



Industrial Process

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We look forward to hearing from you

Please put all your questions into the questions section with this icon.



Q&A



Agenda

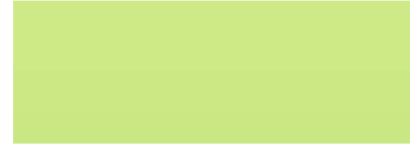
The State of Industrial & Manufacturing

The Size of Opportunity

Energy Efficiency Strategies

Process Improvement Examples

Q & A



The State of Industrial & Manufacturing

State	Industrial & Manufacturing Output	% of State Output	Industrial & Manufacturing Employees	% of State Employment	Average Compensation
Massachusetts	\$53.26B	9.39%	243,000	6.60%	\$103,826.30

Current Challenges



Workforce

Attracting new employees, safety and wellness, training new skills



Costs of Doing Business

Energy, labor, taxes

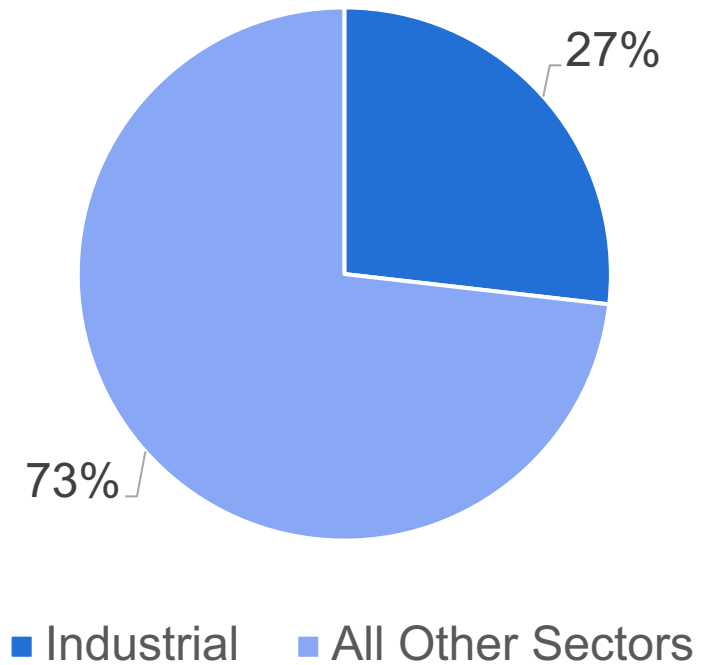


Technology

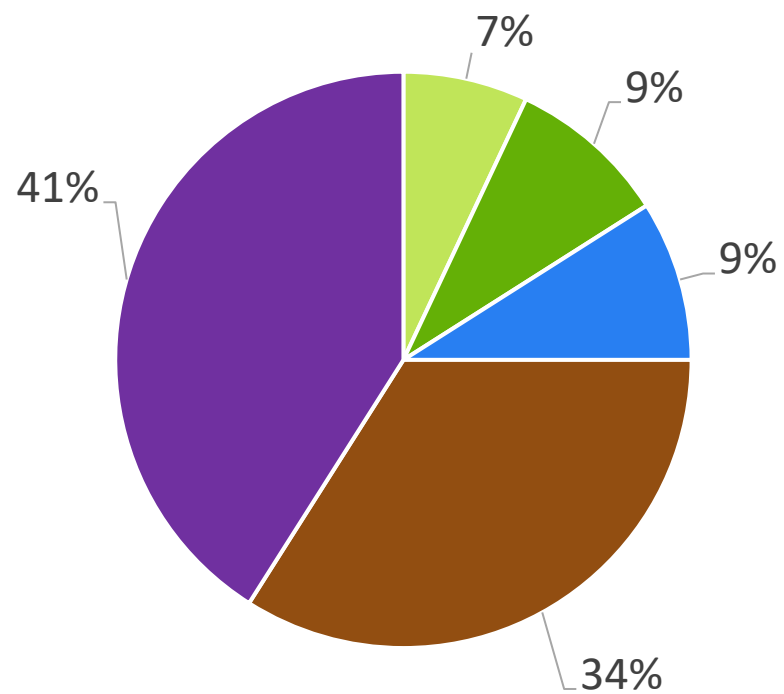
Automation and robotics

Size of Opportunity

Eversource C&I Sector Usage
(MMBtu)



Electric Usage Breakdown



- Lighting
- HVAC
- Plug Loads/Other
- Process Support
- Process Equipment

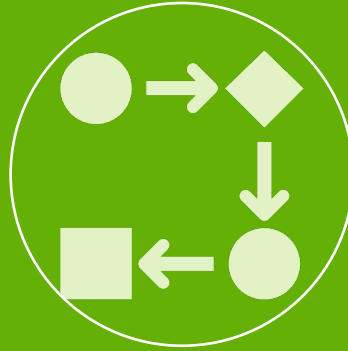


Sources of Energy Consumption



Building Systems

- Heating Plant
- Cooling Plant
- Ventilation Systems
- Lighting Plant



Process Support

- Process Heating
- Process Cooling
- Air Systems/Dust Collection
- Material Handling
- Cleaning (acid baths, parts washing)
- Waste-water Management

