by gas and at the Level 2 DSM, which brings --

15 so it means you've got Keeyask in '19 and then the Gas

16 Plan in 2040.

17   And the -- using the updated capital

18 cost and the 2013 information, the NPV at that Level 2

19 is 604 million, which is significantly higher at the

20 corporate economics level than the other plans that are

21 evaluated here. I do note strongly, I want to

22 emphasize, as we have testified in the past that we

23 label this -- or it'd be hypothetical in that for two

24 (2) reasons.

25   One (1) is that this deal -- this plan

9172

1 and the MP sale associated with it would in our view

2 not be available any more. That if we were to go back

3 to this with a 250 line we would have to renegotiate

4 with it with Minnesota Power now they've seen all the

5 economics.

6   And secondly, the 250 line is vastly

7 inferior to benefits in the US, both in terms of

8 benefits and also use of right-of-way. And we believe

9 and MP believes that this line would not be approved if

10 we were to try and proceed with it.

11   So if you go to Exhibit 171, revision 3,

12 we've added a Path 4 into that as well. It's about

13 halfway down the page. And we've done -- given it the

14 same treatment as all the others. And you see that if

15 you look at it from a provincial point of view, with

16 adding in the transfers and the -- the return on equity

17 embedded, you get around the 2.3 billion to include all

18 of those components similar to the Keeyask Gas Plans,

19 the other Keeyask Gas Plans. You get sort of a similar

20 once you get to this level of inclusion of all

21 potential factors, they'd be -- they're roughly the

22 same.

23   The last I'll comment on is the new

24 Exhibit 185. And if we could turn to page 2 of that.

25 And this was a pre-ask from Green Action Centre. There

9173

1 are a number of pre-asks, and I don't think we'll be

2 able to do all of them. But -- and -- and in this one

3 we have answered to the best of our ability with the

4 available information.

5   And what this was, in Chapter 13 what

6 had been utilized was a social cost of carbon based on

7 estimates from the US Energy Protection Agency and some

8 others. That was at forty dollars ($40) per tonne in

9 2014, growing to eighty dollars ($80) a tonne in 2048.

10 So this used that value in various manners in -- in --

11 with the four (4) plans: the All Gas Plan, Plan -- Plan

12 1, Plan 2, Plan 5, and Plan 14.

13   And in the chart you're looking at here,

14 this was based on the 2012 information because that's

15 what we had readily available to calculate the

16 greenhouse gas emission differences. You'll -- the

17 mark -- the purple is the market plan economics with

18 the new capital costs and WPS no investment in

19 transmission, but you -- other 2012 information. And

20 so those are the market economics you've seen a number

21 of times already.

22   The first bars below that, the light

23 blue are if you -- if you put the social costs on all

24 the Manitoba emissions, just the emissions in Manitoba,

25 and you'll use -- obviously, the All Gas Plan would

9174

1 have higher emissions, so the other plans would look

2 relatively more favourable because they wouldn't have

3 as much greenhouse gas emissions cost in them. And the

4 Keeyask Gas Plan, about whether it's with the 250 or

5 the 750 or without a transmission line, they still do

6 have gas, as well as Keeyask, whereas the Preferred

7 Plan obviously has the least gas, so it would have the

8 least carbon cost.

9   If you go to the green, that's separated

10 out what a US social cost would be and using the same

11 values from EPA. And then when -- the red is when you

12 -- you add them in together from a global point of

13 view.

14   A couple of comments. This is an

15 approximation. First of all, there is some carbon

16 embedded in the market evaluation but, on the other

17 hand, this only goes out to 2048, so those two (2)

18 things tend to balance each other out.

19   And we're not trying to say that this is

20 a value we would get in the market, particularly the US

21 market. What we are trying to say here is -- or what

22 this would indicate, a) if you consider the -- the

23 overall global benefit, this is what you would add to

24 it. But of course, Manitoba ratepayers are not being

25 asked to try and pick up billions of dollars of global

1 impact or prevent them.

2   What it -- it does give some indication

3 on the US side that there is a fair bit of upside room

4 from societal decision-making in the States, if they

5 were trying to tackle climate change to the full

6 degree.

7   And if you turn to figure 2, which is on

8 page 3, this is using information from MNP. We had

9 some evidence in cross-examination with them. And at

10 that time, we indicated MNP actually had overestimated

11 what -- significantly what we were actually using in

12 our -- embedded in our market valuations. But this

13 gives you some feel for how the social costs would

14 compare to what the market valuation has, recognizing

15 the MNP is overstating it. Thank you.

16   THE CHAIRPERSON: Thank you, Mr.

17 Wojczynski.

18   I understand that you have some

19 undertakings, as well, Mr. Williams?

20   MR. BYRON WILLIAMS: I don't have

21 undertakings, but I want to correct the transcript with

22 regard to two (2) undertakings, or as Ms. Fast

23 instructs me.

24   First of all, at page 8,891 of the

25 transcript is Undertaking 125. And it indi -- imposes

9176

1 an undertaking on MKO. And -- and I think it should be

2 a CAC under -- undertaking. So I would suggest that

3 the word 'MKO' be struck out and replaced by CAC.

4   Similarly, on transcript page 8,945,

5 Undertaking 126 imposes the undertaking upon MKO. And

6 we would suggest that the word 'MKO' should be struck

7 out and replaced by CAC.

8   THE CHAIRPERSON: Thank you for that,

9 Mr. Williams. Before we move on to Dr. Gunn, the panel

10 has a few questions that it'd like to address to Drs.

11 Gibson and Gaudreau. So I'll -- Mr. Grant, please.

12   DR. HUGH GRANT: I'm just wondering if

13 I could maybe work through from the very general to the

14 more specific when we're doing this because I -- I got

15 up this morning and I thought I knew what

16 sustainability was, but now I'm not sure what it is,

17 and it seems to have everything in it.

18   I think for me it's -- it's close to

19 what an economist might call a social welfare function

20 that includes a long-term view and includes specific

21 valued ecological sustainability in it. But amongst

22 the other things I read in your report, it includes

23 participatory democracy, accounting for past wrongs,

24 fostering equity. There's a call out for lifelong

25 learning. It's opposed to terrorism. It's in favour

9177

 1 of indigenous people.

 2   There just seems to be whole laundry

 3 list of things with very specific -- I don't want to

 4 say political aspects to them, but... But, for

 5 example, could I just ask:

 6   Why is a fair distribution of wealth an

 7 important component of this and how would you define

 8 'fair'?

 9   DR. ROBERT GIBSON: You've asked a

10 broad question and I'm -- I have to struggle with the

11 brief answer here. The basic challenge of

12 sustainability most obviously at the global level is

13 that we have, by much of the published literature, gone

14 beyond the sustainable carrying capacity of the plant

15 now, particularly including carbon emissions and the

16 effects thereof, but also a variety of other

17 indicators, as well documented.

18   And at the same time, as I mentioned, we

19 have maybe approaching a billion people who are

20 malnourished. So in a world where we have a lot of

21 people who don't have enough, and we have good evidence

22 we're using too much, one of your options is not simply

23 to have continued expansion and hope the trickle down

24 from the continued expansion, the conventional path,

25 will solve the problems, because there isn't the room

1 biophysically for the continual expansion, at least in

2 energy material terms.

3   So distribution has to be part of that

4 story. Much greater efficiencies have to be part of

5 that story. But distribution is also a question. And

6 also, as is well documented, the benefits of GDP

7 increase globally go disproportionately to those who

8 already have advantages. So the lowest 10 percent of

9 the population of the world with the greatest need gets

10 something like .01 percent of the benefits from the

11 current expansion.

12   Well, quite aside from any moral

13 questions that are involved there, it's not physically

14 possible to deal with the problems that we face at a

15 global level with the extent of gap between rich and

16 poor. It's just not possible. So at that broad level

17 equity is clearly important. Now, the -- the relative

18 inequities in different jurisdictions are very

19 different. So what's -- what's the reality in Canada

20 as opposed to the United States? It's just across the

21 border. It's very different.

22   So the extent to which you need greater

23 equity in the distribution of opportunity and the basis

24 for well-being varies from place to place. And that's,

25 in this instance, we could say, a weighting question

9179

1 for that criteria that would be different here from how

2 it would be somewhere else. But there's not very many

3 places in the world where that criteria isn't

4 applicable, and certainly it's also applicable in -- in

5 Manitoba.

6   DR. HUGH GRANT: Okay. But people

7 being able to feed themselves is more a question of

8 income inequality rather than -- I'd had asked about

9 wealth inequality. But in any event --

10   DR. ROBERT GIBSON: That's fair.

11   DR. HUGH GRANT: -- let's -- we'll deal

12 with income inequality --

13   DR. ROBERT GIBSON: Yes.

14   DR. HUGH GRANT: The most recent stuff

15 I've seen is that income inequality globally has

16 declined in the last little while despite it rising

17 rapidly in a lot of Western countries. The rise of

18 India and China has led to a global redistribution of

19 wealth. And some would say that's brought things like

20 the automobile within the reach of a lot of people that

21 couldn't drive them before.

22   And so there's a very clear case could

23 be made that income inequality actually puts less

24 strain on environmental resources. So anyway, I'm just

25 trying to think through the relationship --

9180

 1   DR. ROBERT GIBSON: I think that's true

 2 in some parameters and is not true broadly. I think

 3 that that argument has been examined in great detail,

 4 certainly prior to but certainly in the Brundtland

 5 Commission studies which were about the problem of

 6 poverty being a serious environmental problem because

 7 people with poverty and desperation tend to have to

 8 focus on the short term when they might prefer to look

 9 further ahead.

10   DR. HUGH GRANT: Could I just come to

11 this -- your comments on multiple accounts cost-benefit

12 analysis, and it's not because I think Mr. Shaffer

13 needs my defence in his approach. But I think on -- it

14 was on slide 25 or so, he provided a characterization

15 which I think really trivializes what was being done.

16 Maybe just go back -- no, that's fine. Sorry. Is that

17 a lake sturgeon, by the way?

18   DR. ROBERT GIBSON: Yes.

19   DR. HUGH GRANT: Because I --

20   DR. ROBERT GIBSON: Well --

21   DR. HUGH GRANT: -- we'll bring that

22 into the -- listen --

23   DR. ROBERT GIBSON: It could be.

24   DR. HUGH GRANT: -- marginal

25 willingness -- multiple accounts cost-benefit analysis

9181

 1 can use any way in which they might want to evaluate

 2 and put a value on a resource. It doesn't have to be

 3 marginal willingness to pay, although I -- it is

 4 curious. You would think --

 5   DR. ROBERT GIBSON: It is not used

 6 consistently in Chapter 13, but it is mentioned as the

 7 base at the beginning of that chapter.

 8   DR. HUGH GRANT: But it is interesting

 9 from the standpoint of the Consumer's Association of

10 Canada willingness to pay is not what you considered

11 not to be a fair basis. And -- and that you -- not

12 that you're testifying on behalf of the Consumers'

13 Association, but you also find individuals not to be

14 rational economic actors.

15   In any event, I thought the strength of

16 and what this multiple cost benefit analysis is

17 designed to addressed is the very thing that you raise,

18 is that some things cannot be monetized. And so the

19 fact that they stop short or Mr. Shaffer stopped short

20 of monetizing them is exactly what you want him to do.

21 And yet what he does do is say, I can monetize these

22 things and I can't monetize these ones. But at least

23 I'll give you some basis for making some judgment. And

24 you use your judg -- you go out and use your judgment.

25   So, for example, we've got this lake

1 sturgeon and we know that it may face possible

2 extinction. There -- there is a threat to it. So

3 we've got some measure, unquan -- unmonetized possible

4 cost, but at least we know more specifically what the

5 benefits that may accrue in other areas. And I think

6 that's a benefit. It stops short of trying to say, We

7 can put a price on the lake sturgeon for you. So I

8 think that with the strength of the analysis to

9 criticize them for not monetizing everything it seemed

10 to be inappropriate.

11   DR. ROBERT GIBSON: I wasn't

12 criticizing for not monetizing. And I recognize the

13 value of monetizing where you can. So there's --

14 there's various elements here. First, I did and do see

15 these approaches as compatible, as I suggested. And

16 they are so because there are good calculations and

17 useful understandings that arise from the approach

18 taken.

19   The approach emphasizes quantification

20 where you can, and it comes out of that tradition and

21 is good at that. And Marv Shaffer's work, which I --

22 I'd hire him, too, if I was doing this, is -- is

23 recognizing that you cannot do it, quantification and

24 monetization of everything, as is appropriate and does

25 include a variety of non-monetized things.

9183

1   As I mentioned, only five (5) of the

2 twelve (12) categories gets monetized and he does

3 recognize for the other seven (7) that you can't.

4 That's entirely appropriate in my view, and it's an

5 indication of some limitations of a monetization-based

6 approach.

7   And I have some problems with how those

8 other areas are addressed. I mentioned one (1) or two

9 (2). I think that it is important to have a more

10 comprehensive base for examining the relevant factors

11 throughout than is represented in the multiple accounts

12 analysis in Chapter 13. Hence, the recommendation of a

13 broader set of criteria. But that's not to say that I

14 am opposed to the monetization that was done, or that I

15 criticize that monetization -- the areas where they

16 didn't do, or he didn't do monetization as is

17 appropriate.

18   DR. HUGH GRANT: Could I ask then

19 within a sustainability asystem -- assessment

20 framework, you know, some of the things you obviously

21 struggle with is how do you -- for example, let's take

22 a -- a simpler case where the tradeoffs might be

23 strictly ecological, say.

24   How do we weigh the possible danger of

25 lake sturgeon extinction or a displacement of caribou

9184

1 migration versus the savings in greenhouse gas

2 emissions if hydroelectricity was exported to the

3 United States? How do we -- how do we balance those?

4 How do we make a judgment?

5   What's your guidance?

6   DR. ROBERT GIBSON: I would be

7 delighted to say there's a simple answer to that

8 question and there isn't. We have approached tradeoffs

9 -- actually we have a slide on that. I'll just fire it

10 up if that's helpful.

11   Tradeoffs are something that are always

12 a challenge. They're going to be unavoidable to some

13 extent, but the first step is to avoid them.

14   So what we'd like to do is to -- for --

15 is a) to recognize where we see them as explicitly as

16 possible. Secondly, to see are there ways that we can

17 avoid those tradeoffs.

18   MR. BYRON WILLIAMS: Dr. Gibson, just -

19 - the slide's not in front of the panel I don't think,

20 so.

21   DR. ROBERT GIBSON: Oh. Can I --

22   MR. BYRON WILLIAMS: It's slide -- what

23 number is the slide, sir?

24   DR. ROBERT GIBSON: Thirty-eight (38),

25 so the last one.

9185

1   (BRIEF PAUSE)

2

3   DR. ROBERT GIBSON: Do you have it?

4   The -- the first principle is, of

5   course, avoid where you can. Secondly, if you do have

6   them and they're unavoidable, can you mitigate them

7   significantly? And I think that's exactly what

8   Manitoba Hydro has proposed to do in the -- in the

9   sturgeon case, with as much mitigation as they can

10   think of. Whether that's a -- a full mitigation or not

11   is -- is, I think, a subject for discussion, but the

12   approach is appropriate.

13   You will end up nonetheless with

14   tradeoffs and, in this case, a complex series of

15   tradeoffs, because you have multiple options to compare

16   and multiple different tradeoffs amongst them. And

17   there is no answer to that question, other than you've

18   got to make a reasoned argument why you think, as here,

19   having heard all the evidence, this tradeoff is less

20   obnoxious than others, that the gains that are to be

21   achieved are more desirable than they would be in other

22   cases, that mostly we're avoiding significant adverse

23   effects, and we will do what we can to rectify or to

24   mitigate or to compensate if -- if necessary.

25   There's no better answer to that than

9186

1 having it explicit, having it public, so that the

2 rationale can be examined by others and challenged or

3 celebrated as is. I don't see any other way around

4 that. But we often see, certainly in lots of the work

5 we've done, the tradeoffs are simply assumed and that

6 we're doing some kind of balancing of jobs versus the

7 environment. And we've got to suck up the fact that

8 we're going to sacrifice something, and we have

9 metaphors about eggs and omelets and so forth.

10   And the basic sustainability wisdom is

11 you can't get towards sustainability by balancing.

12 Balancing is about sacrificing economic or social or

13 ecological objectives. And since they're all

14 completely independent, sacrificing any one of them is

15 sacrificing the whole to some extent.

16   So in principle, you can't get where you

17 want to go by a balancing philosophy if that metaphor

18 doesn't work. It's the teeter-totter. If you want to

19 go forward, you can't do it by teeter-tottering. You

20 have to find ways you can serve all of those objectives

21 at the same time. So that's the fundamental idea here.

22   DR. HUGH GRANT: That would imply

23 though there's a risk of extinction of lake sturgeon,

24 the project should not go ahead.

25   DR. ROBERT GIBSON: Well, you're

9187

1 trading off. If -- if you don't do that, what is the -

2 - what is the price you're paying.

3   DR. HUGH GRANT: That's the teeter-

4 totter.

5   DR. ROBERT GIBSON: Well, that -- that

6 is the teeter-totter, but you have to recognize that

7 that's to be avoided to the extent possible, because

8 that model can't work, right.

9   DR. HUGH GRANT: I mean, you say the --

10   DR. ROBERT GIBSON: So I think -- I

11 think that's not inconsistent with what the parties

12 here generally are trying to do, right. I think that

13 the -- we're talking about making those as explicit as

14 possible. I don't think that -- that that's opposed to

15 anybody's view here. The idea that extinction of

16 sturgeon is a bad thing and we want to make sure we

17 mitigate that to the extent possible certainly

18 underlies what is proposed by the Proponent.

19   So, I mean, I think we're essentially on

20 the same page there. You've got the bigger problem of,

21 nonetheless, you are left with a variety of options

22 which will involve tradeoffs. To some extent, I can't

23 help you there. If you make it explicit, you set

24 yourself up for being criticized. It's a public

25 debate, and you stand before what you decide.

 1   DR. HUGH GRANT: Let me just ask you

 2 one (1) other thing then, because you could help me

 3 with it.   In terms of the list you provided of

 4 criteria, there seems to be quite a laundry list of

 5 things, and so when Mr. Williams was asking a few

 6 questions, he seemed to pick off his favourite, so let

 7 me try to pick my favourites.

 8   And I noticed when he was asking someone

 9 to scroll over the form, the scroller went down too low

10 suddenly and exposed something which he asked to

11 immediately scroll up. Now, maybe I'm -- but I want to

12 come on -- it was, I think, page 32 of this handout.

13 And it's -- you've got to flip over to the heading.

14 It's "Develop Fair and Responsible Pricing." And

15 you're suggesting we should promote fair and full-cost

16 pricing, resource pricing.

17   Now, you're aware that electricity

18 prices in Manitoba are among the lowest in the country,

19 and perhaps amongst the lowest in the world. Average

20 cost pricing leads to that. And so, arguably, we've

21 been underpricing this resource for years, and the

22 prices should go up dramatically to reflect that.

23   Would you agree with that?

24   DR. ROBERT GIBSON: You're talking

25 about average price versus marginal cost?

9189

1   DR. HUGH GRANT: Well, I'm -- I'm

2 saying, by virtue of average cost pricing, the price

3 that Manitoba consumers pay for electricity, one would

4 argue, is well below the true resource cost, in the

5 sense that it's well below the -- if for no other

6 standard, the market rate.

7   DR. ROBERT GIBSON: Well --

8   DR. HUGH GRANT: So is it your

9 suggestion that we should put the price of electricity

10 up?

11   DR. ROBERT GIBSON: Well, I'm not going

12 to be claiming to be an expert on the details of how

13 Manitoba Hydro prices electricity, because I basically

14 don't know. But in principle, the -- the subsidizing

15 through lower than actual cost, and we can debate what

16 the actual cost is, is a subsidy for which there are

17 likely to be downside effects, perhaps encouraging

18 waste, making some demand management initiatives less

19 viable, for instance.

20   And if the problem that you're trying to

21 avoid -- it's probably complex. But if the problem

22 you're trying to avoid is -- is the vulnerability of --

23 of customers who would otherwise not have access to

24 energy services, then it may be a better option to deal

25 with that vulnerability than to put a false message to

9190

1 the price about what this actually costs society now

2 and in the long-term.

3   Now, it's -- I -- I suspect, limited

4 knowledge of what goes on in various jurisdictions on

5 this question is that the low price of electricity is

6 also meant for other reasons, industry competitiveness

7 or something, where you're -- a vehicle for subsidizing

8 industry or whoever the consumers are that you are

9 hoping to advantage relative to other jurisdictions.

10   It's probably a selling point for

11 attracting businesses to Manitoba as opposed to other

12 jurisdictions. So we'd have to go into the details

13 here about what are your gains and losses from that.

14 It may be that there are compelling reasons why you

15 would have a lower than full cost for some things.

16   In general, however, it's undesirable

17 because you are encouraging a false message to those

18 consumers who are -- hope to be rational in their

19 decision-making, and the information they have before

20 them is very largely price.

21   DR. HUGH GRANT: So ceteris paribus --

22   DR. ROBERT GIBSON: Yes.

23   DR. HUGH GRANT: -- underpricing the

24 resource, pricing it below the market price, which may

25 be -- that's -- often we think of as a shadow price,

 1 leads to inappropriate consumption?

 2   DR. ROBERT GIBSON: Can do, certainly,

 3 yes.

 4   DR. HUGH GRANT: Okay. Thank you.

 5   DR. ROBERT GIBSON: And the market

 6 price may also neglect all sorts of factors. Carbon

 7 costs are certainly not included adequately in most

 8 jurisdictions that rely on carbon-based electricity

 9 generation.

10   DR. HUGH GRANT: Thank you.

11   THE CHAIRPERSON: I think those are all

12 the questions the panel has for now. So, Mr. Williams,

13 please.

14

15 CONTINUED BY MR. BYRON WILLIAMS:

16   MR. BYRON WILLIAMS: I'll express my --

17 how I impressed I am with Dr. Grant's quick reading

18 abilities and -- and certainly call on Dr. Gunn to

19 present her PowerPoint.

20   DR. JILL GUNN: Thank you very much.

21 Good morning, Mr. Chairperson and members of the panel.

22 And thank you for taking the time to also hear me this

23 morning, today. My name is Dr. Jill Gunn. And I'm

24 going to talk to you just a little bit about some

25 guidance that I feel might help you when you are taking

9192

1 a look at the macro environmental considerations or

2 impacts of the -- of the Preferred Development Plan and

3 its main alternatives.

4   So I'll briefly just go over the scope

5 of my report. Then I'm going to talk to you a bit

6 about what I think macro environmental impact

7 assessment consists of and why that is salient to the

8 panel. Then I'll review some of the common or general

9 impacts and benefits of power supply options. And I'll

10 end with some guidance for the panel in the form of a

11 number of questions.

12   So in terms of the scope of the report,

13 essentially what I'm doing for you here is providing a

14 high-level overview of the potential macro

15 environmental impacts and benefits of a number of power

16 technologies, including hydroelectric, natural gas,

17 wind, solar, and then I've also included demand-side

18 management.

19   So the intent with what I'm doing is to

20 try to actually take a step back from some of the

21 technical evidence that -- that you've heard already

22 and try to set the stage for a thoughtful and strategic

23 discussion that I assume is ongoing amongst yourselves

24 around the different options that you have in front of

25 you from the macro environmental perspective.

9193

 1   So really what I'm trying to do is give

 2 you and, of course the Public Interest Law firm's

 3 client, some ability or some material with which to

 4 perform a comparative analysis of the different

 5 technologies from the macro environmental perspective.

 6 And I do want to help you to be able to critically

 7 assess some of the strengths and the weaknesses of the

 8 plan and its alternatives, and their implications.

 9   So I -- I emphasize again, this is not a

10 technical analysis. My report is not a technical one

11 in -- in the sense that it was not going to provide you

12 with the level of insight or -- or detail that some of

13 the other reports will in the NFAT hearing. It's not a

14 critical assessment of the Manitoba Hydro filing, per

15 se. It's not trying to tell you what the best option

16 is or draw conclusions about the needs for the -- the

17 plan, or the alternatives. I'm -- I'm really just

18 trying to give you some guidance on how to think about

19 macro environmental impacts.

20   So in terms of the approach then, what I

21 did was I consulted, of course, the international peer-

22 reviewed scholarly literature that I felt was relevant.

23 So that was not restricted to Manitoba or to Canada or

24 North America. It was sort of a global review. And

25 when I say, "scholarly," that doesn't just --

 1 'scholarly' simply means that, you know, peers have

 2 reviewed that research. It doesn't mean that it's

 3 simply theoretical.

 4   In fact, the field of environmental

 5 impact assessment is highly practice driven, so the

 6 reports -- the studies that we looked at by and large

 7 were reports of those who are practising environmental

 8 impact assessment. And -- and, so the wisdom is coming

 9 through practical experience that -- that covers a wide

10 range of development contexts. In fact, the field is

11 so practical that I actually have a tough time keeping

12 my job sometimes because they say, What are you doing

13 in an academic setting? This field is so practice

14 driven. Of course, there's a list here for you to --

15 to look at another time.

16   Okay. I'm on page 6. So there's

17 another list of documents there that I did consult at

18 various points to write the report.

19   Okay. So let's move to macro

20 environmental assessment. Okay, on slide 8. So the

21 Public Utilities Board requested a macro environmental

22 impact assessment be done for this hearing, and

23 specifically that referred to the collective macro

24 environmental consequences of changes to air, land,

25 water, flora, fauna, including the potential

1 significance of these changes and their equitable

2 distribution within and between present and future

3 generations. And, of course, the Proponent responded

4 in -- in kind and -- and did that.

