



Energy Efficiency in Industrial Facilities

Toxics Use Reduction Institute – Spring Continuing Education Conference

Devens. MA

April 4, 2019



BLACKSTONE
GAS COMPANY



Columbia Gas
of Massachusetts
A NiSource Company

EVERSOURCE



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Agenda



- What we do and why we do it
- How we identify & engage with industrial customers
- Common measures and examples
- Demand response

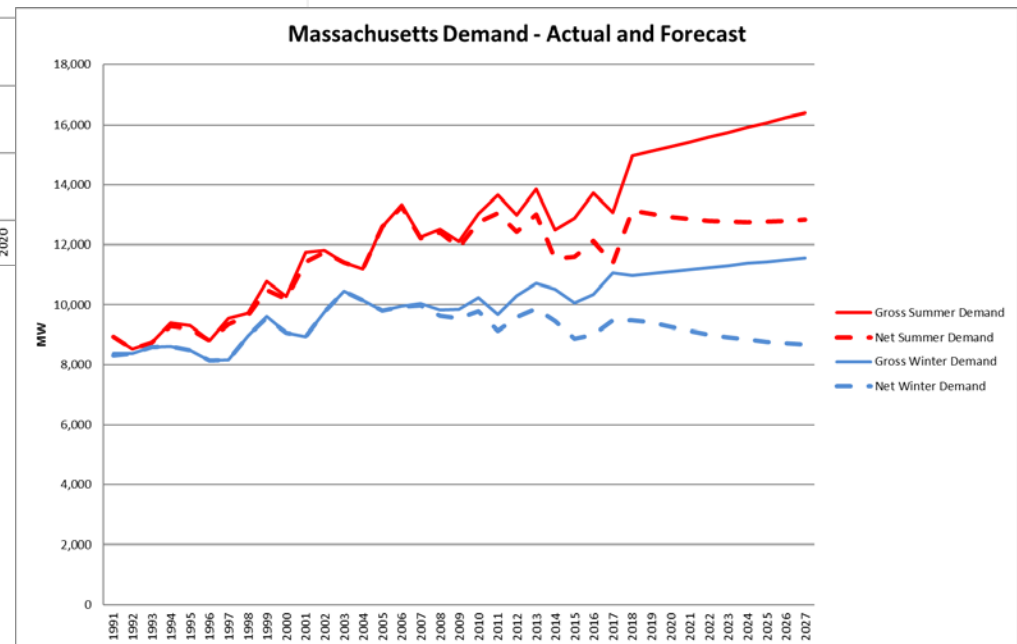
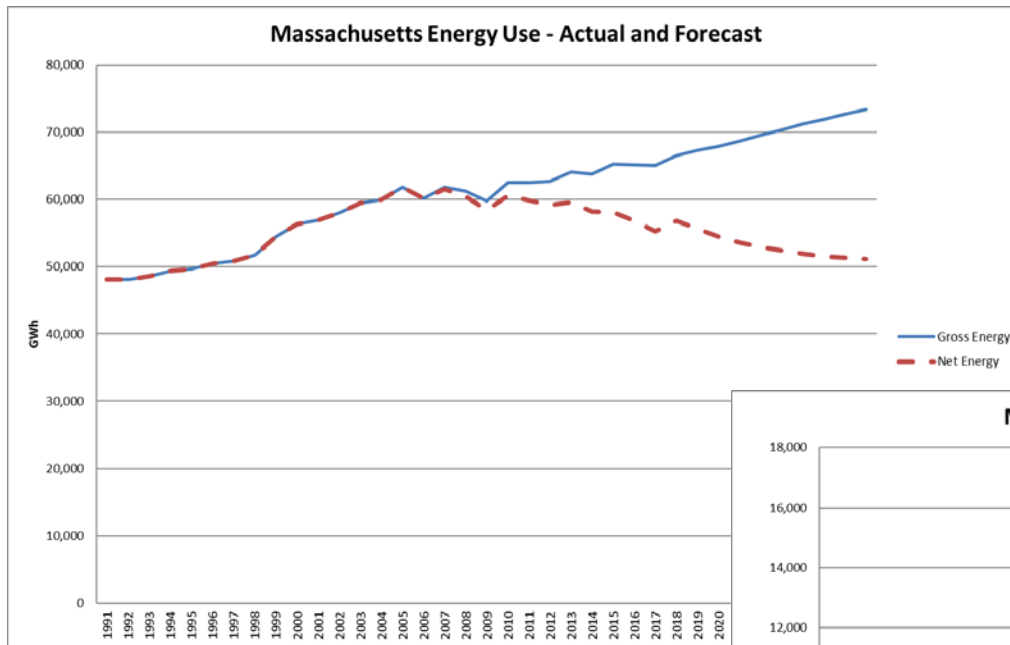
Why we “do” energy efficiency



