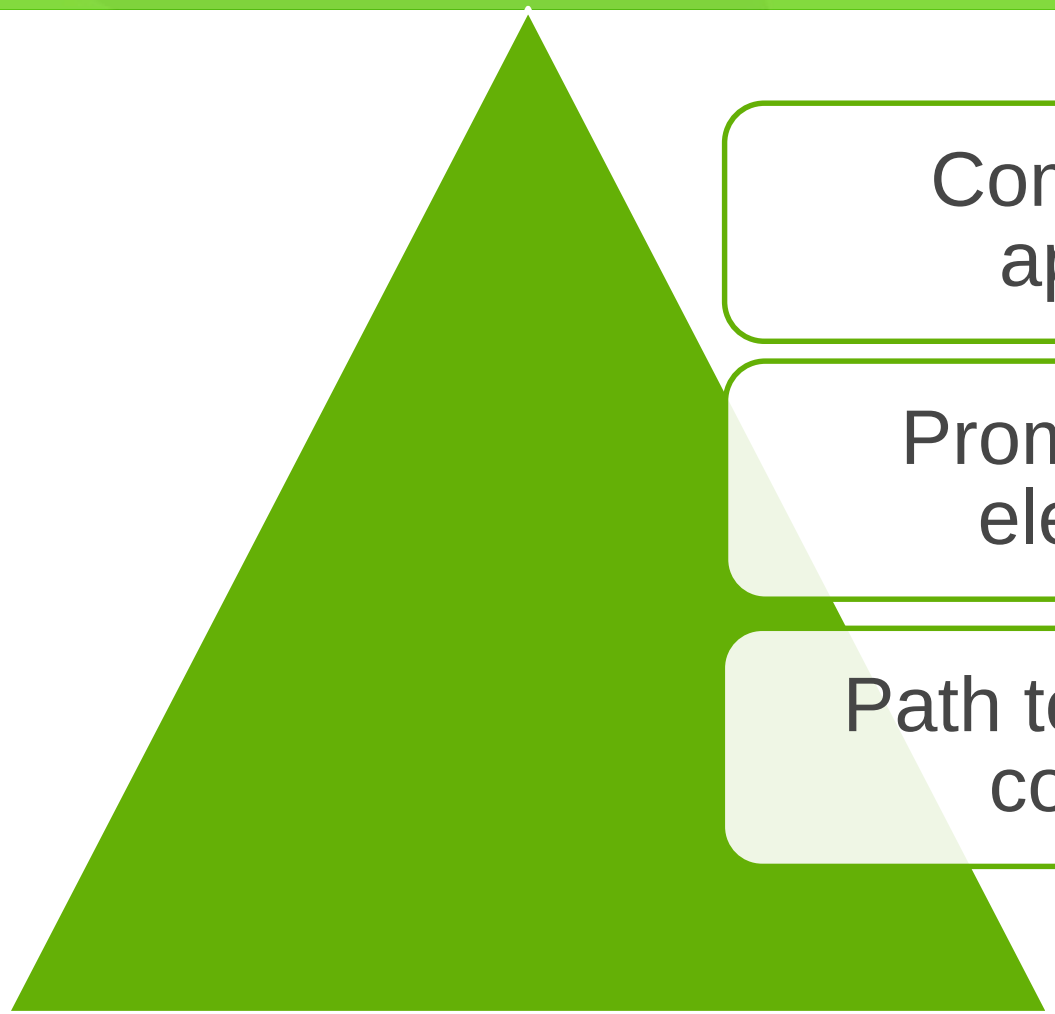
C&I Implementation Update

May 20, 2020

Agenda

- Introduction
- Continuous Energy Improvement
- Energy Optimization
- Equipment & Systems Performance Optimization
- New Construction
- Lighting

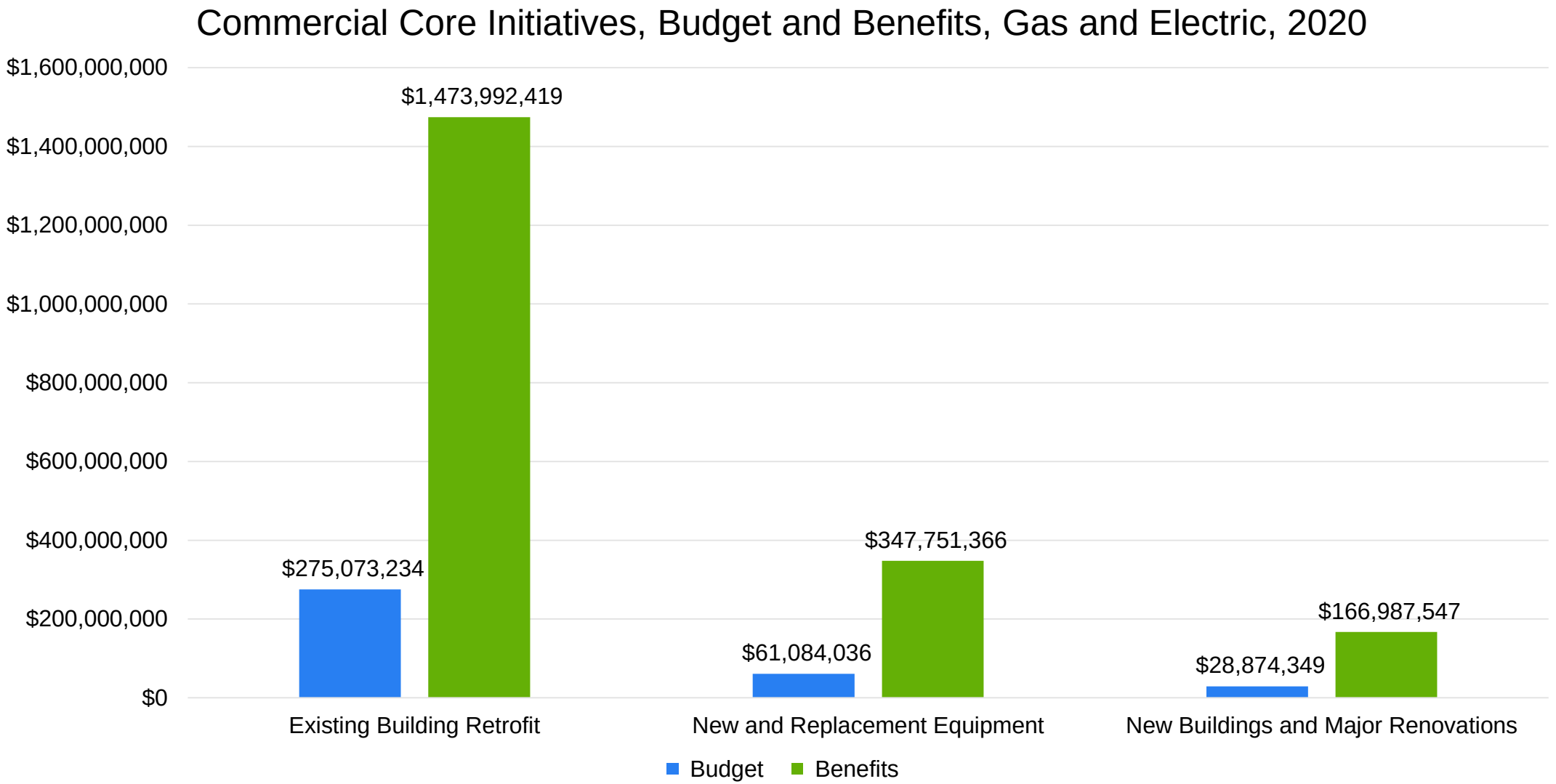
PA Priorities



- Comprehensive approaches
- Promote strategic electrification
- Path to net zero new construction

Goal is to help Massachusetts businesses to save energy!

