



# Commercial & Industrial

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WE ARE MASS SAVE®:





**Who We Are**

**Who We Serve**

**C&I Existing Building Program**

**Additional C&I Programs & Offerings**

**Successes**

**The Road that Lies Ahead**



# Who We Are



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Together, we make good  
happen for Massachusetts.

Your local electric and natural gas utilities and energy efficiency service provider are taking strides in energy efficiency: Berkshire Gas, Cape Light Compact, Eversource, Liberty Utilities, National Grid and Unitil.

As one, we form Mass Save®, with the common goal of helping residents and businesses across Massachusetts save money and energy, leading our state to a clean and energy efficient future.



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# Program Administrator (PA) C&I Implementation



## **C&IMC- Management Committee**

All Program Administrators Represented  
Directed by Program Leads

## **Subcommittees**

Small Business, Midstream, Program Groups

## **Customer Facing Teams**

## **Technical & Engineering Teams**

## **Evaluation**

The team carrying out the C&I energy efficiency within the Program Administrators (PAs).  
Evaluation performs the checks and balances on the savings claimed, measures and tools.



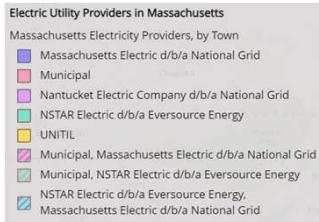
# Who We Serve



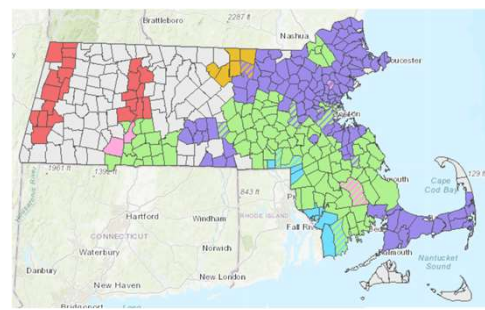
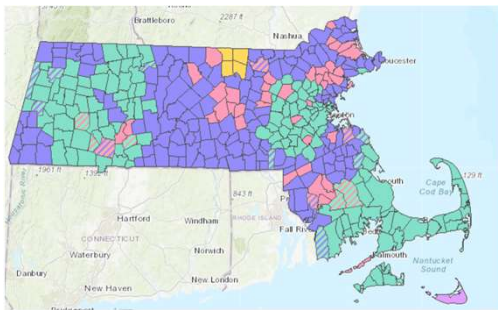
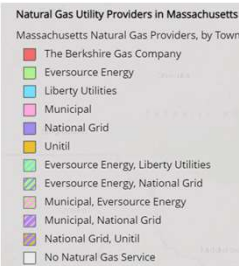
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# Electric & Natural Gas PA Customers



\* Cape Light Compact is the Program Administrator for Dukes and Barnstable County



Communities of the Commonwealth have a variety of industries, customer groups and efficiency needs. As a result, PAs must have diversity in terms of approach and pathways to serve all. All Program Administrator programs are funded from a small energy conservation charge and part of the distribution charge on customer electric bills. These funds are collected to administer the energy efficiency programs. While in most cases the utility provider is also the Program Administrator, for Cape Light Compact, the funds are collected by Eversource and then returned to the Compact to administer the energy efficiency program for Barnstable and Dukes Counties.

## Who We Serve

Commercial & Industrial (C&I) customer segments are designated by natural gas and electricity use

- Micro and Small Businesses
- Medium and Large C&I
- Multifamily

**Figure 3-6: C&I Customer Sizes by Annual Consumption**

Customer Size	Annual Electricity Usage	Annual Natural Gas Usage
Microbusiness	Less than 0.11 GWh	Less than 8,000 Therms
Small Business	0.11 – 1.5 GWh	8,000 – 40,000 Therms
Medium Business	1.5 – 4.5 GWh	40,000 – 250,000 Therms
Large Business	Greater than 4.5 GWh	Greater than 250,000 Therms





# Program Administrator Direction



## **Department of Public Utilities (DPU)**

3-Year Plan (2022-2024)

