

**SCOPE OF WORK FOR ELENCHUS RESEARCH ASSOCIATES INC.  
NFAT REVIEW  
LAST UPDATED: SEPTEMBER 20, 2013**

## ELENCHUS

### **Load Forecasting**

1. From an energy demand perspective, comment on the extent to which Manitoba's Preferred Development Plan addresses the reliability and security requirements of Manitoba's electricity supply.
2. Review Manitoba Hydro's Load Forecast factors and comment on whether they are complete, reasonable and accurate.
3. Comment on the use of an econometric and end-use forecasting methodology.
4. Assess the reliability of Manitoba Hydro's short- and long-term domestic Load Forecast modelling.
5. Review the extent to which Manitoba Hydro has used appropriate scenario planning to examine the potential impact of changes in the industry, the Manitoba and Canadian economies, available technology (generation and loads) and energy efficiency measures (costs and cost effectiveness).
6. Comment on the appropriate use of probability analysis in projected Load Forecasts.
7. Comment on the extent to which retrospective load analysis provides confidence in the Load Forecast.
8. Review Manitoba Hydro's 2012 in 2013 load forecasts.
9. Compare Manitoba Hydro's 2012 and 2013 Load Forecasts with Manitoba Hydro's historical load forecasts back to 2008 with specific reference to:
  - (a) Population growth (birthrates/immigration);
  - (b) Changes in the number, size, and occupancy of residential dwellings;
  - (c) A comparison of the Load Forecast with similar markets (i.e., are Manitoba Hydro's assumptions consistent with neighbouring jurisdictions); and
  - (d) Peak demand and energy trends including seasonal variations in load forecasting.
10. Review Manitoba Hydro's weather adjustment methodology, with specific reference to:
  - (a) Non-heating load;
  - (b) Electric heating loads;
  - (c) Commercial or mass-market consumption;
  - (d) Distribution losses; and
  - (e) Transmission losses.

11. Assess the consistency of transmission and distribution losses under various loads and weather occurrences and the assignment of such losses to customer classes.
12. Assess the impacts on Load Forecasts resulting from potential fuel switching, particularly in light of recent trends in the cost of natural gas.
13. Comment on price elasticity and the impact of electricity rate changes on demand.
14. Review and comment on Manitoba Hydro's historical and forecast growth in electric heating relative to natural gas heating in the context of electricity and natural gas pricing.
15. Review and comment on the extent to which Demand-Side Management and energy efficiency measures have been relied on as an alternative to generation.
16. Review and comment on the appropriateness of and uncertainty related to the timelines for future generation assets to meet domestic load requirements and export commitments.
17. Comment on the impact of global warming on the Load Forecast
18. Comment on the Load Forecast for industrial and commercial consumers.
19. Upon prior approval by the NFAT Panel, address any other issues that may be identified in reviewing Manitoba Hydro's evidence or are requested by the NFAT Panel.

#### **DSM and Energy Efficiency**

1. Review Manitoba Hydro's Demand-Side Management factors and comment on whether they are complete, reasonable and accurate.
2. Review Manitoba Hydro's assessment of technical, economic, and real Demand-Side Management and energy efficiency opportunities relative to other jurisdictions.
3. Review the extent to which Manitoba Hydro has designed and implemented large utility scale Demand-Side Management and energy efficiency programs at the residential, commercial and industrial levels in a manner consistent with other North American jurisdictions where such programs have been implemented;
4. Comment on the proper use of Total Resource Cost (TRC) and Rate Impact Measure (RIM) evaluation tools as well as a Total Societal Costs and benefit analysis from Demand-Side Management and energy efficiency opportunities.
5. Comment on Manitoba Hydro's approach to measuring actual Demand-Side Management and energy efficiency savings.
6. Comment on the appropriateness of Manitoba Hydro's adoption of smart grid technologies for Demand-Side Management.
7. Comment on Manitoba Hydro's approach to determining marginal costs for measuring Demand-Side Management and energy efficiency programs.

8. Comment on Manitoba Hydro's approach to managing Demand-Side Management and energy efficiency lost opportunity revenues.
9. Comment on the reasonableness, thoroughness and soundness of Manitoba Hydro's Demand-Side Management and conservation forecasts.
10. Comment on whether the preferred and alternative resource and conservation evaluations are complete, accurate, thorough, reasonable and sound.
11. Critically assess Manitoba Hydro's DSM Potential Study.
12. Perform independent stress testing of Demand-Side Management levels and an assessment of the reasonableness of Manitoba Hydro's stress testing of 1.5 and 4 times Demand-Side Management spending.
13. Examine Manitoba Hydro's current and potential use of Demand-Side Management in terms of:
  - (a) System capacity dispatchability;
  - (b) Dependable energy dispatchability;
  - (c) Backup resources required;
  - (d) Cost effectiveness;
  - (e) CO<sub>2</sub> footprint;
  - (f) The Role of the Curtailable Rate Program (Peak);
  - (g) The Role of the Surplus Energy Program (Energy); and
  - (h) The location of Demand-Side Management investments.
14. Identify the potential of Demand-Side Management or energy efficiency to defer new generation in Manitoba, including Keeyask G.S. and or Conawapa G.S. alone or in conjunction with other non-hydraulic resources.
15. Review and comment on the evidence with respect to Demand-Side Management arising from the last Manitoba Hydro General Rate Application, including the role of Demand-Side Management in deferral of Generation Investments put forth by the Consumer Association of Canada (Manitoba) Inc.'s expert witness.
16. Consult with other specialists as directed by the Board regarding the use of Demand-Side Management as a resource option.
17. Upon prior approval by the NFAT Panel, address any other issues that may be identified in reviewing Manitoba Hydro's evidence or are requested by the NFAT Panel.