5   Now, interestingly on page 9 the term

6 'macro environmental assessment' doesn't exist in -- in

7 the field of environmental impact assessment that I can

8 find. I looked to a couple of well-known studies that

9 list the types of environmental impact assessment that

10 are out there. And among a list of a hundred and forty

11 (140) or more, this -- this doesn't exist.

12   So then how -- how shall the panel go

13 about evaluating the -- the filing from Manitoba Hydro?

14 Namely, what are some of the core characteristics that

15 we can discern about what 'macro environmental impact

16 assessment' means, what is it, and how is that relevant

17 to you when you're going to make your decision?

18   Well, I went back to the definition then

19 provided by the PUB to try to decipher what some of the

20 core characteristics are. And firstly, we can deduce

21 that it's obviously a strategic type of assessment. So

22 we know that this review process is obviously going to

23 result in a choice of a preferred energy development

24 path from a range of alternatives that you have. And

25 no matter what you chose, which -- whichever path is

9196

1 preferred, that's obviously going to have profound

2 implications for the province's biophysical environment

3 and its communities for many decades to come. That's

4 going to happen no matter what choice you make.

5   But when we think about what a strategic

6 assessment is, the hallmark of a strategic assessment

7 is that it -- it lets you ask some different questions

8 than would normally be asked later on in -- in a

9 regular environmental impact assessment, which would be

10 -- which has been done for Keeyask, which is coming up

11 for Conawapa, et cetera. So a strategic assessment is

12 letting you ask what is the -- the best option, but not

13 just what is the best option. What is the best option

14 based on the desired future that we want to have? So

15 it's really looking forward to where do we want to be

16 and which one of those options would best get us there.

17 So we're thinking strategically about the future.

18   We are also thinking in -- in strategic

19 environmental assessment on how to improve overall

20 societal conditions and environmental conditions as

21 best as we can. So we're looking for positive gains

22 for net -- net positive gains and not simply minimizing

23 negative impacts. So at this stage in this hearing, we

24 really should be thinking about improving conditions as

25 much as we possibly can and not just minimizing.

9197

 1   So on slide 11, in my opinion, the macro

 2 environmental assessment is -- is obviously regional in

 3 scale. That's easily apparent from the features of the

 4 plan. I won't go through it. But what is a regional-

 5 scale environmental assessment? What -- what is the

 6 hallmark of one of those?

 7   Basically, when you are saying that

 8 we're going to think about environmental impacts

 9 regionally, what you're saying is we are going to

10 consider what other activities are going on in this

11 region in addition to what we are proposing to do. And

12 what -- what have been the impacts of those activities

13 to date? But you're also thinking about in the future

14 what other types of developments may occur, what might

15 be the impacts of those, how does it all look when we

16 put it in the context of -- of a regional development.

17   And slide 12. The Public Utilities

18 Board quite rightly asks for information from the

19 Proponent about the -- the macro, collective, or we

20 could say cumulative, effects of the plan, and its

21 alternatives. When you go to a dictionary and you look

22 at 'macro' or 'collective', a synonym for that is

23 'cumulative'.

24   Arguably, of course, there could not be

25 any real examination of macro environmental effects of

9198

1 the plan and its alternatives without considering the

2 potential cumulative effects on the regions that are

3 going to be affected by development.

4   Now, we've seen in the past -- I have,

5 in examining practice, a common mistake in cumulative

6 effects assessment, which is to -- to compare the

7 impacts of one development to another and just leave it

8 at that. And the reason why that's a mistake is that

9 you will always be able to find the lowest impact

10 alternative. So if you have four (4), you have

11 fourteen (14), you're always going to be able to name

12 the one that is the lowest impact alternative.

13   But cumulative effects assessment and

14 the thinking around that takes it one (1) step further

15 to say what you really want to know, though, is what is

16 the total impact of all development on the receiving

17 environment or communities, and what is the marginal

18 cost of adding that one (1) more development option or

19 package?

20   So not -- not just that we have a

21 preferred alternative because it has the lowest

22 impacts, but is -- are those impacts able to be

23 sustained or absorbed by the receiving environment.

24 And we can't know that unless we know the total

25 effects. So you might want to think about that in

9199

1 making your determination.

2   And slide 13. The last feature of macro

3 environmental impact assessment, in my opinion, that's

4 important to you is -- is understanding that it's an

5 appraisal. So we haven't reached the stage where we

6 are going to do a -- a detailed environmental impact

7 assessment, you know, of the -- of the plan on the

8 environment. But we are appraising right now how well

9 the Preferred Plan performs according to certain

10 important values and indicators.

11   And in the field of environmental impact

12 assessment, we would normally use what's called policy

13 appraisal to do -- to undertake an exercise like this.

14 So policy appraisal is used to select among competing

15 policy options when there's a need to determine which

16 is more desirable rather than to predict with accuracy

17 the physical impacts of subsequent development

18 projects. And as I said, that prediction with some

19 accuracy will come later.

20   So the general approach here is to

21 appraise strengths and -- strengths and weaknesses of

22 the various policy options against some values or

23 indicators, like I said. So the question that I think

24 the panel needs to keep in mind is what are the -- the

25 right performance indicators. And I don't know if

9200

1 'right' is necessarily even the best word. You could

2 say the most appropriate, the most important, the most

3 whatever. But which is the right set of performance

4 indicators.

5   Now, of course the Proponent has adopted

6 a set of sustainability criteria, and rightfully so.

7 That would be based on what you have ensconced in your

8 legislation, in your policies, the sustainable --

9 Sustainability Act that you have, et cetera, et cetera.

10 So the Proponent has adopted sustainability indicators.

11 But we have seen this morning, and if you look to the

12 literature, you will see that there are numerous sets

13 of sustainability indicators that are possible to use.

14   Gibson and Gaudreau present a -- a

15 fulsome list of -- of criteria and indicators. You see

16 other sets that are -- are smaller, but -- or -- or are

17 shorter, that are perhaps similarly as useful. I have

18 a couple of examples, one of which I'll talk about

19 later, the Evans work. But anyway, the point is you

20 are doing an appraisal and what are you don't the

21 appraisal based on? What set of indicators or values?

22   So the point in thinking about macro

23 environmental assessment here this morning is to try to

24 remind the panel, from my perspective, about the kinds

25 of high-level strategic questions that -- that I feel

9201

1 you can or should be asking at this point, and

2 particularly when you are reviewing the Manitoba Hydro

3 filing.

4   Okay. So I think a -- a key challenge

5 for you is going to be trying to avoid what's known in

6 science as a reductionist mind-set. And it's really

7 easy to slip into that sort of thinking when you're

8 presented with -- with such high volumes of technical

9 information. But again, I would caution you to try to

10 be aware of what that is and avoid it, and try to look

11 toward shaping sustainable regional outcomes.

12   MR. BYRON WILLIAMS: Dr. Gunn, just in

13 terms of being aware of what a reductionist mind-set

14 might look like, could you help me to understand what

15 you mean by that term?

16   DR. JILL GUNN: Yeah, like put -- put

17 very simply, it's trying to think holistically or in an

18 integrated fashion and avoid the temptation of -- of

19 trying to take the complex phenomenon or phenomena and

20 breaking it down into its components parts, and trying

21 to find an answer or solve each of those problems

22 separately and think that because you can solve each

23 separately, that somehow combining those parts ends up

24 to be the -- the right answer or the best answer.

25   So this is called the problem isolation

1 paradigm in natural resources management. So you don't

2 want to -- when we're thinking about the environment,

3 because it is so complex, because it is interlinked, we

4 don't -- we, as much as possible, want to try to think

5 in an interrelated, integrated holistic fashion about

6 what is the best choice moving forward.

7   Okay. So I'll take you now through some

8 of the common or generic impacts and benefits of power

9 supply options. And I want to just qualify, again,

10 that this information that we have collected is -- it

11 really comes from examples globally of -- of practice.

12 It's not particular necessarily to Manitoba Hydro or to

13 Manitoba. But what I want to do is just try to have

14 you understand some of the main drawbacks and the main

15 benefits environmentally of -- of some of the power

16 supply options.

17   So I'll move this -- through this as

18 quickly as I can. And I -- I should ask, in the

19 interest of time, like will we break at 12:00, or

20 should I -- I'm just thinking this is going to go past

21 twelve o'clock, and...

22   MR. BYRON WILLIAMS: I'll ask the

23 Chair. We are at -- just one (1) second and I'll...

24   Mr. Chair, I -- I expect somewhere

25 around 12:15, 12:20. So it -- we're at your --

 1 obviously we're at guide -- we --

 2   THE CHAIRPERSON: You're well aware of

 3 our monastic habits. We'll keep going until we finish

 4 the task.

 5   DR. JILL GUNN: Okay. I actually have

 6 brothers -- a brother who's a Buddhist monk, so I'm --

 7 I'm well aware when I visit you wait to eat, you wait.

 8 Okay. I can do it if you can. All right.

 9   So then looking to hydro power, some of

10 the main drawbacks environmentally here, of course,

11 have to do with deterioration of freshwater ecosystems.

12 Fresh waters, of course, are essential to both human

13 and ecological services. And when you do develop, you

14 know, dams and -- and all of the associated

15 infrastructure, there are obviously some -- some major

16 impacts related to changes to water temperature and

17 flow, reduced biodiversity. Oftentimes, you can have

18 scouring of river banks, loss of river banks. There

19 can be concentrations of contaminants that weren't

20 there before. Those kinds of documents are well

21 understood and well documented. Okay.

22   Sorry, I will move you through to slide

23 18, and now the main drawback socioeconomically. And

24 this is really from my perspective. Others may -- may

25 interpret this differently. But do know with

9204

 1 hydroelectric development there -- it is documented

 2 that there's often profound social and cultural

 3 disruption. It's well known to lead to significant

 4 changes and challenges in the day-to-day lives of local

 5 and regional communities. And some of those changes

 6 really may be unmitigable because they're hard

 7 quantify. They're hard to trace. They're hard to

 8 monitor, et cetera.

 9   Moving over to some of the benefits of

10 hydro development. We know that it does help to combat

11 climate change, because it does have comparatively low

12 greenhouse gas emissions when we look at how that

13 compares to fossil fuel options. And it is also

14 considered to be the most efficient of the renewable

15 energy options. So all of that is -- is a good thing.

16   Socioeconomic benefits. We're on slide

17 20 now. Of course, hydroelectric power is a very

18 proven and well-advanced technology, particularly in

19 Canada and -- and obviously in -- in Manitoba. So we -

20 - we know what it is, what it looks like, how to do it

21 well. And it's -- it's very -- it's sort of an -- it's

22 the known. There's a lot that is -- the questions

23 there, a lot have been answered.

24   Looking quickly then at natural gas.

25 We're on slide 21. In terms of drawbacks

9205

1 environmentally, one of the main drawbacks is that it

2 does have higher greenhouse gas emissions when we do

3 compare it to the renewables, like hydro, wind, et

4 cetera, but it -- it still does contribute -- it -- it

5 contributes not only, I guess, greenhouse gas

6 emissions, but to resource depletion because it is non-

7 renewable, so that's sort of an inescapable fact.

8   Natural gas development can also cause

9 permanent ground deformations, such as surface faults,

10 landsliding, slumping, et cetera, as a result of

11 hydraulic fracturing. And in some cases, it's induced

12 seismic activity. I don't think that's the case in --

13 in Manitoba. But those are some of the main

14 environmental drawbacks or considerations. Okay.

15   Now, socioeconomically -- we are on

16 slide 22 -- there are some health concerns with natural

17 gas development due to pollution, and that's because

18 there is the potential for leakage. So sometimes the

19 gas can leak or chemicals can leak. And, therefore,

20 there's a possible risk of contamination to groundwater

21 supplies, surface water supplies. And -- and then,

22 obviously, that can possibly lead to human health

23 risks, relatedly.

24   In terms of benefits of natural gas

25 power field generation, so we're on slide 23, I did

9206

 1 mention that it does have lower emissions than -- than

 2 coal and -- and oil, which is good. It's -- so it's

 3 considered sort of a transition fuel. In terms of the

 4 non-renewables, it's the best of the bunch. But again,

 5 the greenhouse gas emissions are still significantly

 6 higher than with the renewables, such as wind, solar,

 7 or hydro power. Okay.

 8   And slide 24, socioeconomically, in

 9 terms of benefits, gas is -- as a power source is very

10 flexible. It's very reliable and it does have

11 relatively low cost to society, in terms of capital

12 development and -- and maintenance. Okay.

13   I'm looking at wind in terms of

14 environmental drawbacks. Wind is believed to be, or

15 been -- been shown to be, according to the research,

16 less efficient in comparison to hydro or fossil fuel

17 alternatives, so it's a less efficient way to produce

18 power. Mostly that's because a number of factors

19 affect how much energy can be captured and converted.

20 That -- it depends upon wind strength and speed, air

21 temperature, air density, whether or not things are

22 obstructing air flow, et cetera. And it also does have

23 some terrestrial impacts, particularly reduced habitat

24 quality for birds.

25   Okay. On slide 26, socio-economic

9207

1 drawbacks of wind power. One of the main ones is that

2 it does have some visual impact issues, relatedly some

3 noise issues. People generally find wind farms to be a

4 disruption of scenery. People don't really like to

5 look at them. It -- it -- they can create shadow or

6 flickering effects. There can be glare from the

7 blades. And there can be some noise issues in -- in

8 the region where -- where the wind farm is located.

9   Slide 27. The benefits of wind include

10 that it has -- is associated with extremely low carbon

11 emissions. In fact, no emissions are directly

12 associated. And really it is said to be quite

13 indispensable as a source of power when you're thinking

14 about your overall mix because its environmental

15 effects are so low. And socio-economically we don't

16 see any evidence of significant health effects, so

17 that's a good thing about wind.

18   Okay. And now looking at solar. In

19 terms of drawbacks, with solar if you're going to move

20 up to the level of having a central system it -- it --

21 you do have considerations of -- of land use. It can

22 compete for land, competing with other important land

23 uses like agriculture, et cetera, so that is a

24 drawback. There are also visual impact issues with

25 solar power. Okay.

9208

 1   And in terms of socio-economically,

 2 slide 30, we see that there are relatively higher costs

 3 of production for solar. So historically there has

 4 been a high cost associated with production,

 5 installation, and maintenance of solar units. However,

 6 we do know that steady advances in technology now have

 7 brought down production costs a fair bit, which is a

 8 good thing.

 9   Okay. In terms of environmental

10 benefits of solar, slide 31. Obviously the sun

11 provides an unlimited source of energy that is easily

12 accessible in many more locations than, you know, if we

13 compare some of the other power supply options. It

14 also contributes no chemical pollutants during nor --

15 normal operation.

16   Okay, and the socio-economic strength of

17 solar is that it does apply to a wide range of domestic

18 and industrial uses. So it's -- it's really easy to --

19 for many, many people to sort of use solar technology

20 and get their needs met without necessarily plugging

21 into the main grid. I guess it's -- it's also got,

22 according to the research, wide-spread public support,

23 which is important.

24   And the -- in terms of environmental

25 impacts socio-economically, the negative environmental

9209

 1 external -- externalities are more evenly distributed

 2 often times because the technology itself is more

 3 widely distributed, so that is a good thing.

 4   THE CHAIRPERSON: One I didn't

 5 understand was the -- the reference to humidity.

 6   DR. JILL GUNN: Sorry? Yes.

 7   THE CHAIRPERSON: Is it because of the

 8 -- the shadow effect that --

 9   DR. JILL GUNN: Yes. So the -- when

10 you have the solar panel sort of covering over the

11 ground that sort of changes the microclimate in the

12 region of the panel. And, so you can get changes to

13 humidity or temperature, et cetera, and this can then

14 affect the habitat that -- that was originally there.

15   MS. MARILYN KAPITANY: Could you also

16 expand on what you meant when you said, "Negative

17 externalities"?

18   DR. JILL GUNN: Oh, yes. So basically

19 some of the negative consequences that would spill over

20 from -- from using that sort of power technology. So

21 if we think about hydro development and the negative

22 externality, it would be something that would be,

23 perhaps, experienced -- oh is it -- is it -- okay, I'll

24 sit closer. I'm sorry. I was sitting back.

25   It's something -- it's any sort of a --

9210

1 a negative consequence that wasn't accounted for or

2 absorbed in -- in the planning for the use of that

3 technology. So, we want to be careful about who has to

4 absorb the -- the overflow of the -- the negative

5 effects from our choice about power use.

6   MS. MARILYN KAPITANY: But in the case

7 of solar could you give some examples of what that

8 might be?

9   DR. JILL GUNN: Well, so the negative -

10 - what I mean -- what I'm trying to say there is that

11 if you -- let's say you already have a solar panel that

12 you're using at your house. It's -- it's more than

13 likely you that is going to experience any -- like

14 directly the positive effects, but also directly

15 probably the negative ex -- effects or externalities of

16 -- of that power choice because it's right on your

17 property. And so -- and so you are experiencing that.

18   There might be negative externality for

19 your neighbour down the street if when they look at

20 your house that's glaring in their eye all -- all of

21 the time. But because solar tends to be more easily

22 and more widely distributed, it means that the -- the

23 consequences of that are also more widely distributed

24 from an environmental perspective.

25   Whereas if you have, let's say, a

9211

1 hydroelectric power generating station that's -- that's

2 obviously located in -- in one (1) spot, you might

3 have the rest of the province getting the positive

4 externalities from that. But it would be the people

5 regionally or locally that might experience more of the

6 negative externalities because they're simply within

7 the vicinity. So that's what -- the point I'm trying

8 to make.

9   MS. MARILYN KAPITANY: Yes.

10   THE CHAIRPERSON: On the PV, I'm

11 surprised that there wouldn't be any reference to -- to

12 disposing of the panels after their life span is over.

13   DR. JILL GUNN: I'm sorry, I couldn't

14 quite hear you.

15   THE CHAIRPERSON: I was wondering about

16 the PV, you know, there would be a defined life span

17 for that -- the -- the --

18   DR. JILL GUNN: Yes.

19   THE CHAIRPERSON: And how do you, you

20 know, disposal of that? Wouldn't that be a factor?

21   DR. JILL GUNN: Yes, I'm sure that it

22 would. Yes. I don't think -- I don't recall it being

23 listed specifically in -- you know, it wasn't -- I

24 don't remember it being a point that came up in the

25 research, but abso -- absolutely.

9212

 1   And -- and also the production in --

 2 involves generally technologies that do use -- that

 3 have carbon emissions or that do burn fuel. So you --

 4 you -- there's some sort of cost in terms of production

 5 as well. So, m-hm, and then where do they go after?

 6 Okay. Okay. Thank you.

 7   So then looking to demand-side

 8 management, so we're on slide 33 now. One (1) of the

 9 drawbacks environmentally of demand-side management is

10 that you have what's known as conservation rebound

11 effects that can occur, meaning that even if you

12 implement some sort of a conservation program, it

13 doesn't necessarily mean -- and even if people buy into

14 it and -- and do it and it's working, it doesn't

15 necessarily mean that you are going to have something

16 positive for the environment come out of that.

17   Because people may perhaps just use more

18 energy in some other area of their life or we can't --

19 there isn't necessarily a perfect correlation between,

20 you know, implementing a policy and seeing an

21 environmental benefit. So, that is something that has

22 been noted as a drawback.

23   Socio-economically, on slide 34, with

24 demand-side management it's been shown that frequent

25 research is really needed to adjust supply and to

 1 disaggregate policies such that different populations

 2 are -- or sort of have equal access to the different

 3 strategies or technologies.

 4   Basically, demand-side management can

 5 sometimes affect lower income communities

 6 disproportionately because they're more sensitive to

 7 pricing changes. So you might find that lower income

 8 groups are -- are responding more readily using less

 9 power, et cetera. Now, again I think Bob made this

10 point not necessarily because they want to, but because

11 cost is -- is an important factor. And then you may

12 not see a corresponding shift in behaviour from those

13 who can afford not to change, if that makes sense.

14   Okay. And in terms of demand-side

15 management and the benefits environmentally, obviously

16 demand-side management is focussed on reducing overall

17 usage of power, no matter what the source. And it's

18 just try -- it's giving us a way to perhaps consume

19 non-renewable resource supplies a little more slowly.

20   DR. HUGH GRANT: Could I just interrupt

21 you and ask you about this rebound effect?

22   DR. JILL GUNN: Yes.

23   DR. HUGH GRANT: Because it's a curious

24 one (1). Could -- are there some examples of that?

25 I'm just -- I'm trying to understand this. If I go out

9214

1 and put in a more efficient hot water tank and it saves

2 on my electricity bill, what might be the potential

3 rebound effect? Is it through my general consumer

4 spending that I save?

5   DR. JILL GUNN: Well, basically the

6 conservation rebound effect revers -- refers to induced

7 consumption of energy due to lower prices, or augmented

8 incomes with the energy conserving technologies. So

9 now that I have installed, let's say, some sort of

10 energy conserving technology or I'm saving a little bit

11 on my power bill, I might sort of spend my money

12 elsewhere that leads -- still leads to resource for

13 energy consumption. And, so you don't actually wind up

14 with a net benefit.

15   DR. HUGH GRANT: You wouldn't -- it

16 might mitigate some of the benefit, or you might have

17 no net benefit?

18   DR. JILL GUNN: You might have no net

19 benefit. It's -- it depends on the consumer's

20 behaviour to --

21   DR. HUGH GRANT: I can imagine in case

22 -- so you're saying I save on my hot water heater --

23   DR. JILL GUNN: Yeah.

24   DR. HUGH GRANT: -- so I go buy an SUV?

25   DR. JILL GUNN: Yes. What -- yeah, I

9215

1 don't think you'd save enough to buy an SUV but -- but

2 that's the -- kind of the principle, yeah. It's --

3 it's a rebound effect that, you know, you're hoping

4 that the policy is going to lead to reduced consumption

5 overall but it doesn't necessarily happen that way.

6   DR. HUGH GRANT: Has anybody attempted

7 to measure the scope of that?

8   DR. JILL GUNN: I -- I don't know. I -

9 - I couldn't say without going back to the -- to the

10 literature.

11   So we're on slide 36, and looking at

12 socio-economic benefit of demand-side management.

13 Obviously because it challenges us to develop better

14 and more efficient technologies, ways to conserve, this

15 can stimulate economic growth which is -- tends to be

16 viewed as -- as positive.

17   But importantly it also defers -- or it

18 can defer the need for installing new network

19 investments. So it can let us put off developing new

20 generation or transmission facilities. It can help to

21 push that away into the future a little bit, which is -

22 - which is possibly a good thing.

23   So then that sort of concludes this

24 overview of the -- the macro-environmental economic

25 impacts and benefits. And at this point what I was

9216

1 trying to do was look to any research that really tries

2 to compare these different power technologies to one

3 another, and when I -- at the outset of the -- the

4 research, I assumed there would be loads of -- of

5 studies that did do that, so how does this compare to

6 that one, because it is very complex and it is very

7 hard to know how one compares to the next.

8   And in -- in all of the research that we

9 did, and I do admit that, you know, our retainer was

10 fairly short so maybe there are more studies, but we

11 only found one (1), and that was by Evans & Others, an

12 Australian group of researchers. And in 2009 they

13 wrote a paper comparing a number of renewable energy

14 technologies according to a set of sustainability

15 indicators, and you see this in slide 37.

16   So when Evans & Others compared the

17 different types of power options, according to the

18 indicators you see in -- on the left, according to

19 price, CO2 emissions, availability and limitations,

20 efficiency land use, water consumption, social impacts,

21 et cetera, they found that wind was the most

22 sustainable.

23   And again this is globally. Their

24 research was looking at practice and evidence on a

25 global scale. They found wind was the most sustainable

9217

 1 followed by hydro power.

 2   MS. MARILYN KAPITANY: So do they just

 3 rank -- is this just a simple ranking, and then adding

 4 up --

 5   DR. JILL GUNN: This is a simple

 6 ranking --

 7   MS. MARILYN KAPITANY: -- the total of

 8 the rankings?

 9   DR. JILL GUNN: Correct, yeah. It's a

10 simple ranking. They didn't weight their

11 sustainability criteria. They decided to say that, For

12 our purposes we will assume that each one of these is

13 equally important to sustainability, so it was not

14 weighted and it was a simple ranking.

15   And they did use qualitative and

16 quantitative methods to try to assess how well each

17 performed, so it was a mixed methods' approach. And --

18 and then I guess using their judgment and what their

19 research was showing them, what it was telling them,

20 this -- these were the term -- determinations they were

21 able to make.

22   So it showed that wind performed very

23 strongly among the renewables, followed by hydro.

24   DR. HUGH GRANT: Can I just sort of --

25   DR. JILL GUNN: Yes.

9218

 1   DR. HUGH GRANT: I thought you said

 2 earlier, and I was curious when -- about it when you

 3 said that solar was very land intensive. Did you say

 4 that?

 5   DR. JILL GUNN: Not -- it -- it is

 6 considered to be land intensive if you move to a

 7 central system for a power generation. If -- if you're

 8 not -- if -- if the solar panels are distributed, you

 9 know, amongst the different industries, homes, small

10 communities, then it is less land intensive. It

11 becomes more land intensive if you have a central

12 system.

13   DR. HUGH GRANT: So just for the sake

14 of argument, wind could be ten (10) times expensive as

15 hydro, but it would still be the preferred in -- in

16 this model because it's completely unweighted.

17   It would still be the best option?

18   DR. JILL GUNN: That's right. This is

19 unweighted, so it would depend upon how you place value

20 on these different indicators, which is more or less

21 important, and they didn't do that.