## **Energy Efficiency Advisory Council (EEAC)**

Chaired by DOER, Support in Long Term Vision, Study Oversight

## **Research Labs & Industry Groups**

## **Outside Energy Efficiency Programs**

States & International

## **Commercial & Industrial (C&I) Customers**

## **Vendors, Contractors, Coordinators, Design Firms**

# Program Administrator Influence



## Internal Program Administrator Staff

Account/ Sales Representatives, Program Managers, Technical Staff

## PA Vendors

Turnkey Vendors  
Midstream / Point of Sale

## Implementation Contractors/ Project Coordinators

Segment Specific Approaches

## Marketing Campaigns

Print, Electronic, Main Streets, Community outreach

## Trade Allies & Market Actors

Direct PA  
Influence  
& Control

PA  
Influence  
Only



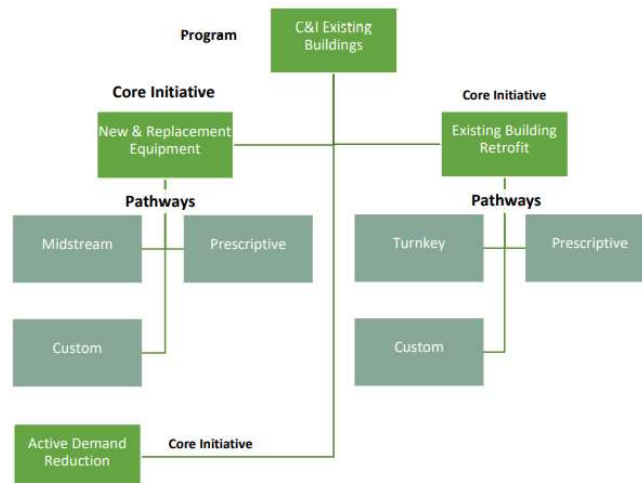
# C&I Existing Building Program



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# C&I Existing Buildings Core Initiatives



## Engagement Pathways

- **Customer Engagement approaches drive customers into savings pathways**
- **Options for all customer choices**
- Midstream
- Prescriptive Rebates
- Turnkey
- Project Engagement - Custom



