

ACTIVE DEMAND MANAGEMENT OPPORTUNITIES

► February 8, 2023

INTRODUCTION

- ▶ **PA presentation focused on current offerings**
- ▶ **C-Team presentation intended to be forward looking**
 - Short term opportunities – ideas and offerings that could be implemented in the current plan
 - Long term opportunities – ideas and offerings that are aimed at future planning periods, once grid modernization plans are underway

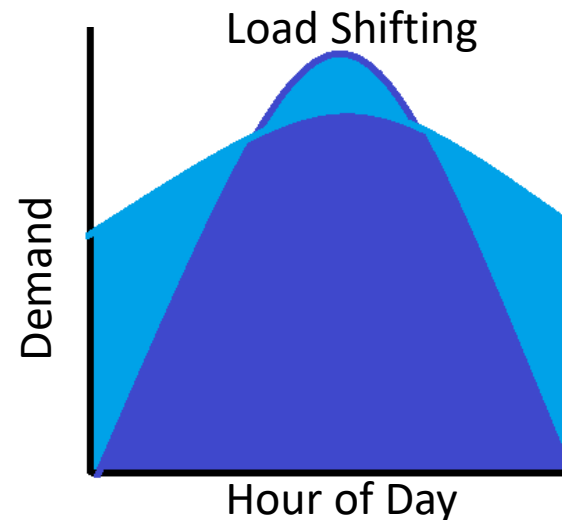
NEW OPPORTUNITIES FOR CURRENT OFFERINGS

- ▶ **Expanding the current list of eligible equipment to beyond Wi-fi thermostats, EVs, and storage for residential will allow the ADM offering to achieve more savings**
- ▶ **Wi-fi enabled heat pump water heaters**
 - United Illuminating conducted a pilot Low Income HPWH Demand Response Program
 - Has been found non-cost-effective in MA previously, but should be periodically re-evaluated
- ▶ **Pool pumps**
 - EnergyStar pool pumps are currently offered as an EE measure
 - A study conducted by Southern California Edison found savings up to 0.7kW by using pool pumps in DR



NEW OPPORTUNITIES FOR CURRENT OFFERINGS

- ▶ C&I specific demand management offerings are often tech-neutral and results oriented
- ▶ As of 2023 all offerings are aligned statewide
- ▶ Integration of efficiency, electrification, and demand response efforts is vital
 - 2019 ACEEE paper identified MA programs as ones that had cross enrollment, but not fully integrated
 - 2022 MA Evaluation found that programs are sufficiently integrated
 - Improvements are still possible



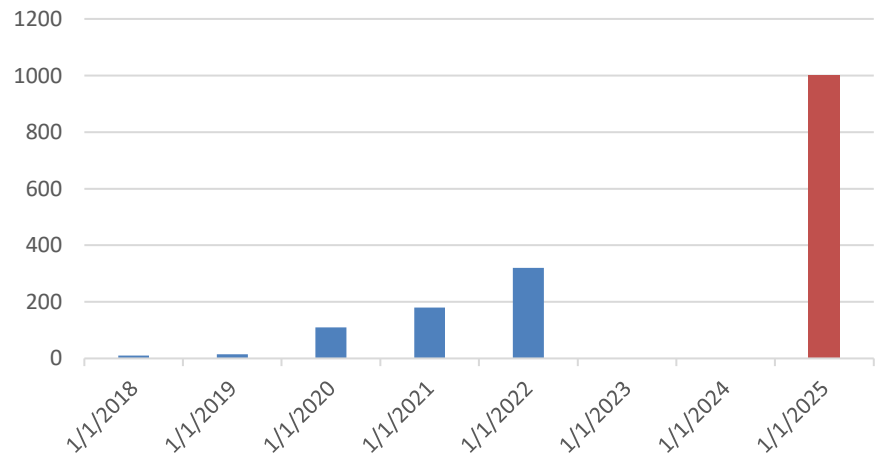
POLICY CHANGES – 2022 CLIMATE ACT

► 2022 Climate Act – “An Act Driving Clean Energy and Offshore Wind”

- Section 24 Allows for the integration of storage and renewable generation with efficiency and electrification within the programs
- Cape and Vineyard Electrification Offering (CVEO) was approved because of section 87A of the same bill

► 2025 Storage Goals are looming

- As of 2/15/22 the Commonwealth had 320 MWhs of storage
- 2025 goal is 1000 MWh



BATTERY STORAGE PROGRAMS – CT ENERGY STORAGE SOLUTIONS

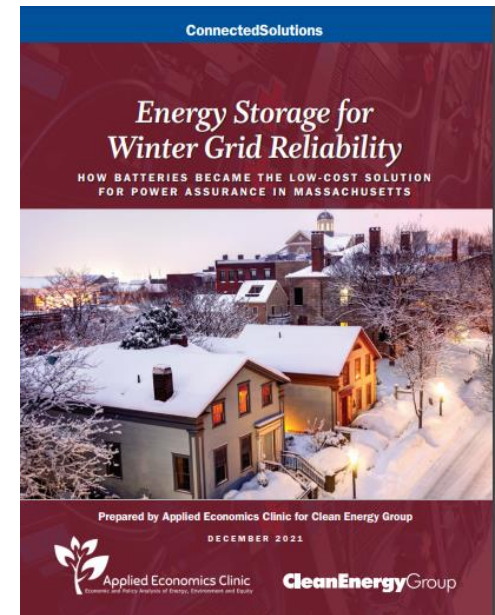
- ▶ **In 2022 the State Public Utility Regulatory Authority (PURA) of CT released the Energy Storage Solutions program**
- ▶ **Designed to deploy 580 MW of behind the meter storage by 2030**
- ▶ **Up-front Incentives differ by income:**
 - \$200/kwh for standard income
 - \$300/kwh for residents in underserved communities
 - \$400/kwh for low-income residents
 - Limited to either 50% of project costs or \$7,500
- ▶ **Additional incentives for ADM events:**
 - Summer: \$200 per average kW contributed across the summer
 - Winter: \$25 per average kW contributed

