Update on the Role of Active Demand Reduction in the EE Forecast

Energy Efficiency Forecast Working Group

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Objective

- Provide an overview of the energy efficiency (EE) forecast's role within the ISO's forecasting, planning, and market frameworks as well as a explain why savings from active demand reduction programs that do not participate in the Forward Capacity Market (FCM) should not be included in the ISO's EE forecast

Active Demand Reduction as Energy Efficiency

Introduction

- Active demand reduction programs* operated by state program administrators (PAs) consist of actions that a customer would not have otherwise taken to reduce their electrical load during a specified period of time
  - Focus on reducing peak consumption, but overall energy consumption is often not impacted or may even increase
    - Customer may reduce or delay consumption, switch to a generator, or consume electricity from an energy storage device
  - This is a contrast to traditional EE savings that generate demand and energy savings year-round

- Examples include:
  - Residential thermostat and other home device programs
  - Curtailed or deferred EV charging programs
  - C&I interruptible load programs

- The ISO has received feedback from state representatives and program administers that active demand reduction programs will make up the majority of the savings supported by state-sponsored EE programs in the future, as claimable savings from traditional EE measures continue to dwindle

**Active demand reduction programs within the EE space are separate and distinct from Active Demand Capacity Resources (ADCRs) that participate in the ISO's Forward Capacity Market (FCM). The term "active demand reduction" refers to state EE program terminology and is not a defined term in the ISO's wholesale markets.*

Background

- The ISO began forecasting the impacts of state-sponsored energy efficiency (EE) programs as a part of the 2012 CELT forecast
  - Methodology relied on a production cost model that translates state EE program budgets into demand and energy savings
  - Assumed traditional "passive" EE measures that produced energy and demand savings year around
- For the 2020 CELT forecast, the ISO updated its EE forecast methodology to include a more granular production cost calculation that considers the specific end-uses targeted for savings within the residential and commercial & industrial (C&I) sectors
  - See the September 13, 2019 EEFWG model methodology presentation
  - This methodology update continued to primarily address traditional EE measures
- During the 2020 EE forecast process, the ISO noted that the forecast methodology does not address "active" demand reduction programs that are expected to play a larger role in state-sponsored EE programs going forward

EE in the Gross Load Forecast

- In the Forward Capacity Market (FCM) EE is treated as a supply-side resource, acquiring Capacity Supply Obligations (CSOs) in the same manner as any other supply-side resource
- Since EE participates as a supply-side resource in FCM, its corresponding energy and demand reductions are reconstituted to ensure EE is not double-counted (as both supply and demand)
- Accordingly, the gross load forecast is intended to be a forecast of demand absent reductions from EE that participates as supply in FCM
  - This requires that the ISO reconstitute (i.e. add back) the demand savings achieved by EE supply-side resources into the historical loads used in developing the gross load forecast
- Non-FCM EE is captured as load reductions in the load forecast
  - Reductions in historical demand are reflected in the load values used in demand modeling
  - Non-FCM EE should not be included in the EE forecast since these are naturally captured in the load forecast

EE Forecast History

- Because EE participates in the FCM, the magnitude of market-facing EE is known throughout the FCM horizon
- Understanding the impacts of EE beyond the FCM horizon required the development of an EE forecast spanning the 10-year load forecast horizon
- The ISO began forecasting the energy and demand impacts of EE beyond the FCM horizon beginning in the 2012 CELT forecast
  - Analysis and discussions with each of the six New England states reported to the PAC in April 2011 found that nearly all state-sponsored EE is captured in the FCM
  - Thus, the EE forecast methodology was centered around capturing the load reducing impacts of state-sponsored EE

The Future of EE in New England

- Claimable savings from traditional EE measures are declining over time
  - Claimable savings are those savings in excess of the current standard practice in place at the time of measure installation. These savings can participate in the FCM as a supply-side resource.
  - As the standard practice becomes more efficient the baseline for savings rises
  - EE program success has resulted in the capturing of the most cost-effective savings (e.g. residential lighting) and has increased efficiency baselines as market segments have been transformed
- Program administrators have been steadily increasing the scope of their EE programs to extend beyond traditional EE measures to continue achieving savings going forward
  - State discussions have indicated that future EE efforts will become increasingly focused on active demand reduction strategies and electrification initiatives

Active Demand Reduction in the EE Forecast

- Guidance from states and EE program administrators (PAs) during previous EE forecast cycles has been to utilize the savings values listed in the state plans through the program duration, and extend out along the 10-year forecast period by holding values constant or applying a growth rate
  - The table on slide 9 demonstrates the non-uniformity of available EE plan data on active demand reduction savings across the six New England states
- It is unclear to what extent active demand reduction programs will be bid into FCM as passive demand resources
  - Consultants to state EE advisory committees have acknowledged that at this time it is difficult to discern the level of FCM participation
  - The ISO has been advised to reach out directly to PAs in order to understand what portion of active demand reduction programs will participate in FCM within each service territory

State-Proposed Active Demand Savings

Extracted from Preliminary State EE Plans and EE Forecast Budget Forms

	State	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Summer Peak Demand Savings (MW)	**ME**	0.0	0.0	6.8	8.2						
	VT	0.9	0.9	0.9							
	NH	14.7	21.5	31.5							
	MA	209.7	231.0	264.8	299.6						
	RI	39.0	39.8	74.5							
	CT	68.2	91.8	101.3	115.4						
	Total	332.4	385.1	479.8	423.2						

	State	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Winter Peak Demand Savings (MW)	**ME**										
	VT										
	NH										
	MA	47.5	2.0	3.1							
	RI										
	CT										
	Total	47.5	2.0	3.1							

	State	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Annual Energy Savings (MW)	**ME**										
	VT										
	NH										
	MA	1,053	1,576	2,407							
	RI										
	CT										
	Total	1,053	1,576	2,407							

Summary

- The end-use production cost methodology currently utilized in the EE forecast focuses almost entirely on traditional “passive” EE measures
  - Reductions from active demand strategies exhibit savings patterns that are more diverse and different in nature from traditional EE
- Projections of expected energy and demand savings from active demand reduction programs are sparse in state EE plan documentation
  - What portion of these programs may already be active and reducing loads used for forecasting?
- It is unclear to what extent active demand reduction strategies will participate in the FCM
  - Participation in the FCM has been a key underpinning for the inclusion of energy and demand savings in the EE forecast
- Non-FCM EE is captured as load reductions in the load forecast
  - Reductions in historical demand are reflected in the load values used in demand modeling
  - Non-FCM EE should not be included in the EE forecast since these are naturally captured in the load forecast

Questions