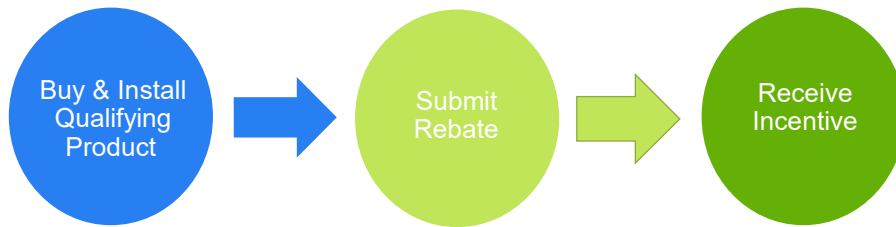
# C&I Pathways- Midstream



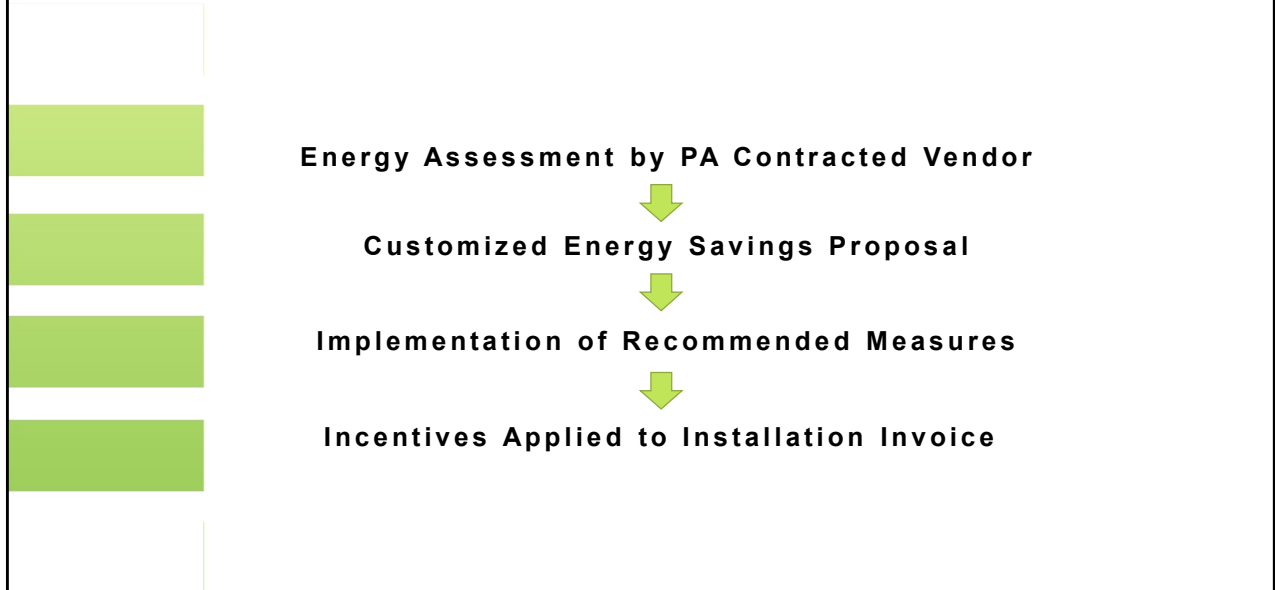
## **Midstream (formerly known as Upstream)- Prescriptive**

- Distributors and dealers participate and pass on incentives to purchaser
- Increased market adoption
- Energy savings easily determined
- Equipment available through midstream (not limited to, but including):
  - Commercial kitchen equipment
  - Electric HVAC
  - Water heaters
  - Cold-storage lab-grade equipment
  - Lighting and more

## C&I Pathways- Prescriptive Rebates



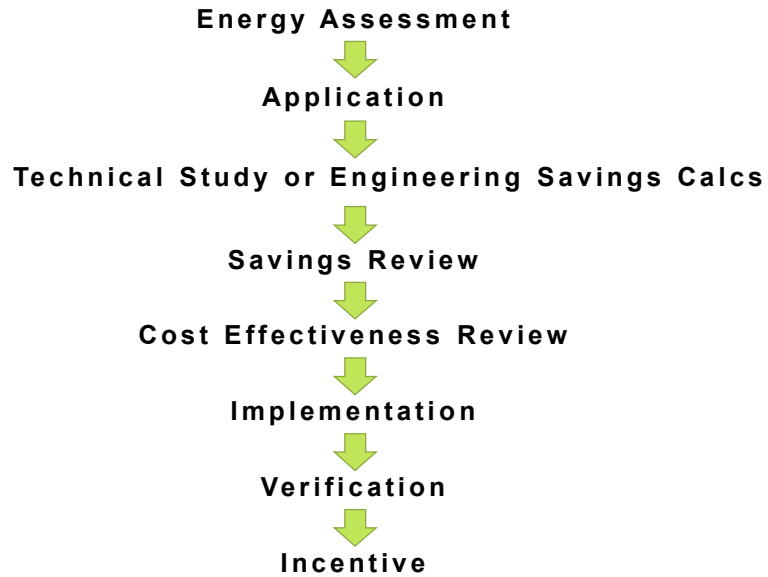
## C&I Pathways- Turnkey



Most applicable to small businesses; Energy Savings Proposal includes the recommended measures with estimated energy savings and applicable incentives



