



Ontario Load Data Research Group Update

December 15, 2005

Current members in the Group



Central

Aurora
Brampton
Burlington
Collus
Enersource Mississauga
Granhurst
Hamilton
Hydro One
Innisfil
Markham
Milton
Newmarket
Oakville
Orillia
Parry Sound
Richmond Hill
Tay
Toronto
Vaughan
Veridian
Wasaga

East

CNP: Gananoque
Ottawa
Ottawa River
Rideau St. Lawrence

North

Atikokan
Chapleau
Hearst
Kenora
North Bay
PUC
Sudbury
Thunder Bay
West Nipissing
Sioux Lookout

West

Blue Water
Brant
Brantford
Chatham Kent
Clinton
CNP: Fort Erie
CNP: Port Colborne
Enwin
Haldimand
London
Peninsula West
St Thomas
St. Catherines
Westario



Re-cap of what has been done

- Province-wide group formed to do joint load research work and received Board approval in November 2003
- Current membership includes about half of all LDCs, representing more than 80% of all electricity customers in the province
- The group hired an external expert to guide the load research work, including sampling design, customer selection and load shape analysis
- End product will be quality generic shapes that meets OEB requirements for rate submission



Methodology for residential customers

- Typical LDC total system load shape consists of large users, residential customers, general service customers and street lighting
- For residential load, we monitored about 600 homes. Houses were randomly selected, stratified by region and heating and cooling equipment
- New interval meters were installed by March 2004 and data collection ended August 2005. Survey questionnaires were also implemented
- Deliverables: Generic load shapes by end use (space heating, water heating and air conditioning)



Sample allocation of interval meters

Central

| | |
|------------------------|----|
| Brampton | 10 |
| Enersource Mississauga | 20 |
| Hamilton | 31 |
| Hydro One | 21 |
| Innisfil | 10 |
| Markham | 10 |
| Oakville | 10 |
| Toronto | 70 |
| Vaughan | 10 |
| Veridian | 30 |
| Wasaga | 10 |

East

| | |
|--------------|----|
| Hydro One | 40 |
| Ottawa | 40 |
| Ottawa River | 10 |
| Veridian | 10 |

North

| | |
|----------------|----|
| Hydro One | 43 |
| PUC | 21 |
| Thunder Bay | 20 |
| West Nipissing | 11 |

West

| | |
|----------------|----|
| Brantford | 30 |
| Chatham Kent | 10 |
| Enwin | 20 |
| Hydro One | 31 |
| London | 40 |
| St. Catherines | 21 |
| Westario | 10 |



Methodology for general service customers

- For the general service class, we use existing interval meter data from group members to generate generic load shapes
- Together the group have about 5,000 customers for analysis
- We are currently processing and adding industry classification information to the data base
- Deliverables: Generic load shapes by industry or business group

What's next



- Generic load data analysis will be completed by March 2006
- Once completed, generic load shapes (residential and general service) will be available for use by members of the Group and other LDCs for use in their LDC-specific load shape analysis required by the Board
- With respect to LDC-specific load shapes, individual LDCs have at least 3 choices:
 - do the analysis yourself,
 - hire an expert to prepare the analysis, or
 - request Hydro One to prepare the analysis

Data for LDC-specific load shapes



- To use the generic load data to create LDC-specific load shapes, the following additional data is required:

Hourly Data

(4 years of data assuming weather normalization is required; this information is also available from IESO if you are wholesale market participant or from host LDC if you are embedded customer)

- Total system hourly load for LDC
- Customers with interval meters by rate class (and SIC)
- Street lighting & other assumed loads
- Embedded generation load, if applicable



Data for LDC-specific load shapes

Monthly Data (at least one year of data)

- Residential customers
 - Number of customers & total monthly kWh
 - End-use saturation for electric space heating, water heating, air conditioning, if available
 - if end-use saturation is not available, need monthly kWh for each customer for analysis
- General service customers
 - Monthly energy by rate class (and SIC)
- Other special rate classes (same as above)



Sample Load Data for Cost Allocation Study

| | Example for one month | Comments |
|------------------------------|-----------------------|--|
| Total LDC kW | 15,000 | This data is available on an hourly basis from each LDCs total consumption e.g. IESO or HONI bill for commodity Having 8,760 data points, the maximum demand for each month can be obtained |
| LESS Large Load kW | 3,000 | This data is available for all interval metered customers e.g. Large Users, General Service above 500 kW. Having 8,760 data points, the maximum demand for each month can be obtained for each individual customer and as group |
| LESS Street light kW | 150 | This data can be determined based on typical profile e.g. hours use time size of lamps Assumed profile determines NCP and together with LDCs time of maximum demand, CP can be determined when applicable |
| LESS General Service > 50 kW | 2000 | Typical load profile (8,760 data points) for this group based on type of activity (retail, school, hospital, etc.) or size (between >50 kW and 200 kW and between 200 kW and 500 kW) to be decided based on results of load data analysis Each LDC will need to apply these typical profiles according to their customer mix in this category |
| LESS Residential load kW | 7,800 | Typical load profile (8,760 data points) for air condition, electric space heating and electric water heating Each LDC will need to apply these typical profiles to their percentage of customers for each category |
| General Service <50 kW | 2,050 | This is the residual from all the numbers above. Since 8,760 data points are available, this group will also have 8,760 data point |

Notes: LDC to provide

Load Research from Stan

Each data group will have 8,760 entries. From these, NCP and CP can be determined on a monthly basis and also energy by month
All data to be on a weather normal basis

Timing



- Generic load shapes will be available in March 2006
- If Hydro One were to do the LDC-specific load shapes for most LDCs, it would take about 6 months to complete (March 2006 to August 2006) assuming
 - commercial agreement signed
 - load shape requirements decided
 - LDCs provide all required information promptly
 - timely Board guidance on weather normalization (total LDC & by rate class); any new rate classes; etc.
- Difficult to complete analysis for all LDCs in August 2006 if major changes are required in July 2006 instructions

Timely decisions are very important



- No guarantee to complete all LDC-specific load shape analyses in August 2006 if major changes are required as a result of the Board's July 2006 filing instructions
- Useful to get some early guidance before start of LDC-specific analyses in March 2006
- Potentially more cost to LDCs if filing instructions in July 2006 required reworking of prior load data analyses
- Suggest Board staff discuss when will specific directions on weather normalization and new rate classes be available to assist load data analyses?