Goals


Commercial Core Initiatives, Budget and Benefits, Gas and Electric, 2020
$1,600,000,000
$1,400,000,000
$1,200,000,000
$1,000,000,000
$800,000,000
$600,000,000
$400,000,000
$200,000,000
$0
$1,473,992,419
$275,073,234
$347,751,366
$61,084,036
$166,987,547
$28,874,349
Existing Building Retrofit
New and Replacement Equipment
New Buildings and Major Renovations
Budget
Benefits

Outline

Margaret Song
Cape Light Compact

Implementation Update

Continuous Energy Improvement

Zach Lippert
National Grid

Maryette Haggerty Perrault
Eversource

Equipment & Systems Performance Optimization (ESPO)

Energy Optimization (EO)

Grayson Bryant
National Grid

Kim Cullinane
Eversource

New Construction

David Gibbons
National Grid

Lighting

Erin Engelkemeyer
Eversource

Continuous Energy Improvement (CEI)

What is CEI?

- A process for improving energy performance
- Coaches facilitate peer-to-peer sharing of best practices
- Achieves O&M savings
- Compliments capital measures
- Also known as Strategic Energy Management (SEM)

Industrial and Waste Water Cohort Overview

- Six large industrial sites
- Kicked off a three-year commitment in May 2019
  - 9 cohort workshops
  - Energy modeling for each site
- Individualize coaching for each team throughput
- Three annual Energy Management Assessments

Year 1 Activities

May 2019

Workshop 1

Establishing a CEI Program

Participants and coaches were introduced, energy consuming equipment was identified and existing energy management efforts were discussed.

June 2019

Workshop 2

Strategies for Saving Energy

Participants and coaches discussed strategies for saving energy. Energy teams received data logging tool kits to be used on the treasure hunts.

July-Aug 2019

Treasure Hunts

Coaches worked with cross functional teams on site to do a comprehensive investigation of the facility looking for energy saving measures.

October 2019

Workshop 3

Tracking Energy Performance

Participants were introduced to the site specific energy models, identified key energy usage parameters and completed exercises using the online software tool.

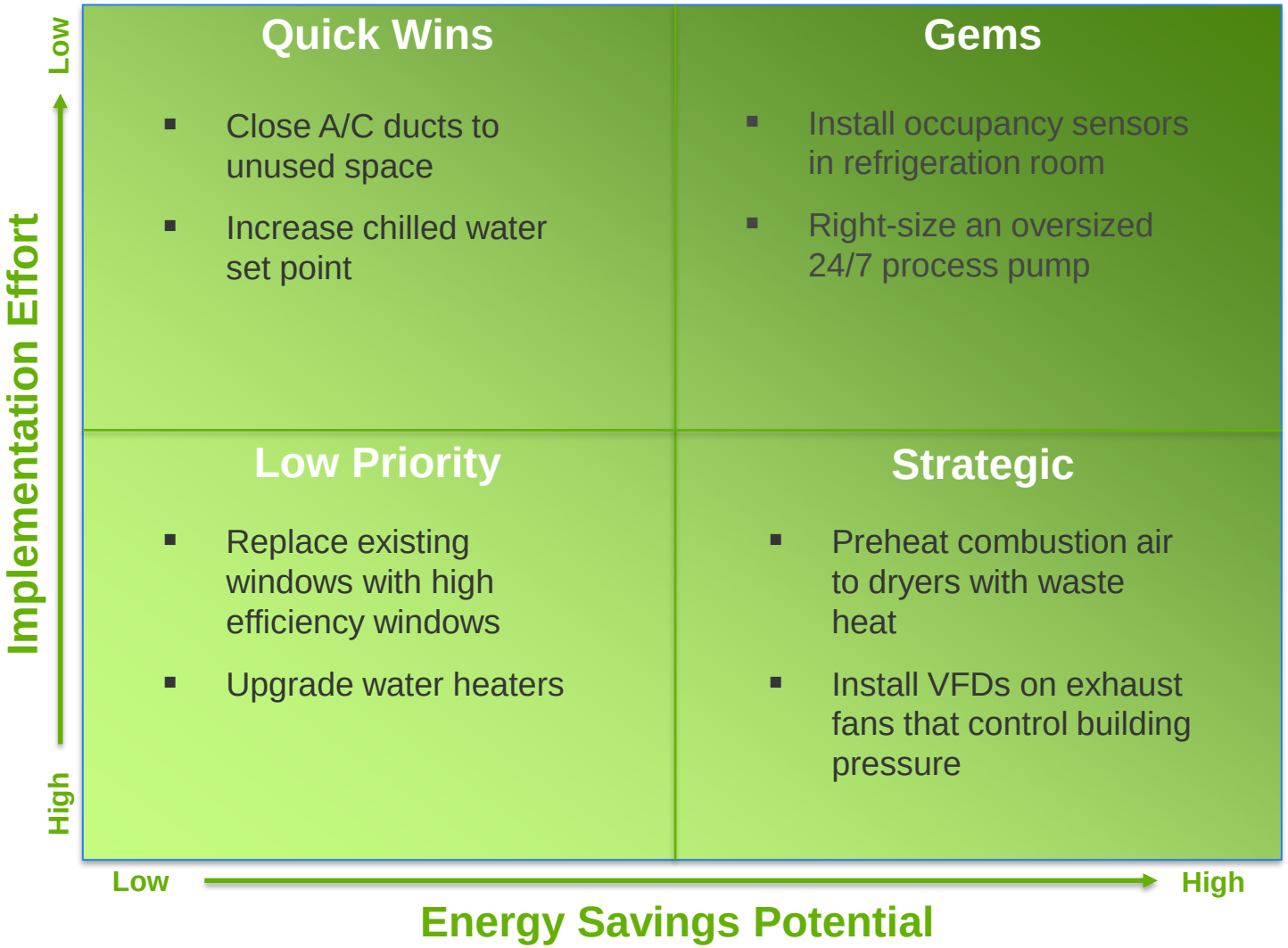
April 2020

Workshop 4

Employee Engagement

Coaches worked with participants to get managers and other personnel involved in sustaining energy measures.

Project Examples and Categories



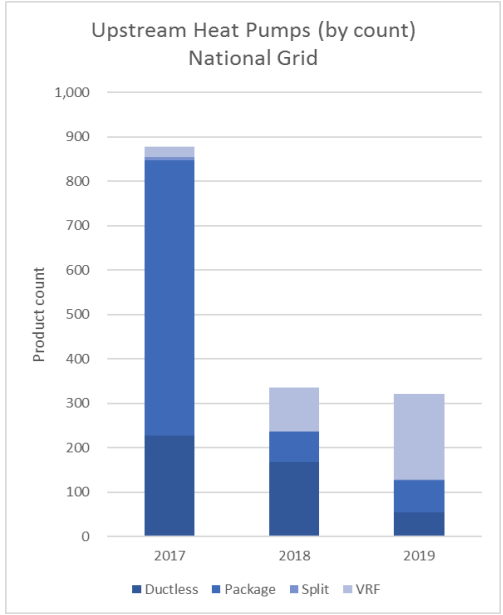
Moving Forward

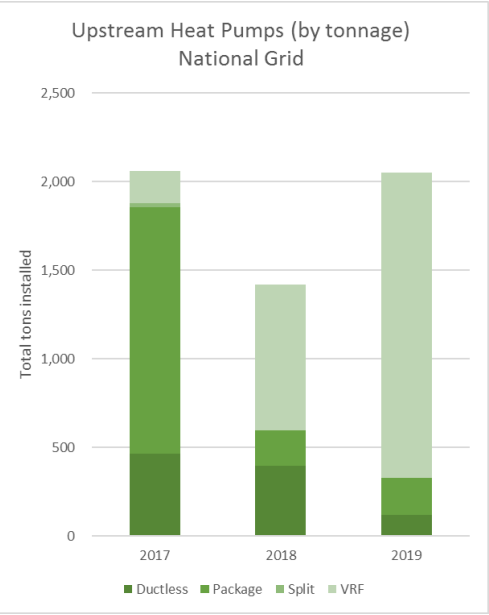
- Year 1 reports to be delivered in June
- Covid-19 adaptation
  - Workshop 4 was done via Microsoft Teams
  - Workshop 5 will likely be done remotely as well
- Two more years of coaching
- Five more workshops
- Three more annual reports