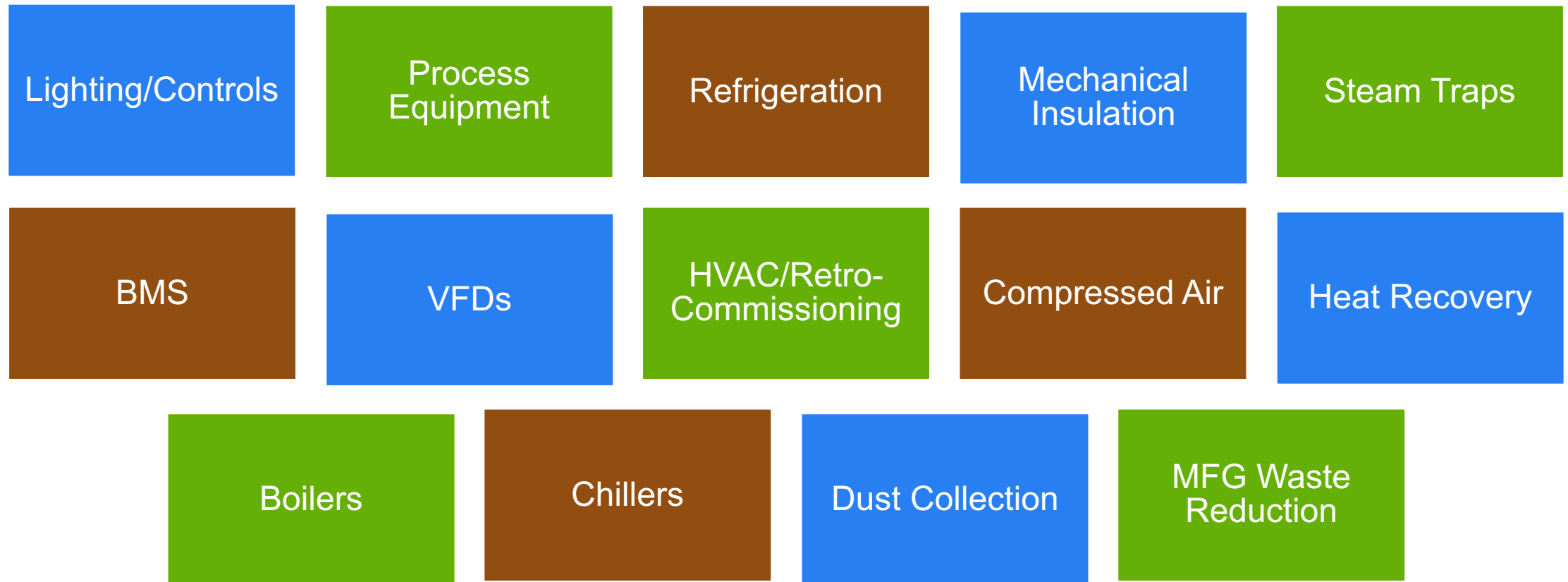


Manufacturing Processes

- Molding
- Baking
- Melting
- Machining
- Joining
- Shearing and Forming

Energy Efficiency Opportunities

From building infrastructure to process equipment; if it saves energy, we are interested



Steam Traps

- Steam Systems should be looked at holistically
- Steam trap leak surveys to identify larger opportunities
- Boiler Efficiency, supply and return piping, water quality
- Pipe Insulation, Combustion Controls, Blow Down HX, Economizer



Compressed Air Leak Surveys

- Referred to as the most expensive utility
- CAIR Leak Survey should include Supply/Demand side audit
- Inappropriate uses
- Storage, Sequencing Compressors, New compressors



Treasure Hunts

- Low Cost/No Cost Measures
- Buy In from All Parties
 - Finance
 - Machine Operators
 - All Employees
- Typical Measures
 - Lighting
 - Steam and compressed Air
 - Process Heat
 - Cooling/HVAC
 - Process Equipment



Industrial Electrification

- Applications with Good Opportunities:
 - Pharmaceuticals and Life Sciences
 - Laboratories
 - Clean rooms
 - Food/Beverage/Breweries
 - Some Manufacturing processes
 - Any customer with simultaneous hot water and chilled water loads
- Oil and Propane Customer are also eligible
 - Electric Utility Takes the Lead



National Grid

Medium-Sized Manufacturer



Project Overview

- Retrofit existing process equipment to remove the use of compressed air
- Installed new ceramic electric heating elements
- Energy use per widget decreased by 40%

Savings

- 3.7 million Lifetime kWh
- Scrap reduction
- Increased thruput

Incentive

- Over \$90,000 in incentives

Large Manufacturer

Project Overview

- Plate and frame heat exchanger for free cooling
- Chiller used for process loads year round
- Controls to manually adjust between mechanical/free cooling
- Energy use per widget decreased by 40%

Savings

- 2.8 million Lifetime kWh
- Less than 2 year payback

Incentive

- Over \$100,000 in incentives



Eversource Customer

Medium-Sized Manufacturer



Project Overview

- Implementation vendor identified opportunities
- Paired with Engineering Services vendor to assist with calculations
- Built & implemented a comprehensive project
- LED lights, Compressed Air, Motors, Controls, & BMS

Savings

- 7.6 million Lifetime kWh
- 74% of savings from Process related equipment

Incentive

- Over \$425,000 in incentives

Key Takeaways



Opportunity

High Usage
Entry Measures
'Going Deeper'
Untapped Market



Assistance

Custom Projects
Engineering Support

Questions?

WE ARE MASS SAVE®:





Kyle Svendsen

Supervisor

Eversource

[kyle.svendsen@
eversource.com](mailto:kyle.svendsen@eversource.com)

Nick Wojcik

Lead Energy Engineer

National Grid

[Nicholas.Wojcik@
nationalgrid.com](mailto:Nicholas.Wojcik@nationalgrid.com)



Thanks for listening.

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