



For Discussion Purposes
Updated: February 18, 2016

Demand Reduction Subcommittee PA Framework & Updates

Analytical Framework

Initial goal is to develop a strategy and analytical framework to dictate how we should be thinking about issues surrounding demand reductions

Overarching Methodology

Identify the problems

- Identify system and customer challenges
- What are the specific drivers of those challenges?
- Identify where in the system those challenges are occurring?

Evaluate solutions

- Who and where should we target?
- What types of technologies and solutions will customers adopt?
- Are there timing and/or geographic constraints?
- Is the solution material to overall customer and system issues?

Analyze costs and risks

- How much will this cost?
- Are there any unforeseen risks?
- What additional benefits can be quantified?
- Are there issues with T&D planning?

Analyses Underway or Completed

- AESC 2015
 - Super Peak Addendum started July 2016 and issued February 17, 2016
 - Findings
 - The electric "four hour on peak" values are about what we expected in terms of magnitude over summer on -peak , somewhere around 20% to 30% higher.
 - This could provide a value boost to demand-rich measures, but that there's a lot of legwork to be able to capture that. In order to capture that value, PAs need to have load shapes for energy savings that are consistent with the four hour periods and work that into B/C models and reporting systems.
 - The demand response savings assessment, the main take away is that the avoided costs are very program specific. TCR provided a worksheet tool to calculate avoided costs for a new program design.
- FCM #10 Results – February 22, 2016
 - 25% lower than last year \$7.03/kw-month down from \$9.55/kw-month
 - The price of \$7.03/kW-month is less than the pre-auction estimate of the cost of building a new natural-gas-fired power plant in New England, at \$10.81/kW-month
 - 1,305 MW of new dual-fuel power plants, 27 MW of wind, 44 MW of solar, and (2) 2.5 MW fuel cell facilities

National Grid Demonstrations

- Proposed demonstrations will help us determine demand reductions during peak periods and if certain types of DR, we are testing, are cost effective.
- Direct Load Control for Resi & SMB (Summer 2016 Start)
 - National Grid leveraged learnings from existing pilots in RI with Wi-Fi thermostats to propose a DR residential demonstration in MA, with Wi-Fi thermostats and other connected appliances and devices.
 - We look to leverage the connected appliances and devices as they become available in the market, as part of our DR residential demonstration, which includes heat pump water heaters, electric hot water heaters, washers and dryers, Smart AC's.
 - With our demonstration, we want to understand reduction in demand by different types of devices during peak periods.
 - National Grid, similar to the residential demonstration is proposing a demonstration for Small Business customers that includes Wi-Fi thermostats and other connected devices.
- Interruptible DR demonstrations for large C&I customers (Summer 2017 Start)

National Grid Analysis

- Reviewed **Peak Demand Reduction Strategy** report that states that MA DR has a potential for a BC ratio of 3.26
 - We have heard several times, most recently by Navigant, that demand response needs to be looked at over a longer horizon than is currently viewed in the EE programs. For instance, Navigant came up with a BCR that is above 3 by choosing to look at the program over a 10 year horizon. Navigant also stated that it normally takes over 5 years for DR program to be cost effective. This is primarily due to 2 factors.
 - ISO-FCM avoided Capacity – It takes three years of running DR programs for the avoided costs to show impacts for this input.
 - Initial program costs such as startup costs and first year customer sign up costs inflate the costs in the beginning years and as the program reaches maturity costs stabilize at a lower amount.
 - In MA we are obligated to calculate the discount rate a certain way (regulatory language below). This term we are using a 2.54% discount rate as opposed to the 10% discount rate used in the Peak Demand Reduction Strategy report by Navigant.
- DR Providers/Consultants
 - EnerNoc who we consulted for program design options, business models and to determine potential
 - Navigant – see above
 - Comverge
 - One of the tasks by TRC, a consultant, working on the AESC 2015 study also looked to explore demand response avoided energy costs as part of the AESC 2015 Addendum. The report is due within the first quarter of 2016.
- Utilities we talked to regarding their DR programs:
 - Xcel Energy
 - GRE
 - Consumers Energy
 - PG&E
 - SCE
- Studies we looked at :
 - The Cadmus Group (2015). Wi-Fi Thermostat Assessment. April 2015.
 - The Cadmus Group (2015). Evaluation of 2013–2014 Smart Thermostat Pilots: Home Energy Monitoring, Automatic Temperature Control, Demand Response. July 2015.
 - The Cadmus Group (2015). Heat Pump Clothes Dryer Technical Demonstration. August 2015.
 - The Cadmus Group (2015) Evaluation of 2013–2014 Smart Thermostat Pilots: Home Energy Monitoring, Automatic Temperature Control, Demand Response July 2015
- Other National Grid Programs
 - Smart Energy Solutions Pilot
 - NWA RI
 - Automatic Temperature Control Demonstration