## C&I Customer Project Engagement



# C&I Pathways- Prescriptive & Custom



## Heating & Cooling

Boilers, Furnaces, Chillers, Thermostats, Heat Pumps



3 Year Plan  
Focus

## Building Insulation & Weatherization (Custom Only)

Air Sealing, Weatherstripping, Building Insulation



3 Year Plan  
Focus

## Building Controls & Optimization

EMS, Retro-commissioning, Monitoring Based Commissioning

## Specialty & Manufacturing Equipment

Compressed Air Systems, Commercial Refrigeration, Lab Grade Equipment

## Lighting & Lighting Controls

# Mass Save Pathways



	Engagement Pathway	Savings Approach	Who receives the Incentive?	Time & Effort to Implement	Incentive Amount \$\$	Evaluation Needs
	<b>Custom</b>	Technology development company uses third-party engineering calculations to verify savings	Payable to Metered Account Holder or assignee	High	Based on Savings	High
	<b>Custom Express</b>	Savings are verified through a standardized tool		Medium		High
	<b>Prescriptive</b>	Pre-existing, well-defined savings calculations in the Technical Reference Manual		Low	Based on predefined values	Low
	<b>Midstream</b>	Mix of deemed savings or calculated savings based on the baseline and the unit sold	Third-party Distribution Channel (i.e. F.W Webb, Granite City)			High
	<b>Market Transformation</b>	Historically, outside of PA programming; 2022-2024 plan may include savings methodology	N/A	High	N/A	High



# Additional C&I Programs & Offerings



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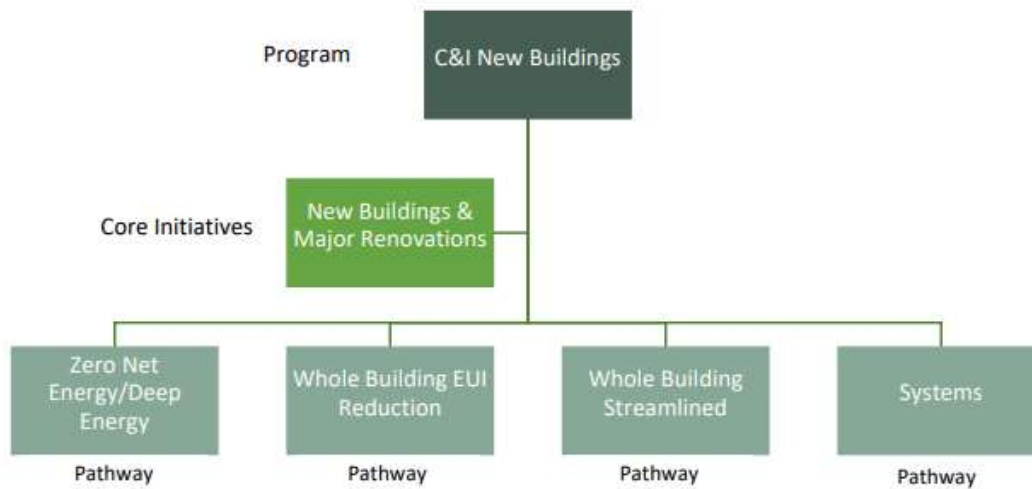


## Program Specific Participation

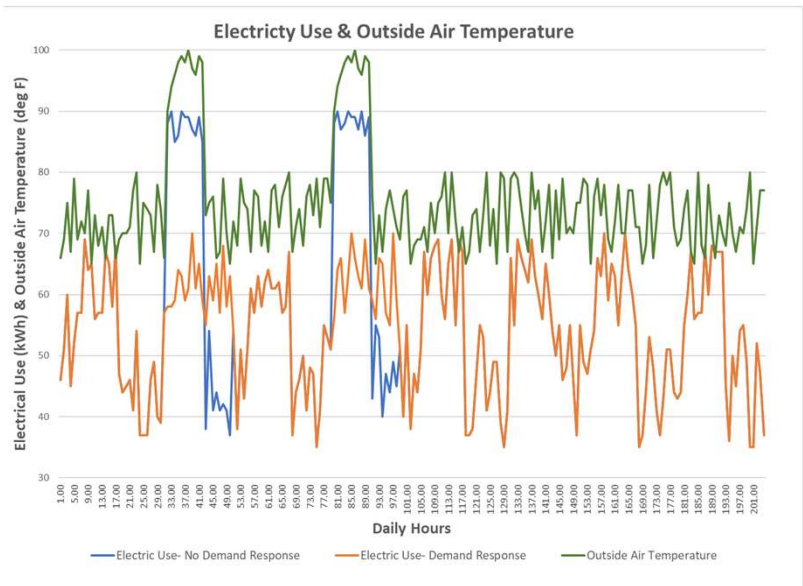
- New Construction & Renovations
- Active Demand Reduction
- Deep Energy Retrofits ★ New 2022!



