

2019

2019 Commercial and Industrial Demand Reduction Initiative

Jointly Submitted by
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1.0 NH Commercial & Industrial (“C&I”) Active Demand Reduction Initiative Background

Eversource, Liberty, NH Electric Cooperative and Unitil (“NH Utilities”) have been actively monitoring multiple demand management demonstrations from other states, with the goal to leverage understanding of potential markets and methodologies that could be adopted in New Hampshire. The 2018-2020 Statewide Energy Efficiency Plan (the approved and amended version of that plan was submitted on January 15, 2019) includes a section on Capacity Demand Management that describes many of the demonstrations that the NH Utilities are monitoring.

One approach that has proven successful, resulting in cost-effective demand reductions, in other states is Commercial and Industrial (“C&I”) active demand reduction. The C&I active demand reduction demonstration efforts and program offerings in Massachusetts, Connecticut, and Rhode Island typically include customers with interval meters and demand charges, with peak demand of 250 kW or higher, and with the ability to curtail 50 kW. Under an active demand reduction approach, customers agree to respond to an event call targeting conditions that typically result in ISO-NE system peak reductions through curtailment service providers (“CSPs”)—vendors who identify curtailable load, enroll customers, manage curtailment events, and calculate payments. The customer is incentivized to respond to event calls using performance-based incentives that are determined by measuring performance against a baseline that is established in alignment with ISO-NE methodology. This approach is technology agnostic and can utilize single end-use control strategies or a multitude of approaches that can reduce demand when an event is called. In the New England demonstrations, customers used lighting with both manual and automated controls, HVAC with both manual and automated controls, process loads, scheduling changes, excess Combined Heat & Power (CHP) capacity, and energy storage to reduce demand. The demonstration projects utilize a “pay for performance” program design, meaning that participants and CSPs are only paid for their verified load reductions. This ensures that utility customers are protected from non-performance, as no upfront incentives are paid.

Eversource and Unitil’s (“Utilities”) active demand reduction offering for 2019 is based on the recently evaluated C&I active demand reduction demonstration efforts from across Massachusetts, Connecticut, and Rhode Island. Based on the success of these regional demonstration efforts, the Utilities will offer incentives to reduce demand at key times to realize customer value and system benefits mainly tied to avoided peak demand as quantified in the regional Avoided Energy Supply Cost (AESC) study.

2.0 NH C&I Active Demand Reduction Initiative

The model for the New Hampshire C&I Active Demand Reduction Initiative are the MA 2016-2018 C&I Interruptible Load Curtailment demonstration projects targeting demand during summer peak (June 1 to September 30). This offering is technology agnostic and provides an incentive for verifiable shedding of load in response to a signal or communication from the Utilities coinciding with ISO-NE system peak conditions. Customers are incentivized based on their average performance during events. Typical technologies or strategies used to curtail load may include:

- energy management systems,
- building management systems,
- software and controls,
- HVAC controls,
- lighting with controls (manual, networked system or integrated),
- process offsets,
- battery storage
- any open automated demand response (OpenADR) compliant technology,
- startup sequencing, and
- other customer facility specific approaches.

Customers can use any technology or strategy at their disposal and earn an incentive based on their curtailment performance. In essence, the incentive equals the customers' opportunity cost – if it makes sense for a customer to shed load for the incentive price offered by the Utilities, then the customer will curtail. Large C&I customers that are subject to demand charges and/or direct capacity charges (determined by Installed Capacity (“ICAP”) tags) with the ability to control lighting, comfort, and/or process loads, can use this demand reduction performance offering to earn incentives by altering their operations when called upon by the Utilities. The incentive, combined with any ISO-NE capacity charge reduction and demand charge reduction, round out a compelling package for customers to adjust operations when called upon.

The Utilities anticipate that there will be between 20-40 hours' worth of calls each summer, representing approximately ten discrete calls. The program will only be offered during the summer months, because that is typically when the ISO-NE system peak occurs and the value for offsetting capacity costs is likely the highest. To maximize customer participation, it is important to minimize operational interference at a customer's facility, and dispatching for 20-40 hours, or less, is likely to result in predictable and sustainable participation levels.

3.0 Delivery Pathways

This fully-integrated initiative uses CSPs and the Utilities' existing energy efficiency implementation teams to assess curtailment opportunities at customers' facilities and deliver curtailment services to those who enroll. The utility Program Administrators will leverage the existing consultative sales approach employed for large customers to market to and recruit customers. CSPs will then identify specific curtailment opportunities, as well as demand charge and ICAP tag management opportunities, and present complete curtailment proposals to the customers. The demand charge and ICAP tag management provide opportunities for direct bill savings to customers.