USES OF ADM BEYOND CAPACITY SAVINGS – WINTER DR

- ▶ **During the cold snap of 12/24/2022 ISO-NE had to rely on several measures under Operating Procedure No. 4 to cover for a capacity deficiency that occurred during peak hours**
 - This need for demand response was driven by short term performance issues from generating resources
 - Short term prices peaked at \$2,816/MWh
- ▶ **Winter demand response can help in situations like this where short-term conditions impact grid stability**
 - Winter DR efforts by the PAs reduced demand by 14-18 MWs during peak demand
 - This also resulted in carbon savings of 15.75 tons
 - Reinstating winter DR efforts for the current and future winters should be a priority

USES OF ADM BEYOND CAPACITY SAVINGS – WINTER DR

- ▶ **A 2021 Clean Energy Group report* discusses why winter demand response is the lowest cost resource during winter constraints**
 - They evaluated a new gas peaker plant to cost \$1.79 - \$3.94 per kWh during capacity scarcity conditions
 - Incentives for battery storage dispatch were evaluated at \$0.51 to \$2.04 per kWh
- ▶ **Continued valuation of winter demand management at \$0/kW is detrimental to grid reliability**
 - Slows growth of battery storage by minimizing participant benefits
 - Creates short term situations of high fossil fuel reliance during capacity scarcity conditions



* <https://www.cleangroup.org/ceg-resources/resource/energy-storage-for-winter-grid-reliability/>

OTHER DR OPPORTUNITIES

- ▶ **Constraints in the natural gas distribution system highlight the need for some form of gas demand response**
 - The need for oil generation in the winter in New England is primarily driven by gas consumption for heating
- ▶ **National Grid committed to working with DOER on developing differentiated gas demand response demonstrations in 2022 in the term sheet**
 - Given winter energy prices due to global market issues these programs are more needed than ever
 - National Grid already has an active Gas DR program in NY
- ▶ **Eversource is running a gas DR program outside of the EE programs as part of the EGMA settlements**

POLICY CHANGES – 2022-2025

GRID MODERNIZATION PLANS

- ▶ **Massachusetts Utilities had their 2022-2025 Grid Modernization Plans approved on 11/30/2022**
 - Over \$450 Million of investment between Eversource, National Grid, and Unitil
 - Calls for deployment of grid monitoring technologies, advanced communication technologies, and automation technologies
 - One of the critical investments outlaid is the deployment of Advanced Metering Infrastructure (AMI) across the state between 2023-2027
 - Other items include investment in a distributed energy resource management system (DERMS)

POLICY CHANGES – 2022-2025

GRID MODERNIZATION PLANS/AMI

- ▶ **Advanced Metering Infrastructure (AMI) is an integrated system of smart meters, communications networks, and data management systems that enables two-way communication between utilities and customers**
 - Generates a large suite of benefits to customers and utilities alike beyond enabling advanced DR strategies
- ▶ **AMI can enable near real time communication with customers allowing for price signals to be more effectively passed along**
 - Critical peak pricing, variable peak pricing, time-of-use-rates, and critical peak rebates are all names of various time/rate-based programs that utilities with AMI have utilized to reduce demand at key moments.

MODERN PROGRAMS USING AMI

- ▶ **ConEd's GridRewards pilot program allows enrolled customers to view their energy usage and receive prompts to change their energy usage**
 - The app prompts you to reduce your energy usage during a peak event in exchange for cash credited to your bills
 - Tips are provided to help customers reduce their energy
 - Traditional “Auto-DR” like DLC wi-fi thermostats are also able to be controlled through the app.
 - Average household that participated got around \$100 in rewards

The logo for GridRewards, featuring a white lightning bolt icon to the left of the text "GridRewards" in a white, sans-serif font, all set against a purple rectangular background.

GridRewards

Source: <https://www.gridrewards.com/>

MODERN PROGRAMS USING AMI

► Oklahoma Gas and Electric SmartHours Program

- Operates during the summer demand season
- Participants can select either a Time of Use (TOU) or Variable Peak Pricing (VPP) rate
- Both enjoy a discounted off-peak rate (approximately 50% of normal rate)
- TOU has a standard peak rate of approximately 2x normal rate
- VPP peak rate depends on grid conditions, ranging from the discounted rate up to 4x normal rate depending on capacity constraints



Source: Oklahoma Gas and Electric

NEXT STEPS IN MA FOR ADM

- ▶ **Continue to consider short term programmatic changes to maximize savings**
- ▶ **Engage with Potential Study and Avoided Energy Supply Costs Study processes to ensure demand response is appropriately considered**
- ▶ **Begin planning and scoping out future program offerings for the next plan period**
 - Enhanced storage support enabled by 2022 Climate Act
 - Pilot programs for utilizing AMI
 - Gas Demand Response
 - Low Income Storage