22   DR. HUGH GRANT: So to correct, it is

23 weighted because there's some --

24   DR. JILL GUNN: Well, sorry, yes, yes--

25   DR. HUGH GRANT: -- that's equally

9219

1 weighted, which --

2   DR. JILL GUNN: -- it -- it is equally

3 weighted, correct, yes. Oh, sorry. Sorry --

4   DR. HUGH GRANT: Are you done now?

5   DR. JILL GUNN: -- if I'm over-

6 speaking.

7   DR. HUGH GRANT: So they -- they should

8 have just left off the total column because this is

9 saying that we should weight them equally?

10   DR. JILL GUNN: Well, I think that

11 they're -- they're -- what they're doing is the simple

12 ranking, and then a total of, you know, which score is

13 best in terms of rankings.

14   DR. HUGH GRANT: But they've imposed

15 the weighting?

16   DR. JILL GUNN: I suppose they have,

17 yes. I suppose they have, yes. But obviously, the --

18 if you interpret their work in any kind of a local

19 context, like for the context of Manitoba, what they

20 said in the paper is they fully assumed that the

21 weightings would change according to what the people

22 there felt was the most important.

23   So I think they tried to get it across

24 as -- as simply as possible in terms of which is the

25 better -- which is the best performer according to each

9220

1 of the sustainability criteria.

2   Okay, so then what they suggest is that

3 the dual -- what they call the dual sustainability of

4 wind energy, meaning that it's quite sustainable from

5 both an environmental and an economic perspective, it

6 suggests that it's time to re-evaluate its place in --

7 in terms of public policy toward wind energy production

8 globally. So again, that may -- may be different when

9 you look on -- on a regional or provincial level.

10   Now, the -- sorry, but something is

11 going on here with these red boxes. Okay, we're on

12 slide 40. And I guess it's --

13   THE CHAIRPERSON: I'm sorry, I just

14 want to go back to the wind -- the one (1) issue. And

15 I guess I'm having trouble reconciling the conclusion

16 here with the fact that, you know, clearly, from the

17 evidence, it appears that, if you're going to go the

18 wind option, you have to maintain a backup system to

19 address the variability of wind.

20   So was that -- do you know if that was

21 addressed as part of this review or...?

22   DR. JILL GUNN: No, I don't think so.

23 I -- I couldn't say for certainty and I don't think

24 that it was. Go ahead.

25   MR. BYRON WILLIAMS: Certainly. And if

9221

1 you would like, we -- Dr. Gunn could undertake to go

2 back and review whether that specific question was --

3 was done.

4   DR. JILL GUNN: Yes, I could.

5   THE CHAIRPERSON: You know, I can -- I

6 can read the report myself. I can just go back and

7 check that myself.

8   DR. JILL GUNN: Okay. Yeah, it's a

9 fairly short paper.

10   DR. HUGH GRANT: Can I just ask one (1)

11 -- I find this actually quite fascinating. One of --

12 the point of a -- of a ranking system, suppose we put

13 in a few other alternatives, say coal --

14   DR. JILL GUNN: M-hm.

15   DR. HUGH GRANT: -- and it might rank

16 pretty well in terms of price, so suddenly these

17 rankings would change. And so I could add five (5) or

18 six (6) different alternatives. And then potentially

19 the ranking between, say, wind and geothermal could

20 change overall.

21   Is that true?

22   DR. JILL GUNN: Absolutely, yeah. I

23 think what they were trying to do was compare the

24 renewables to one another, yeah. So they're looking at

25 solar, wind, hydro and they did include geothermal.

9222

1   DR. HUGH GRANT: Thanks.

2   DR. JILL GUNN: Yeah. So obviously,

3 when you add in the non-renewables that's going to

4 change again. You're right, yeah.

5   But I think the interesting -- for me,

6 one (1) of the most interesting points of this study

7 was that when you look at, you know, hydro globally and

8 you look at where it ranks first, it definitely

9 performs well economically. It ranks first according

10 to price, according to efficiency, and according to

11 availability.

12   But if you take a look at the other

13 categories, it's interesting that either wind or solar

14 ranks first according to CO_2 emissions and land use and

15 water consumption and social impacts.

16   So if we think about it -- about these

17 options from the macro-environmental perspective, which

18 I know does include economic considerations as well,

19 but if we think about the -- the impacts to the land,

20 wind or solar ranks ahead of hydro if we just take a

21 simple reading of -- of this particular study. So I

22 think that's an important thing to -- to note.

23

24 CONTINUED BY MR. BYRON WILLIAMS:

25   MR. BYRON WILLIAMS: And -- and just in

9223

 1 terms of the study, it's certainly not localized to --

 2   DR. JILL GUNN: No.

 3   MR. BYRON WILLIAMS: -- Manitoba or

 4 even to North America. It would be a more global --

 5   DR. JILL GUNN: It's globally, yes.

 6 Yes, that's right. Okay. So moving on then, slide 41.

 7   So those criteria don't address inter-

 8 or intra-generational equity, which is also a part of

 9 the -- the definition of macro-environmental impacts

10 that the PUB provided and which you'll need to

11 consider.

12   I won't spend a lot of time on these two

13 (2) slides. You know, they're -- they're fairly -- I

14 think Bob sort of defined it most simply, and this is

15 looking at the -- the long-term benefits ver -- versus

16 the short-term benefits and for who. But basically, it

17 is something that you'll have to think about. But the

18 -- the most important thing to keep in mind, slide 42

19 here, is that they are perspectives, okay.

20   And -- and the choice about energy

21 supply and -- and what is best is -- is ultimately

22 going to be taken according to some certain

23 perspective. So on slide 43 it says here:

24   "There have been arguments and

25   counter-arguments on the best source

9224

1   of power and -- and ultimately there

2   is no right answer, because obviously

3   the answer is context specific."

4   So if you -- if you look to the

5 research, well, in China it turns out natural gas is

6 their best option, but in Malaysia, well, solar and

7 biomass energy is the best option. Perhaps in Manitoba

8 it's hydro power, or -- or something else.

9   The -- the point is it is context

10 specific and it -- and it depends upon what perspective

11 you're taking, and the perspective does have to include

12 consideration of equity. Who is benefiting and who is

13 -- is, quote -- or I should -- I should say, who is

14 losing.

15   Okay. So the selection of the Preferred

16 Energy Development Package is going to come down to a

17 question of tradeoffs. And -- and we have to think

18 about whose purposes that we're -- we're serving.

19   The context here -- the context for

20 development here, slide 44, is the -- the Nelson River

21 watershed, as we know. Of course the -- the

22 development has implications provincially, but it is

23 the Nelson River sub-watershed that has sustained most

24 of the impacts to date of hydroelectric development.

25 So we know that significant stress has already been

9225

1 experienced in -- in that region over the fifty-five

2 (55) plus years of hydroelectric development that's

3 gone on.

4   All those kinds of effects are -- are

5 well documented through the Keeyask hearing, through

6 the Bipole III hearing, and elsewhere. But it is

7 important to note that both Manitoba Hydro and the

8 Keeyask Cree Nations partners, you know, have agreed

9 along with -- with others, including independent

10 experts like myself, that the Nelson River sub-

11 watershed has already been substantially altered and

12 has sustained significant environmental impacts.

13   And that -- that point, when you're

14 thinking about the macro-environmental effects of

15 projects to come, that really -- that point can't be

16 underscored enough, from my point of view. So the

17 Manitoba Clean Environment Commission, through the

18 Bipole III hearing, did recommend that a regional

19 cumulative effects assessment be performed and that the

20 -- and I guess what -- what I recommended along with my

21 colleague Bram Noble is that any such exercise should

22 focus on characterizing net positive benefits to the

23 region.

24   So ultimately what I'm trying to say is

25 that we need to think about what the values of the

1 Manitoba public are, what the values of the project

2 stakeholders are today. This hearing is happening in -

3 - in present time and -- and anything and all that sort

4 of has gone on previous is clearly very important, but

5 we have to -- we also have to ask, what more do we need

6 to consider today? What new information do we have?

7 What do we think in terms of the future? What is going

8 to be best?

9   Maybe those ideas and perspectives have

10 changed, because we do have new information today. So

11 what are the values of the panel right now. You're --

12 you're free to adopt your own set of standards or

13 criteria in interpreting what's going to be best from

14 an environmental perspective. One doesn't have to just

15 adopt outright criteria that have been used previously

16 or comes from some particular source. You're free to -

17 - to think about what -- what you think are the most

18 important values right now for decision making.

19   And we want to look at what is the best

20 alternative given the state of the Nelson River sub-

21 watershed in the future.

22   Okay. Slide 46. So this is what I want

23 to leave you with, ultimately, is really just four (4)

24 questions that come from the research that I did.

25   A couple of researchers in impact

1 assessment named Kornov and Thiesen, they cautioned

2 that strategic decision-making and strategic policy-

3 making is too often based on an assumption that the

4 more -- basically the more rational information we

5 have, the more technical information we have, the more

6 likely that we're going to arrive at a rational

7 decision, but that is -- been shown to not be the case.

8   That isn't true, and that's because real

9 world decision-making is -- is fraught with all kinds

10 of issues including our own ability to hear that

11 information, to integrate it, you now, in terms of how

12 we tend to behave, what our biases are, ambiguities in

13 the information.

14   There -- there's so many things that

15 affect decision-making and so decision-making is

16 ultimately not rational even -- even if it appears to

17 be because there's a lot of technical information. So

18 they just cautioned that, you know, you -- you should

19 not assume that the -- the technical answer is

20 necessarily the right answer. There's much more to --

21 to consider.

22   DR. HUGH GRANT: Are you suggesting the

23 panel has cognitive limitations?

24   DR. JILL GUNN: Yes. So do I, huge.

25 If it's polished and peer-reviewed literature, it's

1 true -- kidding.

2   But you know, with that in mind what I'm

3 trying to get across is that I would hope for the panel

4 -- whenever it is that you do retire to make your

5 decision, that you do bear in mind strongly what the --

6 the values are that you're basing the decision from.

7 Before you sort of enter into the fray of -- of the

8 technical information, because it is those guiding

9 values that's ultimately going to lead you to your

10 decision. So in this regard I have just four (4)

11 questions briefly that may be of use to you.

12   So Number 1, thinking strategically,

13 what is the preferred future direction for long-term

14 energy infrastructure investments in Manitoba. And a

15 related question at this point in the hearing might be:

16 Do the rapidly changing economics of renewable

17 technologies, such as wind and solar, suggest that we

18 do need to rethink existing policy guidance on -- on

19 energy.

20   Slide 49. The second question that I

21 think is very important for you from a macro-

22 environmental perspective is: What is the vision for

23 the Nelson sub-watershed region and can it or should it

24 sustain further development?

25   So the real-world consequences for

1 regions affected by future power development, whatever

2 it is, must not be forgotten and, in particular, this

3 region should not be forgotten from my perspective.

4   Slide 50. The third question -- and

5 this is coming again from the -- the appraisal

6 literature -- the policy appraisal literature. What

7 are the values and/or performance indicators against

8 which the Plan and its alternatives are being assessed?

9 And -- and as I said, you know, the proponent has a

10 certain set of indicators; there are others out there.

11   Because there are differing world views

12 among the process participants here, there are going to

13 be different opinions around which are the -- are the

14 right ones. And so I'm suggesting that the panel take

15 some time to get clarity around core issues, values,

16 and the shared vision of the future. And I -- and I

17 feel like that is arguably as important as all of the

18 technical informations and decisions that you're going

19 to make.

20   The final question is: What are -- this

21 is coming out of the cumulative effects assessment

22 literature. What are the likely macro or cumulative

23 environmental impacts of the Plan and of each

24 alternative, and how well does each perform with

25 respect to the broad vision, values, and performance

9230

1 indicators that you have identified as being important?

2   So, at the end of the day, when you're

3 looking at the filing from Manitoba Hydro about macro-

4 environmental impacts, if I was you, I would be asking

5 ha -- have they considered any and all reasonable

6 alternatives including different kinds of options then

7 might have been considered important out the outset of

8 the hearing. Thank you very much for your attention.

9 And that's all.

10   DR. HUGH GRANT: Just one quick -- how

11 are you defining -- could you define 'cumulative' again

12 for me because you seem to use it in a few different

13 contexts?

14   DR. JILL GUNN: Yeah, I can give you

15 the most recent definition from -- that was just

16 developed for the Canadian Council of Ministers of the

17 Environment. And this was -- work was done in January

18 and it was -- included across Canada peer review. And

19 the -- the current -- the most current definition is

20 that:

21   "A cumulative effect is a change in

22   the environment caused by multiple

23   interactions among human activities

24   and natural processes that accumulate

25   across space and across time."

9231

 1   DR. HUGH GRANT: Across time?

 2   DR. JILL GUNN: Across time. Yeah.

 3   DR. HUGH GRANT: So probably a bit

 4 different than 'collective.' 'Collective' seems to

 5 have more of a --

 6   DR. JILL GUNN: Well --

 7   DR. HUGH GRANT: -- across space?

 8 Unless you wanted to talk about generations

 9 collectively.

10   DR. JILL GUNN: Well, if you're --

11 you're -- if you're asking the difference between sort

12 of 'collective' and 'cumulative' in -- in my opinion,

13 'collective' means, you know, look -- like putting

14 everything in one (1) basket, there it all is together.

15 So we have all of these different developments together

16 and we can get a picture of what that looks like

17 collectively.

18   But when we're talking about

19 'cumulative,' we're -- we're asking how do these things

20 pile up an effect? How do they pile up on each other?

21 How do they affect each other? How do they interact

22 together? And -- and ultimately when you're thinking

23 about environmental cumulative effects assessment, you

24 have to know how the addition of one (1) more

25 development is going to affect conditions that are

9232

1 already there.

2   So we have to know what the marginal

3 cost because even if it's a very small environmental

4 impact, it could too high. The cost could be too high

5 for that region or the environment to sustain. It

6 simply could so -- even if you come up with a very low

7 -- low impact alternative.

8

9   (BRIEF PAUSE)

10

11   THE CHAIRPERSON: I think that's all of

12 the questions the panel has for now. So I suggest that

13 we recess for lunch.

14   And I'm wondering, Mr. Hombach, can you

15 give me some advice about whether or not we should have

16 an abbreviated lunch, or should we go for -- for forty

17 (40) minutes?

18   MR. SVEN HOMBACH: I -- I don't

19 anticipate any timing difficulties if we regroup at one

20 o'clock.

21   THE CHAIRPERSON: Okay. Let's -- let's

22 agree that one o'clock we'll continue the proceedings.

23 Thank you.

24

25 --- Upon recessing at 12:19 p.m.

9233

1 --- Upon resuming at 1:08 p.m.

2

3   THE CHAIRPERSON: I believe that we can

4 resume the proceedings. I would call upon Mr. Gange,

5 please, to proceed. Thank you.

6   MR. WILLIAM GANGE: Thank you, Mr.

7 Chair.

8

9 CROSS-EXAMINATION BY MR. WILLIAM GANGE:

10   MR. WILLIAM GANGE: I will not be very

11 long, but I just have a couple of questions. Dr.

12 Gibson and -- and Dr. Gaudreau, on page 24 of -- of

13 your presentation, CAC Exhibit 74, the statement was

14 made that -- about -- about flexibility. And -- and in

15 particular, you say:

16   "Uncertainty and precaution favour

17   flexibility versus lock-in."

18   That statement by itself, we -- we know

19 that large hydro dams are not very flexible. They take

20 a long time to build. They take a lot of resources.

21 And on the other side, they also last a long time,

22 correct, sir?

23   DR. ROBERT GIBSON: Yes.

24   MR. WILLIAM GANGE: And -- but at the

25 same time, they -- they produced electrical power for

9234

 1 perhaps a century and at -- at a cost that is basically

 2 fixed from the time that -- that the dam is built.

 3   You'd agree with that as well, sir?

 4   DR. ROBERT GIBSON: Certainly.

 5   MR. WILLIAM GANGE: Yeah. When you say

 6 that some lock-ins may be desirable for effects

 7 predictability, could -- could you explain? I think it

 8 might have been Dr. Gaudreau that was making that

 9 comment, but I don't care who responds to it; either

10 one of you can. I'd like just to know what you mean by

11 the lock-in may be desirable.

12   DR. ROBERT GIBSON: Well, I think we

13 also make a point elsewhere a little later that any one

14 of these criteria is not determinative by itself and

15 it's crucial that we should be looking at the full

16 range of criteria and how it works out.

17   We had a discussion about tradeoffs, for

18 example, there will be some. Lock-in is itself

19 problematic from a flexibility perspective, as I

20 discussed at least briefly in the presentation. But

21 that doesn't mean you should never undertake a project

22 that involves lock-in. It's just you should be aware

23 that that is one of the down sides to what you're

24 doing. It limits you in some ways. It provides some

25 advantages.

9235

1   And effects predictability can certainly

2 include the affect on costs. So if you want to have a

3 reasonably clear idea of what costs there are going to

4 be for generation for a period of time, recognizing

5 there's still some uncertainties involved, there is

6 some relative certainty there, and it's more fixed than

7 in other areas.

8   In other areas, you may have a

9 relatively high cost now but some reasonable

10 anticipation of -- of technological improvements and

11 associated price decline, but it's not very certain.

12 Maybe there's confidence that it will happen. Maybe

13 there's not confidence about how soon and what other

14 complications may arise.

15   So sometimes you would like to have some

16 component of certainty at the price of lock-in. And

17 that's just taking two (2) considerations into account,

18 right. There's way more than that. There may be other

19 reasons why you do a more locked-in kind of option,

20 because it delivers -- we can go on and on.

21   MR. WILLIAM GANGE: Thank you. So --

22 so bottom line, you're just saying that -- that it's

23 one of the factors and -- but it doesn't automatically

24 rule out any of your options.

25   DR. ROBERT GIBSON: Quite so. It's --

1 it's a criterion that is often neglected or given

2 insufficient attention. It's worthy of -- of

3 recognition, but it's certainly not determinative, and

4 it has to be considered within the whole package.

5   MR. WILLIAM GANGE: Thank you.

6 Professor Gunn, on slide 33 of your presentation...

7

8   (BRIEF PAUSE)

9

10   MR. WILLIAM GANGE: That -- yeah,

11 that's good right there. The -- Professor Grant asked

12 you about this rebound effects, and we heard last week

13 from some consumer groups about how, when -- when the

14 price of electricity goes up, there may well be other

15 factors in their life that have to shrink.

16   And -- and I take it that when -- with

17 this con -- the concept of conservation rebound

18 effects, you're not saying there's a one (1) to one (1)

19 or -- or anything like that kind of -- kind of

20 correlation? DR. JILL GUNN: No. I'm not saying

21 that, no.

22   MR. WILLIAM GANGE: So that in -- for

23 instance, it may well be that by using LED lighting, a

24 person is able to reduce their electrical bill

25 substantially so that they have a certain extra amount

9237

1 of money in their budget.   And that -- that

2 extra amount of money could be used for some of the

3 necessities of life, like lotto tickets or -- or

4 cigarettes, or things like that --

5   DR. JILL GUNN: Yes.

6   MR. WILLIAM GANGE: -- as opposed to

7 increasing their electrical demand?

8   DR. JILL GUNN: Yes, absolutely. The -

9 - we -- that's the -- I guess the point is that we

10 don't really know for sure what the effect will be of -

11 - of these demand-side management policies. They could

12 be quite positive, or they could be not what we

13 anticipated or -- or what we desired.

14   MR. WILLIAM GANGE: And certainly in

15 your review of the literature that you've searched,

16 there hasn't been any kind of definitive study as of

17 yet on -- on those effects.

18   Would that be fair?

19   DR. JILL GUNN: My expertise in that

20 area wouldn't range far enough for me to be able to say

21 for sure. I would have to --

22   MR. WILLIAM GANGE: Okay.

23   DR. JILL GUNN: -- go back and -- and

24 have a further look.

25   MR. WILLIAM GANGE: Thank you. Can we

9238

1 go to -- my page says -- well, I guess it's on a whole

2 bunch of pages, but if you go to page 37, you had these

3 charts with the -- the various rankings on the -- on

4 them.

5   DR. JILL GUNN: M-hm.

6   MR. WILLIAM GANGE: And -- and with

7 respect to these rankings, do you know if, for

8 instance, under the column of CO_2 emissions, is -- is

9 that ranking made on a per kilowatt hour of electricity

10 basis, or is it just comparing wind to hydro, et

11 cetera?

12   DR. JILL GUNN: It would have

13 encompassed both. The -- the study methodology

14 indicated that they used a mixed methods approach,

15 which means that at times they would have studied

16 quantitatively the performance according to that

17 indicator, but also qualitatively. So it would be

18 both. It would -- there would be a wide range of

19 studies that would be incorporated to come up with that

20 ranking. So it wasn't just one or the other.

21   MR. WILLIAM GANGE: I see.

22   DR. JILL GUNN: Yes.

23   MR. WILLIAM GANGE: In -- in looking at

24 this chart, and Professor Grant raised some concerns

25 that he had of the -- from his perspective -- by

9239

1 default the chart would seem to be ranking price effect

2 equally with water consumption equally with CO2

3 emissions. And that -- that was the point that

4 Professor Grant was making.

5   In looking at these things, would you --

6 would you agree that -- that in -- in comparing these

7 various different models, that -- just -- could --

8 could you just hold on a sec?

9

10   (BRIEF PAUSE)

11

12   MR. WILLIAM GANGE: In -- in looking at

13 these various models, that there might be a different

14 perspective on them if one were comparing them solely

15 on their own, as compared to looking at them in a

16 portfolio of options that are open to a utility?

17   DR. JILL GUNN: Could you rephrase the

18 question. What do you mean, comparing on their own?

19   MR. WILLIAM GANGE: The rankings are

20 done as against each other, so photovoltaic as compared

21 to wind as --

22   DR. JILL GUNN: Yes --

23   MR. WILLIAM GANGE: -- compared to

24 Hydro as compared to geothermal.

25   DR. JILL GUNN: -- yes, yes, yes.

9240

 1   MR. WILLIAM GANGE: And -- and it

 2 strikes me that wind on its own may have certain

 3 characteristics, but wind when combined with a system,

 4 such as we have in Manitoba, where there's a Hydro

 5 system, may have very different characteristics.

 6   Would you agree with that -- that

 7 characterization?

 8   DR. JILL GUNN: Yeah, I would -- I

 9 would agree with that. Generally, when you're making

10 decisions about some sort of a preferred path for

11 energy development, it's going to involve a range of --

12 of power types. So there's going to be a mix, and --

13 and the debate is around what mix is preferable.

14   MR. WILLIAM GANGE: And you understand

15 that one of knocks that's made against wind power by

16 people studying this is that wind is intermittent?

17   DR. JILL GUNN: Correct.

18   MR. WILLIAM GANGE: And -- and

19   therefore,

20 there's not -- it's not quite as dependable as some of

21 the other -- well, it's -- it's not as dependable as

22 gas, for instance. It's not as not dependable as

23 Hydro, as another example. So that's one (1) of the

24 complaints that made against wind.

25   Do you understand that?

9241

1   DR. JILL GUNN: The literature bears

2 that out.

3   MR. WILLIAM GANGE: But that if wind --

4   so --

5 so that wind in -- in a jurisdiction where there is no

6 ability to combine it with another power source would

7 be less valuable than wind in a -- in a jurisdiction

8 where it can be combined with a -- a -- another power

9 source, such as hydro, such as we have in Manitoba.

10   Does that make sense to you?

11   DR. JILL GUNN: I would agree with

12 that.

13   MR. WILLIAM GANGE: Those are my

14 questions. Thanks very much. Thank you, Mr. Chair.

15   THE CHAIRPERSON: Thank you, Mr. Gange.

16 I'm looking to Mr. Orle now, please.

17

18 CROSS-EXAMINATION BY MR. GEORGE ORLE:

19   MR. GEORGE ORLE: Thank you, Mr. Chair.

20 Good afternoon panel. My questions will be primarily

21 to Dr. Gaudreau. And it's with respect to what has

22 been produced as CAC Exhibit number 57, which is the --

23 the extract from Table 6. And I -- I don't need to

24 have it shown on the screen. I just want to talk to

25 you about it in -- in general terms.

 1   When I first looked at this, it -- it

 2 seemed to be a five (5) pages of -- of a lot of

 3 information that was required to be dealt with. And

 4 I'm -- I'm not going to call it a -- a laundry list,

 5 but it seems to be that it -- it really is a -- a

 6 checklist of sorts.

 7   Would that be correct?

 8   DR. KYRKE GAUDREAU: Could -- could you

 9 clarify what you mean by 'checklist'?

10   MR. GEORGE ORLE: It seems to be that

11 this is a list that will be applied against a -- either

12 a plan or -- or some kind of project that one would

13 look and make sure that these particular items were

14 actually brought to bear or -- or brought to mind in --

15 in the process of evaluation?

16   DR. KYRKE GAUDREAU: Yes, that sounds

17 about right.

18   MR. GEORGE ORLE: And it was little

19 overwhelming until I decided to treat it much like a

20 computerized outline, and I just started closing all of

21 the sub-groups. And it seem to me that there's six (6)

22 essential main topics set out in this particular list?

23   You know, I'm sorry, I -- I may have

24 been misdirecting my questions, I'm sorry, because I

25 think -- I think it was Dr. Gibson that -- that did

9243

1 most of the testimony on this part?

2   DR. ROBERT GIBSON: Yes, that's

3 correct.

4   MR. GEORGE ORLE: Sorry. Am I correct

5 in that, Dr. Gibson, that we have six (6) main

6 categories in this -- in this list?

7   DR. ROBERT GIBSON: Yes, if you have --

8 which you may not have, this slide number 13.

