

Methodology for Preparing Utility-Specific Load Shapes

This note summarizes the methodology Hydro One Load Data Team plans to use in generating utility-specific load shapes for LDCs in Ontario. LDCs opted to do their own load shape analysis work will be required to defend their methodology separately.

Hydro One's method makes use of the following information:

- Generic load shapes prepared for the Ontario Load Data Research Group for residential and general service customers. The residential load shapes have weather-normal profiles for 4 end-use categories (electric space heating, electric water heating, air conditioning and base load) and 4 regions (Central, East, West and North). The general service customer load shapes have load profiles for about 35 industry segments using NAICS-2002 (North American Industry Classification Systems)
- Hydro One weather correction methodology for total utility load and by rate class.
 - Hydro One weather correction method, which was approved by the OEB in its 2006 EDR application, uses 4 years of daily load and weather data to establish the relationship between weather and load and the average of 31 years of weather data to define typical weather conditions.
 - Weather variables used in the weather correction analysis include temperature, wind speed, cloud cover and humidity. In addition to temperature, wind speed is important in the winter months, while humidity is important for the summer months.
 - Estimation of space heating and cooling loads for residential customers makes use of generic load shapes and appliance saturation estimates.
 - Estimation of space heating and cooling loads for general service customers makes use generic load shapes and industry classification.
- Weather-normalized load shapes for battery mats prepared by the Hydro One Load Data Team using information provided by the local cable company. For the upcoming informational filing to OEB, weather-sensitive load profiles for battery mats are required only for LDCs using future test year and not required for LDCs using historic test year in their 2006 EDR applications.
- Results of residential appliance survey undertaken by LDCs using survey questions recommended by the OEB's load research expert. For LDCs opted not to undertake residential appliance survey, estimates of appliance saturation are prepared using monthly energy patterns for each residential customer.
- Deemed street lighting and sentinel lighting load profiles approved by the OEB.
- Interval meter customer load profiles by rate class and by industry classification.
- Special tabulation of Household Equipment Survey results from Statistics Canada.
- Residential appliance survey results undertaken by former Ontario Hydro.

Hydro One's utility-specific load shape methodology is summarized as follows:

Weather correction analysis

- Weather correction analysis is performed for each region and LDC.
- For each region, weather correction analysis is undertaken using the total regional load.
- For each LDC, the weather correction analysis is undertaken for the total utility load as well as by rate class. Weather sensitive loads for space heating and space cooling are determined for each day.
- The relationship of weather sensitivity between the region and the LDC is used to calibrate the utility-specific space heating and cooling loads with the regional estimates.
- Using the weather correction analysis, generic load shapes and monthly profiles, weather-corrected loads are estimated for the total utility load and by rate class.

Residential Customers

- Using number of customers, appliance saturation and generic load profiles, the energy consumption by end-use are estimated.
- The relationship of weather sensitivity between the region and the LDC is used to calibrate the utility-specific energy consumption for space heating and cooling loads.
- The relationship of appliance saturation and housing characteristics between the region and the LDC is used to calibrate the utility-specific profiles for water heating and base loads.
- Weather-normal hourly load shapes are estimated using generic load shapes and energy consumption by end-use.
- Weather-normal energy consumption by end-use will add up to weather-normal residential rate class total.

General Service >50 KW Customers

- General service >50 kW customers are grouped by industry classification excluding interval metered customers.
- Allocation of weather correction will be undertaken for industry classifications that are weather sensitive.
- Analysis will take into consideration number of work shifts for each industry classification.
- Weather-normal hourly load shapes are estimated using generic load shapes and energy consumption for each industry classification.
- Weather-normal energy consumption by industry classification will add up to weather-normal general service >50 kW rate class total.

Interval Metered Customers

- Interval metered customers are grouped by rate class by industry classification.
- Weather correction analysis will be undertaken for industry classifications that are weather sensitive.
- Hourly profiles for LDCs using future test year require profiles specific to 2006.

Street Lighting, Sentinel Light and USL

- Photo-sensitive loads using deemed profiles approved by OEB.
- Non photo-sensitive loads using energy consumption estimates provided by LDCs.
- Weather normalized load shapes for battery mats are used for LDCs using future test year (not applicable for LDCs using historic test year).

General Service <50 KW Customers

- Residual load shapes already approved by the OEB
- However, industry classification information if provided will be used to check the hourly profiles.