

1 **REFERENCE:**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please file the curriculum vitae for each member of your firm who has participated in the preparation of
7 your report and the curriculum vitae of each third party (if any) retained to assist in preparation of your
8 report. Please specify those individuals who intend to appear to give evidence during the oral portion of
9 the proceeding.

10

11 **RESPONSE:**

12 Please reference CAC MB/Elenchus-13 for the curriculum vitae for each member who has participated in
13 the preparation of our report and will appear to give evidence during the oral portion of the proceeding.

1 **REFERENCE: Lines 10–16, Page 10.**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please confirm that tools such as regression analysis, on their own, cannot prove the causal relationships
7 affecting residents per household. Also confirm that any statistically-derived relationship will depend
8 upon the professional judgement exercised in the selection of the appropriate variables to be utilized.

9

10 **RESPONSE:**

11 Elenchus would confirm that tools such as regression analysis, on their own, cannot prove the causal
12 relationships affecting residents per household.

13

14 Elenchus would also confirm that any statistically-derived relationship will depend upon the professional
15 judgement exercised in the selection of the appropriate variables to be utilized. Professional judgement
16 includes using statistical tools to examine the alternate models in order to identify the variables that
17 result in a model with the greatest explanatory power.

1 **REFERENCE: Lines 23-25, Page 10.**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Is the observation that household size may increase during periods of high unemployment an important
7 determinant of an underlying long-term future trend or is it more closely associated with short-term
8 economic cycles?

9

10 **RESPONSE:**

11 Elenchus would agree that the observation that household size may increase during periods of high
12 unemployment is more closely associated with short-term economic cycles than an underlying long-
13 term future trend, assuming it correlates with economic factors that are cyclical. Some economists are
14 of the view that the Canadian economy may be undergoing a transition to slower growth and long term
15 stagnation of incomes for middle class and lower class Canadians. Such structural changes in the
16 economy, if not cyclical, could result in future trends being inconsistent with past trends.

1 **REFERENCE: Lines 11-14 and 19-20; Section 2.1.1 Residential Basic - Forecast Market Share of Electric**
2 **Heat, Page 13.**

3
4 **PREAMBLE:**

5 Page 13, lines 13-14 of the report states "The 2008 forecast estimated 2028/29 MSE at 34.4%, compared
6 to 39.1% in the 2013 forecast, a difference of +4.7%. In 2012, 2028/29 MSE was forecast at 40.1%, a
7 difference of +5.7%.". Page 13, lines 19-20 of the report states: "The change in forecast MSE in 2028/29
8 from 2008 to 2012 was almost 5% and from 2008 to 2013 was almost 6%."

9
10 **a) QUESTION:**

11 Please confirm that the statement at Lines 19-20 of the ERA report should be amended to read: "The
12 change in forecast MSE in 2028/29 from 2008 to 2012 was almost 6% and from 2008 to 2013 was almost
13 5%."

14
15 **RESPONSE:**

16 Elenchus confirms that the statement at Lines 19-20 of the ERA report should be amended to read: "The
17 change in forecast MSE in 2028/29 from 2008 to 2012 was almost 6% and from 2008 to 2013 was almost
18 5%."

19
20 **b) QUESTION:**

21 Please confirm your understanding that the MSE under the Manitoba Hydro 2013 Forecast is projected
22 to be lower than the MSE projected under the 2012 Forecast.

23
24 **RESPONSE:**

25 Elenchus confirms that the MSE under the Manitoba Hydro 2013 Forecast is projected to be lower than
26 the MSE projected under the 2012 Forecast.

1 **REFERENCE: Lines 20-23; Section 2.1.1 Residential Basic - Forecast Market Share of Electric Heat, Page**
2 **13.**

3
4 **PREAMBLE:**

5 Manitoba Hydro has observed a net increase in the number of customers switching from natural gas to
6 electric space heat when compared to the number of customers switching from electric heat to natural
7 gas space heat.

8
9 **QUESTION:**

10 As noted in the response to PUB/MH I-253a, the 2013 Forecast projects net switching for existing
11 customers to become zero by 2017/18. Would ERA agree that Manitoba Hydro has effectively modeled
12 this switching to become symmetrical for existing customers in the 2013 Forecast?