- Reduced energy & supply costs
- Lower O&M costs
- Improved operations, comfort, and performance

- Economic benefits
- Improved system reliability
- Shareholder incentive

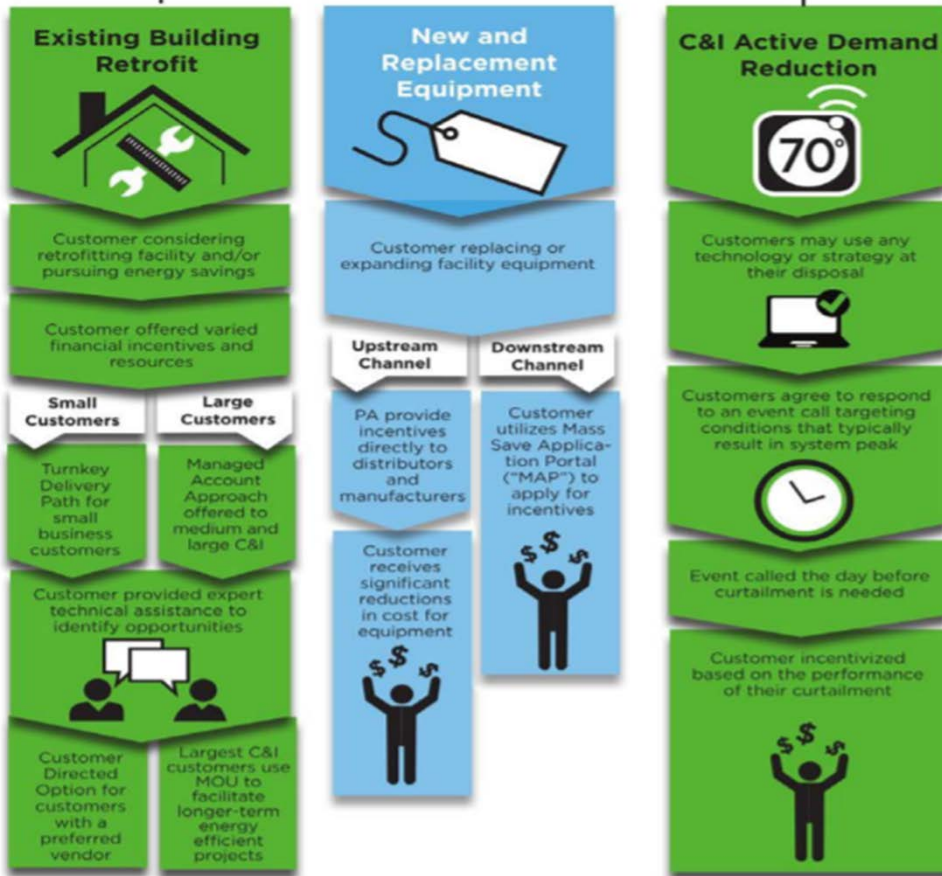
Cumulative impacts on energy & demand



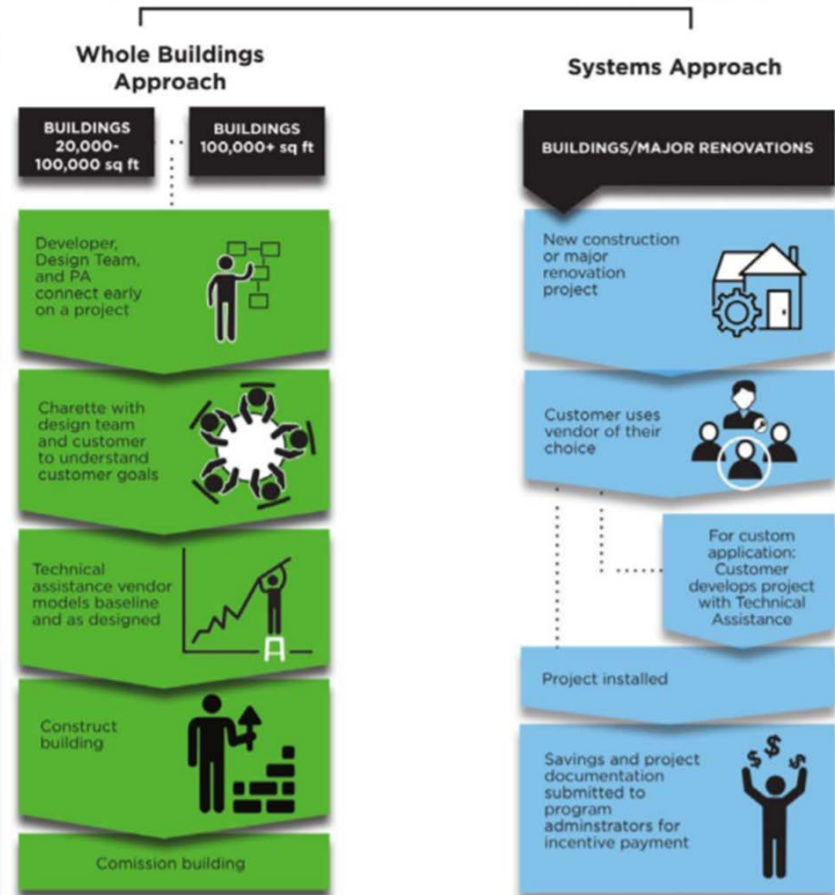
Multiple pathways for all customers to participate



