MA ENERGY EFFICIENCY ADVISORY COUNCIL

→ CONSULTANT TEAM

C&I TRANSITION PLAN: BEYOND LIGHTING

▶ **May 20, 2020**

www.ma-eeac.org

INTRO/AGENDA

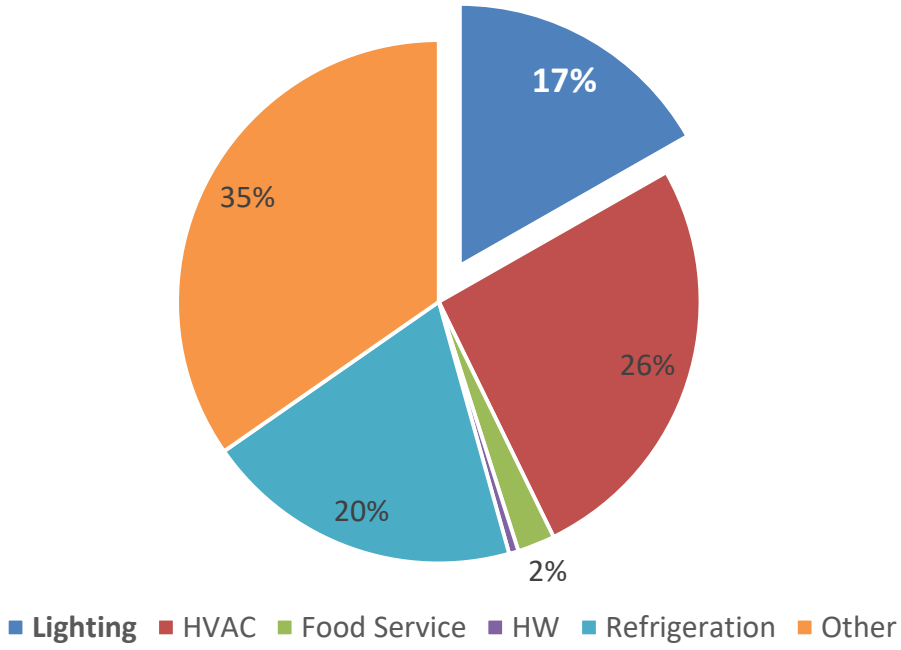
- **C&I savings vs. C&I usage**
  - Lighting dominant
  - Need to pivot to other end-use savings
- **Need Fundamental Market Transformation**
  - Commodity-style approach will only get us so far
  - Short, Mid, and Long-term plans for how to transform the market
- **Workforce is a <u>critical</u> enabling investment for deeper savings**

