

<b>Section:</b>	Load Forecast Review	<b>Page No.:</b>	
<b>Topic:</b>	Load Forecast Conclusions & Impacts		
<b>Subtopic:</b>			
<b>Issue:</b>			

**PREAMBLE TO IR (IF ANY):**

**QUESTION:**

- a) Please summarize and itemize each finding in Daymark’s evidence on Manitoba Hydro’s load forecast by two types:
  - i. Regarding the base load forecast (i.e. impacts apply regardless of rate increase approved).
  - ii. Regarding price elasticity (i.e. impacts will change depending on the rate increase forecast).
- b) Please identify, by finding listed in part (a), if the impact on load forecast has an upward bias, a downward bias, or is unknown.
- c) Do the conclusions made change if the rate increase forecast in the near-term is reduced (i.e. back to previous levels)? If so, please explain the changes to conclusions and directional impacts.

**RESPONSE:**

- 1)
  - a. Summarize and Itemize each finding by
    - i. Impacts apply regardless of the rate increase proposed
      - 1. Top Consumers PLIL method: The PLIL accounts for the long-term load growth of the top consumers sector by evaluating historical shifts in the energy usage of top consumers as a group rather than as individuals.

- The 2017 PLIL method was conservative because it only considers the total load of top consumer companies that have been in the MH service territory since 1983/84, thus excluding the historical load of three companies that are currently in the top consumer sector.
2. Population forecast: MH develops its population forecasts based on the forecasts created by external, independent institutions. The population forecast is used to forecast the residential customer. Similarly, the residential customer count is the basis of MH GSMM sector customers. The evaluation of historical population and residential values along with the forecast used by MH show that MH has consistently used under-forecasted the population and residential customer count.
  3. Weather normalization: MH uses two years of data to estimate the weather-dependent load relationship and average of 25-year data to define the 'normal' year weather.
- ii. Impacts due to amount of price increase proposed
1. Impact of proposed rate hike on electricity demand: MH has considered the impact of proposed price increase in its load forecast through price elasticity estimated using regression results.
  2. Fuel substitution: MH has not explicitly considered the impact of fuel switching that could result from the proposed rate increase for its GSMM and Top Consumers category. In the residential sector, MH considered fuel switching impacts in its end-use forecasting methodology through the inclusion of a gas and electricity price ratio, survey of fuel switching, and Fuel Choice Initiative program. However, the end-use forecasting methodology is not fully utilized by MH in its residential load sector forecast. Besides using the end-use forecast as a tool to balance the appropriateness of the regression results, the end-use methodology is also relied upon to estimate the ratio of electric heat customers to total customers, which is one of the predictive variables in the residential average usage regression model (2017 Load Forecast Report, page 62). However, the use of the ratio of electric heat customers to total customers, also known as a saturation of electric heat variable, in the Residential average usage regression model, gives rise to a multicollinearity issue as pointed out in the Load Forecast Review Report (Page 33). Moreover, the load forecasting methodology utilized by MH does not have an explicit mechanism to account for a potential fuel switching phenomenon in both the GSMM and GS Top Consumer sectors which comprise 68% of total consumer sales in 2016/17.

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- b. Impact on the load forecast by each topic identified in part (a)
- i. Impacts apply regardless of the rate increase proposed
    - 1. Top Consumers PLIL method: The conservative PLIL method used in 2017 forecasted 523 GWh less load than using the 2014 method and 2017 data over the 20-year forecast period.
    - 2. Population forecast: The reliance on independent forecasts that have under-forecasted the population and thus reduce the residential customer count forecast may produce a lower residential load forecast and a lower general service mass market load forecast.
    - 3. Weather normalization: The impact on the load forecast has not been developed by Daymark independently.
  - ii. Impacts due to the amount of price increase proposed
    - 1. Impact of the proposed rate increase on electricity demand: The impact of the proposed rate increase is already directly considered in the load forecast methodology through the price elasticity component of the regressions used in each sector. However, due to multicollinearity, the price elasticities of all three sectors (residential, general service mass market, and top consumers) may not be accurate representations of the price response.
    - 2. Fuel substitution: With the magnitude and duration of the proposed increases it may be more likely that customers would adopt a substitute fuel source as a response to the proposed rate increase. This may be a longer-term response and would reduce the load forecast estimated by MH. However, Daymark did not independently develop a substitution forecast.
- c. Does the conclusion made in (b) change if the proposed rate increase is reduced?
- i.
    - 1. Top Consumers PLIL method: No.
    - 2. Population forecast: No.
    - 3. Weather normalization: No.
  - ii.
    - 1. Impact of proposed rate hike on electricity demand: Yes. The load reduction associated with proposed rate increase would be lower than what is currently considered in MH current load forecast.
    - 2. Fuel substitution: No. Since fuel substitution is not fully considered in MH load forecasting methodology, changes in proposed rate increase may not have any impact due to fuel switching.

**RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:**