9   MR. GEORGE ORLE: Yeah, I'm aware of

10 that slide. I'm --

11   DR. ROBERT GIBSON: So, that's right.

12   MR. GEORGE ORLE: Okay. I then want to

13 go to the actual report, and I believe that that is

14 Exhibit number 20, and to page 20 of the actual report,

15 the last paragraph.

16   And when you talk about Section 4 which

17 includes this table. Midway through the paragraph it

18 says that:

19   "The -- the section in the package of

20   criteria draws from sustainably --

21   sustainability criteria sets for dams

22   prepared by other bodies, such as the

23   World Commission on Dams."

24   Correct?

25   DR. ROBERT GIBSON: Yes.

9244

1   MR. GEORGE ORLE: And -- and is it --

2 am I correct in interpreting this as those six (6) main

3 categories are taken from that body of literature?

4   DR. ROBERT GIBSON: The body of

5 literature including that and as well as many other

6 items, yes.

7   MR. GEORGE ORLE: Okay. Then when I go

8 to the -- the subcategories that are set out under

9 those six (6), are those also taken from the -- the

10 literature or the -- the reports that came out from the

11 World Commission on Dams?

12   DR. ROBERT GIBSON: The World

13 Commission on Dams reports are among the many sources

14 drawn upon for the work. The World Commission on Dams

15 findings are globally applicable, so they did not

16 inform the specification for Manitoba in the particular

17 case that is before us today.

18   So a lot of other material had to be

19 drawn on for that specification work. The World

20 Commission on Dams and other sources helped to do the

21 initial specification of the generic sustainability

22 assessment criteria for application and energy system

23 planning, including dams.

24   MR. GEORGE ORLE: Okay. So in the

25 third paragraph of that -- of that page that sets out:

9245

1   "The World Commission on Dams

2   proposes that a set of sustainability

3   criteria should be applied at all

4   important decision points, including

5   the needs assessment."

6   They don't set out a particular set of

7 criteria; they indicate that a set of criteria should

8 be developed for these types of processes?

9   DR. KYRKE GAUDREAU: They do set out

10 their own set of criteria. And our criteria set is

11 informed by that, but it -- yes, so they do have their

12 own particular set.

13   MR. GEORGE ORLE: Okay. And you're

14 saying that -- that the criteria that you used is -- is

15 either based or takes from that set from the World

16 Commission on Dams?

17   DR. KYRKE GAUDREAU: Yes, in part.

18 Their -- their criteria set also focusses a lot on the

19 procedural elements, which ours do as well. But -- but

20 we address that in other parts of the assessment

21 framework.

22   MR. GEORGE ORLE: Okay. And then when

23 we drill down to the very specific components of -- of

24 each one (1) of the subsets, where -- where does that -

25 - or -- or where do you find that criteria and to place

9246

1 it into this particular process?

2   DR. KYRKE GAUDREAU: I'm sorry.

3 There's not one (1) single criteria. There's a --

4 there are a number of criteria that the World Bank

5 proposes. And I don't have that list in -- in front of

6 me.

7   So could you clarify the question

8 perhaps?

9   MR. GEORGE ORLE: I guess my question

10 would be: Are -- are these subjective determinants

11 that are looked at by you as this particular project,

12 or are those criteria that you have from a -- a set of

13 criteria that may have been developed to be used in a

14 process of this type?

15   DR. ROBERT GIBSON: The criteria set

16 that we have involves various levels of specification,

17 as you might imagine, from the generic criteria that

18 we've developed, which also came from a multiplicity of

19 sources and processes of consultation. And those were

20 global to apply to anything anywhere.

21   Further specification is needed to take

22 it to the application to energy undertakings, to dams

23 in particular, to energy system planning, and into

24 energy system planning in Manitoba with particular

25 contextual factors that have to do with the kinds of

9247

1 options that are available in this province.

2   Therefore, a whole set of sources, a

3 wide set of sources, was used at each stage of that

4 specification. So the World Commission on Dams work

5 was an important contribution to a stage of that

6 specification, along with other material from other

7 literature on energy systems and the key criteria that

8 are involved there.

9   So it would be difficult, retroactively,

10 to extract from the table exactly what was informed

11 directly by the World Commission on Dams approach,

12 which is generic to dams in the world, to what we have

13 identified here.

14   And we have, of course, integrated that

15 with out best understanding of the energy systems

16 literature, for example, and so forth.

17   MR. GEORGE ORLE: Okay. If I -- if I

18 could direct you to page 29, and it's the -- about the

19 second page in on -- on your Exhibit number 57, just to

20 get an understanding of this, one of your main headings

21 in the middle of that page is "Ensuring Fairness." And

22 it's a fairly general criteria which you then adjust

23 for a number of sub-criteria.

24   And if I go to the next page, this is

25 where I find the one that talks about accounting for

 1 past wrongs. So where -- where does this sub-criteria

 2 of accounting for past wrongs come from? Is that

 3 something that you've determined is important for this

 4 particular study, or does that come from some other

 5 literature that indicates that this is one of the

 6 criteria that ought to be accounted for?

 7   DR. KYRKE GAUDREAU: It -- I believe

 8 it's a mix of both. For example, in the World

 9 Commission on Dams, there is a tremendous amount of

10 emphasis placed on free, prior, and informed consent.

11 And with that having a -- not be tied to future

12 development projects, but also making up for the

13 impacts of previous development projects.

14   And so this -- I -- I do believe this is

15 -- is also relevant to the Manitoba situation. But

16 that is a value judgment on our part, obviously, as

17 well as on the part of the reviewers who looked at our

18 criteria set.

19   DR. ROBERT GIBSON: Can I add --

20   MR. GEORGE ORLE: Certainly.

21   DR. ROBERT GIBSON: -- briefly that

22 this also overlaps with the question of due

23 consideration of cumulative effects, which are to some

24 extent those, as Dr. Gunn has -- has expressed, a

25 result from past activities, past stresses, some of

9249

1 which are biophysical and some of which are social, and

2 that these are part of the context in which you

3 evaluate the -- the integrity of a system using that

4 language, whether you have serious issues that need to

5 be addressed, especially if you're talking about

6 additional activities that might add to stress on that

7 biophysical and/or social system.

8   And therefore, especially where these

9 kind of considerations have some kind of historical

10 grounding, those are considerations that need to be

11 taken into account so that you understand those kinds

12 of effects that you would like to encourage as benefits

13 to deal with existing problems.

14   So this might be simply defined as if

15 you have existing issues, they are likely to be

16 priorities for attention when you are proposing an

17 undertaking that will have various effects. If they're

18 helping to remedy existing problems socially or

19 ecologically, then that's a good thing and it may be

20 very important.

21   And if we were weighting those things,

22 then that might deserve a significant weight relative

23 to other considerations that would be less important,

24 because the previous -- the baseline resulting from the

25 history is not problematic.

9250

1   MR. GEORGE ORLE: Okay. In your report

2 you indicate that these types of criteria or

3 sustainability criteria, they have been used by -- by

4 other bodies as a source of guidance. And I believe in

5 particular at page 25 you talk about them being used in

6 the Mackenzie -- Mackenzie Gas Project?

7

8   (BRIEF PAUSE)

9

10   DR. ROBERT GIBSON: I need a brighter

11 light or better eyes. Yes. Not these exact criteria,

12 because they were specified for that case, but yes.

13 Broadly, the answer is yes.

14   MR. GEORGE ORLE: Okay. And in that

15 particular case, they were used by the -- the panel in

16 a way to take a look at each one of the portions of the

17 project and to -- to give it some kind of -- of

18 heading, uncertain mixed or clearly adverse, so they

19 were used almost as a template to take a portion of the

20 project and determine how the panel weighed that

21 particular criteria against the project?

22   DR. ROBERT GIBSON: Yes, mostly. They

23 didn't apply it to a portion of the project. They were

24 looking at alternatives, which, because of the nature

25 of that undertaking, were different alternatives from

9251

1 what are faced here. We're looking at various

2 culminations of generation and demand management

3 options for a system plan for electricity.

4   In that case, the alternatives were,

5 well, simply what is the throughput of the pipeline and

6 what are the associated cumulative effects of

7 development to provide that throughput. And

8 consequently, you could compare various levels of

9 density, I suppose, of that project plus its other

10 effects.

11   So that was -- they compared the

12 alternatives in that sense against the criteria they

13 had developed.

14   MR. GEORGE ORLE: Okay. And the

15 criteria that they used in the Mackenzie Gas Project,

16 in terms of the very general, the six (6) main headings

17 that you have here, would they have been using similar

18 general principles?

19   DR. ROBERT GIBSON: Similar but not

20 identical. Because this was a case of a nonrenewable

21 resource extraction and, therefore, depletion project,

22 one (1) of the major categories of concern was that

23 there needed to be some kind of bridging between that

24 project, which was necessarily time limited to a more

25 desirable future, which would have to use that project

9252

 1 as a bridge to more sustainable livelihoods thereafter.

 2   That's not a major consideration in this

 3 particular case, so their -- their categorization and

 4 their priority concerns are different because of the

 5 substantive difference in the undertakings.

 6   MR. GEORGE ORLE: Okay. And the

 7 heading, "Accounting for Past Wrongs," that's -- that's

 8 not a novel approach or a novel concept.

 9   That -- that's something that's used in

10 sustainability studies, maybe not -- maybe not on a

11 regular basis, but fairly regularly?

12   DR. ROBERT GIBSON: Where -- it's

13 something that is sadly appropriate in lots of cases.

14 And so whether that's the terminology always used, I

15 couldn't tell you, but certainly the terminology has

16 been used and certainly it's appropriate in a range of

17 cases.

18   MR. GEORGE ORLE: Okay. And you

19 familiarized yourself with the -- the terms of

20 reference that the -- the Board has with respect to

21 this particular hearing?

22   DR. ROBERT GIBSON: Yes, we've read

23 them.

24   MR. GEORGE ORLE: And you familiarized

25 yourself with the appropriate legislation in Manitoba

9253

1 dealing with the matters raised in this -- in this NFAT

2 hearing?

3   DR. ROBERT GIBSON: Yes.

4   MR. GEORGE ORLE: And are you satisfied

5 that the criteria that you have -- have raised in your

6 exhibit are ones that are appropriate within the

7 jurisdiction of the Board to deal with on this NFAT

8 hearing?

9   DR. ROBERT GIBSON: Yes. As we've

10 argued, in part because of the specifics of the terms

11 of reference, et cetera, but also the general

12 requirement that is reflected in those terms of

13 reference, which is to find the best option,

14 essentially, for the well-being in Manitoba.

15   So if that's the general requirement as

16 confirmed, I think, by the terms of reference, then a

17 comprehensive look at the major considerations that are

18 involved, or macro, if you wish, considerations that

19 are involved is necessary.

20   MR. GEORGE ORLE: Okay. And in terms

21 of the accounting for past wrongs, do you feel that

22 that's a criteria that can be applied by this Board or

23 for the Board to be able to make recommendations in

24 regards to past wrongs?

25   MR. BYRON WILLIAMS: Just -- just on

9254

1 the point, and I'll -- we'll certainly -- I -- I

2 certainly wouldn't prohibit the witness from answering

3 that question. I just -- I think he can give insight

4 into what he thinks appropriate based upon his

5 understanding of the -- of the record. He's -- he's

6 not expressing a legal opinion, nor is he -- he's

7 offering a kind of interpretation that may be employed

8 by the Board, but I don't think he'll be telling the

9 Board how it might apply it.

10   If I could just draw that nuance, Mr.

11 Orle.

12   MR. GEORGE ORLE: I'm -- I'm prepared

13 to accept that. I'm -- I'm not asking him anything

14 other than I -- I don't think he put something into his

15 criteria that he didn't think the Board could take into

16 account, and that's all I'm getting at.

17

18 CONTINUED BY MR. GEORGE ORLE:

19   MR. GEORGE ORLE: Are -- are you

20 satisfied that this is a criteria that ought to be

21 taken into account?

22   DR. ROBERT GIBSON: Yes, it -- it is,

23 and if only for having a proper understanding of both

24 the -- the current conditions that will be affected by

25 a new undertaking in various circumstances and by -- or

9255

1 for its implications for the valuing of positive

2 contributions that may be made by an undertaking.

3   Both of those considerations would seem

4 to be material to what the Board is required to

5 address, and both of them are fairly broad

6 considerations that would seem to fit into the -- the

7 ambit of the major concerns that would have to be

8 attended to look at overall benefits and disbenefits of

9 the various options.

10   THE CHAIRPERSON: Mr. Orle, maybe I

11 could -- could I -- do you mind if I ask a question

12 here at this point because --

13   MR. GEORGE ORLE: Certainly.

14   THE CHAIRPERSON: -- I want to clarify

15 something. You know, in relation to this issue of past

16 wrongs, I expect that -- that that criteria is related

17 to examination of this project and ensuring that ills

18 that have occurred in the past with previous projects

19 are not repeated with this current project.

20   Now, I just want to clarify. Is that --

21 is that what you mean, or do you mean something broader

22 than what I've just described?

23   DR. ROBERT GIBSON: No, I do mean

24 something broader. If we have problems, we want to try

25 to resolve them and that would be beneficial. If there

9256

1 are negative effects from previous things, negative

2 effects from some untoward climatic event, we would try

3 to make things better. Part of what this is about is

4 making the world better in Manitoba. And so that means

5 repairing damage as well as doing additional good

6 things.

7   So I think in general that's a category

8 of things that you would consider. If -- if we had

9 serious ecological devastation from something or other

10 in the past, and a new project could help reduce that

11 and have rehabilitation we would say, yes, that's a

12 good thing. And maybe it's a strong mark in favour of

13 whatever that undertaking is.

14

15 CONTINUED BY MR. GEORGE ORLE:

16   MR. GEORGE ORLE: And if I might follow

17 up on that question. Would you believe it would be

18 appropriate, in terms of addressing past wrongs, that

19 if there was to be damages -- or that there was to be

20 amelioration of damages, that one could take into

21 account a condition of a new project to ameliorate some

22 of the damage that had been caused by the previous

23 projects?

24   DR. ROBERT GIBSON: Certainly in

25 general, conditions of approval do include further

9257

1 mitigation of negative effects, and further enhancement

2 of positive ones would fall into that category.

3   MR. GEORGE ORLE: Okay. And one of the

4 -- the issues that have been raised as -- and -- and

5 the new thinking in terms of dealing with indigenous

6 peoples is -- is active partnerships in the projects.

7   And would I be correct in saying that a

8 past wrong may be the fact that there was no benefit

9 given to the indigenous peoples as a result of the

10 projects proceeding?

11   DR. ROBERT GIBSON: Certainly.

12   MR. GEORGE ORLE: And that one way of

13 ameliorating that might be to take the benefits that

14 come from the current project and being able to apply

15 that back? You'll have to answer 'yes' or 'no' for the

16 transcript.

17   DR. ROBERT GIBSON: Oh, sorry. Nodding

18 doesn't help. Yes, certainly.

19   MR. GEORGE ORLE: And so it might not

20 be inconceivable that where Manitoba Hydro is currently

21 making partnerships on future dams, that there may be

22 some thought as to making First Nations partners in the

23 previous dams that are already successful?

24   DR. ROBERT GIBSON: That's conceivable.

25 I'm not necessarily proposing it. I don't have the

9258

1 expertise on what the best options are, but I wouldn't

2 see any reason for precluding that possibility.

3   MR. GEORGE ORLE: And certainly if

4 today's First Nations are receiving a portion of the

5 benefits in the new dams, then there would be no reason

6 why past First Nations that were impacted wouldn't

7 receive either from the past projects, or from the

8 current project, a portion of the benefits?

9   DR. ROBERT GIBSON: I -- I don't see

10 any reason why that can't be on the table.

11   MR. GEORGE ORLE: Okay. And I'm not

12 asking you to -- to make a decision on it. I'm just

13 saying that these are conceivable areas that can be

14 dealt with and discussed in the process of dealing with

15 the sustainability of this particular project or the

16 projects that are under consideration.

17   DR. ROBERT GIBSON: I would think so,

18 yes.

19   MR. GEORGE ORLE: Thank you. Mr.

20 Chair, those are all the questions I have of the

21 witness. Thank you.

22   THE CHAIRPERSON: Before I turn the

23 microphone over to -- to Manitoba Hydro, I have a few

24 que -- a few questions I'd like to clarify in my own

25 mind. And perhaps we could start with page 16. Dr.

9259

 1 Gaudreau -- I'm sorry, Dr. Gibson.

 2   DR. ROBERT GIBSON: Of the slides?

 3   THE CHAIRPERSON: Sixteen (16).

 4   DR. ROBERT GIBSON: Of the slides?

 5   THE CHAIRPERSON: Yes, please.

 6   DR. ROBERT GIBSON: Okay. Yes.

 7   THE CHAIRPERSON: Now, so I'm looking

 8 at the -- I'm looking at the -- the first bullet,

 9 specifically the first line under the bullet:

10   "Rejects the assumption that we need

11   to meet continuously to increasing

12   energy demand."

13   And I think I understand the -- the phys

14 -- philosophical groundings of that statement. But you

15 will -- you will acknowledge, no doubt, there's a

16 stress here between the harsh reality that Manitoba

17 Hydro faces where the client, an -- an existing client

18 and perhaps a new immigrant to Manitoba, when -- when

19 that client puts on the light they expect the energy to

20 be there.

21   I think this is describing an energy

22 future which is very different than the one (1) that --

23 that we are currently living in, but the -- the one (1)

24 we're currently living in there's an expectation that

25 the power will be there.

9260

1   Now, did you acknowledge that there's --

2 there's a-- a very difficult stress line there for

3 Manitoba Hydro?

4   DR. ROBERT GIBSON: Dr. Gaudreau may

5 have some response here, too. But my initial reaction

6 is, yes, especially if we go back to the point that Dr.

7 Gaudreau made earlier about what people are wanting,

8 whether they are recent immigrants or people who have

9 been here forever, are the services not just the

10 energy.

11   And so the question is: How best can we

12 meet those needs for those services, recognizing that

13 there are problems if we are simply increasing

14 generation to meet new de -- new demand? So is it a

15 tradeoff between meeting new demand and -- and meeting

16 the broader requirements for not continually expanding

17 material energy mandate?

18   I think the answer in most literature

19 is, no, we don't have to make that tradeoff because

20 there are such significant improvements that we can

21 make through efficiencies that it should be at least

22 the first point of entry into this discussion. Well,

23 how can we provide for the new demands -- and it's not

24 just new people, probably there's new uses from new

25 technologies and a variety of other things, in ways

1 that will not require us to keep generating more and

2 extracting more material? Are there ways to do that?

3   And this is a subject of, well,

4 libraries full of -- of documentation and efforts.

5 There's a whole discussion about factor 4 and fact --

6 factor 10 efficiencies. Factor 4 is: Can we get four

7 (4) times as much benefit out of each unit of material

8 and energy that we have? Factor 10 is ten (10) times

9 as much.

10   I said, well, that sounds pretty

11 ambitious. But for fifteen (15), maybe twenty (20)

12 years now there's been a literature that has argued

13 that we could get factor 4 efficiencies with existing

14 technology, and affordably. We have to do some

15 transferring of how we do things. It'll not be an

16 automatic or easy transition, but there are lots of

17 opportunities. Because we haven't paid much attention

18 to efficiency in the past, there's lots of

19 opportunities. And there's been lots of gains.

20   To do so more significantly then there

21 are more ambitious things you have to do. For example,

22 if I drive my car to Toronto from Waterloo, 90 some odd

23 percent of the energy used is moving a hunk of medal to

24 Toronto. It's not moving me. It's a highly

25 inefficient way to get a human body from 'A' to 'B'

9262

1 relative to other options. But I'd have to have

2 convenient public transit which we don't have at the

3 moment.

4   So, you know, I may be stuck with it

5 because there's a structural problem with basic

6 inefficiencies. So -- but I could easily get a factor

7 10 efficiency improvement in transportation between

8 where I live and where I sometimes go to see my

9 grandsons, because the way we've done it -- the way

10 we've designed it is poor. So transition will take

11 time. But a factor 10 efficiency is enormous. So if

12 we can do that in various fields then, certainly, we

13 can provide for new demand.

14   THE CHAIRPERSON: Now, one (1) -- one

15 (1) of the challenges that the criteria you are

16 proposing create, I suppose, is the fact that you would

17 -- we would be called upon to retrospectively assess a

18 project -- or pardon me, retrospectively apply criteria

19 to a project that -- where those criteria were not used

20 to design the project to start with.

21   In other words, Manitoba Hydro probably

22 de -- designed its project to ensure that it met the

23 sustainability requirements set out by legislation.

24 And so now we're introducing a new set of criteria --

25 expanded set of criteria, the ambitious ones, to a

9263

1 project where this was never contemplated, either those

2 criteria were never contemplated, or at least not to

3 the extent that you are proposing, they were never

4 applied in the design phase.

5   So you're sort of saying, Let's go back

6 and look at the project using criteria, ambitious ones,

7 that were never used to develop the project in the

8 first place.

9   How do you respond to that?

10   DR. ROBERT GIBSON: Well, first of all,

11 as I think I said in my -- my presentation, what

12 Manitoba Hydro has done in this case is quite a bit

13 closer to the standard that we are proposing to apply

14 than most other cases that we've seen. So the step, as

15 I argued, is not as great as it might be in other

16 cases.

17   Secondly, I don't think that what we're

18 proposing is different criteria for that -- that which

19 is generally expressed in -- in Manitoba Hydro law and

20 policy. The particular statements are pretty broad

21 about integrated consideration, about overall benefits,

22 about considering the full range of socioeconomic,

23 cultural, and et cetera considerations.

24   What we've done, I think, is not being

25 tied to any traditions of -- of planning in any

9264

1 institution, taken what we believe is the best

2 understanding of what a serious effort to integrate and

3 attend to the considerations means.

4   Is it a higher standard than was applied

5 by Manitoba Hydro in -- in their studies? Yeah, I

6 think it is. Would it have been fair to expect them to

7 do it in the first place? Well, I suppose they could

8 have, but not many people do, and, therefore, we

9 shouldn't be, you know, rude about the effort that they

10 made.

11   Is it reasonable for you now to apply

12 standards that are at a higher level than Manitoba

13 Hydro applied? Well, I guess panels are always doing

14 that, or at least they think they are. And so that's

15 not outrageous. How far you should go, I guess, is a

16 practical question. All of these criteria, there's

17 ninety (90) on this list, which is scary for me and I

18 don't even have to do the work, so that's a problem.

19 And you look at each individual one (1), they demand a

20 fair amount of specifics about various component issues

21 under each one (1) of the individual cases, so that's

22 fairly demanding.

23   I still think it's worth doing because I

24 don't think it's impossible. I think on the basis that

25 the knowledge you people will have at the end of these

9265

 1 hearings, you could probably fairly rapidly go through

 2 these and say what kind of reaction you have just on

 3 the basis of your knowledge from being exposed to this

 4 day after day for so long.

 5   And then you can rank the potentially

 6 reasonable options. And you can see from that ranking

 7 how much difference it makes. You may end up ranking

 8 the -- the options pretty much the same as Manitoba

 9 Hydro has done. I don't know because I haven't done

10 it, so I don't discount that possibility in part

11 because I think, basically, Manitoba Hydro has come

12 pretty close to applying sustainably-based criteria.

13 Again, there's a difference, but it's not enormous.

14   So I don't know what you're going to

15 find out of that, but I don't think it's impossible to

16 do. And then I think it's possible to say, all right,

17 so there is a difference between these points, what do

18 we do about that difference. And how far you go is a

19 judgment call about how far you push, how you take into

20 account the point that you've just raised about, well,

21 they weren't clearly required to do this from the

22 outset. It's not very surprising that they didn't.

23 But in the broad public interest, it looks like these

24 are things they should have been thinking about and

25 maybe these are options that deserve more attention.

9266

1   Well, we're pretty down the list of what

2 the decision making would do at that point. And we'd

3 have to have specifics to say how we would arrange it,

4 and maybe you and I wouldn't agree. But I think the

5 answer simply is that if you did something that was

6 similar to that, the result would be way better than

7 what you would get otherwise. And that you can make a

8 significant step forward into better decision making in

9 that way. How far you decide to push it is a

10 reasonable judgment about the practicalities facing

11 Manitoba Hydro, facing your analysis, facing Manitoba

12 in the future.

13   I defer to your judgment. You know the

14 context of making these decisions and the government

15 that you're reporting to and et cetera. There's real

16 world stuff there that I defer to your knowledge on.

17 But do I think applying this would be practical? Yes.

18 Do I think you could move the sticks along the yard?

19 Yes. I don't know how far you can go down the field,

20 but I think you can do a significant job.

21   MS. MEGHAN MENZIES: If I could just

22 quickly interject. Be -- before we move on to cross-

23 examination by other Intervenors, I had advised that

24 the MMF -- that I would -- I had advised Jessica

25 Saunders that I would put it on the record that while

9267

1 the MMF was here and listened to the presentations this

2 morning, they would not have any cross-examination for

3 the afternoon.

4   THE CHAIRPERSON: Thank you for that,

5 Ms. Menzies. Me. Monnin, any questions?

6   MR. CHRISTIAN MONNIN: Merci, M.

7 President. We have no questions.

8   THE CHAIRPERSON: Merci, Me. Monnin.

9 I'll turn the microphone over to Manitoba Hydro. Ms. -

10 - Ms. Mayor, please.

11

12 CROSS-EXAMINATION BY MS. JANET MAYOR:

13   MS. JANET MAYOR: Thank you. My

14 questions are for Dr. Gunn. Now, this panel of the --

15 the Public Utility Board has been given a significant

16 responsibility to make recommendations to the

17 Government of Manitoba on the need for the Preferred

18 Development Plan and its assessment of whether that

19 plan is in the best long-term interest of the Province

20 of Manitoba.