Energy Optimization:
New Heat Pump Offering

Recapping 2019 Results

- The PAs reported 1,275 heat pumps installed in buildings with commercial meters (bi-annual KPI #3), 4 of which were “fuel switching”
  - Distributors are rarely familiar with project specifics
- Observed an increase in VRF systems installed and a decrease in DMSHPs through the upstream pathway
- Office and multifamily spaces continue to be the most frequent space types, followed by retail and industrial.



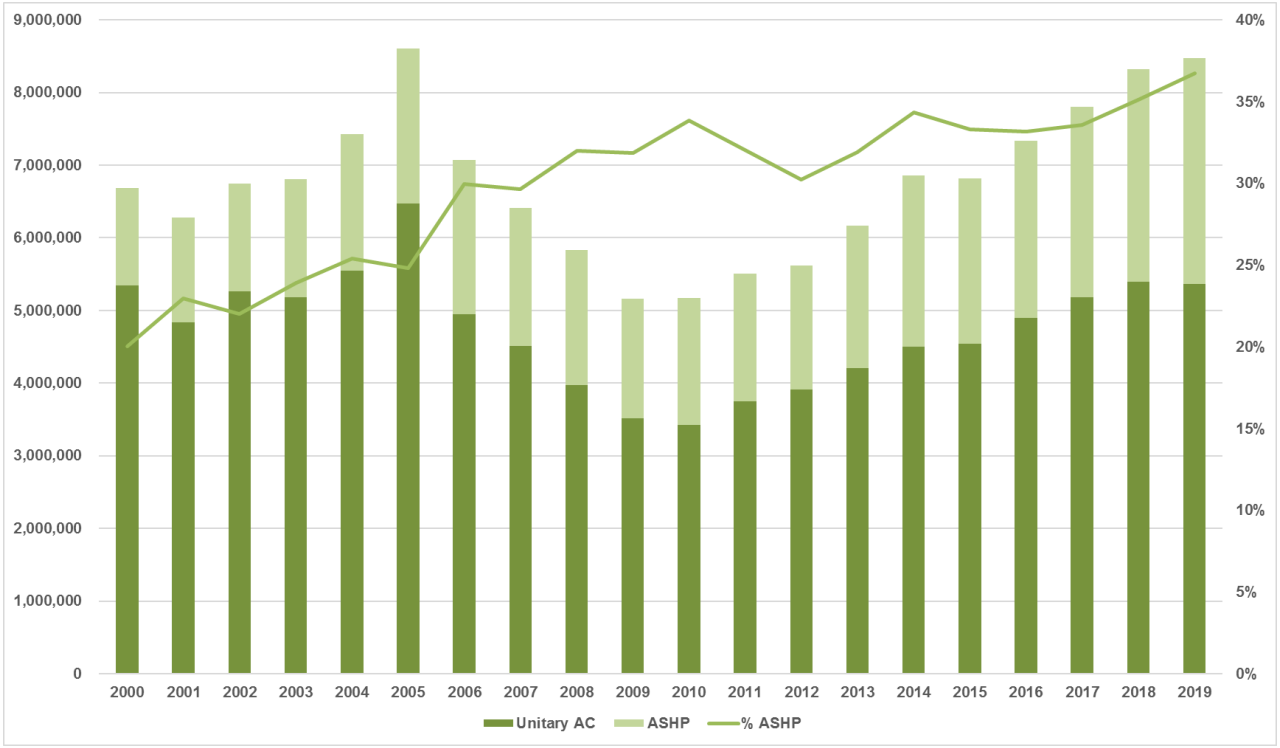


Goal of the New Pathway

- Prescriptive “downstream” pathway
  - Savings calculated based on project parameters
- Objective
  - Increase programmatic throughput of heat pump equipment
- Goals
  - Simplify inputs for customer/contractor while claiming savings for “energy optimization” and minimizing evaluation risk
  - Expand the number of entities using incentives to promote installations

Proportion of Heat Pump Shipments

Source: AHRI.com

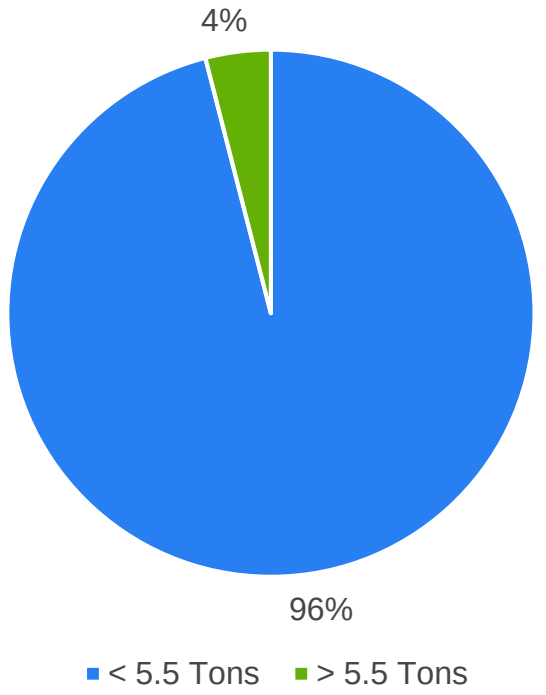


Scope of the New Pathway

- Targeting small commercial customers installing small heat pumps in modular or stand-alone applications
- Customer/contractor centered, project-based
- Adopting existing residential incentives
  - $250/ton for “standard” installations
  - $1,250/ton for “EO” installations