13
14 **RESPONSE:**

15 Elenchus would agree that Manitoba Hydro has effectively modeled this switching to become
16 symmetrical for existing customers in the 2013 Forecast.

1 **REFERENCE: Lines 27-29; Section 2.1.1 Residential Basic - Forecast Market Share of Electric Heat, Page**
2 **14.**

3
4 **PREAMBLE:**

5 It may also be useful to examine the extent to which Manitoba Hydro, which owns both the electricity
6 and gas utilities in the Province, can influence the choice of energy source for space heating.

7
8 **a) QUESTION:**

9 Please confirm that the 2013 load forecast includes an adjustment to projections of market share of
10 electric heat based upon the Heating Fuel Choice initiatives noted on page 12 of the 2013 Forecast.

11
12 **RESPONSE:**

13 Elenchus would confirm that the 2013 load forecast includes an adjustment to projections of market
14 share of electric heat based upon the Heating Fuel Choice initiatives noted on page 12 of the 2013
15 Forecast.

16
17 **b) QUESTION:**

18 Please confirm your understanding that, as discussed during teleconferences with ERA and as detailed in
19 response to PUB/MH I-253b and MIPUG/MH II-36d, Manitoba Hydro has and continues to explore
20 opportunities for influencing fuel choice for heating.

21
22 **RESPONSE:**

23 Elenchus would confirm understanding that, as discussed during teleconferences with ERA and as
24 detailed in response to PUB/MH I-253b and MIPUG/MH II-36d, Manitoba Hydro has and continues to
25 explore opportunities for influencing fuel choice for heating.

1 **REFERENCE:** Lines 8 - 9; Section 2.1.3 General Service Top Consumers, Page 25.

2

3 **PREAMBLE:**

4 "For future planning purposes, it seems reasonable to assume there may be an economic downturn in
5 the next 20 years."

6

7 **QUESTION:**

8 For future planning purposes is it not also reasonable to assume that there may be an economic boom
9 in the next 20 years?

10

11 **RESPONSE:**

12 Elenchus would agree that for future planning purposes it is also reasonable to assume that there may
13 be an economic boom in the next 20 years. Both positive and negative variances would be captured
14 within the range of load forecast scenarios recommended by Elenchus.

1 **REFERENCE: Lines 3 - 4; Section 3.1.1 Forecast Variability, Pages 33, 34.**

2

3 **PREAMBLE:**

4 "The following table summarizes the range between maximum and minimum forecast energy and
5 forecast peak demand for each given year and the range as a percentage of the weather adjusted actual.
6 In percentage terms, the range has also been trending upwards in recent years."

7

8 **QUESTION:**

9 Please provide a table which demonstrates which Manitoba Hydro load forecast was relied upon to
10 establish the maximum and minimum forecast energy and peak demand for each year in the charts
11 provided on page 33 of the report.

12

13 **RESPONSE:**

Summary of Variability for Forecast Years with 15+ years of Forecasts				
GWh's				
Forecast Year	Min	Min Year	Max	Max Year
2001/02	20,446	1996	23,497	1989
2002/03	20,649	1996	23,913	1989
2003/04	20,872	1996	24,281	1989
2004/05	21,095	1996	24,645	1989
2005/06	21,317	1996	24,998	1989
2006/07	21,555	1996	25,354	1989
2007/08	21,803	1996	25,714	1989
2008/09	22,067	1996	26,078	1989
2009/10	22,330	1996	26,448	1989
2010/11	22,614	1996	26,429	1990
2011/12	22,878	1996	26,544	2008
2012/13	23,146	1996	27,107	2008