21   In making those recommendations and

22 assessments, the Government as -- of Manitoba, in its

23 terms of reference, specifically asked the Public

24 Utilities Board to consider whether the Preferred

25 Development Plan is aligned with the Manitoba Hydro

9268

1 Act, the Government of Manitoba's Clean Energy

2 Strategy, the Principles of Sustainable Development

3 outlined in the Sustainable Development Act, and the

4 Climate Change and Emissions Reduction Act.

5   You would agree with that being the

6 responsibility given to them?

7   DR. JILL GUNN: Yes.

8   MS. JANET MAYOR: Now, have you had an

9 opportunity to read those four (4) documents which I

10 just cited?

11   DR. JILL GUNN: Not at all. Not at

12 all.

13   MS. JANET MAYOR: Would you have read

14 the Clean Energy Strategy?

15   DR. JILL GUNN: Yes.

16   MS. JANET MAYOR: And I just want to

17 turn to that.

18   DR. JILL GUNN: Yes. Yes.

19   MS. JANET MAYOR: So if we can turn to

20 that document. It's in Manitoba Hydro's book of

21 documents, which hasn't as of yet been filed as an

22 exhibit. And I believe that will become Manitoba Hydro

23 186.

24

25 --- EXHIBIT NO. MH-186:   Manitoba Hydro's Book of

9269
 1   Documents

 2

 3   MS. JANET MAYOR: Thank you. And we

 4   have it on the screen.

 5

 6   (BRIEF PAUSE)

 7

 8   MS. JANET MAYOR: Now, starting at page

 9   6 of the Strategy, if we can just scroll down. On the

10   bottom left-hand corner in green the Government of

11   Manitoba has outlined its strategic -- strategic

12   objectives.

13   Is that correct?

14   DR. JILL GUNN: Yes, it looks that way.

15   MS. JANET MAYOR: And -- sorry, just

16   scrolling back up a little bit on that page, it also in

17   the yellow box talks about its vision for the future in

18   the box that's entitled, "Looking forward"?

19   DR. JILL GUNN: Yes.

20   MS. JANET MAYOR: And if we can turn to

21   now the following page.

22

23   (BRIEF PAUSE)

24

25   MS. JANET MAYOR: I'm sorry, if we can

 1 go to -- two (2) more pages. One (1) more. Thank you.

 2 And starting on page 9 of that Strategy document, the

 3 Government of Manitoba begins to outline its clean

 4 energy priority actions. The first of which is

 5 building new hydro?

 6   DR. JILL GUNN: Yes.

 7   MS. JANET MAYOR: And in its

 8 description of building new hydro -- sorry for jumping

 9 around a little bit here. If we could just go to page

10 2 of the document, so we're going to go back.

11   Under that 'priority action building new

12 hydro' the government includes the construction of both

13 Keeyask and Conawapa, improvement of Manitoba Hydro's

14 transmission system and interconnections to the US, and

15 maximize -- maximization of economic benefits and job

16 creation from those projects. You would agree with

17 that?

18   DR. JILL GUNN: Yes. Yeah.

19   MS. JANET MAYOR: And those items are

20 all part of Manitoba Hydro's Preferred Development

21 Plan?

22   DR. JILL GUNN: Yes.

23   MS. JANET MAYOR: And at page 9 of that

24 document...

25

9271

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 1                      (BRIEF PAUSE)

 2

 3               MS. JANET MAYOR:   On the right-hand

 4  side Manitoba government talks about its long-term

 5  strategic decisions to build on Manitoba Hydro's own

 6  renewable resources.

 7               DR. JILL GUNN:   Yes, I see that.

 8               MS. JANET MAYOR:   Now, you describe for

 9  us in your report four (4) questions that you pose as

10  setting the stage for thoughtful strategic discussion

11  of the options.  And those questions, and I'm -- I'm

12  going to paraphrase, but they speak to creating the

13  preferred future direction for long-term energy

14  infrastructure investment in Manitoba, the vision for

15  the Nelson sub-watershed region, and the broad vision

16  and values.

17               That would be fair in terms of --

18               DR. JILL GUNN:   Correct, yes.

19               MS. JANET MAYOR:   -- what's asked for

20  in the question?

21               DR. JILL GUNN:   Yes.

22               MS. JANET MAYOR:   Now, you...

23

24                      (BRIEF PAUSE)

25
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9272

1   DR. JILL GUNN: I'll -- I'll do my

2 best.

3   MS. JANET MAYOR: You indicated this

4 morning in your presentation that the Proponent has

5 used the various pieces of legislation that I've just

6 referred to and the strategies as its performance

7 indicators. And I believe that the words you used

8 were, "Rightfully so."

9   DR. JILL GUNN: Correct.

10   MS. JANET MAYOR: So would you agree

11 that the province of Manitoba, through those documents

12 and legislation, has already set out its vision of

13 sustainable development, and how energy production fits

14 within that vision?

15   DR. JILL GUNN: Yes, I would agree.

16   MS. JANET MAYOR: Now, I'd like to turn

17 to your report now, so not the slide presentation but

18 the actual report. Turning to page 13 of your report

19 and scrolling down to the bottom of that page -- thank

20 you. When you reviewed the -- and I'm -- I'm in

21 Section 3.1.

22   When you reviewed the Preferred

23 Development Plan and the various alternatives, you were

24 instructed to consult with Mr. Harper who was hired on

25 behalf of the Consumers' Association, and to review the

 1 La Capra Report, rather to -- than to review the NFAT

 2 submission itself, is that correct?

 3   DR. JILL GUNN: What you see in Section

 4 3.1 where I'm summarizing the -- the main features of

 5 the Plan, the -- the -- those features were given to

 6 me, yes, by -- in consultation with Mr. Harper.

 7   And what I used those for, what we

 8 really -- what they were used for in my report was just

 9 to identify those -- the basic power supply options.

10 So I didn't actually review -- I didn't do a critical

11 assessment of -- of the alternatives based on the

12 different macro-environmental impacts.

13

14   (BRIEF PAUSE)

15

16   MS. JANET MAYOR: So it was simply a

17 high level overview of the potential macro-

18 environmental impacts and benefits rather than an

19 actual assessment of those --

20   DR. JILL GUNN: Correct --

21   MS. JANET MAYOR: -- impacts and

22 benefits?

23   DR. JILL GUNN: -- yes. It was

24 summarizing on a global scale the usual kinds of

25 environmental impacts and benefits that you will see

9274

1 associated with each type of power supply option.

2   MS. JANET MAYOR: And in your report,

3 you further indicate that:

4   "The report does not attempt to

5   assess the best development option,

6   nor does it draw conclusions as to

7   the needs for alternatives of the

8   plan."

9   DR. JILL GUNN: It doesn't do that. In

10 my view that's the purview or the mandate of the panel.

11   MS. JANET MAYOR: On page 15 of your

12 report at the bottom in the footnote you perhaps put a

13 qualifier, maybe perhaps put an -- an additional

14 disclaimer on the information that you do provide in

15 your report indicating that:

16   "The information provided regarding

17   the matro -- macro environmental

18   impacts of various power supply

19   options may inadvertently misinform.

20   As it is a high level review based

21   primarily on academic literature, the

22   discussion is not context specific to

23   Manitoba and it may not be up to date

24   with rapid movements in the

25   marketplace."

9275

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 1                    Is that fair?

 2                    DR. JILL GUNN:   Correct.

 3                    MS. JANET MAYOR:   And in fact in

 4  footnote 9 at the bottom you actually refer the reader

 5  to another expert for information on the macro

 6  environmental impacts of Manitoba Hydro's Preferred

 7  Plan.

 8                    DR. JILL GUNN:   Correct, the MMP report

 9  went into a much more detailed and direct analysis of

10  the macro environmental assessment provide by Manitoba

11  Hydro.

12                    MS. JANET MAYOR:   Now, at page 18 of

13  your report, looking at the table, you put together a -

14  - a table of the potential environmental impacts of

15  hydroelectric power generation.

16                    DR. JILL GUNN:   Correct.

17                    MS. JANET MAYOR:   And you reviewed that

18  again this morning in your presentation.

19                    Earthquakes are not a concern in

20  Manitoba with respect to the Preferred Development

21  Plan?

22                    DR. JILL GUNN:   Correct, yeah.  So that

23  was asked to us as a clarification in the Information

24  Request process.

25                    MS. JANET MAYOR:   And from your prior
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9276

1 reading of the Keeyask environmental impact assessment

2 documentation, you would agree that Western-style

3 agricultural production is not mentioned and is not

4 taking place in the region of either Keeyask or

5 Conawapa?

6   DR. JILL GUNN: From my recollection.

7 It has been a while since I reviewed all of those

8 documents, yes.

9   MS. JANET MAYOR: So flooding of

10 Western-style agricultural areas is also not a concern

11 with respect to the Preferred Development Plan?

12   DR. JILL GUNN: I wouldn't know. That

13 I haven't looked directly at.

14   MS. JANET MAYOR: There are no concerns

15 with respect to resettlement, though, as no individuals

16 or communities are being required to relocate?

17   DR. JILL GUNN: As I said, my report

18 doesn't focus on the specific impacts of the Preferred

19 Plan or alternatives. It focuses at a high level

20 globally on -- on the types of impacts that are

21 associated with these kinds of power supply

22 developments.

23   MS. JANET MAYOR: Nothing in your

24 reading, though, indicated that resettlement would be a

25 problem with respect to these projects?

9277

1   DR. JILL GUNN: I don't feel

2   comfortable to answer that with clar -- or definition

3   or clarity.

4   MS. JANET MAYOR: Turning to page 22

5   and the table that's found there, you discussed

6   significant impacts from the development of other

7   energy sources such as resource depletion of non-

8   renewable resources and the possible link to seismic

9   activity due to hydraulic fracking. Those would not be

10 concerns or impacts related to hydroelectric

11 development.

12   Is that correct?

13   DR. JILL GUNN: Could you restate that?

14 The -- yes, the fracking would not apply as -- as I

15 know to hydroelectric, but what was the other piece of

16 the question? I thought there was some -- one other

17 aspect.

18   MS. JANET MAYOR: Resource depletion of

19 non-renewable resources.

20   DR. JILL GUNN: Okay. Correct. No,

21 not significantly.

22   MS. JANET MAYOR: But those are

23 concerns as you've outlined in that table with an All

24 Gas Plan?

25   DR. JILL GUNN: Generally speaking they

9278

 1 are. They are concerns, yes.

 2   MS. JANET MAYOR: Now, also on page 22

 3 near the bottom of where we're looking at. It says:

 4   "Recent studies have highlighted some

 5   compelling evidence of the

 6   significant threats that gas

 7   development poses to the environment

 8   and human health."

 9   Could you just tell us at a high level

10 what those -- what the literature spoke about in terms

11 of that compelling evidence?

12   DR. JILL GUNN: If I recall, and I'd

13 have to go back to that source to be sure, it had to do

14 with potential gas leakage and contamination of ground

15 and surface water supplies. But as I said, I -- to be

16 sure I'd have to double check.

17   MS. JANET MAYOR: That particular

18 impact is not one which would result from hydroelectric

19 generation?

20   DR. JILL GUNN: Not to my knowledge.

21   MS. JANET MAYOR: On the benefits side,

22 one of the key benefits that you note for hydroelectric

23 power is that it helps combat climate change because it

24 has comparably lower greenhouse gas emissions.

25   DR. JILL GUNN: Than -- than non-

 1 renewables? Yes.

 2   MS. JANET MAYOR: And that would be a

 3 substantial benefit as compared to an All Gas Plan?

 4   DR. JILL GUNN: Yes.

 5   MS. JANET MAYOR: And in the All Gas

 6 scenario, in fact, you list high greenhouse gas effect

 7 as a significant environmental impact?

 8   DR. JILL GUNN: Yes, higher than non-

 9 renewables.

10   MS. JANET MAYOR: There has been some

11 discussion during the -- the course of this hearing

12 about the broad impacts and benefits of the Preferred

13 Development Plan in the North, in Manitoba as a whole,

14 and even across Canada.

15   In your report, you make the comment

16 that all supply options have profound potential impacts

17 on the environment and that tradeoffs among them are

18 complex?

19   DR. JILL GUNN: Could I pause to

20 correct myself. I -- I made an error when I just said

21 that, in terms of gas, it has higher emissions than non

22 -- or renew -- non-renewables, but I meant renewables.

23 Just to clarify for that record, that was an error.

24   And then could you please restate the

25 question?

9280

 1   MS. JANET MAYOR: Yes, absolutely.

 2   There's been some discussion during the course of the

 3   hearing about the broad impacts and benefits of the

 4   Preferred Development Plan --

 5   DR. JILL GUNN: Yes.

 6   MS. JANET MAYOR: -- in the North,

 7   across Manitoba, and across Canada. At page of your

 8   report, so we can even go there, now, you make the

 9   comment further down, I believe, about midway in the

10   first paragraph under the reference to La Capra, you

11   say:

12   "All supply options have profound

13   potential impacts on the environment,

14   and tradeoffs among them are

15   complex."

16   DR. JILL GUNN: Yes.

17   MS. JANET MAYOR: There's been

18   discussion during this hearing, and even between you

19   and I, about the potential impacts of gas fuel

20   generation, such as land fracturing and seismic

21   activity.

22   If you were to look at the impacts of an

23   All Gas Plan, for example, in comparison to the

24   Preferred Development Plan, would it, in your view, be

25   appropriate to consider the impacts not only in

9281

1 Manitoba, but also in those areas where fracking,

2 drilling, gas extraction is taking place?

3   DR. JILL GUNN: Yes, that would be

4 appropriate.

5   MS. JANET MAYOR: Now, as part of your

6 work on the Clean -- the Keeyask Clean Environment

7 Commission hearing you were asked to review the

8 environmental statement and associated materials filed

9 by the partnership. And the EIS itself included the

10 study of some thirty-eight (38) valued environmental

11 components.

12   Sixteen (16) were socioeconomic in

13 nature, and those included employment opportunities and

14 business opportunities?

15   DR. JILL GUNN: Yes. However, my role

16 in reviewing that impact statement was to focus on the

17 cumulative effects assessment that was done, and so we

18 did not review the entire environmental impact

19 statement or what was assessed for all of the -- the

20 VECs that would have been identified for the direct

21 impact assessment.

22   MS. JANET MAYOR: And fair enough. So

23 with that qualification, and I appreciate that, during

24 the course of the hearing though and in reviewing the

25 transcripts, you would have been aware that potential

 1 terms of your tables you have listings of impacts and

 2 benefits. What I don't see on any of your tables,

 3 particularly with hydroelectric generation, is the

 4 opportunities and benefits relating to those types of

 5 matters, so economic and business opportunities, that

 6 are often seen in hydroelectric generation, and

 7 particularly in Manitoba Hydro -- or in Manitoba for

 8 this -- for these projects.

 9   They weren't listed in your table as --

10 as environmental and socioeconomic benefits?

11   DR. JILL GUNN: Not specifically.

12   MS. JANET MAYOR: Indirectly, where

13 would they be found in your table on hydroelectric

14 generation?

15   DR. JILL GUNN: Under hydroelectric

16 generation? I -- I can see if they are indirectly

17 there. Could you give me a page, or I will find it.

18   MS. JANET MAYOR: So your table on

19 hydroelectric generation is on page 18, if that helps

20 you.

21   DR. JILL GUNN: Okay. And, so you're

22 asking does it talk about like business opportunities,

23 et cetera --

24   MS. JANET MAYOR: Economic

25 opportunities, those types of things --

9284

 1   DR. JILL GUNN: -- opportunities, m-hm.

 2   MS. JANET MAYOR: -- I don't see that

 3 in your list of potential benefits.

 4   DR. JILL GUNN: Well, I mean, I -- I

 5 guess indirectly it's there because I mean it is

 6 talking about that over the long term. It is a

 7 relatively low-cost option. So, you know, it is

 8 talking about the fact that, you know, there are going

 9 to be some -- some cost savings over the long term in

10 terms of being low cost.

11   And the accelerated rural development, I

12 mean, that's talking about potential business

13 opportunities. I mean, conceivably -- con -- economic

14 opportunities -- economic development opportunities.

15 So I -- I would say indirectly it may have captured

16 that.

17

18   (BRIEF PAUSE)

19

20   MS. JANET MAYOR: In terms -- if we can

21 go to page 38 of your report --

22   DR. JILL GUNN: Thirty-eight (38)?

23   MS. JANET MAYOR: Yeah. Starting near

24 the bottom, sorry, in the last section, and you talk

25 about considering further impacts of hydroelectric

9285

1 generation in light of the past effects that have

2 occurred on the Nelson River.

3   DR. JILL GUNN: Yes.

4   MS. JANET MAYOR: And in support of the

5 statements that you make on the next page, on page 39,

6 you cite at the top as two (2) of the sources for that

7 statement reports prepared by yourself and Bram Noble?

8   DR. JILL GUNN: Correct.

9   MS. JANET MAYOR: And the other three

10 (3) sources, G&P Resource Services, Peake, and

11 Schaefer, those were experts retained by the Consumers'

12 Association?

13   DR. JILL GUNN: They were.

14   MS. JANET MAYOR: And you've indicated

15 that you certainly haven't attended in the Nelson River

16 watershed, and you haven't done any environmental

17 impact assessments, that's correct?

18   DR. JILL GUNN: That's right.

19   MS. JANET MAYOR: And the experts from

20 G&P Resources Services, Mr. Peake, and Dr. Schaefer,

21 they also have not gone to the Nelson River watershed

22 to prepare their reports or to conduct an environmental

23 impact study for the Keeyask project, correct?

24   DR. JILL GUNN: I would have no idea if

25 they have been there or not. When we are citing the

9286

1 Gunn and Noble, and Noble and Gunn reports, really what

2 we are saying, those reports are based on -- on our

3 reading of -- of the Keeyask EIS. So that's why in the

4 next sentence it actually cites Manitoba Hydro itself,

5 specifically some instances in Chapter 7 that were

6 supportive to the statement.

7   MS. JANET MAYOR: From the materials

8 that you have read, it is clear that Manitoba Hydro

9 staff, its Cree partners, and the numerous consultants

10 spent ten (10) to twenty (20) years studying that

11 region? You talked about that this morning?

12   DR. JILL GUNN: Correct.

13   MS. JANET MAYOR: They analyzed over

14 thirty (30) valued environmental components and

15 assessed the potential environmental impacts?

16   DR. JILL GUNN: They did.

17   MS. JANET MAYOR: That work included a

18 significant amount of time in the field doing studies?

19   DR. JILL GUNN: It would have.

20   MS. JANET MAYOR: As we discussed this

21 morning, the Cree partners also have years of

22 experience living in the region and observing the

23 environment?

24   DR. JILL GUNN: Yes, they do.

25   MS. JANET MAYOR: And they prepared

 1 their own environmental evaluation reports that were

 2 filed with the Clean Environment Commission?

 3   DR. JILL GUNN: Yes.

 4   MS. JANET MAYOR: And you certainly

 5 don't dismiss or discount the work of our partners and

 6 their years of experience, do you?

 7   DR. JILL GUNN: Of course not, no.

 8   MS. JANET MAYOR: You've read the

 9 environmental impact study executive summary filed for

10 the project?

11   DR. JILL GUNN: For which project?

12   MS. JANET MAYOR: For the Keeyask

13 project. I'm sorry.

14   DR. JILL GUNN: Yes, the -- sorry, the

15 executive summary for the Keeyask project, yes. I

16 mean, I wouldn't have read it recently, but I did read

17 it, yeah.

18   MS. JANET MAYOR: Perhaps we can call

19 that up. And I apologize, Ms. Villegas. I thought I

20 was going to -- it's in the book of documents. And it

21 is the very -- the very last page.

22   And after all of the years of work being

23 done by the various scientists, engineers, biologists,

24 and those impacted, what they concluded, and I'm

25 looking at the second paragraph, is that that:

9288

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 1                    "The project will cause innumerous

 2                    and widespread environmental and

 3                    social effects, some of which would

 4                    have the potential -- would have had

 5                    the potential to be significant.

 6                    However, using past experience,

 7                    Aboriginal traditional knowledge, and

 8                    leading scientific and engineering

 9                    techniques, the partnership has

10                    mitigated, remediated, and are

11                    compensated for these effects such

12                    that the partnership is confident the

13                    project should proceed.  The project

14                    will also produce substantial

15                    environment, social, and economic

16                    benefits."

17               Now, that conclusion that I've just read

18   to you and all of the supporting materials for that

19   conclusion was the subject of a very lengthy hearing

20   before the Clean Environment Commission?

21               DR. JILL GUNN:   Yes, it was the subject

22   of -- yes, it was.  M-hm.

23               MS. JANET MAYOR:   In fact, I read in

24   the newspaper today it was almost five (5) months.

