



# Super Peak and Demand Response Avoided Cost Analysis

December 16, 2015



# Super Peak Study details

## Why do we need Super-peak and DR peak values?

- Peak periods are broad (currently 7 am to 11 pm) and may not capture full value of energy efficiency delivered at times of high demand or high prices
- Narrower time periods would be more accurate at representing the value of demand resources including Demand Response (DR)

## What is Super-peak and DR Peak?

- “Super-peak” and “DR peak” analysis of narrower time bands for electricity and natural gas. These are pieces or subsets of the existing ISO “peak” energy definitions.

Study Conducted as follow-up to Avoided Energy Supply Cost (AESC) 2015, by Tabors Caramanis and Rudkevich (TCR)

# Scope of Work

- Task 1 – Super-peak avoided costs for electric energy
- Task 2 – Super-peak avoided costs for gas energy
- Task 3 – DR Peak avoided cost for electric energy

All three tasks are focused on *peak energy* avoided costs, not peak demand or capacity

# Super Peak Avoided Costs Expected Analysis

## When are the “Super-peak” periods? (Task 1&2)

- Summer weekdays, June through August – 13:00 to 17:00
- Winter weekdays, December through February – 17:00 to 21:00
- Natural Gas- Peak days (10), shoulder days (141) and baseload days (214)

## Other expected analysis (Task 1&2)

- DRIPE (price effect) values for super peak and other peak periods
- Development of the avoided cost workbooks for the super-peak and other peak periods
- Analysis of alternate costing period definitions for natural gas, to reflect more accurately the seasonal variation of marginal energy costs

# Demand Response (DR) Peak Expected Analysis

## Task 3

- DR Peak analysis to estimate the impact of demand response (DR) on locational marginal prices for the following zones: MA (3 + statewide), ME, RI, NH, and CT
- Model – same as was used in the AESC 2015 Base Case for the period of 2016 – 2018 to ensure consistency of results
- Analyzed for three year period consistent with AESC and Plan
- Demand Response events were designed based on National Grid Smart Energy Solutions\* program in Worcester and the proposed scale of National Grid DR programs in the MA Three-Year Plan 2016-2018



*\*National Grid Smart Energy Solutions program was funded through a separate filing and not through the MA three-year Plan 2016-2018*

## Task 3 – Expected Results

- Locational Marginal Prices (LMP) for the DR case in real 2015 dollars:
  - by zone,
  - by year,
  - by AESC 2015 costing period,
  - and/or by super-peak periods
- LMP differences from the Base Case scenario by zone by AESC 2015 costing period and for super-peak/other peak periods

# Next Steps

- Preliminary analysis and memo to be shared with AESC Study Group (regional avoided cost study), early 2016
- Demand Savings working group to develop a DR benefit/cost framework using these results
- There may be implications for how energy efficiency or targeted initiatives (geo-targeting) are analyzed and valued in the future, depending on the results
- Interest from some to clarify the terminology for ISO peak energy (used in AESC study) vs common use of “peak” and “super-peak”