Adam Jacobs *- EEAC Consulting Team*

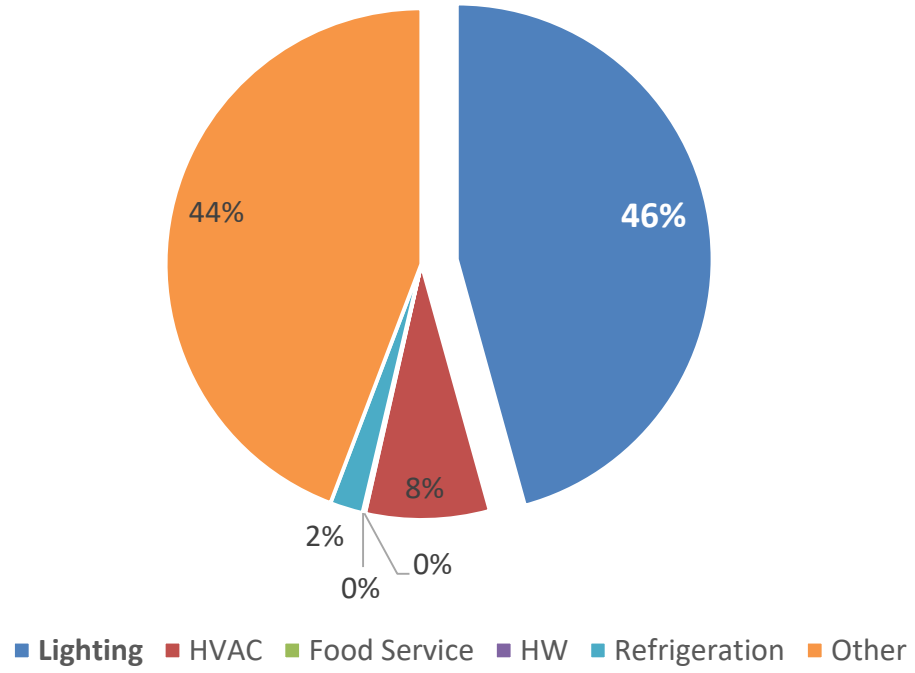
C&I USAGE VS C&I SAVINGS

- **Lighting was 17% of New England commercial electric consumption in 2012 (even less for industrial), and still makes up 46% of planned net lifetime savings**

CBECs 2012 - New England Electric Use



MA 2019-2021 Plan - Electric Savings



NEED TO GO DEEPER

17%
lighting

83%
everything
else

GOING DEEPER IS DIFFICULT – KEY PERFORMANCE INDICATORS