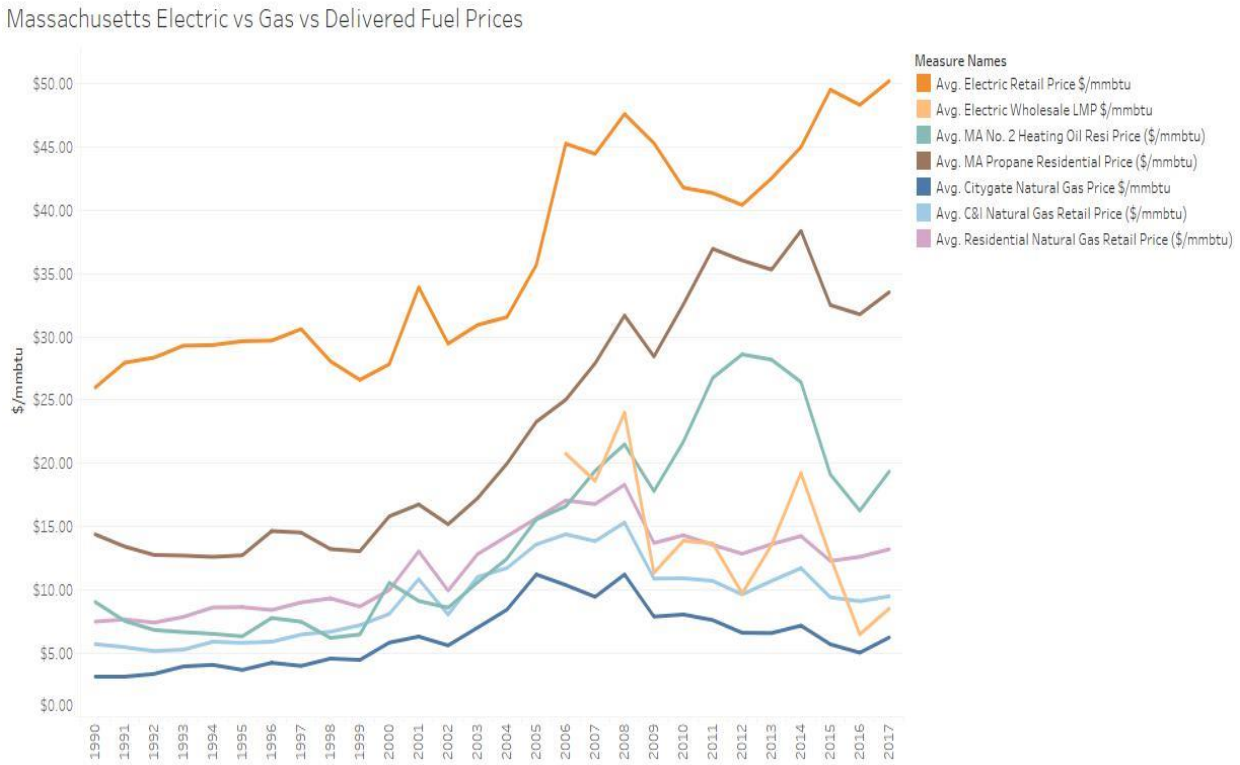
2014-2019 Central Air Conditioner and Heat Pump Sales (# of Units)

Source: AHRI.com



Barriers to Heat Pump Adoption

- Spark spread
  - Gas prices trending at historic low levels
- Existing systems / infrastructure
- Building envelope
  - Air-tightness & insulation have a greater impact on cost and customer satisfaction
  - Commercial weatherization is rarely cost-effective
- Most applicable for new construction and/or when a customer wants supplemental heating & air conditioning



Equipment & Systems Performance Optimization (ESPO)

Goal of the New Pathway

- All PA ESPO Working Group
  - Convenes weekly
  - Shares best practices & project updates
  - Collaborates on process & program improvements
  - Brings suggestions to C&IMC
- Joint PA Projects
  - Electric PA takes lead on project generation & ensures secondary PA is properly involved

Progressing Offerings

- Increased RCx interest to date!
- Development of additional Low Cost Tuning Measures (LCTM)
  - Brainstorming with vendors
  - Learning sessions with business partners
  - LCTMs under investigation
    - Heat Exchanger Cleaning (steam to hot water)
    - RTU Coil Cleaning (evaporator & condenser)
- Outreach to property owners & contractors
  - LCTM summary page marketing
  - Distribute to industry organizations & members

ESPO Challenges

- Low Cost Tuning Measure Track
  - Further adoption & expansion needed
    - Increase contractor awareness
    - Provide more gas measures
    - Further demonstrate validation of calculators
- Targeted Systems & Whole Building/Process Tuning Tracks
  - Tuning Investigation can result in ECMs outside ESPO scope
    - Controls upgrades may not qualify for incentives
- Monitoring Based Commissioning (MBCx)
  - Adoption requires fully functioning EMS
  - Quantifying savings to PA rigor

Notable Program Successes

- Variety of customers participating
  - Youth & Senior Centers
  - Hospitals & Universities
  - Biotech & Labs
  - Schools & Municipalities
  - Office Buildings
  - Industrial/Manufacturing
- Substantial inbound customer interest
- Increased provider pool
- Proven success in 2019
  - Over a dozen closed projects statewide representing more than 3.35M kWh in claimed savings

Next Steps

- Increase adoption of LCTM Track
  - Continue targeted Marketing & Outreach
  - Collaborate with Workforce Development team
- Continue collaboration with EMS Working Group
  - Align RCx & MBCx outcomes with EMS functionality
- Ease calculation rigor for MBCx customers
  - Develop standard requirements for pre & post trends
  - Investigate custom express tool development for top measures

New Construction

Why Revamp the NC Offerings?

Declining Savings

Code	kWh/ft²	Therm/ft²
IECC 2012	2.21	0.22
IECC 2015 + ISP	1.37	0.11
IECC 2018 + ISP	TBD	TBD

Investigate and Test New Approaches

The 3-Year Plan says PAs will

- Explore using Energy Use Intensity (EUI) as a tool for driving savings
- Explore basing savings and incentives on actual building performance versus modeled

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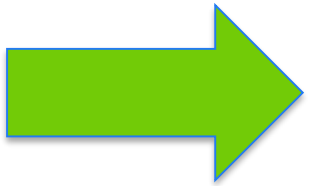
Zero net new construction is part of locally driven carbon reduction plans



Accelerate Trends & Respond to Customer Needs

Technology Primer

- Energy Use Intensity (kBtu/sf/yr)
- Similar to MPG - allows comparison from one building to another

EUI

- Passive House design focuses on robust insulation and air tightness, high-performing glazing, and simplified mechanical systems to achieve ultra low energy use

Passive House

- Buildings that consume as much energy as they produce over a 1 year period
- Other terms - zero net ready, zero net carbon, zero net emissions