This fully integrated approach relies on sales delivery teams promoting efficiency and active demand offerings to customers as they assess opportunities at customer facilities. Using the existing efficiency delivery apparatus is key to the growth of NH C&I active demand reduction. The robust relationships the Utilities have with the target customers (typically large electric customers with interval meters and demand charges) have been critical to the demonstration success in Massachusetts and the Utilities anticipate they will be the source of progress on this New Hampshire initiative.

Customers and CSPs respond to dispatch signals or criteria specified by the Utilities, generally using a system peak trigger. Events will be called the day before curtailment is needed. The core model remains focused on reducing demand during summer peak events typically targeting fewer than twenty hours per summer, although the actual number of dispatch hours may be higher. The goal of the offering is to call events at times of peak energy use. For customers participating in ISO-NE demand response markets, ISO-NE event days will be excluded from baseline calculations. The approach is structured to avoid interfering with the ISO-NE programs or penalizing customers for participating in both programs.

4.0 Anticipated Project Benefits

The NH C&I Active Demand Reduction Initiative will seek to confirm hypothesized benefits about reducing usage during ISO-NE system peak times. If this demonstration project is continued over multiple years or is developed into a program, the Utilities will be able to use ISO data to see if New Hampshire's share of overall peak capacity has been reduced over time.

This offering will be different than the ISO-NE demand response program and will be focused on generating different types of benefits. The ISO-NE demand response program has historically

been a program centered around reliability, which is a FERC-designated responsibility of ISO-NE. Although direct demand response calls from ISO-NE for reliability have essentially been phased out, the ISO-NE program still functions, and its main goal is to maintain system reliability. In this Initiative, the Utilities will be primarily focused on providing economic benefits for customers.

The Utilities will focus on reducing capacity and possibly transmission costs through peak demand reduction, which is not a primary goal of ISO-NE. For example, ISO-NE historically would not need to call an event during the peak hour if there were adequate supply. However, each of the Utilities may choose to call an event during the peak hour in order to lower ICAP tags and mitigate capacity costs. Customers will be able to make use of both programs if, as is anticipated, they are dispatched at different times. It is not a requirement to participate in ISO-NE’s demand response program in order to participate in the Utilities’ proposed program. In the rare instance when both the Utilities and ISO-NE dispatch at the same time, the ISO-NE dispatch will take priority and the customer’s dispatch will not factor into the performance calculation for the Utilities’ program, ensuring that the customer would not receive an additional incentive nor be penalized from the Utilities for the same dispatch.

5.0 Customer Incentive Calculation

The incentive for the interruptible load curtailment will be based on the average performance of the customer during the called hours, multiplied by the payout rate. For example, for summer curtailment, the Utilities may call for reductions during 10 hours in a given year. A customer’s hypothetical load reductions during those hours are presented below:

Table 5.1: Example load reductions

Reductions in kW										
Hour 1	Hour 2	Hour 3	Hour 4	Hour 5	Hour 6	Hour 7	Hour 8	Hour 9	Hour 10	Average
100	80	90	95	100	100	90	0	90	80	82.5

In this example, the average customer performance across the 10 called hours is an 82.5 kW reduction. The customer and CSP will split the performance incentive, which in this example would be calculated as 82.5 (average kW reduction) x \$35 (illustrative payout rate combined for both) = \$2,887.50. This incentive would be paid out on an annual basis and would be re-calculated each year based on that year’s performance, considering any adjustments made to the payout rate. There are no direct penalties for non-performance. However, non-performance will impact the performance calculation for a customer and thus the level of incentive. Hour 8 in the table above is an example of non-performance during a called event-hour. There is no direct penalty but the non-performance in that hour impacts the overall average reduction, which is the basis for the incentive calculation.

6.0 Baseline Calculation Methodology

A baseline will be calculated as described below for each C&I customer participating in the program. The baseline will be calculated at the retail delivery point. In order to participate in the program, the C&I customer must have an interval meter recording load or any output pushed back to the distribution system—i.e., “net supply”—for each interval. Solely for the purpose of this demand reduction effort, respondents may propose metering at a retail billing point that does not utilize a utility interval meter but is capable of recording load or net supply at appropriate intervals.