# New Construction & Renovations



# Active Demand Reduction (ADR)



## Deep Energy Retrofit New in 2022!







# Successes



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## Successes

Massachusetts is consistently ranked one of the most energy efficient states in the country according to the American Council for an Energy-Efficient Economy (ACEEE). And the EE programs achieve every available point allowed.

**WE CAN'T DO IT  
WITHOUT YOU, IT'S ALL  
ABOUT THE CUSTOMERS**





# The Road that Lies Ahead



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# C&I GHG Goals



**Lower GHG emissions, save energy & reduce demand**

**Provide customers with options that meet their economic, technical and environmental needs, and GHG reduction goals**

**Motivate customers to think comprehensively about building design, construction, and operation.**

**Figure 3-27: 2022-2024 Planned Performance Summary – C&I New Buildings & Major Renovations (Core Initiative)**

Planned Results	Projection
Total Statewide Budget	\$93,779,089
Net Annual All-Fuel MMBtu Savings	758,977
Net Lifetime All-Fuel MMBtu Savings	11,479,295
2030 Annual GHG Emissions Reductions (Metric Tons CO <sub>2</sub> e)	34,668
Total Benefits	\$11,464,508
Projected Cost Effectiveness (BCR)	4.2
Net Annual Electric MWh Savings	62,589
Net Annual Natural Gas Therms Savings	3,367,416

**Figure 3-30: 2022-2024 Planned Performance Summary – C&I Existing Buildings Program**

Planned Results	Projection
Total Statewide Budget	\$1,333,101,982
Net Annual All-Fuel MMBtu Savings	7,698,063
Net Lifetime All-Fuel MMBtu Savings	78,908,701
2030 Annual GHG Emissions Reductions (Metric Tons CO <sub>2</sub> e)	253,119
Total Benefits	\$4,512,049,478
Projected Cost Effectiveness (BCR)	2.5
Net Annual Electric MWh Savings	787,604
Net Annual Natural Gas Therms Savings	19,338,754

## Annual Savings Contribution Comparison



The Program Administrators did effectively 0 C&I sq ft in 19-21 (around 10 projects statewide at very small sites), so these targets are extremely ambitious.

## C&I GHG Barriers to Participation



**Retrofit Electrification could result in higher capital and operational costs**

**Providing customers with large variety of options that meet their economic, technical and environmental needs, and GHG reduction goals**

**Need to motivate customers to think comprehensively about building design, construction, and operation**

**Many existing commercial building systems have technical barriers to full electrification**

# Specific Challenges for Large C&I



## Characteristics of Large HVAC GHG Reduction Projects:

- High touch customer engagement
- Leverages significant technical resources
- Involves multi-measure or system-wide approach to end uses
- Can have high savings relative to touch-point
- **Takes a long time!** Which can lead to potential for unrelated derailment issues to arise...
  - Supply chain
  - Product costs



# We're listening.



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# Appendix



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**Figure 3-32: Customer Segment Engagement Approaches**