Zero Net Energy

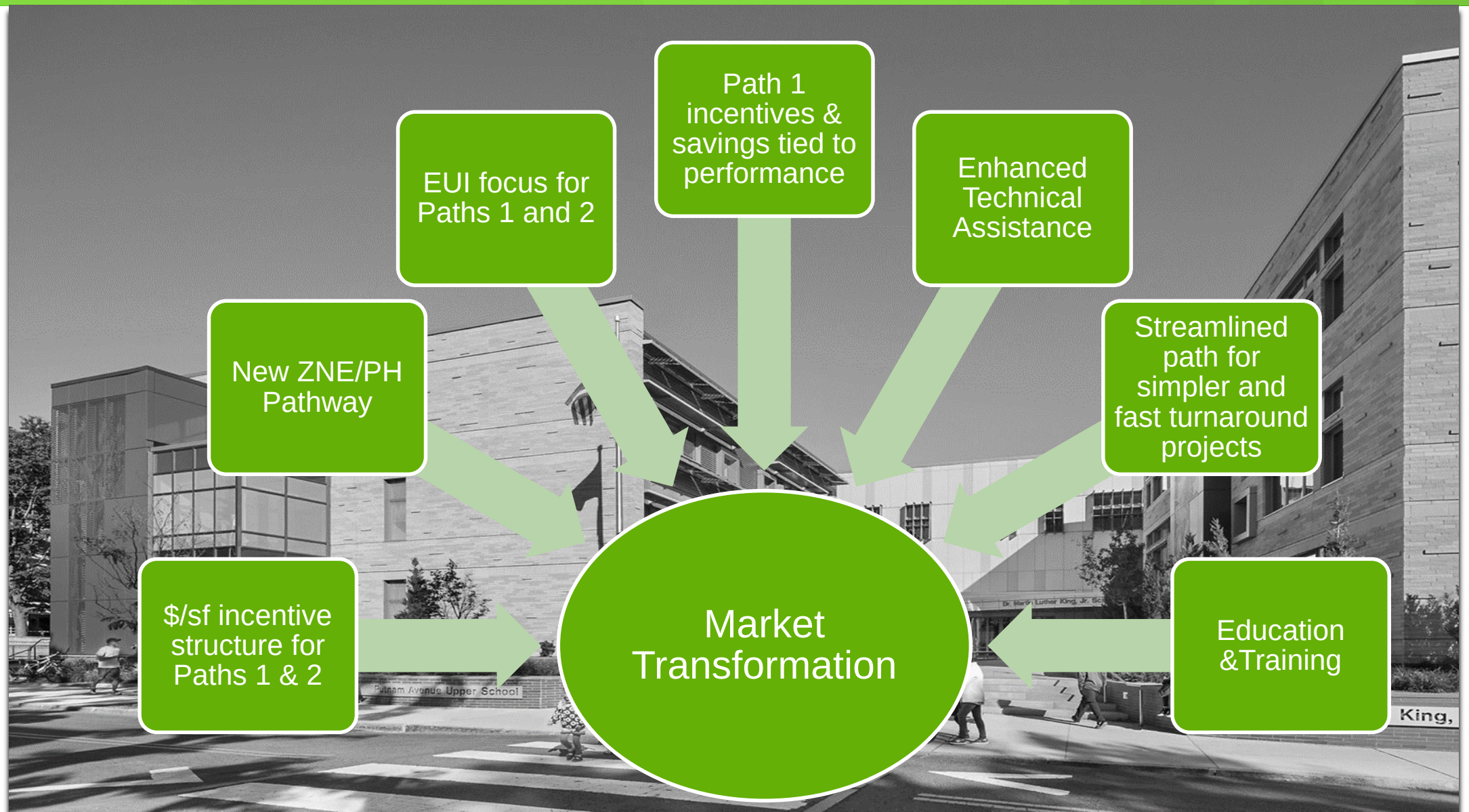
New Program Pathways

PAs must be able to reach all NC customers and building types

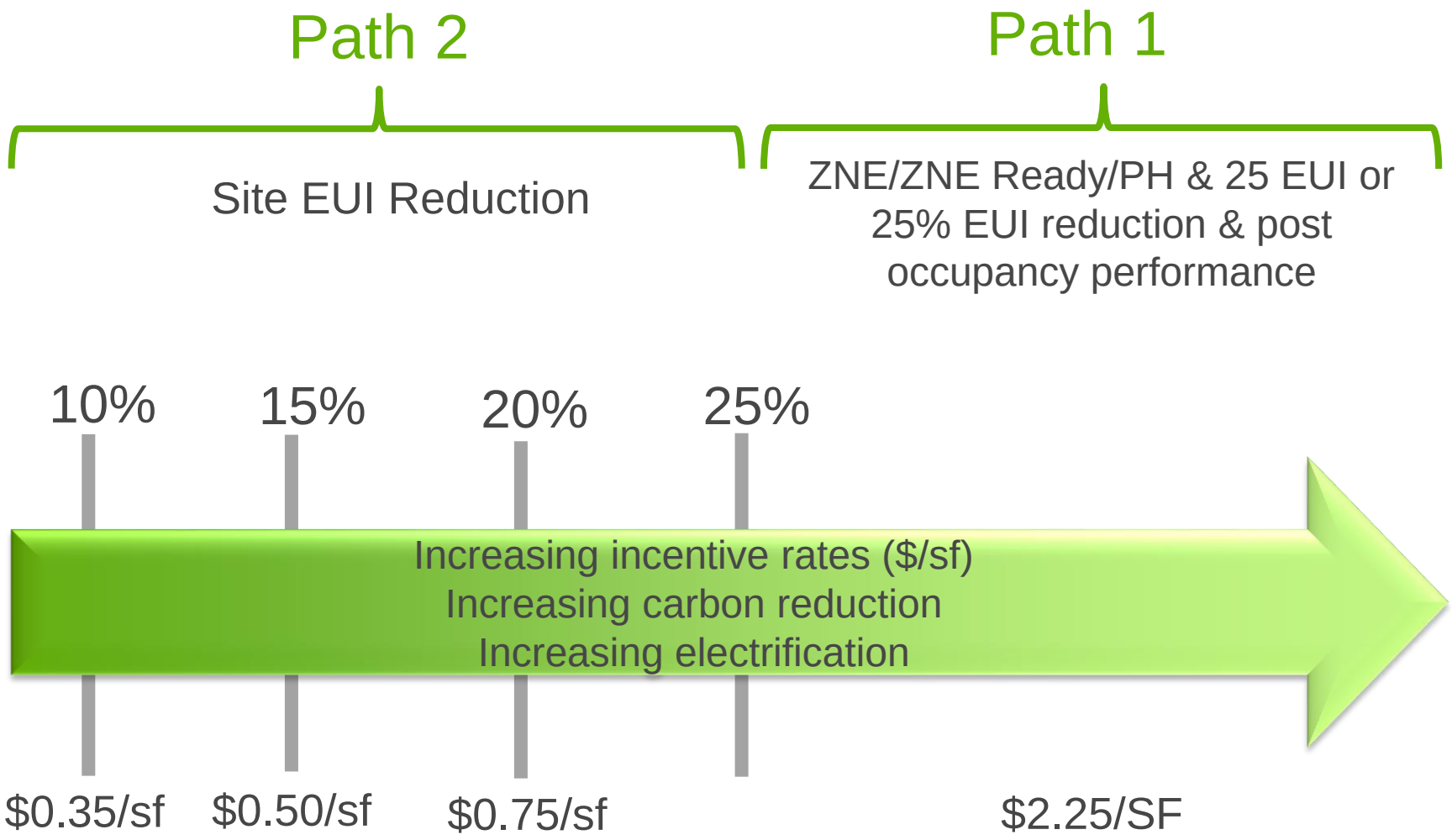
Version	Path 1	Path 2	Path 3	Path 4
New Pathways	Zero Net Energy / ZNE Ready / Passive House / Low EUI	Whole Building Modeled – Refocusing on EUI Reduction	Simplified Whole Building	Systems
Current Pathways	No targeted Path – projects supported through integrated design	Integrated Design – Large Building	Integrated Design – Small Building	Systems

