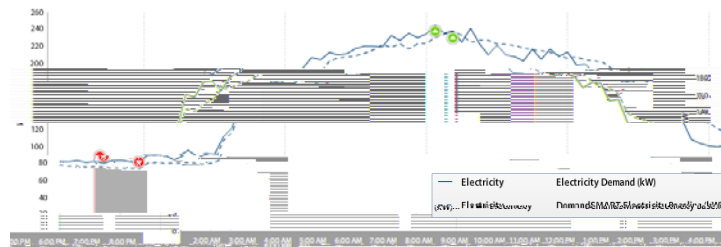






## Profile Approach

- Popular in other markets and utility programs with significant Demand Response participation
- Average of actual demand interval by interval over recent period of time prior to dispatch
- Shaped baseline that closely follows a site's load profile



Actual EnerNOC customer meter data and profile baseline – University student center – 28 January 2011



5

## How Does it Work?

- High X of Y methodology
  - Look back from event/test over a specified number of days – Y
  - Use meter data from the highest X (5) days within those Y (10) days to build profile
- Selecting Y (the “look-back window”):
  - Short enough to capture recent trends, long enough to combat gaming
  - Only includes relevant days (i.e. non-event, Business Days)
- Selecting X:
  - Dispatches are most likely to occur on days with high temperature/demand
  - Using all days in Y would result in an understated baseline
  - Using subset (X) with the highest energy usage offsets downward bias
- Average usage during *each interval* on X days is then averaged together to create a forecast for each interval on the current/future day

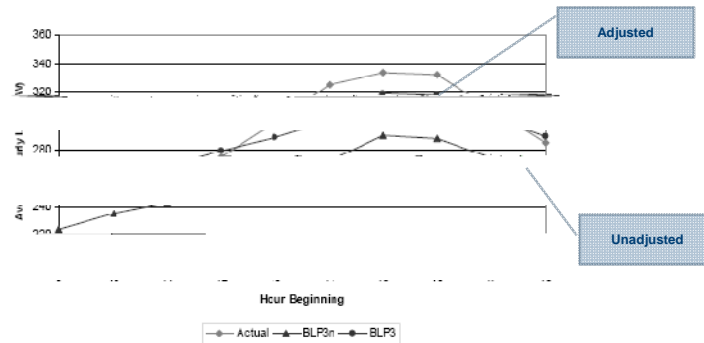


6

## Example: High 5 in 10

In this case,  $Y = 10$  days and  $X = 5$  days with the highest average demand. As denoted by

## Illustrative Example: LBNL Study



The unadjusted baseline (BLP3n) understates Actual metered load.

The adjusted baseline (BLP3) closely tracks to Actual metered load.

Lawrence Berkeley National Laboratory, "Estimating Demand Response Load Impacts: Evaluation of Baseline Load Models for Non-Residential Buildings in California", January 2008



9

## Recommended RD measure

### High 5 in 10

- Last 10 non-event, business days short enough to capture recent trends, long enough to combat gaming
- Top 5 days brings baseline forecast more in line with expected conditions during a dispatch.

### Asymmetric Adjustment

- Asymmetric reflects likely dispatch patterns in WEM
- Symmetric problematic with long lead time
- Applied at the time of dispatch to ensure baseline integrity,
- Additive (kW)

Calculated Individually and summed to create the DSP RD



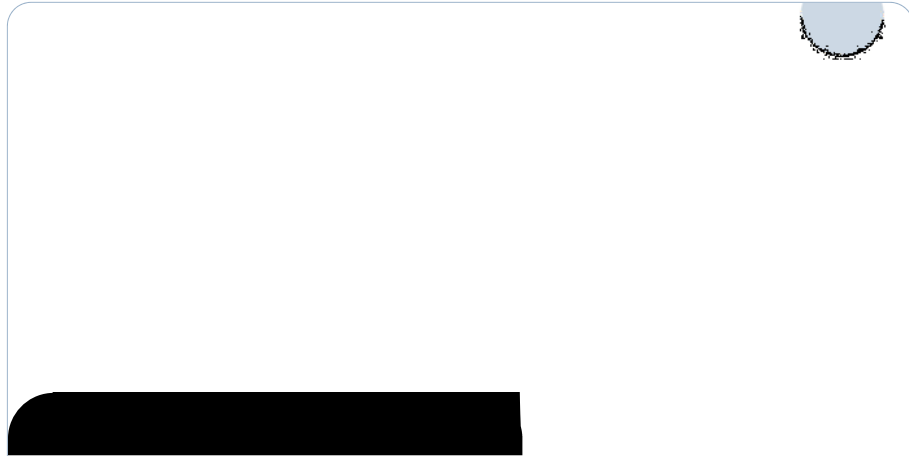
10

## Individual RDs • Individual Performance

- Baselines should be calculated individually, since end-user loads can vary greatly. A baseline methodology based on the coincident peak of a portfolio will never be able to accurately predict usage on a dispatch day.

## Issues and Considerations

- Sufficient arrangements in place for market start – DSP has enough DR capacity?
  - DR nominations by load. Total nominations equal cap credit level or refunds apply
  - NMI Registration Verification Test provides further validation if required
- Profile approach doesn't match nature of forward Cap Market
  - Other forward capacity markets (eg. PJM and ISO- New England) utilise profile baselines
  - RD needs to provide operational forecast, not a system planning measure
  - Should RD be set 2+ years in advance as well?
- Reliability of the IMO's security of supply forecast.





## Appendix: Performance Insight