- **KPI #4 – less than 5% of C&I lighting projects had controls in 2019**
  - Upstream is 91% of project volume and delivers 2% of projects with controls
  - Upstream is easy for participants but hard to push customers to better solutions

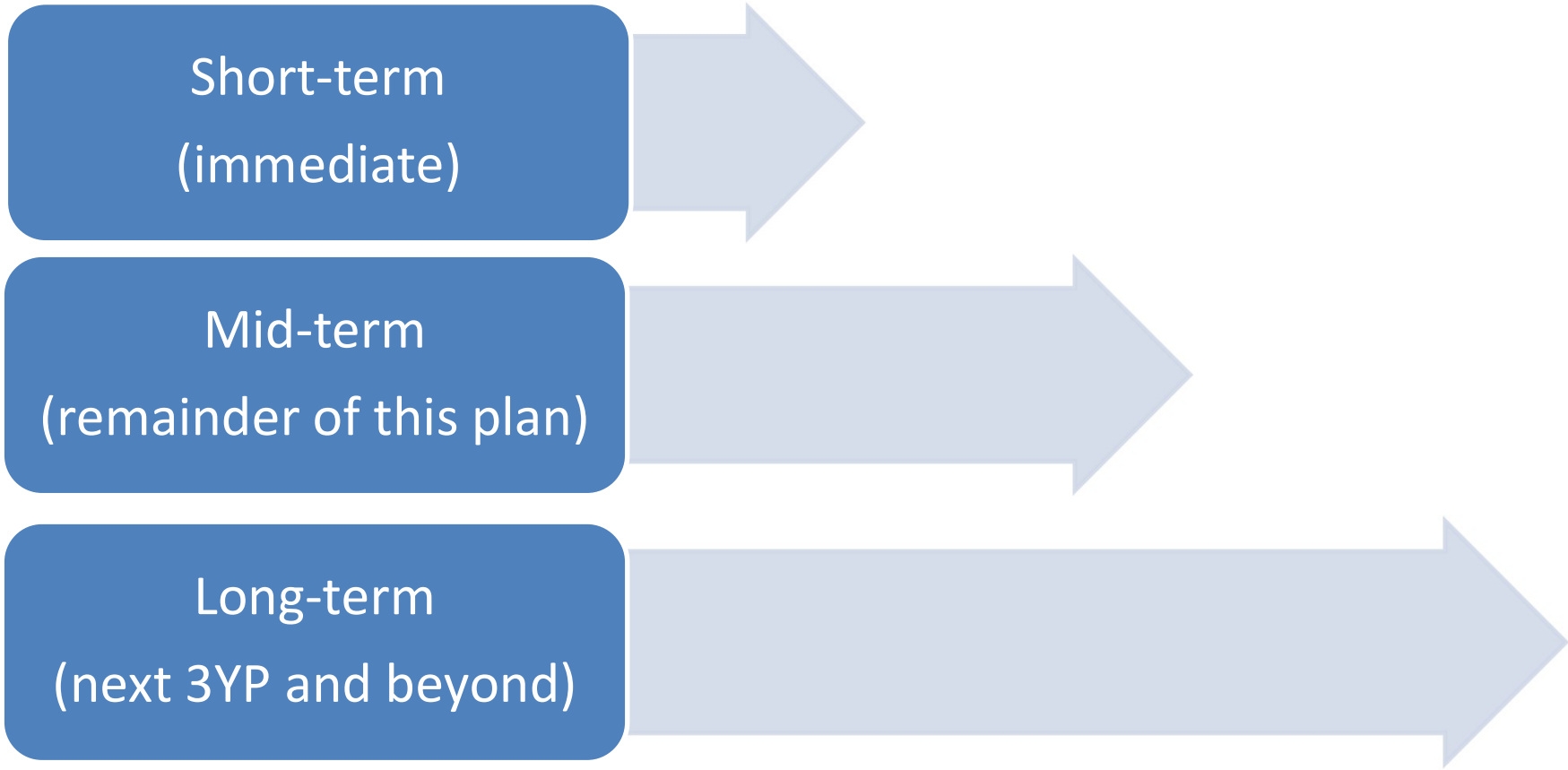
- **KPI #5 – only achieved 75% of planned custom HVAC electric and 57% of custom gas savings in 2019**
  - HVAC savings have been declining
  - goal was for rebound this plan cycle