Key program changes are in Paths 1 and 2

Major Changes



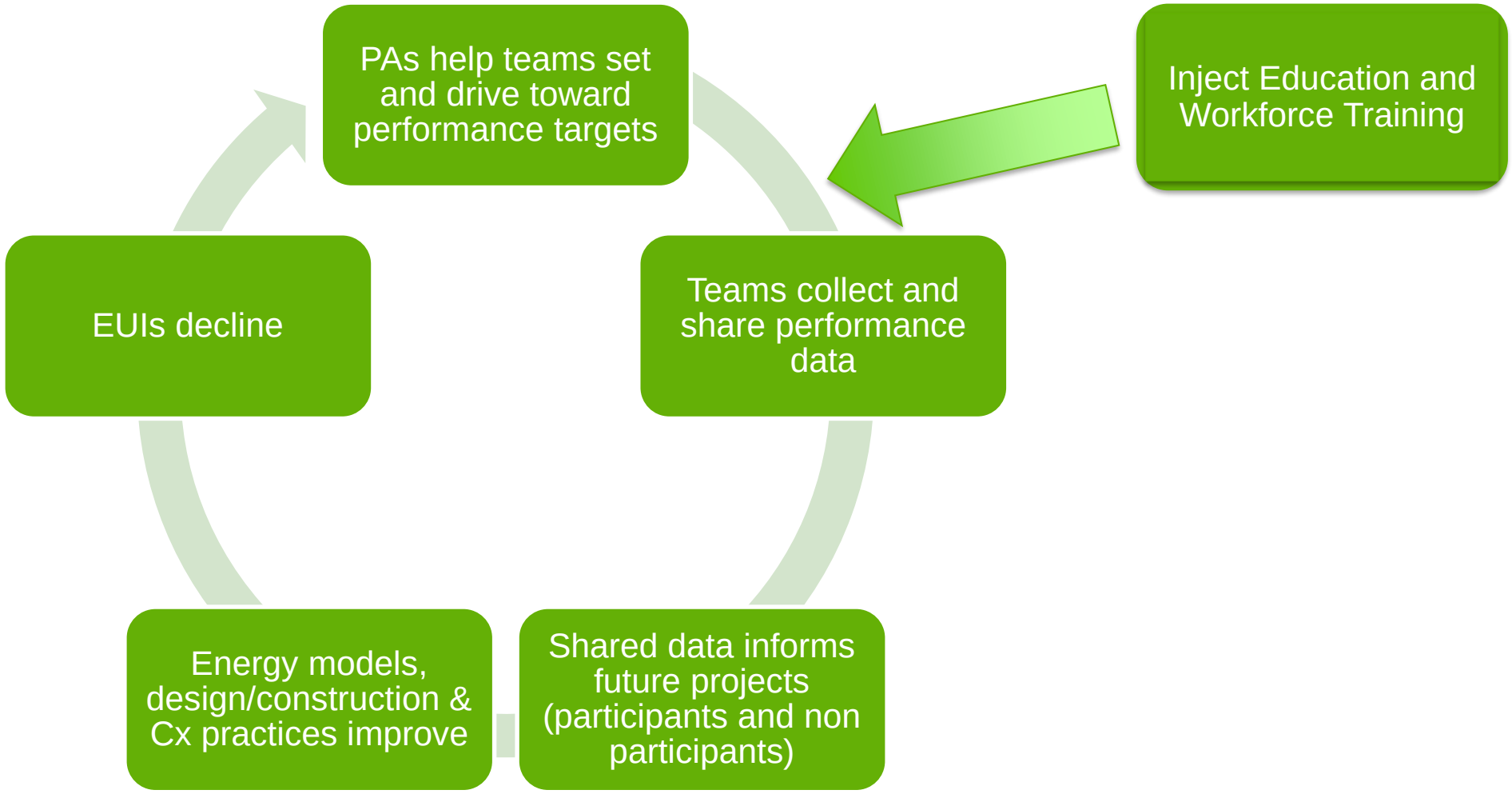
Key Program Change – Incentivizing Low Site EUIs



As EUI % reductions increase, so do incentive rates

Market Transformation

Data suggest that EUIs are not declining much over time, our goal is to bend that curve



Lighting

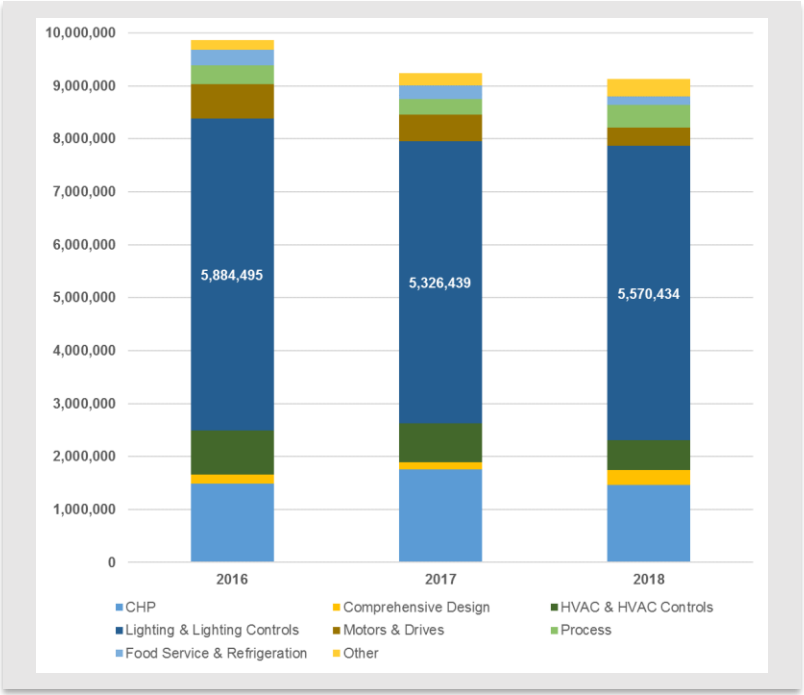
Areas of Focus

Harvest Remaining LED Screw-ins	Optimize Penetration of Fixture / Troffer Market	Promote More Control Products and Options
With LED Screw-ins becoming standard practice, harvest remaining opportunities.	With products costly and installation more complex, concerted effort needed to drive continued market penetration.	Controls technologies are maturing and standardizing thus creating an opportunity to increase adoption.

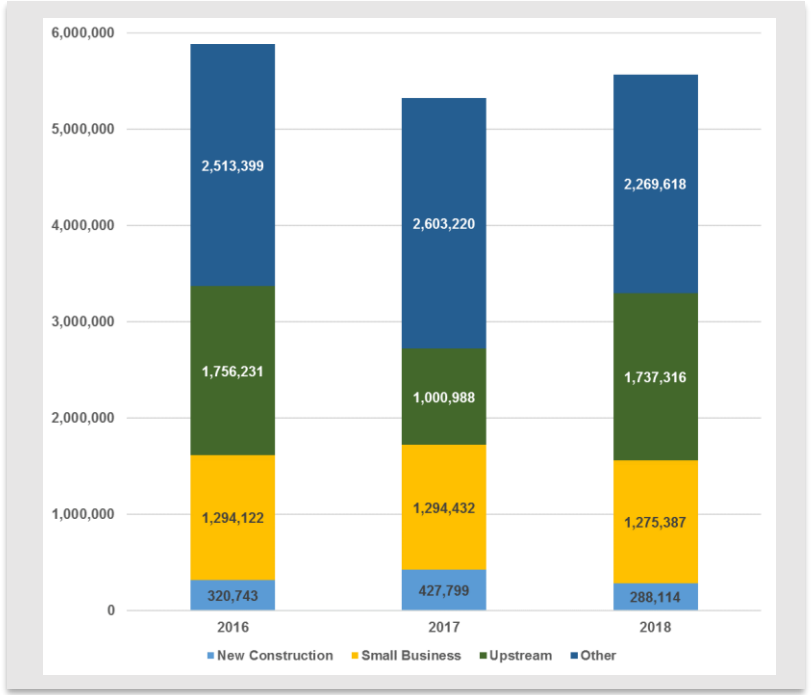
Historical Lighting Results

- Lighting continues to provide majority of C&I electric savings
- Variety of pathways to serve customers
- Balanced contributions across pathways

C&I Electric Savings by End Use (Lifetime MWh)