25   Hard to believe it actually took us all that long, I
```

1 say to Mr. Sargent and Ms. Johnson who are present.

2   It was also subject to a very thorough

3 review by experts within various departments of the

4 federal government through the Canadian Environmental

5 Assessment Agency's own assessment project, correct?

6   DR. JILL GUNN: Yes, that's correct. I

7 guess I'm wondering if you're asking if I, you know,

8 agree about the conclusions, or --

9   MS. JANET MAYOR: Well, what I wanted

10 to ask you about was the -- the -- the CEAA recently

11 issued its comprehensive study report for the Keeyask

12 project. I believe it was in the last two (2) weeks.

13 And they concluded that the project is not likely to

14 cause significant adverse environmental effects when

15 implementation of the proposed mitigation measures, the

16 follow-up program, and adherence to conditions and

17 requirements related to the necessary federal permits,

18 authorizations, and approvals are taken into account.

19   Were you aware of that report and its

20 conclusion?

21   DR. JILL GUNN: I -- I'm aware that the

22 report was released. I haven't read it yet. And the -

23 - we -- the record would show that, you know, the work

24 that I did or was involved with in -- in that hearing

25 for the cumulative effects assessment review, you know,

9290

1 our report showed that some of the conclusions made by

2 the Proponent in the EIS were -- were not well

3 substantiated.

4   So we're on record as questioning

5 whether or not it is -- can be trusted that there are

6 no significant adverse effects.

7   MS. JANET MAYOR: And that

8 determination will be made by the Clean Environment

9 Commission, correct?

10   DR. JILL GUNN: Correct.

11

12   (BRIEF PAUSE)

13

14   MS. JANET MAYOR: Sorry, can I just

15 have one (1) minute?

16

17   (BRIEF PAUSE)

18

19   MS. JANET MAYOR: We have no further

20 questions. Thank you very much -- for Dr. Gunn. Mr.

21 Bedford, I believe has some for Drs. Gibson and

22 Gaudreau.

23   THE CHAIRPERSON: Mr. Bedford, good

24 afternoon. Do you expect to take a fair amount of

25 time? Otherwise, what we can do is break right now and

9291

1 after the break you can start your questions. Is

2 that...?

3   MR. DOUGLAS BEDFORD: A break now would

4 be fine. I anticipate --

5   THE CHAIRPERSON: Okay, let's --

6   MR. DOUGLAS BEDFORD: -- maybe thirty

7 (30) minutes, but...

8   THE CHAIRPERSON: Okay. We've been

9 sitting for close to an hour and a half, so let's do

10 that. Let's take a break right now, and say take ten

11 (10) minutes. And we'll resume after that.

12

13 --- Upon recessing at 2:23 p.m.

14 --- Upon resuming at 2:41 p.m.

15

16   THE CHAIRPERSON: I believe that we are

17 ready to resume the proceedings. Mr. Hombach, please.

18   MR. SVEN HOMBACH: Ms. Mayor has

19 advised me that she needs to address an administrative

20 matter before we turn it over to Mr. Bedford.

21   MS. JANET MAYOR: Thank you. Just one

22 (1) comment. I had made reference when I was asking

23 questions of Dr. Gunn about the CSR and the CEAA

24 report, and I had quoted the conclusions. Just for the

25 record, it was actually filed as Manitoba Hydro Exhibit

9292

1 183 at Tab 2 yesterday by Mr. London. So just for the

2 record, it is there if you wanted to review it. Thank

3 you.

4   THE CHAIRPERSON: Thank you for that.

5   Mr. Bedford, please.

6

7 CROSS-EXAMINATION BY MR. DOUGLAS BEDFORD:

8   MR. DOUGLAS BEDFORD: Good afternoon,

9 Dr. Gibson and Dr. Gaudreau. Dr. Gibson, my name --

10 and, Dr. Gaudreau, my name is Doug Bedford. You both

11 know, of course, I work as legal counsel at Manitoba

12 Hydro. Dr. Gibson, we met in a fashion about five (5)

13 months ago at the Clean Environment Commission hearing.

14   To paraphrase something I heard first

15 thing this morning, I want you to know that my

16 questions for you will be enriched and modified from

17 those that I asked you at the Clean Environment

18 Commission.

19   And, Dr. Gaudreau, when I told your

20 colleague, Dr. Gibson, some five (5) months ago that in

21 preparation for his coming to Winnipeg I had read a

22 book that he was the lead author, I'd read a second

23 book of which he was the author of two (2) chapters,

24 and I'd read some ten (10) of his articles, he

25 recklessly responded that I was his most devoted

9293

1 student. But I'm going to surrender that accolade this

2 afternoon to you.

3 Would you each please look at the second

4 page of the executive summary of your paper, which is

5 Roman numeral number II? And you write, about the

6 middle of the first paragraph that we can see on the

7 screen, and I quote:

8 "Such a framework

9 course, a sustainability assessment

10 framework] or its substantive

11 equivalent is also necessary to meet

12 the terms of reference for the NFAT

13 review and legislative requirements

14 set forth in the Manitoba Sustainable

15 Development Act."

16 And I suggest to each of you that that's

17 not quite an accurate statement, is it?

18 DR. ROBERT GIBSON: I may be on. I

19 think we could quibble over what 'necessary' means in

20 this context. I've responded to this question in

21 various forms today. And my view, at least, is that

22 this framework or its substantive equivalent is

23 required, necessary to do an adequately thorough

24 comprehensive and integrated job of what is before the

25 Board in this case, considering all the things that are

9294

1 to be considered, but also recognizing that the basis

2 of it comes down to the preferable long-term energy

3 development option for Manitoba when compared to

4 alternatives, which is the last line of the last bit of

5 the scope in the terms of reference.

6   So there's a very broad scope. There's

7 a lot of elements in it, lots of things to consider.

8 In the end, that's where it comes together in my view.

9 I'm not offering you a legal opinion on this. If you

10 wish to take it to the Supreme Court of Canada, I don't

11 think anyone will invite me there to pronounce upon it,

12 but my considered view is that effectively, it's

13 necessary to do something of this kind.

14   MR. DOUGLAS BEDFORD: Take heart. I've

15 never been invited to the Supreme Court of Canada

16 either. I read in this Public Utility Board's terms of

17 reference for this hearing that it is to take into

18 account whether or not my client Manitoba Hydro's

19 Preferred Development Plan aligns with Manitoba's Clean

20 Energy Strategy and aligns with the principles of

21 sustainable development as set out in our Manitoba

22 legislation.

23   So I'd suggest to you when one is asked

24 to determine whether a plan aligns, could one not say

25 that the task is to use a synonym, to determine whether

9295

1 the plan reflects sustainable principles, or

2 alternatively, whether the plan is consistent with the

3 principles and the Clean Energy Strategy?

4   DR. ROBERT GIBSON: Broadly, yes, but

5 you pretty quickly come into some difficulties, I

6 think. I've looked over the Clean Energy Strategy.

7 It's an admirable document, but for instance, there are

8 several main points. Your colleague pointed to the

9 first one about building hydro. That's followed by

10 another one about being the leader of energy efficiency

11 on the known planet -- no, Canada.

12   And then the fourth one, I think, is

13 about doing great stuff on renewable energy. All fine,

14 but you may not need to do all three (3) to meet all

15 need that is reasonably defined for Manitoba, and

16 similarly, with all the rest, there's a lot of things

17 to be taken into consideration, all of which, I'd think

18 -- I haven't given it a huge critical analysis, but I

19 would say generally that's all pretty amiable and --

20 and desirable listing of things to take into

21 consideration.

22   There will be difficulties when you

23 can't do all of them at once, as people often complain

24 about in various policy requirements, and so it may not

25 be possible entirely to be in accord with all of the

 1 various components of all of the pieces, and for that

 2 reason, I think it's sensible to -- to take all that

 3 into account. It's probably obligatory to take it all

 4 into account to consider, but also you have to weigh

 5 all those things in light of the overall objective,

 6 which I think is also quite clearly presented in the

 7 terms of reference.

 8   So I have no quibble with the terms of

 9 reference, and I think you try to do the best job in

10 the circumstances of addressing all those matters and

11 coming up with the preferable long-term option.

12   MR. DOUGLAS BEDFORD: The task of

13 taking into consideration doesn't necessitate a full

14 assessment of sustainability, does it?

15   DR. ROBERT GIBSON: Well, it's not -- a

16 full assessment of all the things that are possibly

17 involved would probably exhaust our remaining years,

18 so, no, and the direction, as I understand the terms of

19 reference, is at least on many major components at a

20 macro level, presuming that more details would be

21 examined, for example, by the Clean Environment

22 Commission.

23   So you can't do absolute thoroughness,

24 but that leaves the responsibility to cover all the key

25 consideration, I should think, to the level of -- of

9297

1 understanding that is reasonable in the circumstances

2 which is open to judgement, and the decisions have to

3 get made within some kind of reasonable time.

4   I think that is best addressed by how

5 much detail you go into in particular matters rather

6 than constraining the range of matters that you

7 consider. It's breadth rather than depth, I suppose is

8 my bias on that matter, and we could certainly debate

9 about the choices to be made there.

10   MR. DOUGLAS BEDFORD: Would each look

11 at Appendix 2 to the paper, which appears on page 56?

12   Now, I'm sure -- please, correct if I'm

13 wrong -- that you have each noticed that in life, when

14 we write legislation where we ask for things to be done

15 and we want them done when we -- when it's mandatory to

16 do them, we use words like 'shall' and 'must'.

17   You've seen that?

18   DR. ROBERT GIBSON: Yes.

19   MR. DOUGLAS BEDFORD: And on the other

20 hand, when we want to take a permissive approach with

21 our fellow citizens, we opt for words like 'may' or

22 'should', correct?

23   DR. ROBERT GIBSON: Yes.

24   MR. DOUGLAS BEDFORD: And you helpfully

25 reprinted the principles and guidelines for the

9298

1 Sustainable Development Act in this province, and I'm

2 sure you can see, as I did, that we don't see the words

3 'shall' or 'must', but I read the word 'should' ten

4 (10) times.

5   You saw that?

6   DR. ROBERT GIBSON: Yes.

7   MR. DOUGLAS BEDFORD: And I believe

8 that's why on page 23 of your paper, you make the

9 observation in a sentence about midway down the page,

10 and I'll paraphrase, But there is no particular

11 official Manitoba government document stating that

12 decisions must be made using a sustainability

13 assessment framework.

14   That's --

15   DR. ROBERT GIBSON: That's correct.

16   MR. DOUGLAS BEDFORD: -- that's why you

17 wrote that, it's you're familiar with the point that

18 I'm trying to make.

19   DR. ROBERT GIBSON: Well, there's two

20 (2) problems there. One (1), my declining memory cells

21 can't take me back to the moment when that was written

22 and can't tell me whether I wrote that or Kyrke wrote

23 that. So there's -- there -- there is a bit of a

24 question there.

25   I suspect that was not the logical

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1 pathway -- not that it's a -- a wrong of -- a -- a one

2 that I shouldn't have thought of, but I doubt if that's

3 -- I was simply pointing out, or we were simply

4 pointing out that there isn't such a requirement,

5 certainly not explicitly.

6   What I have argued here today is that in

7 the present context of -- of best approaches to

8 determining what's the best option, sustainability

9 assessment criteria, basically criteria for long-term

10 well-being, as well as short-term considerations is, in

11 practice, the approach that would be sensible to do the

12 best job you can, which is, I think what is before us.

13   So no, these are not prescriptive as you

14 might wish to say, that 'should' language as opposed to

15 'must', and I think that I if I were to respond to that

16 logic, I would agree that this is appropriate language

17 -- that it should say, "should," in part for the reason

18 that I raised earlier, which is that it will not always

19 be possible to do all of these things at the same time.

20   We had a discussion earlier about

21 tradeoffs. Sometimes you won't be able to do all these

22 things, so in my experience, planning legislation and

23 assessment legislation often takes this approach,

24 recognizing that there will be some tension among the

25 criteria that are there.

9300

1   Our criteria will also involve some

2 things that cannot be delivered by your overall plan,

3 one guesses. There will be some unfortunate tradeoffs,

4 one expects. And, you know, I think we have to deal

5 with those, but recognizing that -- that reality, such

6 legislative language is, I think, appropriate, and

7 accommodated by what we're suggesting.

8   MR. DOUGLAS BEDFORD: And I'd suggest

9 to you I think it's Dr. Gaudreau that must have written

10 that part of the paper, because I heard him in the

11 presentation advocating the great value of flexibility

12 in planning. So my assumption was that that would have

13 been a good question for Dr. Gaudreau to seize

14 ownership of.

15   Dr. Gaudreau, in the presentation, you

16 chose to selectively quote one (1) passage from the

17 World Commission on Dams report. There, however, is

18 another one on page 21 of the written paper, to which I

19 would like to draw your attention, and it's the second

20 one in italics.

21   My particular interest is in the last

22 sentence, of which you quote from that report, and I

23 quote:

24   "Where projects affect indigenous and

25   tribal peoples, such processes are

1   guided by their free, prior, and

2   informed consent."

3   Unquote. And so when I harken back to

4 the fact that my client, Manitoba Hydro, a number of

5 years ago in the early days of negotiating the Keeyask

6 Generation Station Agreement, made a public commitment

7 that it would not build the Keeyask generating station

8 for export purposes unless a requisite majority of the

9 members of the four (4) First Nations in the vicinity

10 supported the project, I'd suggest to you that that

11 fact is a very wholesome reflection of that advice that

12 we get from the report in the World Commission on Dams.

13 Is it not that where a project is knowingly going to

14 affect an indigenous people, that the processes to

15 develop that -- to plan and develop the project ought

16 to be guided by the free prior and informed consent of

17 those people?

18   DR. KYRKE GAUDREAU: I can't

19 definitively answer your question, but I would note

20 that my understanding of the -- I want to say polls, of

21 the referenda in the various communities, my

22 understanding was that there was less than a majority

23 of the eligible voters in each community that actually

24 voted, do I'm not certain that your premise that there

25 was a majority support is, in fact, correct.

9302

1   And second of all, I'm not an expert at

2 all, or versed in the intricacies of what free prior

3 and informed consent always means, but issues, for

4 example, such as power differentials between the

5 negotiating parties must be taken into account. And so

6 without questioning whether that was an issue in the

7 Manitoba Hydro context, I can say that I don't know

8 whether it was an issue in the Manitoba Hydro context,

9 so I can't answer that question for you.

10   MR. DOUGLAS BEDFORD: I've -- I've on

11 occasion in my life had to sit where you were sitting

12 and answer questions from someone like me, and I know

13 when it gets late in the afternoon it is tremendously

14 difficult to always listen. The words I chose to use

15 were 'requisite majority', so that no one be mislead.

16 Someone asked me, What do you mean by requisite

17 majority?

18   I would take my inquisitor back through

19 the definitions and terminology in the joint Keeyask

20 Development Agreement, because the process for the

21 referendums was set out there, but I won't belabour

22 that point.

23   I heard you reference, as I have heard

24 others reference, our Manitoba Clean Energy Strategy,

25 and I've heard the advocacy today that one of the

9303

1 cardinal things which we all ought to have in this

2 province when we look at our future and our energy

3 needs in the future is a clear shared vision of the

4 future.

5   So I would suggest to you, is not

6 Manitoba's Clean Energy Strategy, published in 2012, an

7 example of a clear and shared vision of the future.

8   DR. KYRKE GAUDREAU: I can't speak for

9 the historical experience in the sense that I wasn't

10 around when that strategy was drafted, so I don't know

11 to the extent that there was public participation. I

12 would certainly note that that -- my understanding of

13 the -- the energy world today is that much has changed

14 in the two (2) years since that strategy was drafted,

15 such as the change in prices of solar, the change in

16 prices of demand-side -- of conservation and demand-

17 side management.

18   So I'm not certain that I would consider

19 the -- the Clean Energy Strategy -- what were your

20 words again?

21   MR. DOUGLAS BEDFORD: "A clear shared

22 vision of the future."

23   DR. KYRKE GAUDREAU: Yes. I'm sorry --

24 that said, I'm not -- I'm not saying it isn't, so.

25   MR. DOUGLAS BEDFORD: Turning to the --

9304
1 the ninety (90) criteria which each of you have set out

2 in your paper, I take it that there is not yet a

3 generally accepted best practice for sustainability

4 assessment either in Canada or anywhere else in the

5 world?

6   DR. ROBERT GIBSON: I'm on? I would

7 say, No, there isn't a best practice that's clearly

8 established. Moreover, as we have taken some pains to

9 argue, the particular set of criteria applied will have

10 to be specified for any circumstance to be useful, so

11 best practice will always be context-specific to some

12 degree, and maybe the -- there will never be a -- a

13 fully defined approach.

14   The one that we've proposed generically

15 is clearly very general, and wouldn't by itself qualify

16 as best practice, even if everybody embraced it, which,

17 sad to say, hasn't happened quite yet. So it'll be

18 interesting to see in coming years whether some form of

19 best practice is agreed upon by representative parties

20 of some sort. It's not clear who that would be if --

21 if done.

22   The International Association for Impact

23 Assessment, for instance, does some things of that

24 sort. Which with -- what they would call best practice

25 is now at least consistent with what we're talking

 1 about, and certainly isn't anywhere near as detailed.

 2   I'm not sure I would look forward to

 3 that happening with any high expectations because of

 4 the nature of sustainability assessment, and the nature

 5 of the institutional world in which some kind of best

 6 practice would have to be established.

 7   MR. DOUGLAS BEDFORD: And I concluded

 8 that that was one explanation for the lack of success,

 9 the friends you referenced in an anecdote this morning

10 they've had in trying to get a book published on the

11 subject.

12   DR. KYRKE GAUDREAU: Perhaps, but

13 again, that's -- there were -- were highly ambitious

14 trying to cover what was going on, on the planet, and

15 there's huge variations in applications in

16 jurisdictions and so forth, so it's hardly surprising

17 that there is a great variety. Their problem was

18 simple numbers of different things they had to cover,

19 as I understand it.

20   MR. DOUGLAS BEDFORD: It is on page 25

21 of your paper that you give some guidance, albeit

22 modest, to a reader as to how to apply the ninety (90)

23 criteria that you've developed uniquely for my client's

24 Preferred Development Plan and the alternatives. And I

25 hasten to observe that I did read your warning, that

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1 this is not for use in a purely quantitative way, but I

2 also saw the recommendation that the criteria can be

3 used in a non-quantitative way.

4   Have I got that correct?

5   DR. ROBERT GIBSON: Yes.

6   MR. DOUGLAS BEDFORD: Okay. Now, I

7 wish to reveal to all that, without my client's

8 permission, but with the enthusiastic endorsement of

9 the three (3) cats that live in my home, because it

10 meant that I was not playing my bagpipes indoors, I

11 applied the ninety (90) criteria to a thoughtful

12 analysis of my client's Preferred Development Plan and

13 the alternatives.

14   And I will reveal to you that in twenty-

15 four (24) instances, meaning twenty-four (24) bullet

16 points, I saw either a possible positive contribution

17 to sustainability, but I was uncertain in my own mind

18 as to whether there was such a positive contribution to

19 sustainability, or, alternatively, in some of the

20 twenty-four (24) instances, I saw neither a positive

21 nor an adverse contribution to sustainability.

22   However, in sixty-six (66) out of the

23 ninety (90) criteria, I found in my thoughtful analysis

24 a strongly positive contribution to sustainability.

25 And I can tell you that sixty-six (66) out of ninety

9307

1 (90) amounts to 73 percent of the criteria.

2   And so, pleased with myself, I suggest

3 to you now that 73 percent is not bad, is it?

4   DR. ROBERT GIBSON: Well, first, let me

5 congratulate you on a superb question with excellent

6 resource and research background. I'm not sure I would

7 agree necessarily with failing to play the bagpipes,

8 but I'm not a cat.

9   I don't know the answer, in part because

10 I've not done the work that you've done, so I have to

11 defer to your greater brilliance on this matter,

12 certainly your greater work. Secondly, I don't know

13 how that 73 percent stacks up with all the other

14 options. So in my classes, seventy-four (74) beats

15 seventy-three (73), at least insofar as I can make the

16 fine distinction between those two (2) numbers.

17   If there are better alternatives, of

18 course, we would want to pursue those. So seventy-

19 three (73) may be wonderful because the others don't

20 get over forty-five (45). But you've kept that part

21 secret so far, so I don't know what you got on the

22 other ones.

23   MR. DOUGLAS BEDFORD: We're coming to

24 that. I -- I will tell you that when I did this work,

25 I was labouring under the illusion that by following a

 1 rational procedure, as identified by Drs. Gibson and

 2 Dr. Gaudreau, I would automatically be led to a

 3 rational choice. And it's with some dismay I've

 4 learned this morning that one does not follow the

 5 other.

 6   MR. BYRON WILLIAMS: Mr. -- Mr.

 7 Bedford, I presume you're -- you're posing

 8 hypotheticals rather than offering testimony. So I'm -

 9 - I'm taking that in the spirit of a -- of a

10 hypothetical. And assuming that and that it's not

11 testimony, the -- the witnesses can -- can continue as

12 long as they're comfortable with your hypotheticals.

13

14 CONTINUED BY MR. DOUGLAS BEDFORD:

15   MR. DOUGLAS BEDFORD: You're welcome to

16 take it any way you wish. To turn to the alternatives,

17 I found with any alternative involving the exploitation

18 of natural gas, that the alternative fared poorly

19 against the Preferred Development Plan because it would

20 involved an increased reliance in this province on the

21 non-renewable resource, on a fossil fuel.

22   It's almost intuitive. But when one

23 goes through the work, that was a feature that brought

24 more adverse -- or brought distinctly adverse

25 contributions, if I can put it that way, as you do, to

 1 sustainability.

 2   That's almost intuitive, isn't it?

 3   DR. ROBERT GIBSON: I'm not surprised,

 4 but again, I'd have to go through the full set of

 5 criteria. I'd be inclined to agree. But since you're

 6 the one that did the work and we didn't, I wouldn't

 7 want to guarantee we'd have identical answers.

 8   MR. DOUGLAS BEDFORD: And somewhat

 9 similarly, when I applied my thoughtful analysis to

10 alternatives that involved less opportunities for

11 Aboriginal employment, business and opportunities and

12 revenues, that led to the alternatives faring more

13 poorly because they just didn't provide, as you

14 advocate, for that closing of the gap between rich and

15 poor is the way you express it, sometimes providing

16 more widespread benefits to indigenous populations who

17 are almost inevitably impacted by many developments.

18   DR. KYRKE GAUDREAU: Could I just ask a

19 quick clarification?

20   MR. DOUGLAS BEDFORD: Of course.

21   DR. KYRKE GAUDREAU: For the -- could

22 you describe both which alternatives you were looking

23 at, and also were you basing your evaluation from

24 Chapter 13, or was this just off the top of your head?

25   MR. DOUGLAS BEDFORD: This is

9310

1 something, as you've learned, that my cats and I worked

2 out, so.

3   DR. KYRKE GAUDREAU: Okay. Okay.

4   MR. DOUGLAS BEDFORD: I won't blame

5 Chapter 13.

6   DR. KYRKE GAUDREAU: Okay.

7   MR. DOUGLAS BEDFORD: Certainly I

8 looked at the All Gas alternative. I gave

9 consideration to futures where we didn't build more

10 generating stations and tried to avoid building more

11 gas generating stations and instead gambled, if I can

12 put it that way, on demand-side management future.

13   So there's some aspects of that that

14 reflect very well, applying your criteria. But other

15 aspects of that didn't work, in my opinion in my

16 analysis, so well when it came to providing the kinds

17 of jobs and business opportunities and revenue flows to

18 these First Nation communities.

19   DR. KYRKE GAUDREAU: Could -- could you

20 describe why you're using the word 'gamble'? I -- I

21 just find that that's a bit of a confusing word, in

22 part because my understanding of demand-side management

23 and some of the others -- some of these other

24 opportunities is that they don't require a trend to

25 figure out what the energy system will look like

9311

1 perhaps seventy-eight (78) years in the future, or

2 further on. So I'm just -- I'm confused by that choice

3 of word.

4   MR. DOUGLAS BEDFORD: I'm mindful of

5 your counsel's admonishment that I'm giving too much

6 evidence and too little questions, so. We'll move on,

7 and we'll leave it to the Public Utilities Board to

8 sort out whether too much reliance of some visions of

9 the future amounts to a gamble as opposed to a

10 certainty.

11   Some of the examples of the Preferred

12 Development Plan that I thought did provide, as you put

13 it, a positive contribution to sustainability were the

14 Moose Sustainability Plan that our First Nation

15 partners had developed. I don't know whether either of

16 you have read the document or have heard it mentioned

17 before, although I'm reminded Dr. Gibson has heard it

18 mentioned before because I put it to him five (5)

19 months ago.

20   That -- that would be a positive

21 contribution to sustainability, would it not? First

22 Nations being encouraged and actually carrying out a

23 development of a Moose Sustainability Plan?

24   DR. ROBERT GIBSON: I would think so,

25 at least on the basis of what we know. There have been

1 plans in the past that haven't been implemented

2 successfully, sometimes through no fault of those who

3 were attempting to. So I'm not in a position to judge

4 how that's likely to pan out, but certainly in

5 principle it's -- it's a positive thing.

6   MR. DOUGLAS BEDFORD: It was included

7 in the evidence before the Clean Environment Commission

8 that each of the First Nations involved with the

9 Keeyask project are going to develop and pursue and

10 carry out their own traditional monitoring plans,

11 should the project go ahead. And I'm reminded that one

12 (1) of the bullet points, one (1) of the criteria of

13 the ninety (90) criteria that you recommend is just

14 that: the encouragement of indigenous controlled and

15 developed monitoring plans.

16   So no doubt you'll quickly agree that to

17 -- to have that is another example of a positive

18 contribution to sustainability?

19   DR. ROBERT GIBSON: I would say so,

20 yes.

21   DR. KYRKE GAUDREAU: I would note,

22 though, that that -- it obviously begs the question

23 what these plans are monitoring for and -- and what

24 type of adverse impacts that the plans were set in

25 place to monitor. So once again, it's an argument for

1 looking at the full suite of criteria and not

2 necessarily cherry-picking certain criteria.

3   MR. DOUGLAS BEDFORD: So if we continue

4 down the path of, as you say, trying to look at the

5 full suite -- and we won't look at all the detailed

6 examples today. But additional examples of things that

7 our First Nation partners have been encouraged to do or

8 have said they themselves want to implement and do are

9 a wellness program in the communities. They wish to

10 develop language programs so that their indigenous

11 languages will not be lost. And offsetting resource

12 programs.

13   All of those, I would suggest to each of

14 you, are good examples, wholesome examples, of positive

15 contributions to sustainability that certainly form a

16 part of the Preferred Development Plan.

17   DR. ROBERT GIBSON: We can go through

18 more of these, I think, and I'm not sure what firm

19 conclusions we can imply for -- for the panel -- for

20 the board in this case. A lot of the -- a lot of the

21 particulars depend on important considerations that I

22 certainly don't know enough about, and I don't think

23 Dr. Gaudreau does either. Monitoring is a good thing.

24 Monitoring by local people, indigenous people in this

25 instance, is a good thing. It doesn't guarantee that

9314

1 if you find a problem, you can deal with it.

2   The problems of environmental

3 assessments generally is that monitoring isn't done.

4 But when it is done if you're monitoring a project that

5 has no capacity for adjustment then you may find a

6 problem, but there's not much you can do about it,

7 because that horse is out the barn, and well, this is a

8 problem. We'll have to do something. Maybe it's to

9 compensate. It doesn't mean you can fix it.

10   There's been a lot of concern expressed

11 by people who are looking at the idea of adaptive

12 management, presuming, like in the old days, we find a

13 problem, we can fix it. Well, often we can't. And so

14 monitoring by itself doesn't guarantee that we have

15 lasting benefits and we can fix what goes wrong. That

16 depends on the specifics of what is the undertaking and

17 whether there's a flexibility to deal with the problem.

18   So there -- at a broad level we can make

19 some cheerful conclusions, but there are -- there's a

20 level of some specifics that are necessary to see where

21 this goes in the end. There are obviously important

22 job opportunities provided by new undertakings in areas

23 where there's a joblessness problem, or a limited job

24 opportunities problem.

25   But that's a lasting problem. And if

9315

1 the jobs aren't lasting, then there's a question of:

2 What happens when those jobs are finished after the

3 construction period and there's relatively few jobs for

4 the maintenance thereof thereafter? There's training

5 involved, as I understand it, in many of these cases.

6 That training may provide various opportunities for

7 using this -- this construction period as a bridge for

8 something more lasting.

9   Well, it's beyond me to say what has

10 been done there is going to be successful, is adequate,

11 that there's some clear idea what these trained people

12 are going to be able to do after the construction jobs

13 on -- on a particular dam or not. So I don't know the

14 details of that. I know there's a question to ask

15 about that, but that's as far as I could go on it.

16   So generally the points that you're

17 making are these are attractive items, and I fully

18 agree. They may be the best option available. That's

19 entirely possible. Whether they are necessary lasting

20 contributions to sustainability and to what extent is a

21 more difficult question. I don't know the answer to

22 that.

23   MR. DOUGLAS BEDFORD: The fact that I

24 had those examples and many others in mind when I

25 looked at your criteria and then endeavoured to apply

9316

1 your criteria to the Preferred Development Plan and

2 alternatives, that's, I thought, the sort of thing that

3 you advocate in the paper should be done: Be aware and

4 learn the details of what is being proposed, and then

5 ask yourself broader questions, just as the criteria

6 invite the reader to do.

7   So I happily conclude that -- and that's

8 why I put the specific suggestions to you -- that I was

9 on the right track in how to apply the criteria that

10 you've authored.

11   DR. ROBERT GIBSON: I would agree, and

12 I would go further to say that since you've been here

13 listening to all the testimony and have probably read

14 more of the paragraphs of the full submission than I

15 have, that you probably know way more than I do about

16 the specifics on some of these matters. You do have a

17 client you're serving too, so that may be a factor in

18 this, conceivably.

19   But in any event, what you're -- what

20 you're working through here does sound like a

21 reasonable thing to do. It's something that is best

22 done by someone informed on the specifics of these

23 matters. I can't claim to be adequately informed to do

24 that, but the approach is, you know, sensible enough --

25   MR. DOUGLAS BEDFORD: I --

9317

1   DR. ROBERT GIBSON: -- except for not

2   playing bagpipes.

3   MR. DOUGLAS BEDFORD: Well, I do remind

4   you that I did not have my client's permission to apply

5   your criteria to its Preferred Development Plan. And I

6   suspect that you're no more fond of my bagpipes than my

7   three (3) cats are.

8   One (1) of the books that I referenced

9   earlier that I had to read I'm sure you're both

10 familiar with, and that's a book that was published

11 last year on sustainability assessment. And I know,

12 Dr. Gibson, you're familiar with it because you

13 authored two (2) of the chapters in the book.

14   And I have provided to you by way of

15 handout pages 268 and 269. And perhaps one of my

16 colleagues can facilitate handing out the -- the rest

17 of the copies. And, Dr. Gibson, notwithstanding your

18 admission that -- that your memory fails you at times,

19 it maybe serves you well at this moment because I'm so

20 fond of the passage I'm about to read that I read it to

21 you when you appeared as a witness at the Clean

22 Environment Commission.

23   And I'm debating whether to repeat that

24 exercise today. I thought I would because, to my mind,

25 it forms a nice epitaph for what's been going on in

9318

1 this room for the past couple of months and will

2 continue to go on for the better part of another month.

3   So I'm going to quote. And I know what

4 Dr. Gibson's answer is likely to be, so, Dr. Gaudreau,

5 you're entitled to independent thought as an academic,

6 and you can comment when I'm done. But the passage I

7 like begins on page 268, and I quote:

8   "The reality of the modern world is

9   that assessment costs money and takes

10   time, and there will never be enough

11   money or enough time to conduct the

12   level of assessment that might be

13   considered ideal. It is also true

14   that levels of uncertainty and

15   economic, environmental, and

16   political realms is going to mean

17   that any specific recommendations

18   about what might be ideal in any

19   given setting will be both hard to

20   pin down and contested by multiple

21   stakeholders."

22   Unquote. Dr. Gaudreau, do you agree

23 with that comment by the editors of this particular

24 book on sustainability?

25   DR. KYRKE GAUDREAU: Do you mind if I

9319

1 just read it again?

2   MR. DOUGLAS BEDFORD: Of course not.

3   DR. KYRKE GAUDREAU: Thank you.

4   MR. DOUGLAS BEDFORD: Read it aloud,

5 too. And then maybe others will really get the

6 message.

7

8   (BRIEF PAUSE)

9

10   DR. KYRKE GAUDREAU: So what question

11 are you asking again?

12   MR. DOUGLAS BEDFORD: I'm asking

13 whether you agree with what the editors to this book

14 have written in that passage that I've read out.

15   DR. KYRKE GAUDREAU: I don't disagree

16 with it. Having not read the book, I -- I can't claim

17 to know the entire context it was placed in.

18   MR. DOUGLAS BEDFORD: It's a good book.

19 I commend it to your attention. And perhaps we can all

20 hope that there's five (5) people in this room who will

21 be able to pin down the ideal and tell us what it is

22 for the future. I have no further questions. Thank

23 you.

24   MR. WILLIAM GANGE: Mr. Chair, it's

25 Bill Gange back here. I just want to say before Mr.

9320

1 Hombach starts that I probably am the only person in

2 the room who has heard Mr. Bedford play the bagpipes,

3 and it's awesome no matter what his cats think about

4 it.

5   THE CHAIRPERSON: Mr. Bedford, since

6 you're an avid reader, I would recommend a barn burner

7 on Iowa curves you read at your leisure. For another

8 day. Mr. Hombach, please.

9   MR. SVEN HOMBACH: I'm not sure I can

10 keep up with all that heavy literature, but I will try.

11   MR. KURT SIMONSEN: Just before you go

12 there, Mr. Hombach, can we enter that as an exhibit as

13 Manitoba Hydro 187?

14   MR. DOUGLAS BEDFORD: Yes, thank you.

15   MR. KURT SIMONSEN: I'll call it the

16 "Sustainability Assessment: Pluralisms, Practice, and

17 Progress."

18

19 --- EXHIBIT NO. MH-187:   Literature called,

20   "Sustainability Assessment:

21   Pluralisms, Practice, and

22   Progress"

23

24 CROSS-EXAMINATION BY MR. SVEN HOMBACH:

25   MR. SVEN HOMBACH: Dr. Gunn, shall we

9321

1 give your colleagues a break and start with you?

2   DR. JILL GUNN: If they want a break,

3 sure.

4   MR. SVEN HOMBACH: Now, as part of your

5 report, you made it clear that the term 'macro

6 environmental assessment' is not a term of art in

7 environmental assessment literature?

8   DR. JILL GUNN: I've never seen it and

9 in the two (2) reviews of -- of the various types of

10 impact assessment and related processes that are

11 practised, it was not there, and one (1) study looked

12 at a hundred and forty-two (142) types, and the other

13 study looked at forty (40) types.

14   MR. SVEN HOMBACH: And will you accept,

15 subject to check, that Oxford Dictionary describes the

16 word 'macro' as meaning a large scale, or overall.

17   DR. JILL GUNN: Subject to check, yes.

18   MR. SVEN HOMBACH: Now, your

19 assessment, conclusion, and recommendation to this

20 panel was to consider this to mean conducting a

21 strategic environmental assessment?

22   DR. JILL GUNN: Can you restate that?

23 The --

24   MR. SVEN HOMBACH: Your ultimate

25 conclusion as to the meaning of this term was that it

9322
1 aligns with a performance of a strategic environmental

2 assessment?

3   DR. JILL GUNN: I'd -- I wouldn't

4 agree that that's what I said. I -- I didn't at any

5 point say that the panel should undertake a strategic

6 assessment. I was just saying that we can take some

7 cues from a strategic environmental assessment about

8 the types of questions that the panel might want to

9 ask.

10   MR. SVEN HOMBACH: You reviewed and

11 you, in fact, quoted the Board's definition that was

12 set out in Order 92/'13?

13   DR. JILL GUNN: Yes.

14   MR. SVEN HOMBACH: Your conclusion that

15 this panel should draw some items from strategic

16 environmental assessments, is that based on the Board's

17 definition in Order 92/'13, or are you simply of the

18 review that -- of the view that that the Board's

19 definition aligns with sustain -- sorry, strategic

20 environmental assessments?

21   DR. JILL GUNN: I'm saying that the

22 exercise that the panel is -- is undertaking is by

23 nature strategic, because they are looking forward to

24 the future in a strategic manner, and so the -- and

25 that, you know, strategic environmental assessment

1 could have some possible cues that they might want to

2 pay attention to.

3   MR. SVEN HOMBACH: Is it fair to say

4 that strategic environmental assessments usually focus

5 on programs or policies, whereas regular environmental

6 assessments or environmental impact assessments focus

7 on projects?

8   DR. JILL GUNN: Strategic environmental