C&I EXISTING BUILDINGS



C&I NEW BUILDINGS & MAJOR RENOVATIONS



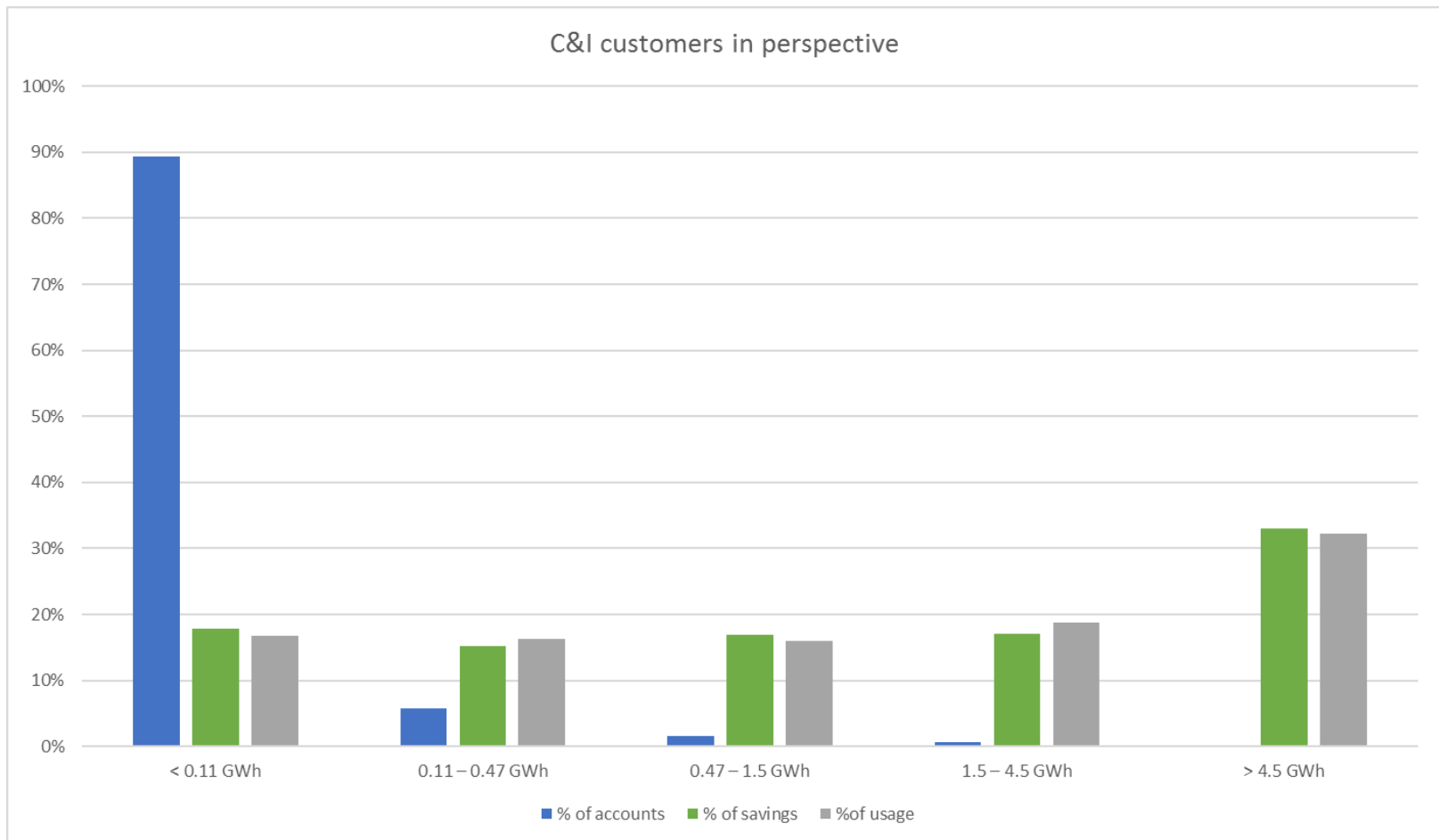
Simple Steps to Savings

Applying for incentives involves the following



- **Identify an Opportunity**
 - Either on your own, or with the assistance of your PA(s) or a contractor of your choice, identify the qualifying energy savings opportunity. Consider a no-cost facility assessment as a starting point.
- **Submit Application**
 - Complete an official Application providing details about your company, your building, and the project along with necessary documentation (equipment cut sheets, engineering calculations or savings documentation, invoices, W-9, etc.)
 - A pre-inspection may be required to determine eligibility. If so, a representative will contact you to schedule an appointment.
 - Purchase and install the new qualifying equipment.
- **Receive your Incentive**
 - Once the equipment has been installed and all supporting information has been received and reviewed, you will be issued your incentive payment.
 - A post-inspection may be required prior to issuance of any incentive payments.
- **Repeat the Process**
 - Once you start saving, consider re-investing those savings in the next opportunity.