Summary of Variability for Forecast Years with 15+ years of Forecasts				
Demand				
Forecast Year	Min	Min Year	Max	Max Year
2001/02	3,677	2001	4,441	1989
2002/03	3,761	2001	4,509	1989
2003/04	3,810	2000	4,578	1989
2004/05	3,857	2000	4,646	1987
2005/06	3,903	2000	4,735	1990
2006/07	3,949	2000	4,813	1990
2007/08	3,981	2002	4,866	1987
2008/09	4,011	2002	4,957	1990
2009/10	4,041	2002	5,012	1990
2010/11	4,078	2002	5,091	1991
2011/12	4,117	2002	5,180	1991
2012/13	4,164	2002	5,203	1992

1 **REFERENCE: Lines 27-28, 1 - 11; Section 3.2, Pages 41, 42.**

2

3 **PREAMBLE:**

4 "Unfortunately, since grid parity depends on unpredictable technological innovations, as well as the
5 trend in the price of grid power and the extent of economies of scale in the production of alternate
6 generation and storage technologies, it is not possible to forecast accurately either the timing or the
7 impact of grid parity. It is nevertheless reasonable to expect that grid parity will be reached sooner in
8 high-cost jurisdictions than in low-cost jurisdictions... and that the cost of self-generation technologies
9 will be lower for large consumers than for small consumers."

10

11 **a) QUESTION:**

12 In what range of timeframe does ERA project Manitoba will reach "grid parity"? What timeframes would
13 be projected for each of the different sectors within Manitoba?

14

15 **RESPONSE:**

16 As mentioned above it is not possible to forecast accurately either the timing or the impact of grid
17 parity. However Manitoba Hydro could consider using a reasonable parallel model of the
18 implementation and effects of the cellular phone on the telephone companies. In the early 1980's
19 cellular went from theory to application to installation of cell towers. First established in high profit
20 areas and then as consumer acceptance and growth occurred, service fanned to cover broader territory.
21 Today the phone companies wires business still exist servicing there territory with fewer and declining
22 customers.

23

24 Elenchus has not conducted a cross-jurisdictional analysis of grid parity; however, it is noted that many
25 commentators foresee grid parity in at least some North American jurisdictions within a decade. Behind
26 the fence generation is already evolving for many industrial customers in many jurisdictions. On the
27 basis of the publicly expressed concern about the imminence of grid parity by credible industry experts,
28 including Bruce Campbell the CEO of the Ontario Independent Electricity System Operator, it is not
29 unreasonable to anticipate that grid parity cannot be dismissed as a possibility for Manitoba and its
30 export markets with 10 to 20 years.

1 **REFERENCE:**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please file the curriculum vitae for each member of your firm who has participated in the preparation of
7 your report and the curriculum vitae of each third party (if any) retained to assist in preparation of your
8 report. Please specify those individuals who intend to appear to give evidence during the oral portion of
9 the proceeding.

10

11 **RESPONSE:**

12 Filed separately.

1 **REFERENCE:**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please provide details of the experience of each of the contributors to your report with respect to Life
7 Cycle Assessments and Ecological Footprinting.

8

9 **RESPONSE:**

10 Elenchus has no experience in the practice of Life-Cycle Assessments or Ecological Footprinting.
11 Associate Russ Houldin has taught the EF to undergraduates, along with other methods of evaluating
12 environmental impacts, as an Adjunct Professor and Sessional Instructor at the University of Toronto
13 since 1994.

1 **REFERENCE:** Lines 23-24; Section 3.2.2.2 Curtailable Rates Program, Page 10.

2

3 **PREAMBLE:**

4 Page 18 of Appendix B Power Resource Plan & Page 40 of Appendix C - 2012 Electric Load Forecast.

5

6 **QUESTION:**

7 Please confirm your understanding that projected capacity savings under the curtailable rates program,
8 although reflected in the Power Smart Plan, are not included in Manitoba Hydro's Power Resource Plan.

9

10 **RESPONSE:**

11 Elenchus understands that MH includes the CR program in its DSM savings projections.

1 **REFERENCE:** Lines 4-5; Sections 3.2.2.3 Surplus Energy Program, Page 11.

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please confirm your understanding that the Surplus Energy (SE) Program is not a DSM program and
7 therefore not included in Manitoba Hydro's Power Smart Plan.