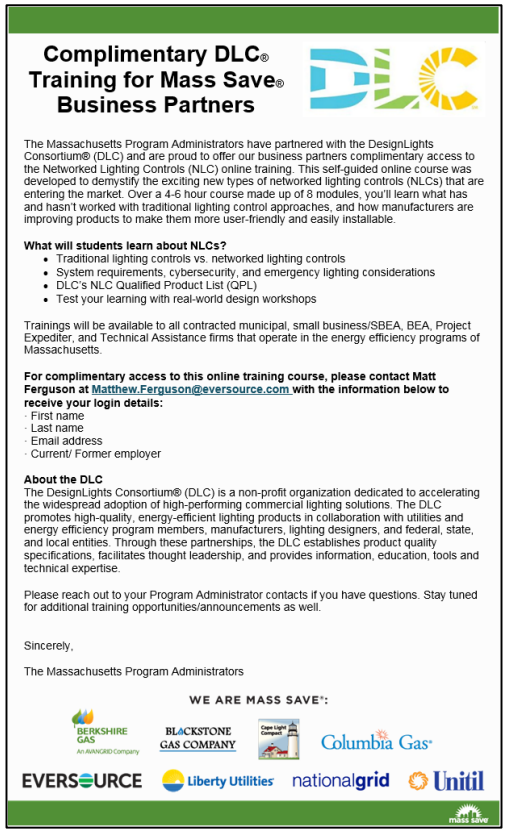


C&I Lighting Savings by Pathway (Lifetime MWh)



Training Activities

- Influencing customer choice and supporting a capable workforce
- Wide variety of venues, channels, and partners
  - Apr 27, 2019 – “Advanced Lighting Controls”, IBEW Local 103, Joint Apprentice Training Center, Dorchester, MA
  - May 7, 2019 – “Networked Lighting Controls for Installers”, MAEEP, Norwood, MA
  - May 8, 2019 – “Networked Lighting Controls for Installers”, MAEEP, Norwood, MA
  - May 18, 2019 – “Advanced Lighting Controls”, IBEW Local 103,Joint Apprentice Training Center, Dorchester, MA
  - Oct 21, 2019 – “Advanced Lighting Controls”, Westwood, MA
  - Nov 14, 2019 – “Controls & Exterior Lighting Products”, Distributor Appreciation Event, Natick, MA
  - April 2020 – “Networked Lighting Controls”, DesignLights Consortium online training
  - May 14, 2020 – “Codes, Controls, Compliance – Elements of Successful Lighting Control Designs” webinar, IES
  - TBD, 2020 -- “Automated Lighting Controls”, MAEEP, Norwood, MA



Complimentary DLC® Training for Mass Save® Business Partners

The Massachusetts Program Administrators have partnered with the DesignLights Consortium® (DLC) and are proud to offer our business partners complimentary access to the Networked Lighting Controls (NLC) online training. This self-guided online course was developed to demystify the exciting new types of networked lighting controls (NLCs) that are entering the market. Over a 4-6 hour course made up of 8 modules, you'll learn what has and hasn't worked with traditional lighting control approaches, and how manufacturers are improving products to make them more user-friendly and easily installable.

What will students learn about NLCs?

- Traditional lighting controls vs. networked lighting controls
- System requirements, cybersecurity, and emergency lighting considerations
- DLC's NLC Qualified Product List (QPL)
- Test your learning with real-world design workshops

Trainings will be available to all contracted municipal, small business/SBEA, BEA, Project Expediter, and Technical Assistance firms that operate in the energy efficiency programs of Massachusetts.

For complimentary access to this online training course, please contact Matt Ferguson at Matthew.Ferguson@eversource.com with the information below to receive your login details:

· First name
· Last name
· Email address
· Current/ Former employer

About the DLC

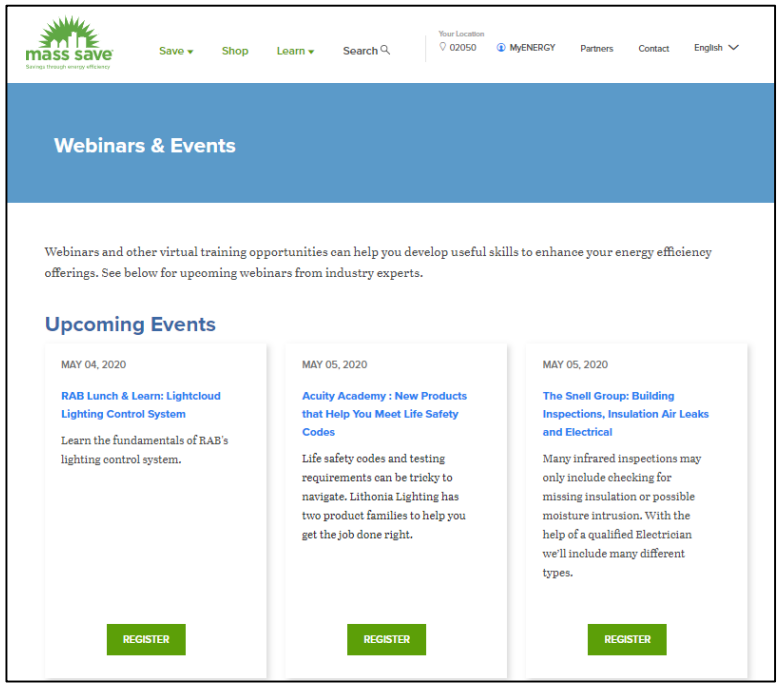
The DesignLights Consortium® (DLC) is a non-profit organization dedicated to accelerating the widespread adoption of high-performing commercial lighting solutions. The DLC promotes high-quality, energy-efficient lighting products in collaboration with utilities and energy efficiency program members, manufacturers, lighting designers, and federal, state, and local entities. Through these partnerships, the DLC establishes product quality specifications, facilitates thought leadership, and provides information, education, tools and technical expertise.

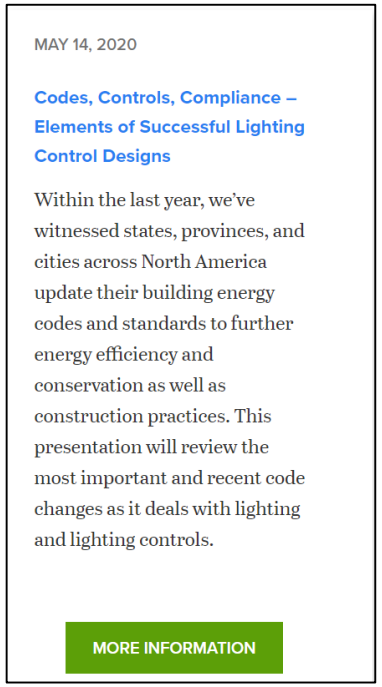
Please reach out to your Program Administrator contacts if you have questions. Stay tuned for additional training opportunities/announcements as well.

Sincerely,

The Massachusetts Program Administrators

WE ARE MASS SAVE®:





Promotions

Massachusetts & Rhode Island Commercial Upstream Lighting Initiative

Extra incentives available from March 1, 2020 - May 31, 2020

It's your time to shine.

For a limited time, the Sponsors of Mass Save® and National Grid in Rhode Island are providing higher incentives on lighting equipment, **helping you sell more while customers save more.**

Check the chart below to see which equipment qualifies and the promotional incentive for each one. Keep in mind, these incentives only last a limited time, so act quickly to get the higher incentive for your customers before this promotion fades out.