- **KPI #6 – over 88% of small business electric savings was lighting in 2019**

MARKET TRANSFORMATION – EASY THINGS ALONE WILL NOT MEET GOALS

Source: PA October 2019 EEAC Presentation

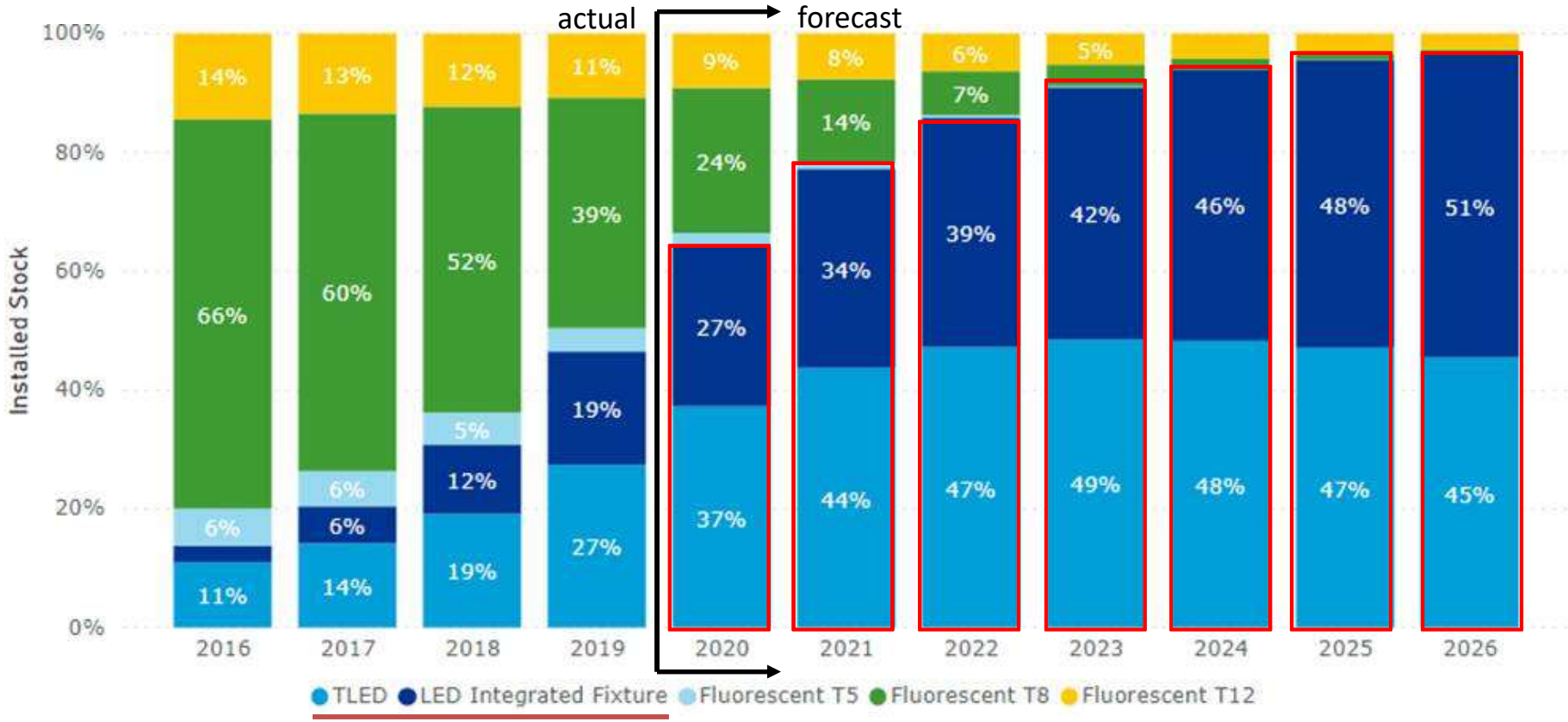
MARKET TRANSFORMATION – THREE DIFFERENT TIME HORIZONS



SHORT-TERM… NOT A BAD TIME TO TAKE A STEP BACK

SHORT-TERM: PRESERVE OPPORTUNITY FOR BETTER LIGHTING SOLUTIONS

2020 Council Priority: increasing the percentage of lighting projects that include controls towards a goal of 50% penetration



Source: DNV GL Massachusetts Lighting Market Model

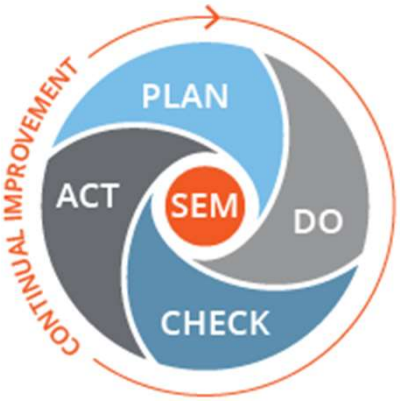
SHORT-TERM: FOCUS ON WORKFORCE

- **Several PA-sponsored trainings for C&I vendors in response to COVID:**

- **More on this later…**

MID-TERM: DOUBLE DOWN ON GOOD THINGS WE'RE ALREADY DOING

- **C&I programs already experimenting with program enhancements**
  - New construction redesign w/ EUI targets
  - Savings from O&M/behavior measures
  - Active Demand Reductions
- **Promoting alternative fuel CHP like biogas**



MID-TERM: THINGS WE KNOW ARE IMPORTANT BUT HAVEN'T FIGURED OUT

- **Energy Management Systems (EMS) and controls critical**
  - Significant savings from controls, need clarity on baselines