9 assessments can focus really on any policy, plan, or

10 program or initiative, and sometimes initiatives, that

11 term is interpreted to -- to mean or include specific

12 projects. Strategic environmental assessment at a

13 programmatic level very often does apply to groups of

14 projects, you know, the details of which are generally

15 known.

16   So strategic environmental assessment is

17 quite fle -- flexible in that regard, but the -- the

18 hallmark is that it is strategic. It's -- it's

19 forward-looking. It's -- it's looking at things at a

20 much higher level.

21   It's -- whereas as a direct or a project

22 environmental impact assessment is looking at the

23 direct consequences of a -- of a particular project and

24 whether or not its negative affects could be mitigated

25 or minimized.

9324

1   MR. SVEN HOMBACH: Let's go to page 11

2 of your report for a moment.

3

4   (BRIEF PAUSE)

5

6   DR. JILL GUNN: Oh, sorry, I have the -

7 - the PowerPoint. Yes.

8   MR. SVEN HOMBACH: It's in front of you

9 on the screen as well.

10   DR. JILL GUNN: Okay, yes.

11   MR. SVEN HOMBACH: You've provided a

12 list of receptors at page 11 of your report.

13   DR. JILL GUNN: Yeah.

14   MR. SVEN HOMBACH: Are those the same

15 receptors that you would consider in a regular

16 environmental impact assessment?

17   DR. JILL GUNN: Generally -- generally,

18 I would say yes, but in any particular environmental

19 impact assessment, the receptors of importance are

20 going to be defined within that project context. So

21 these are -- this is a generic list, and it was

22 developed for the European Union, I believe, for use

23 there, so it's a generic list.

24   MR. SVEN HOMBACH: Did you compare that

25 list to the list of the receptors in the Keeyask

1 Environmental Assessment that has already taken place?

2   DR. JILL GUNN: No, I haven't compared

3 this particular list, no. This is -- this list is

4 applicable, or was developed in the context of a policy

5 appraisal, SEA, and the Keeyask Environmental Impact

6 Assessment is -- is not that. It is not a strategic

7 assessment. It is not a policy appraisal.

8   MR. SVEN HOMBACH: And keeping in mind

9 your choice of words from a minute ago, 'high-level',

10 is it your view, then, that a Strategic Environmental

11 Assessment would be a high-level review of all the

12 issues?

13   DR. JILL GUNN: Yes, and -- and -- but

14 if I can qualify that, generally, how strategic is

15 understood is that it's understood as being upstream of

16 -- of project considerations, or -- or impact

17 determinations. So 'high-level' meaning a -- a broader

18 view or a more futures-oriented view, yes.

19   MR. SVEN HOMBACH: When you say,

20 "upstream," does that mean before you've actually built

21 the project?

22   DR. JILL GUNN: Ideally, yes, but --

23 but in practice, that definitely doesn't always happen.

24   MR. SVEN HOMBACH: And you're aware

25 that the actual detailed Environmental Assessment into

9326

1 Keeyask has already taken place?

2   DR. JILL GUNN: Of course, yes.

3   MR. SVEN HOMBACH: On page 51 of your

4 slide presentation from this morning, you equate the

5 terms 'macro' and 'cumulative', and I'd like to get a

6 better understanding of what you mean with

7 'cumulative'. Now, it's my understanding that unlike

8 macro environmental assessment, a cumulative

9 environmental assessment, that's actually a term of

10 art?

11   DR. JILL GUNN: Yes, cumulative envir -

12 - effects assessment, yes.

13   MR. SVEN HOMBACH: And among other

14 things, that looks at the baseline and historic

15 projects that have already taken place to date?

16   DR. JILL GUNN: Yes, in -- in a retro -

17 - in the retrospective portion of a cumulative effects

18 assessment, you are trying to establish previous trends

19 of change based on previous development.

20   MR. SVEN HOMBACH: And it involves

21 assessing the incremental effect of an additional

22 project?

23   DR. JILL GUNN: Yes. In the

24 prospective portion of a cumulative effects assessment,

25 yes, that's what you would be trying to determine.

9327

 1   MR. SVEN HOMBACH: Have you reviewed

 2 the terms of reference issued to this panel?

 3   DR. JILL GUNN: I believe I have.

 4   MR. SVEN HOMBACH: Let's go to the

 5 terms of reference, that PUB Exhibit 2. On the bottom

 6 of page 4 of the document, there's a number of items

 7 that are listed as not being in scope for this panel,

 8 and if you look at the fourth bullet, it states:

 9   "The environmental reviews of the

10   proposed projects that are part of

11   the plan, including Environmental

12   Impact Statements (these will be

13   conducted through individual

14   processes by the Manitoba Clean

15   Environment Commission, and where

16   possible, the impacts of the matters

17   to be considered by the CEC are

18   included in the cost of the projects

19   that are part of the plan)."

20   You were aware of that exclusion that

21 must be considered in conjunction with the Board's

22 mandate to review macro environmental effects?

23   DR. JILL GUNN: I believe I understand

24 that, yes.

25   MR. SVEN HOMBACH: Did I hear you right

1 this morning that you provided evidence on behalf of

2 the CAC in both Clean Environment proceedings, the ones

3 into Bipole III and the ones into Keeyask?

4   DR. JILL GUNN: Correct.

5   MR. SVEN HOMBACH: Okay. You're aware

6 of the fact that coming out of the Bipole III

7 proceeding, the Clean Environment Commission

8 recommended a cumulative regional effects assessment?

9   DR. JILL GUNN: Yes, that's right.

10   MR. SVEN HOMBACH: And that term,

11 'cumulative regional effects assessment', is that the

12 same thing as a cumulative effects assessment, or is

13 there a difference?

14   DR. JILL GUNN: So you're asking what

15 is the difference between a regional environmental

16 assessment and a -- a cumulative regional environmental

17 assessment?

18   MR. SVEN HOMBACH: Between the term

19 'cumulative regional effects assessment'.

20   DR. JILL GUNN: Okay. I -- the -- that

21 term is kind of mixed up for me. That isn't usually

22 what we would call it, so that's why a bit confusing.

23   MR. SVEN HOMBACH: What -- what would

24 you usually call it?

25   DR. JILL GUNN: A regional cumulative

9329

1 effects assessment, or a regional environmental

2 assessment.

3   MR. SVEN HOMBACH: Okay. And what is

4 the distinction between that and what you simply refer

5 to as a cumulative effects assessment?

6   DR. JILL GUNN: Okay. So you're asking

7 me to -- to -- I'm sorry, I'm confused what you're

8 trying to get me to explain the difference --

9   MR. SVEN HOMBACH: Is there a

10 difference between a regional assessment and a non --

11   DR. JILL GUNN: Yes.

12   MR. SVEN HOMBACH: -- regional one?

13   DR. JILL GUNN: A regional and a non-

14 regional, absolutely, yes. If we're just talking

15 about, you know, regional and what that means to impact

16 assessment, generally, historically when -- when an

17 impact assessment is done, it looks at the direct

18 effects that are fairly localized to the -- the project

19 itself.

20   So over time, it was obviously

21 understood or recognized that taking a broader look at

22 the impacts of any particular project was probably a

23 better idea, and so over time, the trend was more

24 toward doing a -- a regionally scoped environmental

25 assessment for a project.

9330

1   So expanding the scope geographically to

2 the region was seen to be better practice. And so you

3 did see then some -- some really good quality regional

4 environmental assessments coming online. But whether

5 or not we can say that a regional environmental

6 assessment is the same as a regional cumulative effect

7 assessment, that is questionable, because those things

8 -- they are different methodologically.

9   MR. SVEN HOMBACH: You recall being

10 asked by way of Information Requests whether a

11 cumulative effects assessment took place in the Keeyask

12 hearing?

13   DR. JILL GUNN: I don't recall

14 specifically in the Information Request. If you

15 directed me there, I'm sure I'd see it.

16   MR. SVEN HOMBACH: If we can put them

17 up on screen, it's PUB Exhibit 48, page 14 of the PDF.

18

19   (BRIEF PAUSE)

20

21   MR. SVEN HOMBACH: Question 15b:

22   "Was a cumulative effects assessment

23   part of the recent Clean Environment

24   Commission hearing into Keeyask?"

25   And you answered, "Yes, it was."

 1   DR. JILL GUNN: Yes.

 2   MR. SVEN HOMBACH: And then you

 3 expressed some -- some concerns about the scope of it,

 4 but you indicated that it was considered.

 5   DR. JILL GUNN: Correct.

 6   MR. SVEN HOMBACH: You're aware of the

 7 fact that this panel is not to duplicate the efforts in

 8 front of the Clean Environment Commission?

 9   DR. JILL GUNN: Yes.

10   MR. SVEN HOMBACH: Okay. And I

11 appreciate, Dr. Gunn, that there hasn't been an

12 environmental assessment hearing into Conawapa yet,

13 which forms of the Preferred Development Plan?

14   DR. JILL GUNN: Yes.

15   MR. SVEN HOMBACH: Does the fact that

16 the cumulative effects assessment did form part of

17 Keeyask affect your recommendations to this panel as to

18 what it should consider?

19   DR. JILL GUNN: No, I don't think so.

20 If you'll note in -- in the response to that

21 Information Request, the response says that the Keeyask

22 CEA was found to be deficient in a number of important

23 ways, notably with respect to prospective analysis

24 which really is core to cumulative effects assessment,

25 and that the Keeyask cumulative effects assessment does

9332

1 not constitute a regional CEA . So I don't think that

2 the conclusions there have -- have coloured, you know,

3 what I'm recommending to the Board other than to say

4 that I do think it's important to keep the -- the

5 Nelson sub-watershed context and condition in mind.

6   MR. SVEN HOMBACH: You're not

7 suggesting a regional CEA for this panel, though,

8 right? You indicated that there's a distinction

9 between a regional CEA and what you refer to as a

10 strategic environmental assessment?

11   DR. JILL GUNN: Yes, I -- in -- in my

12 report and in my testimony today in -- at no point do I

13 say that the -- the panel needs to undertake any form

14 of -- of impact assessment. I don't say, And now you

15 should do a policy appraisal or now you should do a

16 CEA. That's -- I'm just saying that what they're

17 calling or what is being called a macro environmental

18 assessment bears strong similarities to these other

19 forms, recognized forms of impact assessment, and that

20 we can perhaps take some cues from or learn from in

21 terms of the types of questions that the panel is -- is

22 tasked with answering in this hearing.

23   MR. BYRON WILLIAMS: And just for --

24 and I hate to interrupt, Mr. Hombach. But just by way

25 of clarification, you're not suggesting that there is a

9333

1 regional CEA process before the Clean Environment

2 Commission, I take it?

3

4 CONTINUED BY MR. SVEN HOMBACH:

5   MR. SVEN HOMBACH: I was not suggesting

6 that. Mind you, I'd be interested in hearing the

7 witness's perspective, considering that she indicated

8 that a cumulative effects assessment did take place

9 before the CEC.

10   DR. JILL GUNN: Well, the -- a

11 cumulative effects assessment was performed as part of

12 the -- the Keeyask environmental assessment process,

13 yes.

14   MR. SVEN HOMBACH: And again keeping in

15 mind your comments about a macro environmental

16 assessment being high level, are you suggesting that

17 this panel consider cumulative effects as a high level

18 as well?

19   DR. JILL GUNN: Yes, I -- I think so.

20 But, I mean, the -- I think that they themselves, or

21 the -- the PUB itself asked for consideration of the

22 collective or cumulative impacts of -- of the proposed

23 -- the Preferred Plan and its alternatives. It's

24 within the definition.

25   They asked for consideration of

9334

1 collective. And when I looked up, you know, synonyms

2 or definitions for 'collective', 'cumulative' is a

3 synonym. And because I'm looking for any type of

4 guidance for the panel to be able to assess the filing

5 this is why I looked to the -- the closest forms of

6 impact assessment that are recognized that I am

7 familiar with. So that's why we are discussing

8 strategic assessment, cumulative effects assessment,

9 and whatnot. I'm not saying the panel needs to do

10 those assessments.

11   MR. SVEN HOMBACH: Let's go to page 13

12 of your report for a moment. Under the second numbered

13 bullet, you reference a study by Noble and Gunn 2013,

14 and I believe Ms. Mayor referred you to that study.

15   And that was the evidence you filed in

16 the Keeyask hearing on behalf of the Consumers'

17 Association?

18   DR. JILL GUNN: Correct.

19   MR. SVEN HOMBACH: So when you state in

20 the report that it is agreed past alterations have been

21 cumulatively significant, who -- to whose agreement are

22 you referring?

23   DR. JILL GUNN: Manitoba Hydro and the

24 Keeyask Cree Nations, who we cite them extensively.

25 The -- those -- the fact that the region has been

9335

1 substantially altered, that -- that phrase appears

2 numerous, numerous, numerous times in the Keeyask EIS.

3 And we just simply quote those parties in saying so.

4   MR. SVEN HOMBACH: And because this

5 particular quote does not refer to any page number in

6 the evidence that you filed in front of the Clean

7 Environment Commission, I'd like an undertaking from

8 you to just refer to the page numbers that you're

9 actually relying on.

10   DR. JILL GUNN: Yeah, for sure. In --

11 if you go to my -- my slide presentation and we go to

12 slide 44, it's not on the slide specifically, but it's

13 in my notes here. So what I said was -- my notes to

14 myself:

15   "Manitoba Hydro and the Keeyask Cree

16   Nations partners have agreed that the

17   Nelson sub-watershed -- Nelson River

18   sub-watershed has already been

19   quotes] 'Substantially altered'."

20   And what I'm quoting there is the

21 Manitoba Hydro 2012 environmental impact statement.

22 And then for the record, that phrase appears in Chapter

23 7, page 7-16, page 7-23, page 7-37, et cetera, et

24 cetera.

25   MR. SVEN HOMBACH: The undertaking has

9336

 1 been fulfilled.

 2   MR. BYRON WILLIAMS: Actually, and --

 3 and, Mr. Hombach, just if -- if you wish, and it's

 4 totally up to you, but we do have an electronic version

 5 of that report that we've made available to the

 6 reporter, and we could flip up the page in which those

 7 citations are, if it would help. If not, that's fine.

 8   MR. SVEN HOMBACH: I don't think that

 9 is necessary at this point, Mr. Williams, although if

10 that report could be filed as a CAC exhibit so that we

11 can refer to it, it would be helpful.

12   MR. BYRON WILLIAMS: We will undertake

13 the -- to file the report in which -- which -- in which

14 Ms. -- or Dr. Gunn relies upon for the suggestion that

15 there has been evidence presented by the KHLP

16 suggesting that the region has already been, in

17 quotation marks, "substantially altered."

18   MR. SVEN HOMBACH: Thank you.

19

20 --- UNDERTAKING NO. 129:   CAC to file the report in

21   which Dr. Gunn relies upon

22   for the suggestion that

23   there has been evidence

24   presented by the KHLP

25   suggesting that the region

9337

1   has already been

2   substantially altered

3

4 CONTINUED BY MR. SVEN HOMBACH:

5   MR. SVEN HOMBACH: Dr. Gunn, this

6 morning you walked the panel through some of the

7 general benefits and disadvantages of the different

8 technologies, and you indicated and confirmed that

9 those were general comments and not specific ones

10 relating to the Preferred Development Plan or the All

11 Gas alternative presented by Manitoba Hydro?

12   DR. JILL GUNN: Correct.

13   MR. SVEN HOMBACH: And with respect to

14 hydro dams, you referred to the long-lasting nature of

15 the dams.

16   DR. JILL GUNN: M-hm. I -- I do. I

17 think that I referred to the long-lasting nature of --

18 of the dams. I know I have in -- in previous reports,

19 so I trust that that is there. It is obvious that

20 there is long-lasting -- dams of a long-lasting nature.

21   MR. SVEN HOMBACH: Is it your

22 understanding that a hydro dam has a useful life

23 somewhere between about a hundred (100) and a hundred

24 and twenty-five (125) years?

25   DR. JILL GUNN: That's consistent with

9338

1 what I've heard. I -- I'm not an expert to know for

2 sure what the lifespan would be.

3   MR. SVEN HOMBACH: So when you're

4 comparing alternative technologies, like wind for

5 example, do your comments apply to an analysis over the

6 technology over the same time frame?

7   DR. JILL GUNN: I wouldn't be able to

8 answer that question for you. That's something that I

9 wouldn't have explored in this -- in this testimony, a

10 report.

11   MR. SVEN HOMBACH: But in your view, if

12 you were to compare two (2) technologies like, let's

13 say, wind or hydro, like you have a hundred and twenty-

14 five (125) year useful life on the one hand compared

15 to, let's say, a twenty-five (25) year useful life on

16 the other hand, would you have to equalize the

17 lifespans in order to properly evaluate the

18 distinctions between the environmental effects?

19   DR. JILL GUNN: I think how you would

20 answer that question is quite complex. You'd have to

21 look at a whole range of factors. You know, if -- if

22 wind only had a useful lifespan of twenty-five (25)

23 years compared to a hundred for hydro, that isn't the

24 end of the question or end of the story. And -- and I

25 wouldn't -- the analysis would have to look at all

9339

 1 kinds of factors that I just couldn't comment on that.

 2 I don't feel comfortable to comment on that.

 3   MR. SVEN HOMBACH: Are you comfortable

 4 commenting on what the type of factors are that you

 5 would take into consideration?

 6   DR. JILL GUNN: No. I -- I wouldn't

 7 know offhand.

 8   MR. SVEN HOMBACH: Another aspect of

 9 that is the capacity factor. And again, you were taken

10 through that in cross-examination earlier today. But

11 is it your understanding that with a technology like

12 wind, for example, a nameplate capacity isn't

13 necessarily reflective of the power that you can expect

14 to generate?

15   DR. JILL GUNN: Yes, that's my

16 understanding, yes. But as -- as I said and -- and as

17 counsel for Hydro confirmed, I -- I don't claim to be

18 an expert in -- in energy, in terms of the different

19 types of technologies and comparing them across all of

20 the -- the different factors.

21   MR. SVEN HOMBACH: And is it your

22 understanding that for wind, for example, a capacity

23 factor is somewhere in the vicinity of 40 percent?

24   DR. JILL GUNN: I'm just trying to

25 recall. For what I read, that sounds about right. I

9340

1 think it's definitely under 50 percent. I can't recall

2 the exact figure that -- I think that sounds about

3 right.

4   MR. SVEN HOMBACH: So again, if you

5 were to compare different technologies, if we were to

6 compare a dam like Keeyask with average energy output

7 of 4,400 gigawatt hours per year to a wind form, you'd

8 have to up-size wind or you'd have to up-size the

9 technology to a similar output?

10   DR. JILL GUNN: Well, as I said, I

11 don't feel comfortable to make those kinds of

12 conjectures. I don't think I have the expertise to do

13 so. And I also think that it's not about pitting --

14 pitting one power technology against another. I think

15 it's about what is the right mix of -- of technologies.

16   So it's not trying to say that we have

17 to drop one completely from consideration; it's what is

18 the correct -- or the -- the best mix of all of them

19 together. And again, I don't -- I'm not the expert to

20 let you know what that is. I couldn't compare.

21   MR. SVEN HOMBACH: But would you accept

22 that there's both a qualitative issue and a

23 quantitative issue?

24   DR. JILL GUNN: Respecting what?

25   MR. SVEN HOMBACH: The -- the factors

1 that you listed in your presentation this morning of

2 primarily quali -- qualitative, the benefits and the

3 drawbacks of the different technologies you provided.

4   Is that a fair characterization?

5   DR. JILL GUNN: Yeah. Yeah, that would

6 be fair to say, sure, yeah, yeah. They were

7 characterized in a qualitative way. That's right,

8 yeah.

9   MR. SVEN HOMBACH: And the questions

10 that I just asked you about up-sizing the technology to

11 a similar output, that would deal with quantitative

12 issues?

13   DR. JILL GUNN: It probably would deal

14 with quantitative and, I would, suspect some

15 qualitative as well. I'm not sure what the -- what the

16 point is.

17   MR. SVEN HOMBACH: And you -- you

18 indicated you didn't feel comfortable commenting on

19 that issue, but you don't have reasons to disagree with

20 the suggestion that one would have to take the

21 quantitative issues into account?

22   DR. JILL GUNN: Well, the research

23 that's quoted in -- in this study, like the -- the --

24 this is a gathering of, you know, research and many,

25 many studies from many places and regions of these

9342

1 kinds of power supply options being implemented.

2   So I assume -- or I -- I mean, in the

3 gathering of those studies, you're going to have

4 gathered qualitative and quantitative information, all

5 of which would have been synthesized into the -- the

6 general commentary that I do provide in the report.

7   So I'm -- I'm not sure what -- what the

8 issue is between qualitative versus quantitative.

9   MR. SVEN HOMBACH: To the best of your

10 knowledge, were the studies that you relied on life

11 cycle analyses type studies?

12   DR. JILL GUNN: Sorry?

13   MR. SVEN HOMBACH: To the best of your

14 knowledge, were the studies that you cited on the

15 different technologies based on life cycle assessments?

16   DR. JILL GUNN: I couldn't say. I

17 couldn't say.

18   MR. SVEN HOMBACH: If we could go to

19 page 34 of your report.

20

21   (BRIEF PAUSE)

22

23   MR. SVEN HOMBACH: And scroll to the

24 bottom. That's a table where you assessed the impacts

25 and the benefits of DSM. And you were taken through

9343

1 the conservation rebound effect this morning. And I

2 noticed that that is the only environmental effect that

3 you have listed.

4   In your view, is there any issue of

5 increased resource used due to, let's say, renovations,

6 replacement of appliances or replacement of

7 technologies before the useful life span or other such

8 criteria that would also have an adverse impact?

9   DR. JILL GUNN: I'm not aware of -- of

10 any further -- of the literature that was reviewed this

11 was the primary impact that was noted. There certainly

12 could be more to speak of. It doesn't claim to be

13 exhaustive. It's just the -- the primary one that came

14 to the fore in the review of the literature that we

15 did.

16   MR. SVEN HOMBACH: Okay.

17   DR. JILL GUNN: Yeah.

18   MR. SVEN HOMBACH: Thank you, Dr. Gunn.

19 And, Dr. Gibson, you recall My Friend opposite, Mr.

20 Bedford, taking you through a line of questioning to

21 establish whether or not compliance with a

22 sustainability framework is mandatory or merely

23 suggestive?

24   You have to say 'yes' or 'no' for the

25 transcript.

 1   DR. ROBERT GIBSON: Yes.

 2   MR. SVEN HOMBACH: Are you aware of any

 3 Canadian jurisdictions where compliance with principles

 4 of sustainability is mandatory as opposed to

 5 permissive?

 6   DR. ROBERT GIBSON: Well, as -- as

 7 we've discussed before, it's not really a question, in

 8 our view, of a sharp line between mandatory and

 9 permissive. I wouldn't characterize the situation here

10 as permissive. The -- the terms of reference have

11 explicit expectations of taking into consideration some

12 matters which include the sustainability principles, et

13 cetera.

14   And there is a broader legislated and

15 general expectation for -- and a terms of reference

16 expectation for choosing a best option that begs

17 questions then about what are the grounds for choosing

18 a best option? What are the criteria to be applied?

19   In our view sustainability assessment

20 criteria are with recognition of long-term factors

21 merely a way of expressing the obligation to be

22 considering the full suite of relevant factors that

23 make a difference in the long as well as short term.

24 Though I wouldn't characterize that as merely

25 permissive. I would think that that comes closer to

9345

 1 being a reasonable obligation that's broadly entrenched

 2 in legislation and expectation.

 3   MR. SVEN HOMBACH: You're aware that

 4 this panel is being asked by the province to assess the

 5 compliance with Manitoba Hydro's Preferred Development

 6 Plan with the principles of sustainable development as

 7 set out in the Sustainable Development Act, and you in

 8 fact cited those in your report?

 9   DR. ROBERT GIBSON: That -- that is one

10 of the items in a list that refers to taking factors

11 into consideration, yes.

12   MR. SVEN HOMBACH: I'm going to pose an

13 interesting challenge for Ms. Villegas at this point.

14 And I will ask her if it is possible to put up two (2)

15 documents on the screen at the same time. On one (1)

16 side, page 16 of your report where you provide in Table

17 3 a short summary of your eight (8) evaluation

18 criteria. And on the other side PUB Exhibit 58-5, page

19 375, which contains the principles of sustainable

20 development as set out in the statute.

21   And while we're for waiting -- while

22 we're waiting for that or until Ms. Villegas tells me

23 that I haven't been nice enough for her to -- to engage

24 in this challenge, did you actually compare your

25 framework against the framework that's set out in

9346

1 Manitoba statute?

2   DR. ROBERT GIBSON: Yes, that's one of

3 the contributing considerations that we took into

4 account. The -- the table that you have on page 16

5 predates the -- the terms of reference by a decade. So

6 you will understand why it may not have been informed

7 by Manitoba energy considerations or sustainable

8 development considerations.

9   MR. SVEN HOMBACH: And overall is it

10 fair to say that there's substantial overlap, but

11 they're not identical?

12   DR. ROBERT GIBSON: Yes, there's

13 substantial overlap, and I would agree that they are

14 not identical. Certainly, they are not identical in

15 the formation of the -- and the structuring of the

16 requirements. I did at one point go through the

17 Sustainability -- the Sustainable Development Act

18 principles to consider whether there were any gaping

19 holes relative to our criteria, but I'd have to do that

20 again since the tiny remaining memory cell seems to be

21 flickering at the moment.

22   MR. SVEN HOMBACH: Ms. Villegas, I'm

23 very impressed. Dr. Gibson...

24

25   (BRIEF PAUSE)

9347

1   MR. SVEN HOMBACH: We now -- we now

2 have both documents in front of us on the screen, and

3 if it's legible to you, maybe take a minute to actually

4 review them?

5   DR. KYRKE GAUDREAU: Could I just

6 mention that in Appendix 1 of our report on page 41,

7 Table 7, there is such a comparison, although it also

8 includes the Manitoba Environment Act as well as the

9 Canadian Environmental Assessment Agency Act.

10   MR. SVEN HOMBACH: Thank you. That is

11 helpful. Dr. Gibson, you see that the principles of

12 sustainable development are -- are numbered in the same

13 manner as you would write a statute on the right side?

14 You have to say yes or no.

15   DR. ROBERT GIBSON: Yes.

16   THE CHAIRPERSON: Could you give us the

17 reference again, please, so we could pull it up on the

18 screen since we're talking about it?

19   DR. KYRKE GAUDREAU: I'm sorry, Table

20 7, page 41 of the report.

21   DR. ROBERT GIBSON: It's of our

22 submission, yeah.

23

24 CONTINUED BY MR. SVEN HOMBACH:

25   MR. SVEN HOMBACH: And, Dr. Gaudreau,

9348

1 just to be clear, Table 7 is essentially a -- a summary

2 and a reproduction of various principles of sustainable

3 development set out in various statute?

4   DR. KYRKE GAUDREAU: Yes.

5   MR. SVEN HOMBACH: It's not an actual

6 concordance or com -- comparison per se that tries to

7 compare one section against the other?

8   DR. KYRKE GAUDREAU: At the bottom of

9 each of...

10

11   (BRIEF PAUSE)

12

13   DR. KYRKE GAUDREAU: Sorry. At the --

14 at the bottom of each of -- of each cell, there is a

15 short discussion about how they -- how they overlap.

16 So if you were to scroll down, continue scrolling,

17 you'll see, "Comment," and that just provides a brief

18 comment for each of our eight (8) criteria -- for each

19 of Dr. Gibson's eight (8) criteria.

20   MR. SVEN HOMBACH: If we put -- could

21 put Dr. Gibson's criteria back up on the left side?

22   DR. ROBERT GIBSON: The same criteria

23 that you see in Table 3 are in Table 7.

24   MR. SVEN HOMBACH: Yeah, I appreciate

25 that, Dr. Gibson. I would like to walk you through a

9349

1 quick comparison between those two (2) criteria,

2 considering that the Board has specifically mandated to

3 assess the Preferred Development Plan in light of the

4 principles we see on the right side of the screen.

5   The first two (2) of your criteria,

6 socio-ecological system integrity and livelihoods,

7 efficiency, and opportunity, would you say that those

8 broadly align with Clauses 1 and Clauses 2 we see on

9 the right?

10

11   (BRIEF PAUSE)

12

13   DR. ROBERT GIBSON: There is more to it

14 then that, because as you will see if you look at page

15 41, the first criterion on socio-ecological system

16 integrity aligns also with other principles that are

17 listed there, so the top third of -- of page 41 in that

18 table.

19   So, yes, there is some correspondence

20 between the two (2) that you've identified, but there

21 are other components of the principles in the Manitoba

22 Sustainable Development Act which also are relevant to

23 expressing the underlying considerations in the first

24 criterion category of socio-ecological system

25 integrity.

9350

 1   And if you turn to page 42, where we

 2 have the second of those sustainability assessment

 3 criteria categories, livelihood, sufficiency, and

 4 opportunity, you will see that several points are drawn

 5 from different parts of the Manitoba Sustainable

 6 Development Act, in addition to the ones that you have

 7 identified as the -- the first two (2) on the list

 8 there.

 9   So the short answer is that there is not

10 a one (1) to one (1) correspondence directly between

11 particular principles and particular criteria

12 categories, but there are components throughout the

13 Sustainable Development Act list of principles that

14 together, speak to these various -- the eight (8)

15 criteria.

16   MR. SVEN HOMBACH: Let's go to the

17 second page of the document on the right, and look at

18 Section 6 in the Principles of Sustainable Development

19 set out in the Sustainable Development Act

20   Where would you slot those in among your

21 eight (8) categories, because I had some challenge with

22 that?

23   DR. ROBERT GIBSON: Certainly, that has

24 to do with the maintenance or reestablishment if -- so

25 the first criterion on social -- socio-ecological

1 system integrity refers to establishing and maintaining

2 long-term integrity of sociobiophysical systems,

3 protecting life support systems. So those items under

4 conservation and enhancement about maintaining

5 ecological processes, sustainable harvesting, wise and

6 efficient use of resources, et cetera, and the next set

7 on repairing damage and degradation, rehabilitating and

8 reclaiming, all of those would certainly contribute to

9 the establishment and the maintenance of sociological

10 system integrity.

11

12   (BRIEF PAUSE)

13

14   MR. SVEN HOMBACH: When you're

15 providing your detailed lists as opposed to the -- the

16 list that we're looking at on the left side of your

17 screen, if I heard you correctly, you're not suggesting

18 that every single one of those criteria has to be met

19 for a -- a project to be feasible, or to go ahead, or

20 to be compatible with principles of sustainable

21 development?

22   DR. ROBERT GIBSON: No, I -- I suspect

23 there will be limited likelihood that any option will

24 deliver on all of those positively. Our Learned

25 colleague Mr. Bedford suggests a 73 percent sec --

9352

1 success rate in the one that he examined, and he may

2 wish to argue in submission that that's the highest

3 level that's achievable. And as I've admitted, I'm not

4 really in a position to -- to, you know, challenge that

5 conclusion in the absence of me doing something at

6 least as good.

7   So the reality is that -- that there, as

8 we've said, will likely to be tradeoffs. Some will

9 have greater strengths in some areas and some in

10 others. We would like to have positives in every

11 category. Where we see that there are negatives, we

12 would like to find ways to avoid them or correct them.

13 Whether all of that action can lead to positives across

14 the field, I don't know, but that is normally what one

15 tries to do in these cases. You want to avoid

16 significant adverse effects, and where that doesn't

17 seem to be promised by what is proposed, then it's

18 common for decision bodies to issue approvals with

19 terms and conditions that will address those --

20   MR. SVEN HOMBACH: So then staying on

21 the subject of the surreptitious analysis done by Mr.

22 Bedford and his cats, this -- a 74 percent -- you

23 wouldn't say a 74 percent, that's a 'C' plus or that is

24 a 'B' simply based on percentages.

25   You have to compare it to other

9353

1 projects?

2   DR. ROBERT GIBSON: Yes, my students

3 complain about that too, about relative grading, but

4 we're doing relative grading here. That's quite

5 clearly what the terms of reference require. What's

6 the best option in comparison with the others?

7   We have criteria we're looking at. Mr.

8 Bedford has quite rightly pointed out that where there

9 are positives, they're not always uniformly and

10 perfectly positive. There's mostly positive, but maybe

11 there's some imperfections here or there.

12   So it is -- it is probable that we will

13 have relative imperfections. And as I've said several

14 times, we're not assigning a letter grade here or a

15 number grade. This is trying to compare, making sure

16 we're not missing any key categories.

17   It may be that if you do the kind of

18 assessment in maybe a slightly more or less

19 surreptitious manner than -- than Mr. Bedford, we would

20 get to a fairly clear distinction amongst the options.

21 Maybe one will leap out as relatively acceptable. But

22 it may be that there'll be some that are very close and

23 a closer look and careful judgment will have to be made

24 on -- that's a common thing.

25   But it doesn't mean that one that gets

9354

1 74 percent, or 83, or 59 is -- is necessarily okay.

2   MR. SVEN HOMBACH: Okay.

3   DR. ROBERT GIBSON: The advantage here,

4 and it's a really important one, is that we are

5 considering alternatives. We are looking for the best

6 option, which is marvellous in comparison with what is

7 often done, where something is proposed and you decide

8 whether or not it is acceptable, as if there's some

9 line to cross, the seventy-three (73), that's okay, but

10 seventy-two (72) wouldn't be.

11   That's clearly a much less desirable way

12 of making serious decisions about what you should do in

13 the future. So this is a difficult challenge, but it

14 is also way more sensible than the alternative.

15   MR. SVEN HOMBACH: To use a law school

16 analogy, you're grading on a curve?

17   DR. ROBERT GIBSON: Well, we are, yes.

18   MR. SVEN HOMBACH: Okay. Your report

19 on page 17 discussed the concept of lock-in, where you

20 raised some concern that society could become dependent

21 on current technologies.

22   Are you actually suggesting that

23 Manitoba, or more specifically, Manitoba Hydro, is

24 currently experiencing a lock-in or are you just

25 raising this as a potential concern for the future to

9355

1 be taken into account in the analysis?

2   DR. KYRKE GAUDREAU: I do not believe

3 we were suggesting that Manitoba is currently locked

4 in, so we were more raising that as an important point

5 to consider in future decision-making.

6   MR. SVEN HOMBACH: On page 13 of the

7 report, you're suggesting that one should seek

8 improvements in current capacity.

9   And do you understand, sir, and I'm not

10 sure if this goes to Dr. Gibson or Dr. Gaudreau, that

11 capacity is a term of art and utility planning and it

12 refers to the ability deliver power?

13   DR. KYRKE GAUDREAU: Yes, we apologize,

14 we did not use capacity in that capacity, for lack of a

15 better word, sorry.

16   MR. SVEN HOMBACH: So when you're

17 referring to capacity, you're referring to broadening

18 the ability to consider and implement alternatives?

19   DR. ROBERT GIBSON: The general point

20 here is about the potential for improving current

21 performance of existing facilities and existing

22 programs as an option that is -- has, in some cases,

23 been neglected in favour of simply doing new supply.

24 It is a generic consideration common in the literature

25 about -- about, well, not just dams, but also many

9356

1 kinds of different projects. It used to be very common

2 in waste management, for example.

3   And so we would say that this is a

4 general thing that is not -- like the rest of the

5 criteria, not particularly aimed at Manitoba Hydro or

6 Manitoba, other than to recognize the context. So

7 improvements of current capacity is certainly something

8 that ought to be considered in any jurisdiction facing

9 these kinds of choices.

10   MR. SVEN HOMBACH: Okay. This morning

11 you made one (1) other analogy, and that revolved

12 around cutting butter with a chainsaw. And I tried not

13 to -- to picture that in my mind. And you referred to

14 the distinction between high-quality electrical energy

15 and low-quality electrical energy. And your conclusion

16 was you don't need to use high-quality energy to heat

17 homes.

18   When you're referring to low-quality

19 electricity, what are you referring to? Are you

20 referencing wind, solar, heat pumps, that technology?

21   DR. KYRKE GAUDREAU: Just to clarify,

22 sorry, I was referring to low-quality energy, not low-

23 quality electricity. Electricity is always of the --

24 the same quality. But in terms of low-quality energy,

25 yes, things such as using heat pumps, passive solar

9357

1 heating, enhanced insulation, there are other ways to

2 make homes comfortable.

3   MR. SVEN HOMBACH: Then let me carry

4 the analogy a bit further and say if -- if your choice

5 was between using one (1) chain saw or ten thousand

6 (10,000) butter knives, there's a -- there is a

7 qualitative and quantitative evaluation that you'd have

8 to conduct as to whether or not one is more economical

9 than the other?

10   DR. KYRKE GAUDREAU: Yes, I imagine

11 there would need to be.

12   MR. SVEN HOMBACH: And you're not -- as

13 part of your mandate and as part of your review you're

14 not actually suggesting that in this specific context,

15 one is more economical than the other?

16   DR. KYRKE GAUDREAU: No, although I

17 would say that generally the literature argues that

18 many of the conservation and demand-side management

19 options are oftentimes cheaper or more -- more

20 economical. Although I believe in Dunsky's report he -

21 - he does mention that it also depends on the type of

22 financial analysis that one uses. So there's a

23 question of what -- what type of analysis is being

24 applied.

25   MR. SVEN HOMBACH: But you didn't

 1 conduct your own independent analysis? You're merely

 2 raising it as an issue for the Board to consider?

 3   DR. KYRKE GAUDREAU: That is correct.

 4   MR. SVEN HOMBACH: Similarly, on page

 5 10 of your report you discussed the benefits of

 6 backcasting. And you were of the view that backcasting

 7 might help avoid overstated demand.

 8   You didn't actually analyze whether or

 9 not there currently is overstated demand in Manitoba,

10 did you?

11   DR. KYRKE GAUDREAU: No.

12   MR. SVEN HOMBACH: Okay. Thank you

13 both. Those are all of my questions.

14   Mr. Chairman, I'm wondering if we could

15 stand down for one (1) minute to address an

16 administrative matter?

17   THE CHAIRPERSON: Yes, let's do that

18 please.

19

20   (BRIEF PAUSE)

21

22   THE CHAIRPERSON: Mr. Williams, I

23 understand you have some questions on re-direct?

24   MR. BYRON WILLIAMS: I'm just -- Hydro

25 has none I -- I take it?

9359