8

9 **RESPONSE:**

10 Elenchus does not include the SE program in its stress-testing analysis. MH appears not to include SE
11 contributions towards DSM savings but Elenchus has been unable to find a specific rationale offered by
12 MH for this.

1 **REFERENCE: Sections 3.5 Carbon Dioxide Footprint; 3.5.1.2 Elenchus' Comments, Page 30.**

2

3 **PREAMBLE:**

4 The life cycle assessment (LCA) studies for Keeyask & Conawapa utilize a greenhouse gas (GHG) emission
5 functional unit, namely tonnes CO₂eq/GW.h, to quantify the implications from these Projects and
6 contrast them to numerous comparison technologies as documented in Appendix 7.3 of the NFAT
7 submission. The LCAs included GHG emissions from relevant project components and inputs during
8 construction (including material sourcing, manufacture and transport), operation and land-use changes
9 including reservoir implications.

10

11 **a) QUESTION:**

12 How would life cycle activities such as material excavation, manufacturing and transport be specifically
13 accounted for within an ecological footprint analysis?

14

15 **RESPONSE:**

16 Elenchus does not offer Ecological Footprint (EF) analysis services (See MH-Elenchus 3). Rather, Elenchus
17 is aware of the methodology and refers to it in order to address one of the specific questions of the
18 SOW. In an EF activity such as material excavation, manufacturing and transport are converted to an
19 area of land required to support the activities. Details of the assumptions employed may be found in the
20 reference provided in Elenchus' report or, for example, Global Footprint Network, **Calculation**
21 **methodology for the national Footprint accounts.**

22

23 **b) QUESTION:**

24 How would the various GHG implications be converted to an ecological footprint?

25

26 **RESPONSE:**

27 An EF analysis represents environment impacts as areas of land. This requires assumptions about how
28 the impacts relate to the Earth's surface. For GHGs, for example, tonnes of CO₂ may be represented as
29 the equivalent forest area required to sequester that amount of carbon. For more detail see, for
30 example, Global Footprint Network, **Calculation methodology for the national Footprint accounts.**

31

32 **c) QUESTION:**

33 Please identify the specific key environmental indicators or outcomes (besides GHG implications) that
34 would be considered in the proposed ecological footprint methodology.

35

36 **RESPONSE:**

37 The impacts of all of the alternatives considered would be presented in terms of one metric, the
38 equivalent area of land required to support each alternative.

39

40 **d) QUESTION:**

41 What benefits would an ecological footprint analysis deliver relative to a GHG analysis? What are the
42 disadvantages of ecological footprint analysis?

43

44 **RESPONSE:**

45 The key benefit is that all alternatives would be expressible in terms of a common unit – area of the
46 Earth's surface. In contrast, normal EIAs express impacts in terms of a variety of quantitative or

- 1 qualitative factors. The MH multiple accounts approach is of this type. The key disadvantage is the
- 2 number of assumptions that have to be made.

1 **REFERENCE: Appendix C: Table 1, pages 1-3.**

2

3 **PREAMBLE:**

4

5 **QUESTION:**

6 Please provide an Excel version of Table 1: Historical and Projected with Base DSM with all formulas
7 intact.

8

9 **RESPONSE:**

10 Table 1 was created by cut-and-paste from the relevant annual variables using “paste-special values”;
11 consequently there are no formulae.

1 **REFERENCE: Figure 4; Section 3.3.2.4 Stress Testing and Deferrals, page 21.**

2

3 **PREAMBLE:**

4 Figure 4, page 21 depicts that the DSM LF is less than the System LF.

5

6 **QUESTION:**

7 With the understanding that generally a DSM EE measure load profile may not mirror the system load
8 profile, and that the more comprehensive the operational control of the measure is the more the
9 expected difference between the two should be, please explain the rationale for the statement "this is
10 an indication that the DSM estimates are not fully consistent with projected loads".

11

12 **RESPONSE:**

13 As the report indicates, the comparison of system and DSM load factors is put forward as a qualitative
14 diagnostic of the degree of coherence of the bottom-up DSM forecast with the top-down use of system
15 values (such as marginal costs) and stress-testing. See answer to PUB/Elenchus-36.