Segments	Medium & Large	Small Businesses	Multifamily
Description	Medium & large C&I customers have a small number of accounts; however, they represent a significant portion of energy consumption in the C&I Sector.	Small businesses can participate in all C&I offerings. However, the PAs have developed pathways specifically to provide turnkey services.	Multi-unit residential use buildings have unique characteristics that require a cross-functional offering. Multi-unit buildings may contain building-level systems more traditionally found in commercial facilities while also consisting of in-unit residential measures.
Objective	The PAs engage in market segmentation to classify and serve these large customers with their unique needs.	Remove barriers and increase participation within the small business category. PAs define small businesses by energy consumption.	Integrated offering of residential and commercial implementation teams to support delivery of services to multi-unit buildings with both residential and commercial meters.
Engagement Strategy	The PAs generally engage with these larger customers through a managed account approach that connects customers directly to resources and offerings best suited to their circumstances.	Small businesses can utilize the Turnkey offering and work with one of the PAs' contracted vendors. There is also a Customer Directed Option if a small business works with a vendor of its choice.	This pathway is supported mainly within the Residential Coordinated Delivery Initiative.
Financial Support	Custom and prescriptive incentives as well as cost-share for technical assistance services.	Custom and prescriptive incentives	Custom and prescriptive incentives.
Technical Assistance and Consultation Services	Customers may receive technical assistance from an independent firm that is contracted with the PAs or from a vendor contracted with the customer. The outcome of technical support is to help customers understand their energy savings opportunities and to act on them.	The PAs provide a Turnkey vendor to provide technical assistance and consultation on Turnkey measures.	The PAs work with contracted vendors to offer the assessment, which provides a path for implementation based upon cost-effective measures.



Pathway	Midstream	Downstream (prescriptive)	Custom
Approach	Point-of-sale	Equipment based	Project based
Project Types	Retrofit, replace on failure, and new equipment	Retrofit, replace on failure	Retrofit and new equipment
Scalability	High	Medium	Low
Transaction Costs	Low	Medium	High
End Uses Available	Lighting, HVAC, gas water heating, food service, pumps	Almost All (exc. Combined Heat & Power, food service, true new construction)	All
Eligibility	Active Massachusetts C&I Account	Active Massachusetts C&I Account	Active Massachusetts C&I Account and more complex than one-for-one replacement
Target Market	Small C&I customers Large C&I customers with small retrofit projects	Medium/Large C&I customers with equipment upgrade projects	Large C&I customers and projects, including new construction and major renovation
Process Mechanics	Incentive paid directly to distributor and distributor applies customer incentive as a line item on the invoice No paperwork required of customer or customer agent	Incentive paid directly to customer or designee Incentive application (PDF, web) completed and submitted by customer or representative	Incentive paid directly to customer or designee Incentive application completed, along with engineering calculations and analysis, submitted by customer
Incentive Strategy	Incentive designed to motivate distributors to stock, promote, and sell energy-efficient products	Incentive calibrated to mitigate some or most of the incremental cost energy-efficient equipment relative to standard efficiency alternatives	Incentive calibrated to motivate customer action in consideration of customer economics (e.g., payback, Return on Investment (ROI), Net Present Value (NPV), etc.)
Incentive Structure	Incentives for each product as \$ per unit (i.e., Horsepower (HP), Ton, etc.)	Incentive for each product as \$ per Unit (i.e., HP, Ton, etc.)	Dollar per unit of savings incentive based on project-specific savings and economics
Savings Methodology	Deemed	Deemed formula	Project-specific based on technical/engineering analysis

**Figure 3-36: New & Replacement Equipment Pathways**

Pathway	Midstream	Downstream Prescriptive	Custom
Project types	Adding new equipment or replacing failed equipment	Adding new equipment or replacing failed equipment	Adding new equipment or replacing failed equipment
Eligible/target building sizes	Any facility	Any facility	Any facility
Objective	Provide easy access to high-efficiency equipment and lower upfront costs	Widget based or high-efficiency equipment replacement with predefined set of qualification guidelines and active PA participation in decision making process	Widget or systems-based replacement with consultative style engagement and influence of customer decision. Significant PA participation through techno-economic analysis via in-house staff or contracted vendors
Incentive design	Incentives provided at point of purchase on eligible equipment from participating distributors or dealers	Per unit incentives provided for installation of eligible equipment	Incentives provided based on project specific energy savings and economics