Customers in context

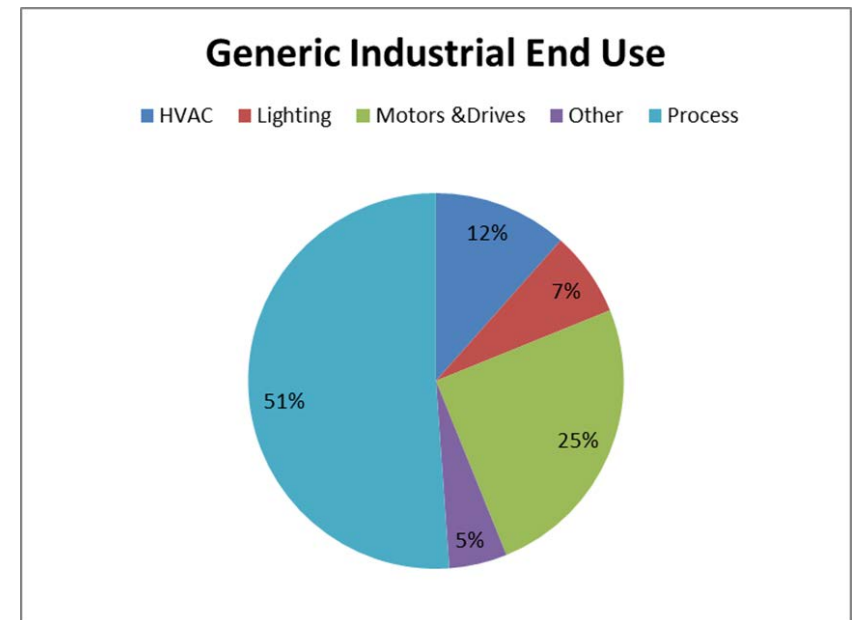


- Less than 3% of C&I customers comprise ~2/3 of our consumption...and savings

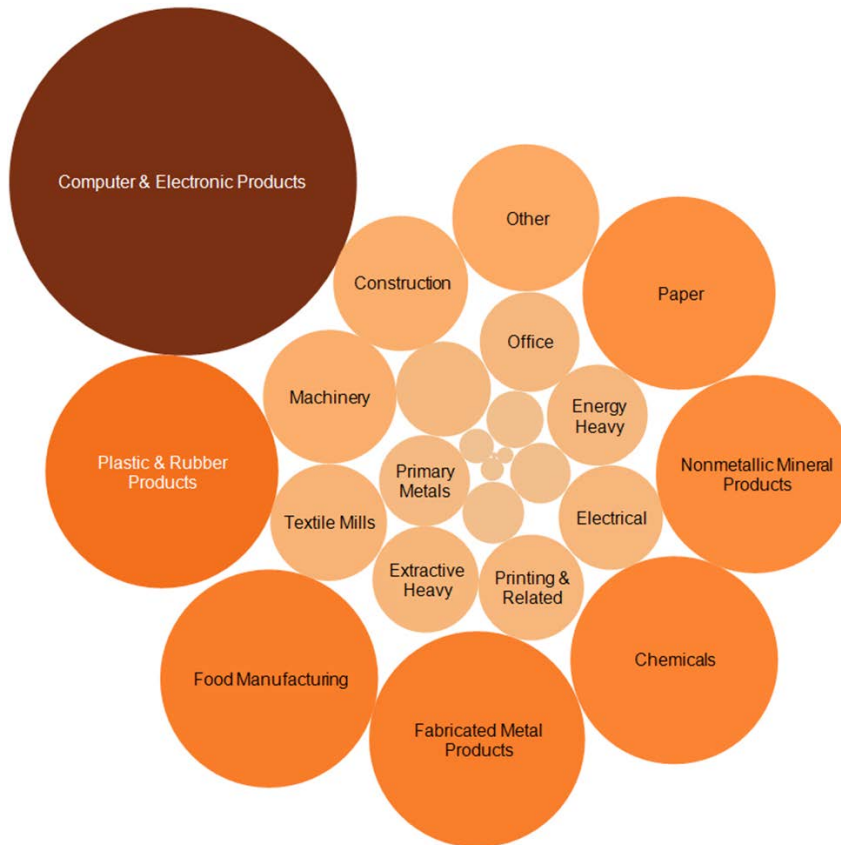
Defining “industrial” customers



- Facilities characterized by *process-related* energy consumption
 - Ovens
 - Chillers
 - Compressors
 - Motors: material handling
 - Extruders/IMMs
 - Scheduling & sequencing



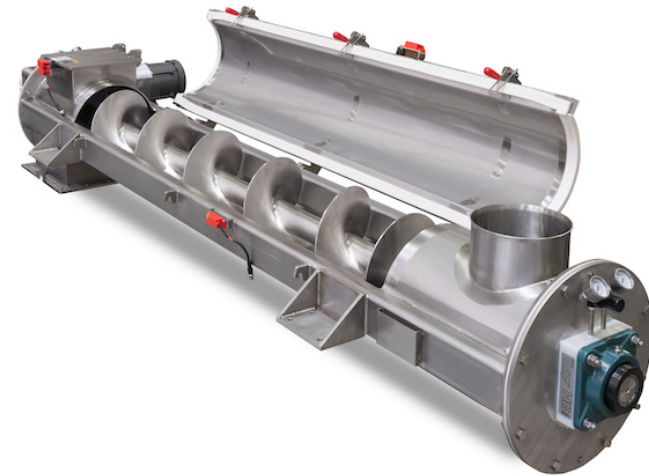
Industrial customers by segment



- Massachusetts customers represent a wide range of industries, but there are some clusters:
 - Biotech/pharma
 - “Tech”
 - Plastics
 - Metals
 - Food processing

Case study #1: Food processor

- Mixers, fillers, packagers, compressors, pasteurizers
- +6.5million kWh/year
- ~\$1,000,000/year in energy savings
- ~1 MW in reduced demand



End Use

Compressed Air	6%
Drives & Motors	13%
Lighting	0%
Process	75%
Refrigeration	6%
Total kWh	6,700,000
% of usage	33%



Case study #2: Paper products



- Pulp machine, dust collection, compressor
- Nearly 5 million kWh/year
- \$400,000/year in energy savings
- ~420 kW in reduced demand



End Use

Compressed Air	10%
Drives & Motors	32%
Lighting	30%
Process	28%
Total kWh	3,000,000
% of usage	34%

Case study #3: Plastics

- Compressed air leaks, compressor, chiller, dehumidifier
- ~2.5 million kWh/year saved
- \$300,000/year in energy savings
- ~240 kW in reduced demand