CLC Demonstrations

- From Three Year Plan at Appendix L Part 1 pg 6
Build off the success of the CLC behavioral initiatives, CLC is proposing to establish the platform for the “connected home”
 - Using The Energy Detective devices on up to 200 Resi & SMB
 - Mobile Application
 - 7-10 events a year
 - Will utilize the HES and Small Business direct install EE delivery modes looking for customers with central air conditioning and/or electric heat

Deliverables by End of Q1

- Structure of Group
- Scope of Group
- Milestones
- Timelines

From the Term Sheet:

....the PAs will provide a report to the Council setting forth the specific scope, tasks, and detailed timelines for this group by the end of Q1 2016.

Scope of Group

- Review 3 distinct issues associated with peak demand
 - Summer system peak, winter system load, distribution
- Long term strategy for flattening load
- Actionable projects focusing on C&I to move towards those goals
- Evaluate potential of residential programs

Milestones

Suggested milestones below in no particular order, specific milestones have not yet been discussed or agreed upon and categorized.

- Provide background and context of problem
- Form subgroups
- Receive recommendations from sub groups
- Develop cost effectiveness screening
- Set evaluation protocols
- Identify measures with most potential
- Reassess milestones as appropriate
- Put demonstration projects in field (When? DOER funds?)
- Develop cost recovery and incentive structure
- Report results from NGRID and CLC demonstration projects

Timelines

Timelines will be developed and put against specific milestones that are identified as relevant to the core objectives of the Group

Milestone	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
TO BE FILLED OUT AS MILESTONES ARE IDENTIFIED												

- Quarterly reports to sub-committee

Appendix



Appendix

The PAs and the Council recognize the growing economic importance of achieving demand reduction goals and mitigating winter and summer peaks. The Term Sheet does not include targets for potential new statewide summer and winter demand peak reduction initiatives, and does not reflect costs, benefits or incentives associated with such initiatives. Subject to open meeting law requirements, PA representatives will work with a small Demand Savings Group that includes the DOER, the Attorney General's Office, the Low-Income Energy Affordability Network, interested expert and qualified stakeholders and the Council's consultants to explore approaches to cost-effective new demand reduction/peak reduction electric and gas initiatives. This Demand Savings Group will be addressing challenging and important matters, and all parties are committed to the successful development and actual implementation in-the-field during the 2016-2018 Plan period of new demand/peak reduction initiatives. To ensure that this in-the-field implementation goal is reached, the PAs will provide a report to the Council setting forth the specific scope, tasks, and detailed timelines for this group by the end of Q1 2016. This report will also provide an anticipated, high-level in-the-field deployment schedule for 2016-2018 based upon the then most current information. Deployment in-the-field will be subject to approval by the Department of Public Utilities and confirmation of cost-effectiveness. The PAs will also provide a report to the Council on the ongoing "super peak" avoided cost study on or before December 31, 2015 (if that study is delayed, this PA deliverable date will be appropriately adjusted).