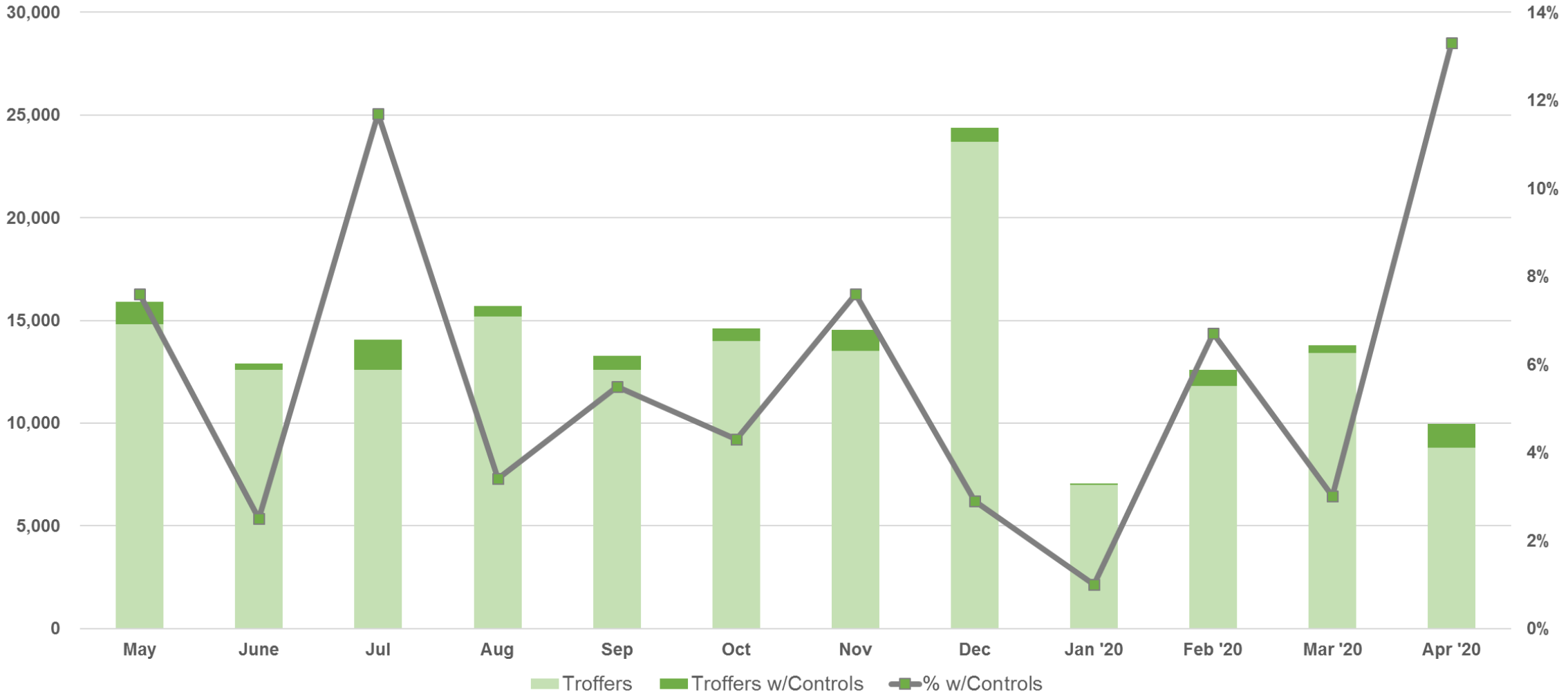
Questions? Send us an email. Upstreamlighting@Clearesult.com

Product Type ($15 Minimum Customer Contribution)	Incentive
1x4, 2x2, 2x4 LED Troffer w/ Controls DLC - Standard	$ 90.00
1x4, 2x2, 2x4 LED Troffer w/ Controls DLC - Premium	$ 100.00

*Special offer is only available for sales made during 3/1/20-5/31/20 and installed at an eligible Massachusetts or Rhode Island commercial location. In Rhode Island, these programs are funded by the energy efficiency charge on all customers' utility bills, in accordance with Rhode Island law.

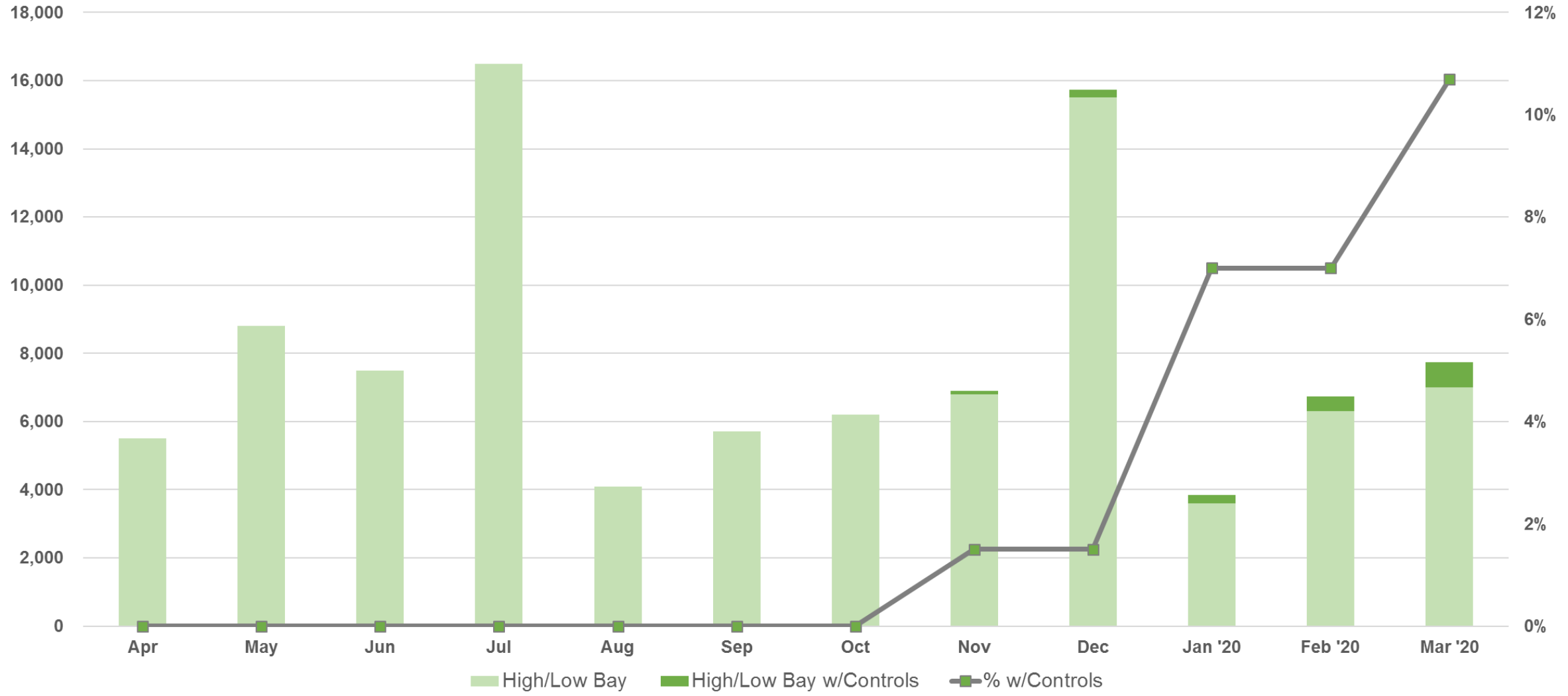
Linear Fixture Trends

Troffer Sales Quantities



High/Low Bay Fixture Trends

High/Low Bay Sales Quantities



Planning For The Future

Goal is to create a portfolio of pathways, products / measures, and incentives that:

- serves a broader range of customers' needs / interests
- streamlines participation for all involved parties – contractors, distributors, customers
- addresses the main barriers to participation
- is more comprehensive in the range of offerings available
- better aligns with market/industry practices and processes
- influences workforce development