**Figure 3-35: Midstream Offerings**



HVAC	Lighting	Foodservice	Natural Gas Water Heaters
Unitary air conditioners	LED controllable linear lamps and linear lamps with controls	Ovens – combination, convection, conveyor, rack, deck	Storage
Air-source, water source, and geothermal heat pumps	LED linear fixtures and fixtures with controls	Broilers - conveyor and underfired	Tankless (on-demand)
Pump Energy Index (PEI)-rated pumps	High/low bay and high/low bay with controls	Griddle, steamer, fryer	Volume (DHW boiler)
Dual enthalpy economizers	LED exterior and LED exterior with controls	Dishwashers	Indirect
ECM circulator pumps		Refrigerators, freezers, and ice machines	
Variable refrigerant flow heat pumps		Hot food holding cabinets and refrigerated chef bases	
Cold-storage equipment		On-demand commercial electric hand wrap machine	

**Figure 3-34: Downstream Prescriptive and Custom Offerings**

HVAC	Lighting	Process
Natural gas	Interior lighting	New compressors
Furnaces	Interior lighting with controls	Refrigerated dryers
Condensing boilers	Exterior lighting	Additional storage
<b>Wireless enabled and programmable thermostats</b>	Exterior lighting with controls	Zero-loss condensate drains
Infrared heaters	Lighting controls	Enhanced controls
Steam traps		Piping improvements
Faucet aerators		Leak repairs
Showerheads		Motors with VSDs
Electric		VSDs
Heat Pumps		
Room air purifiers		
Motors and VSDs		
VSDs		
Chillers		

*The PAs also offer a Custom pathway for any project regardless of end use.*

Strategic Intervention – Reducing GHG Emissions						
GOALS						
<ul style="list-style-type: none"> <li>Lower GHG emissions, save energy and reduce demand.</li> <li>Provide customers with options that meet their economic, technical, and environmental needs, and GHG reduction goals.</li> </ul>			<ul style="list-style-type: none"> <li>Motivate customers to think comprehensively about building design, construction, and operation.</li> </ul>			
Barriers	Example Tactics	Tactic Status	Customers Impacted	Building Type(s)	Pathway(s) Involved	Time Horizon
• HVAC retrofit electrification could result in higher capital and operational costs.	Provide the market with more transparent information for evaluating electrification options and pathways, including incentives and total system costs.	E, M, N	S, M, L	E, N	M, P, C, N	S
• Many existing commercial building systems have technical barriers to full electrification.	Design and implement a Deep Energy Retrofit offering to enable as part of a more comprehensive approach to helping customers managing energy investments and usage.	N	S, M, L	E	C	M
	Promote electrification where appropriate and work with customers to develop HVAC solutions that best suit their needs.	M, N	S, M, L	E, N	M, P, C, N	M, S
• The market does not have extensive experience with heat pump technologies and design elements.	Offer financial assistance intended to promote the role of energy efficient design and technical assistance in the development process for new buildings.	M	S, M, L	N	N	S
• Building commissioning is more focused on functionality as opposed to the performance and optimization of systems.	Engage the Commonwealth as the state's largest property holder to set a leadership example in GHG emissions reductions by making specific commitments to electrify state buildings.	N	L	E	C	S
	Develop various methods of publicly recognizing and celebrating those customers who are exhibiting significant leadership in and commitment to electrification and GHG emissions reductions.	N	S, M, L	E		S
• Market perception is that low EUI/highly efficient buildings come with significant added costs.	Increase emphasis on post-occupancy building consumption to encourage customers to support energy performance commissioning.	M	M, L	N	N	S
• Commercial weatherization remains challenging to deliver cost-effectively at scale but can be an enabler of the electrification of heating.	Facilitate information sharing regarding best practices in design and construction, as well as per square foot cost metrics.	M	M, L	N	N	M
	Address gaps in the skills and experience through workforce development efforts to train on operations and maintenance of electric heating systems.	N	S, M, L	E, N	C, N	M
<p><b>Tactic Status:</b> Existing (E), Modified (M), and New (N)</p> <p><b>Customers Impacted:</b> Small (S), Medium (M), and Large (L)</p> <p><b>Building Type(s):</b> Existing (E) and New (N)</p> <p><b>Pathway(s) Involved:</b> Midstream (M), Downstream Prescriptive (P), Custom (C), and New Construction (N)</p> <p><b>Time Horizon:</b> Short-term (S), Mid-term (M), and Long-term (L)</p>						