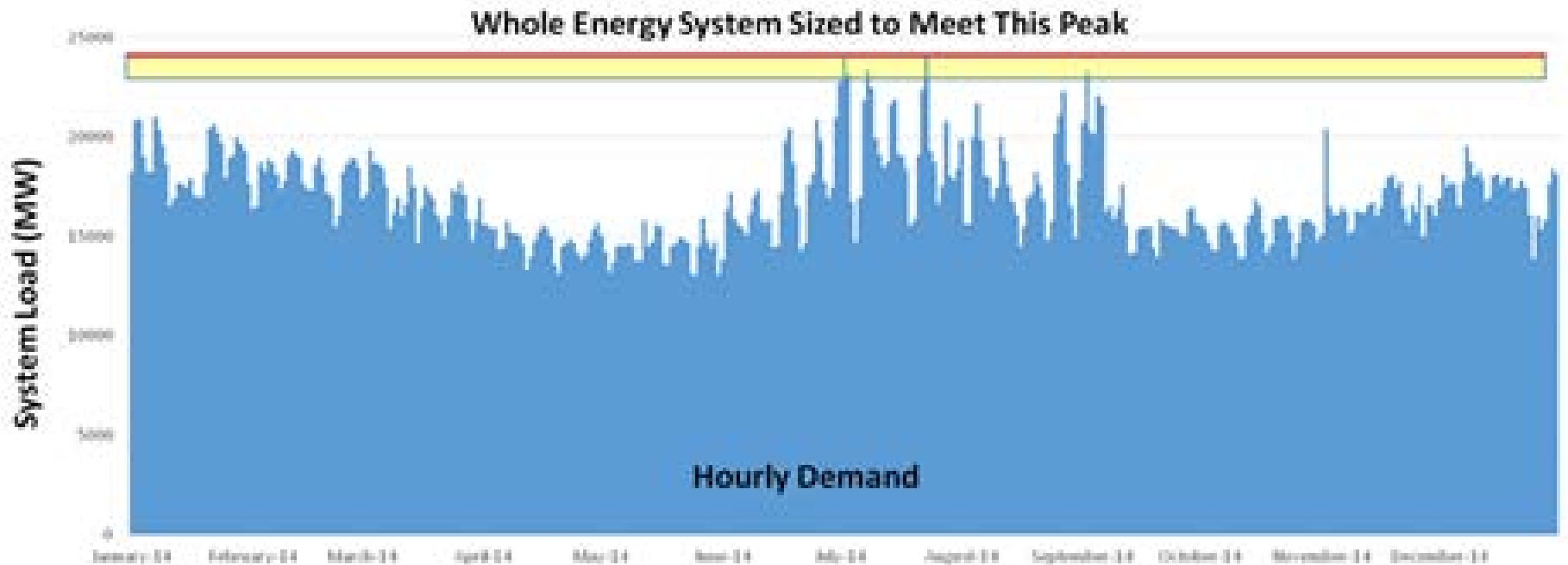


End Use

Compressed Air	63%
HVAC	21%
Lighting	16%
Total kWh	2,500,000
% of usage	6%

Demand response

Why “do” demand response?



C&I Demand Response—Options



Program Parameters

Typical Application

Targeted
Dispatch

- 3 - 8 events per summer
- 3 hours per event
- **\$35/kW-summer**
- Eversource only: Targeted Storage
\$100/kw-summer



Daily Dispatch

- 30 - 60 events per summer,
- 2 - 3 hours per event
- **\$200/kW-summer**

Per Order:
Demonstration for 2019
– expect to reach full
offering for 2020



Winter
Dispatch

- 5 events per winter
- 3 hours per event
- **\$25/kW-winter**



Strategies and Technologies Typical to Dispatch Scenarios



Targeted Dispatch	Daily Dispatch	Winter Dispatch
<ul style="list-style-type: none">• Usually Manual• Temperature setback ~3F• VFD speed limiting• Early setback• Process Changes• Rarely Lighting• Generators• Combined Heat and Power	<ul style="list-style-type: none">• Usually Automatic• Batteries• Flywheels• Thermal Storage• Industrial Freezers	<ul style="list-style-type: none">• Usually Manual• Snowmaking• Industrial Processes• Generators

Questions?

<https://www.masssaveapplicationportal.com/resource/1551816311000/BusinessIncentives>