```
 1                    (BRIEF PAUSE)

 2

 3              MR. BYRON WILLIAMS:   But -- but I -- I

 4 think we -- my only question is going to be about

 5 bagpipes and cats, but I think properly I -- I

 6 improperly preceded you yesterday.  So if you do have -

 7 - that -- that was my bad, not yours.

 8              MS. JANET MAYOR:   Sorry, no, we don't

 9 have any additional questions.  Thank you.

10

11 RE-DIRECT EXAMINATION BY MR. BYRON WILLIAMS:

12              MR. BYRON WILLIAMS:   Just a -- a couple

13 of questions.  Dr. Gibson, you -- you remember a

14 discussion about hypothetical bagpipes not being played

15 to not discour -- disturb the hypothetical cats?

16              Do you remember that discussion with My

17 Friend Mr. Bedford?  You have to say yes, sir.

18              DR. ROBERT GIBSON:   Sorry, I was

19 engaged in the pleasant memory.

20              MR. BYRON WILLIAMS:   So was that a yes?

21              DR. ROBERT GIBSON:   Yes.

22              MR. BYRON WILLIAMS:   And the discussion

23 of cats and bagpipes was in the context of using your

24 Table 6 to compare different plans.

25              Do you recall that?
```

 1   DR. ROBERT GIBSON: Yes.

 2   MR. BYRON WILLIAMS: And certainly,

 3 you'll recall in your evidence discussion of the

 4 optimization of portfolios?

 5   DR. ROBERT GIBSON: Yes.

 6   MR. BYRON WILLIAMS: And if one were

 7 going to undertake that analysis, sir, you wouldn't

 8 recommend simply comparing one (1) energy source -- or

 9 one (1) generating source against another, I'll suggest

10 you, rather, you would look to optimizing different

11 portfolios, taking into account optimized levels and

12 mixes of different demand sources and different

13 generation sources.

14   Would that be fair?

15   DR. ROBERT GIBSON: This is beginning

16 to sound like a serious question, yes.

17   MR. BYRON WILLIAMS: And sir, if you

18 were told as well that in terms of the objectives of

19 the exercise, one was looking to optimize social

20 benefits for northern and Aboriginal communities, it is

21 conceivable and indeed likely that you would recommend

22 optimizing the portfolios not only for generation

23 sources and -- and demand sources, but to consider ways

24 to optimize each portfolio in terms of the social

25 benefits?

9361

1   DR. ROBERT GIBSON: Yes. Let me

2 address a couple of elements of that, possibly less

3 satisfactorily then you wish.

4   I'm sure that Mr. Bedford considered two

5 (2) options that he discussed, maybe more that he

6 hasn't discussed, as illustration rather than as final

7 answers, and I think it's a -- a salutary exercise, and

8 we all might agree that one might take that further

9 than he did, but we would want to consider first -- in

10 first instance, the full suite of -- of portfolios

11 that, by the end of this hearing, seem to be

12 potentially reasonable and desirable, and they may be

13 beyond simply the list that's in the initial

14 submission, since further information has appeared and

15 so forth.

16   Secondly, we've talked about tradeoffs,

17 and those tradeoffs are to be avoided, and sometimes

18 they may flag -- if we find two (2) or three (3)

19 options that look fairly close and fairly attractive,

20 but have some negative elements, one (1) of the first

21 questions is, Well, what could we do to reduce the

22 negative aspects of these various options?

23   So the portfolios are not fixed -- they

24 aren't fixed. Now they aren't fixed when you do a

25 first cut, so there may be a portfolio that looks

1 pretty good, but it has some negative elements. It has

2 deficiencies -- some -- some disadvantages relative to

3 other options.

4   Well, there may be ways of dealing with

5 those disadvantages by adjusting the portfolio. This

6 is common enough we have conditions of approval, but

7 you can also adjust the portfolios. They're

8 practically the same thing at this strategic level.

9   So I don't know what kind of things that

10 would be involved -- gas has got big problems with CO_2.

11 If you found some magical way to sequester all that ga

12 -- all the CO_2 and, you know, make a huge revenue

13 stream out of it, that would be good. I don't see that

14 happening, but, you know, they didn't see that with

15 sulfur I Sudbury fifty (50) years ago, so, you know,

16 it's possible.

17   Secondly, if you rely on demand-

18 management, and -- and you delay benefits that may be

19 attributed to doing the Keeyask dam for many years,

20 then you have communities that were reasonably

21 expecting some opportunities. They're not going to get

22 them, is there some way you could deliver those

23 opportunities another way?

24   That's going to be a -- an additional

25 cost, but maybe it's part of a viable portfolio. I

9363

1 don't know -- I don't know the details. I'm just

2 saying in principle, you can shift the portfolios as

3 you go when you find that there are problems that these

4 tradeoffs identify. So this is sort of just a

5 reasonable iterative working through your options, but

6 certainly that's possible.

7   How bagpipes might enter, I don't really

8 have a firm answer for. I think it's probably true

9 that, like many of these kind of effects, some people

10 like them better than others, and so it could be a

11 powerful incentive or disincentive for efficiency

12 efforts, depending on sort of the receptor.

13   So this is context-specific analysis

14 that is a little beyond me. I'd have to defer to Mr.

15 Bedford, and his fans and detractors.

16   MR. BYRON WILLIAMS: I thank you, and I

17 have no more questions about bagpipes, cats, or

18 anything else.

19   THE CHAIRPERSON: Manitoba Hydro, any

20 questions? No. Okay. I think that completes today's

21 proceedings. I remind everyone that we're back

22 tomorrow morning at nine o'clock.

23   And I want to thank Dr. Gunn, Dr.

24 Gibson, and Dr. Gaudreau for the work you've kind --

25 your -- for their contribution to the proceeds so far.

9364

1 You may be called upon to provide additional work, but

2 for the time being thank you very much for the work

3 you've done. I appreciate the contribution.

4   DR. ROBERT GIBSON: And thank you.

5 It's a pleasure appearing before this panel. It's one

6 of the most civilized experiences I've had of this

7 kind, and you're all to be celebrated.

8   THE CHAIRPERSON: Thank you for that.

9 Have a good evening, everyone. Have a safe trip back

10 home, too.

11   DR. ROBERT GIBSON: Thank you.

12   DR. KYRKE GAUDREAU: Merci beaucoup.

13

14   (PANEL STANDS DOWN)

15

16 --- Upon adjourning at 4:22 p.m.

17

18

19 Certified correct,

20

21

22 _____

23 Cheryl Lavigne, Ms.

24

25

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