

ENERGY PROBE INTERROGATORY #2

INTERROGATORY

Refs: Exhibit B, Tab 1, Tab 2;

Exhibit B, Page 8: Appendix A, Page 3 - Common Assumptions;
Exhibit B, Tab 1, Schedule 6, Page 6

Preamble:

Where assumptions are shared between multiple technologies, they have been gathered in a Common Assumptions table (Appendix A). Among these common assumptions, London, Ontario was selected as a default climate zone, due to its elevation and annual average temperature cycle. In addition to weather-related assumptions, the common assumptions include efficiencies for different types of equipment, common conversions, local conditions that would impact measures like average water temperature, heat content of natural gas, etc.

Energy Probe would like to understand the sensitivity and effect of environmental variations in the Common Assumption for Heating Degree Days (HDD) and Cooling Degree Days (CDD) on the estimated savings for the listed Residential Measures in each of the two Union (North/South) and three Enbridge (Niagara, Central and Eastern) Zones, leaving other assumptions as per the TRM.

Building Envelope

Attic Insulation Retrofit

Basement Insulation Retrofit

Draft Proofing Kit Retrofit

Heat Reflector Panels Retrofit

Heating and Cooling

95% High Efficiency Furnace Retrofit

Adaptive Thermostat Direct Install Retrofit

Please Provide in Excel and PDF format:

- a) A Table/Tab with the approved Heating and Cooling Degree days for each of the 5 Zones listed in the Preamble.
- b) For the Residential Measures listed below, please provide a Table/Tab summarizing the Common Assumptions.

Witnesses: D. Bullock
L. Kulperger

- c) For the listed Measures please provide a Table/Tab with the savings estimates using Common Assumptions.
- d) For the listed Measures provide the savings for each of the 5 HDD and comparable CDD Zones in the Union/Enbridge Zones. Compare to the results using Common assumptions (London).
- e) For each of the Measures apply a weighting to the savings from the installed measures based on the last 3 years DSM programs.
- f) Prepare a Summary of the Weighted Difference in savings for each measure.
- g) Please provide the claimed savings for each measure using Common Assumptions and the savings using Zone-Based Heating and Cooling DD assumptions.
- h) Please provide statistical analysis of the variation/difference in heating/cooling Degree days on savings claimed for each measure in the last three years by Union and Enbridge.

RESPONSE

- a) Union's approved 2016 weather normal heating degree days ("HDD") have been calculated based on the Board approved methodology. For Union South, it is 3,780 and for Union North it is 4,930¹. Union does not have cooling degree day ("CDD") data.

Enbridge's 2016 weather normal heating degree days have been calculated based on the Board approved methodology in accordance with the Board's EB-2012-0459 Decision with Reasons dated July 17, 2014 as follows: For Enbridge Niagara it is 3,408; Enbridge Central it is 3,617; and Enbridge Eastern it is 4,323². Enbridge does not have CDD data.

- b) Attic Insulation Retrofit, Basement Insulation Retrofit, and Draft Proofing Kit Retrofit have not been updated as part of the Technical Evaluation Committee ("TEC") Technical Reference Manual ("TRM") Project and do not form part of this Application. The input assumptions for these measures shown on the Updated

¹ EB-2016-0245, 2017 Rates–Updated Interrogatory Responses, Exhibit B.Staff.9 p. 2.

² As filed at EB-2015-0114, Exhibit C2, Tab 1, Schedule 2.

Witnesses: D. Bullock
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Summary Table of Measure Assumptions (Exhibit B, Tab 1, Schedule 2) have not been updated or changed from the Board-approved values.

Of the remaining listed Residential Measures included in the TRM, only the High Efficiency Furnace for New Construction / Time of Natural Replacement (there is not a Retrofit measure) relies on a Common Assumption. Specifically, the London climate zone was used in computing the Equivalent Full-Load Hour (“EFLH”) value required in the savings algorithm.

- c) The savings estimate using the Common Assumptions for the High Efficiency Furnace New Construction / Time of Natural Replacement can be found in the substantiation document (Exhibit B, Tab 1, Schedule 6, p. 98).

$$NG \text{ savings factor} = \frac{675 \text{ hours}}{35.738 \frac{kBtu}{m^3}} \times \left(\frac{95\%}{90\%} - 1 \right) = \frac{1.05 m^3}{\frac{kBtu}{hr}}$$

- d) HDD’s and CDD’s are not direct inputs into the substantiation documents for the listed measures. As noted above, calculating the annual gas savings factor for the High Efficiency Condensing Furnace uses an assumption for the EFLH, derived by Caneta Research Inc. This research provided estimated EFLH values for three cities: London, North Bay, and Toronto. The utilities have used this data for further analysis since EFLH values were derived through energy modeling, which assessed the heating and cooling characteristics of various house archetypes and furnace sizes
- e) As outlined above HDD and CDD are not direct inputs for the listed measures; however the High Efficiency Condensing Furnace uses an EFLH assumption by city.

Union: In 2016, Union launched the Low Income Furnace End-of-Life offering and installed 24 residential high efficiency condensing furnaces. All of these units were installed in Union South.

Enbridge: In the previous three years, Enbridge did not include the High Efficiency Condensing Furnace measure in its prescriptive offerings.

- f) See response to part (e).
- g) Union: The total claimed cumulative natural gas m³ savings for Union’s Low Income Furnace End-of-Life installs is 29,106 m³ (pre-audit). All of these units are installed in Union South. For illustrative purposes, if using the North Bay EFLH value rather

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than the Common Assumptions, this would result in an increase to savings of approximately 32%.

Enbridge: See response to part e)

- h) Union: Since Union only has results in the Low Income Furnace End-of-Life offering for one measure, there is no comparative data to use for statistical analysis.

Enbridge: See response to part e)