The baseline will be calculated for each non-holiday weekday interval during the summer cooling season, when the ISO-NE system peak generally occurs. The summer season for purposes of the Utilities’ program will be June 1 through September 30th. The only weekday summer holidays are Independence Day and Labor Day. If Independence Day falls on a Saturday, the holiday is observed on Friday, July 3; if the holiday falls on a Sunday, the holiday is observed on Monday, July 5. A CSP or the C&I customer is restricted from taking any action to create or maintain a baseline that exceeds the typical electricity consumption levels that would be expected in the normal course of business for the customer. The program will be designed to minimize this risk and any customer/CSP found to be engaging in this practice will be removed from the program.

If the participating C&I customer produces net supply (i.e., pushes back energy at the retail delivery point) in an interval, that net supply will be used in the baseline calculations for that interval as representative of normal operating practice.

A non-holiday weekday baseline in each interval is equal to the average of the customer's meter data for the same interval from 10 prior non-holiday weekdays, as follows:

- For a customer without a non-holiday weekday baseline, the initial non-holiday weekday baseline will be created using meter data from the first 10 consecutive non-holiday weekdays with a complete set of interval meter data. This interval meter data will either be from a period just prior to the start of the customer's enrollment in the program or for the first 10 consecutive non-holiday weekdays once enrolled in the program. The customer is not permitted to participate in any activation until a baseline can be calculated. This includes activations from ISO-NE dispatch.
- For a customer that has established a non-holiday weekday baseline, the baseline is calculated each day using meter data from:
 - the 10 most recent of the previous 30 non-holiday weekdays, excluding days during which: (1) the customer received an activation instruction or (2) the customer was on a facility scheduled shutdown (as described later);
 - if there are fewer than 10 such days, then meter data from additional days will be used (until a total of 10 days have been identified) including, first, the most recent days during which the customer received an activation instruction and, second, the most recent days during which the customer was on a facility scheduled shutdown.

A facility scheduled shutdown is a reduction in demand resulting from a scheduled plant shutdown or scheduled maintenance of energy consuming equipment that would have normally responded to a demand response event during the activation period. A scheduled plant shutdown may be no shorter than a single calendar day and the total duration of the scheduled plant shutdown per summer cooling season or winter heating season may not exceed 14 calendar days. A facility in shutdown will not have those days counted toward baseline unless the requisite 10 days cannot be met with days with normal operations. Only the first day of a scheduled plant shutdown may be counted as performance during a program dispatch. Additional days in shutdown will not count towards positive performance.

7.0 Costs and Savings

Eversource anticipates spending \$250,000 in 2019 to generate 5 MW of summer demand savings. Unitil anticipates spending \$90,000 in 2019 to generate 1.8 MW of savings (included in the Large Business Energy Solutions budget). This equates to \$50/kW. That budgetary figure is inclusive of incentives, vendor costs, software costs, and utility program delivery costs. As mentioned earlier, this is a “pay for performance” program design, meaning that none of the incentive or vendor costs will be paid unless there are verifiable and measurable load reductions.

Costs for the Demand Reduction Initiative are included in the benefit cost model and detail attachments provided in the DE 17-136 Update Plan Compliance Filing made on January 15, 2019. Because this is a pilot initiative, the savings are not included in the benefit cost model for 2019.

8.0 Next Steps

The Utilities will utilize CSPs under existing contracts through their respective Massachusetts demand response programs and will begin recruiting New Hampshire customers for participation immediately following approval to prepare for the summer 2019 season. The Utilities will provide updates on the NH C&I Active Demand Reduction Initiative as appropriate at DE 17-136 Quarterly Meetings. All of the NH Electric Utilities will review this initiative for potential inclusion in the 2020 Update and the 2021-2023 Statewide Energy Efficiency Plan.

The NH Electric Utilities will also continue to review the results of other demonstrations approved by the Massachusetts Department of Public Utilities (“MA DPU”) in D.P.U. 16-178, and programs under consideration in D.P.U. 18-117 (Fitchburg Gas and Electric, dba Unitil) and D.P.U. 18-119 (Eversource in MA) as well as other related demonstrations in Connecticut and Rhode Island. In 2018 and 2019, Eversource (MA) is deploying demand reduction

demonstration offerings for battery storage, thermal storage, software and controls, and active demand response, some including upfront incentives for equipment installations. Eversource has also proposed testing the ability to manage electric vehicle charging in Massachusetts. These demonstrations are designed to test the ability of the projects to deliver cost-effective benefits to customers at scale. After the evaluation of the demonstrations, Eversource in Massachusetts will submit a report to the MA DPU with an analysis of the actual costs and benefits of each demonstration project. The NH Utilities will utilize this review and as well as demonstration results from other states and utilities to inform future potential offerings in New Hampshire.