

# BASELINE METHODOLOGY FOR RESIDENTIAL DR

Demand Response Working Group  
Meeting #3

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July 15, 2016

# Definition

A **baseline** is an estimate of the electricity that would have been consumed by a demand resource in the absence of a Demand Response event (NAESB)

# Feedback on Meter Data Granularity

Stakeholder Feedback: Requirement for 5-minute granularity of meter data is a challenge for Residential DR providers. Smart meters currently capture data on an hourly granularity.

The IESO exploration of Baseline methodologies will include the necessary meter data and granularity to support the chosen approach.

# Feedback on Baseline

Stakeholder Feedback: DRWG members advised current baseline methodology is a challenge to participation for residential DR

- Current baseline used for HDR and CBDR resources developed with traditional C&I participants in mind
- Residential participants are different from C&I because residential loads are highly-weather sensitive
- Current HDR baseline may lead to negative biased baseline

# Alternative Baseline Methodologies

Alternative baseline methodologies include:

- Randomized controlled trials
  - A group of contributors is divided into multiple control groups and only a subset of the contributors provide demand response that day
- Historical baseline with a weather sensitive adjustment factor
  - $X$  of  $Y$  with an adjustment factor based on temperature or load
- Regression Modelling
  - Complex models and large data sets are utilised to adjust the baselines to weather on event days for homogenous customer groups

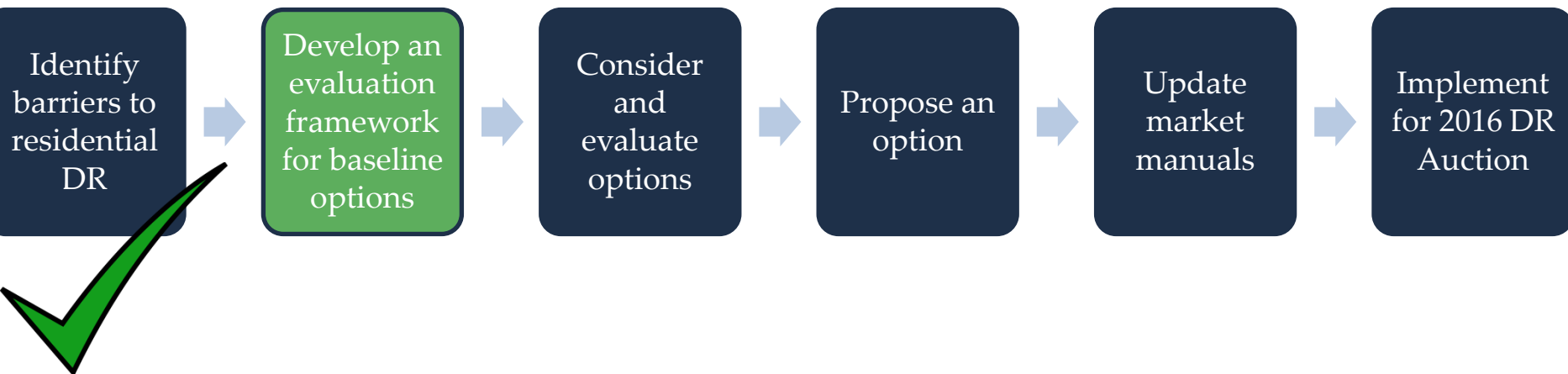
# Alternative Baseline Methodologies

Alternative baseline methodologies include:

- Statistical Sampling
  - Contributors are compared to similar loads that do not participate in DR programs
- Firm Service Load
  - Participants reduce to predetermined load level
- Custom Baseline
  - Participants provide their own baseline methodology which the ISO administers.

# This year's goal

- Implement an alternative baseline methodology to accommodate residential DR for the 2016 Demand Response Auction



# Evaluation Step

- Evaluate alternative baseline methodologies that recognizes greater weather sensitivity
  - Inclusive of residential loads, small commercial loads and other weather sensitive loads
- The selected alternative will not replace the existing baseline methodology. It will add an option that can be applied if it is more accurate.



# Evaluation Criteria

- **Accuracy:**
  - Is the methodology reflective of the typical resource's consumption pattern?
  - Will it allow the IESO to be confident that a DR activation has been delivered?
- **Robustness:**
  - Does the methodology apply to a large number of providers?
  - Will the methodology continue to be valid as DR programs grow?
- **Feasibility:**
  - Is the methodology easily understood and applied?
  - Can the methodology be implemented in the near future with existing tools (e.g. meters) and resources?
- **Best practices:**
  - Does the methodology use best practices learned from other jurisdictions?

## Ontario's Experience: *peaksaver*®

- *peaksaver*® was designed to be a non-intrusive residential demand response program aimed at reducing electricity consumption of participants' enrolled appliances (i.e. air conditioners) on the hottest days of the year
- Program evaluation is based on randomized control trials using smart meter data
- Contributor settlement is not required

# Highlights from Other Jurisdictions

- NYISO
  - Elective Weather-Sensitive Customer Baseline (CBL) utilizes an in-day adjustment factor based on load during the two-hour period beginning with the start of the hour that is four prior to the event start
- PJM
  - Alternative Weekday CBL Type for Weather Sensitive Loads uses a weather sensitive adjustment that adjusts the hourly CBL to compensate for the average hourly temperature between the CBL basis days and the temperature of the event hour
- ISO NE
  - Baseline Type-I: methodology based on historical interval meter data, which may also include other variables such as weather and calendar data

# Questions to DRWG Members

- Are there other baseline approaches that we haven't considered?
- What other criteria are important to consider in evaluating baseline methodologies?
- From your experience, what are potential issues or opportunities with various methodologies?

# Feedback

- Please provide feedback on the proposed questions by July 29th.
- Where proposing alternative baseline approaches or best practices, please provide specific references or use cases to aid in our evaluation.
- To provide feedback, contact [engagement@ieso.ca](mailto:engagement@ieso.ca)