

## **Mr. Fenrick's Responses to Board's Interrogatory sent on June 21, 2013.**

1. As noted in the Board's May 30, 2013 letter to stakeholders providing an update on the timeline for expert reports and written comments, the Board asked that expert models and datasets supporting be filed with the Board. Please provide these materials to the Board.

PSE previously provided the benchmarking dataset used (PEG Version 2 Dataset Modified and Used by PSE.xls), the inflation factor calculation spreadsheet (Inflation Factor Tables EUCPI TWA.xls), and the PSE econometric benchmarking model coefficients (PSE Unit Cost Econometric Model.xls).

Attached with this response are:

- The GAUSS code used to calculate the PSE econometric model named "PSE\_UCEM.prg"
  - The excel spreadsheet calculations using PEG's 2007 econometric TFP calculations named "Econometric TFP using PEG's 2007 Method.xls".
  - PSE's Table 19 calculation spreadsheet named "PSE Table 19.xls".
2. On page 34, you indicate that your econometric model includes "Peak demand" and "Hourly high winds above 10 knots" as independent variables. For each variable, please clarify how it is defined, measured (including requisite data and sources). For the wind variable, how was it mapped to distributors?

For the "Peak demand" variable used in the PSE econometric model we used the variable labeled as "Annual Peak kW" in PEG's Version 2 data. We did not modify the variable as it was found in PEG's dataset. This variable is defined as the annual peak demand for each distributor and it is our understanding that PEG gathered this variable from the RRR distributor filings.

The "Hourly high winds above 10 knots" independent variable was gathered and calculated by PSE. The wind variable measures the prevalence of high winds. System hardening projects and activities in these areas will increase costs relative to utilities that do not face these types of wind events on a regular basis. Hourly weather data from weather stations across Ontario was mapped to each utility's service territory to construct this variable.

The variable was calculated by using hourly weather station data mapped to each service territory within the sample. In each hour, we subtracted the recorded wind speed by ten knots. If the wind speed was at or below ten knots we set the value equal to zero. Similar to how cooling and heating degrees are calculated, we determined the level of wind speed above the 10 knot threshold in each hour for

each service territory. These hourly observations were then summed for the entire year to provide an annual wind speed variable.

The equation for the variable is provided below.

$$WDD10 = \sum_1^{8760} (\text{Wind Speed in Knots} - 10 \text{ Knots}) : \text{if negative then } 0.$$

If any hourly observations were missing, we assumed the wdd10 hourly value was at the average for that weather station.

The distributors were mapped to the nearest available weather station. Weather station data in Ontario is available through the National Climate Data and Information Archive. There are 19 weather stations in Ontario that provide hourly wind speed observations. We mapped each distributor to the nearest weather station by creating a GIS map of the distributors' service territory and the location of the 19 weather stations to determine the nearest weather station for each distributor.

3. On page 41, Table 15 lists your unit cost econometric model benchmark results for 20 distributors. Please provide unit cost econometric model benchmark results for all distributors.

Please see the attached table named "Full PSE Table 15.xls".

4. To provide the Board with more comparable efficiency ranking results, please provide your results using the same distributor masking that PEG and the EDA have used (e.g., Distributor 1, Distributor 2, etc.).

Please see the attached table named "PSE UCEM Results with Distributor IDs.xls".

5. PEG did not include the following expenses in their data set: bad debts; federal and Ontario capital and income taxes (PILs); interest; and unclassified debits and credits. Have you included any of these expenses in your analyses?

PSE used the same total cost definition as PEG in our analysis. In the benchmarking econometric model, we used PEG's Version 2 dataset and used the variable labeled as "Total Cost" for the cost definition. We did this in order to provide the Board with a comparison between the two models using the same cost data definitions. While PSE disagrees with PEG's exclusion of certain expense categories (e.g. bad debts), especially in the TFP index analysis, we thought comparing the merits of the two econometric models would best be achieved through using the same definition of costs.