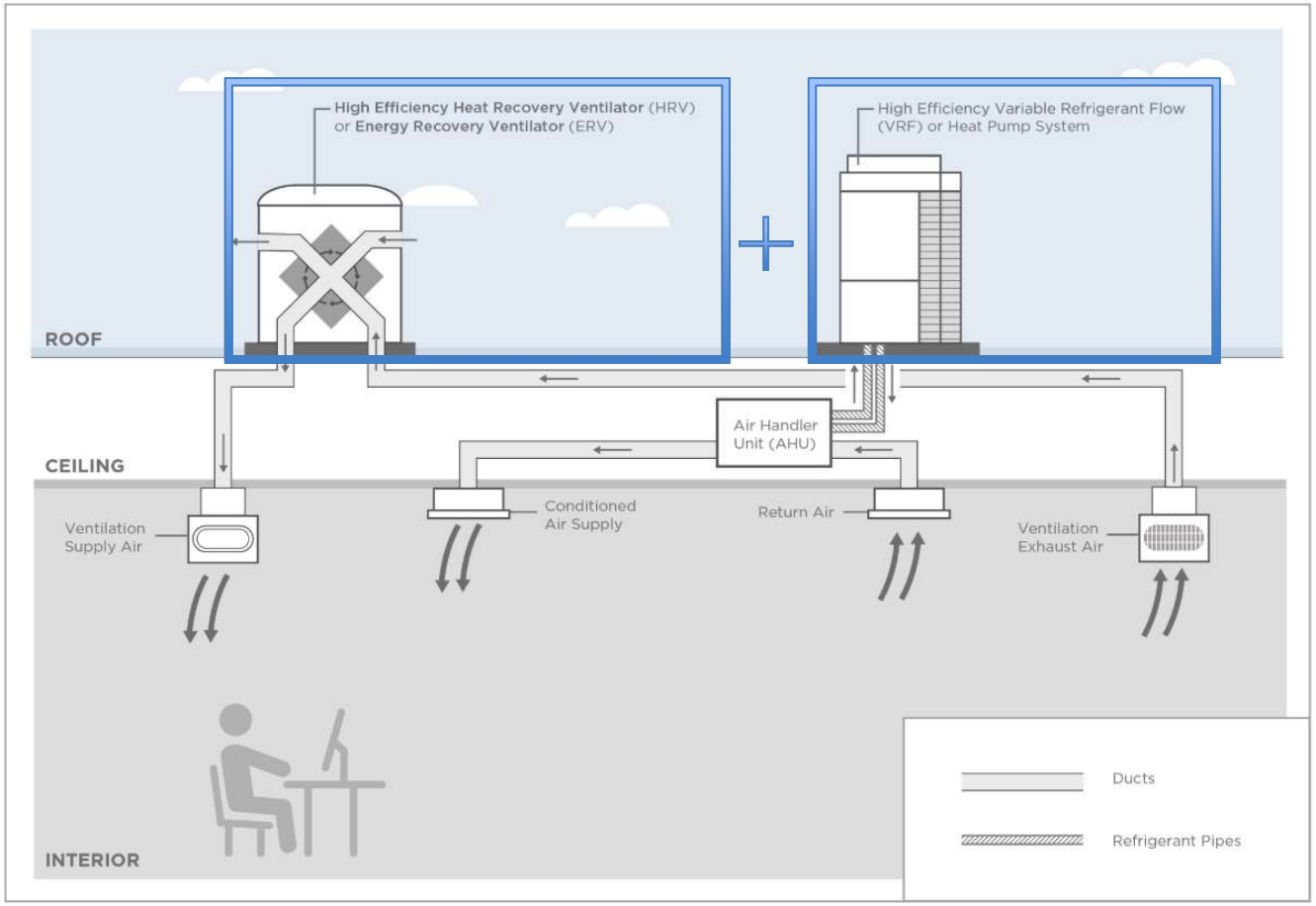
PUGET SOUND ENERGY

HVAC CONTROLS UPGRADE INCENTIVE		
INCENTIVE DESCRIPTION	**PSE ELECTRIC (OR COMBINED ELECTRIC & NATURAL GAS SERVICE)**	**PSE NATURAL GAS SERVICE ONLY**
Maximum Total Incentive = Base + Performance	50 percent of total project cost	25 percent of total project cost
Base Incentive (Based on 5 percent whole building savings*)	$0.35 per kilowatt-hour (kWh) saved (+ $4.70 per therm saved)	$4.70 per therm saved
Maximum Base Incentive	35 percent of cost	15 percent of cost
Performance Incentive (Based on first year whole building savings)	Based on actual percentage of whole building savings greater than six percent	$4.70 per therm saved

MID-TERM: THINGS WE KNOW ARE IMPORTANT BUT HAVEN'T FIGURED OUT

► Energy Optimization and Fuel switching for C&I

Dedicated outdoor air system w/ heat recovery



VRF/ heat pump

Source: NEEA Very High Efficiency Dedicated Outside Air Systems

MID-TERM: THINGS WE KNOW ARE IMPORTANT BUT HAVEN'T FIGURED OUT

- Demand Response: cross-promoting is a good start
- To grow ADR: need coordinated and/or integrated delivery

ACEEE Levels of EE/DR Integration

Source: ACEEE Integrated Energy Efficiency and Demand Response Programs

MID-TERM: THINGS WE KNOW ARE IMPORTANT BUT HAVEN'T FIGURED OUT

- **Determining the role of traditional CHP in climate goals**
  - Tipping point for emissions benefits; Renewable fuel or bust?

Source: Greater Lawrence Sewer District CHP Presentation at 2020 RI Annual CHP Meeting

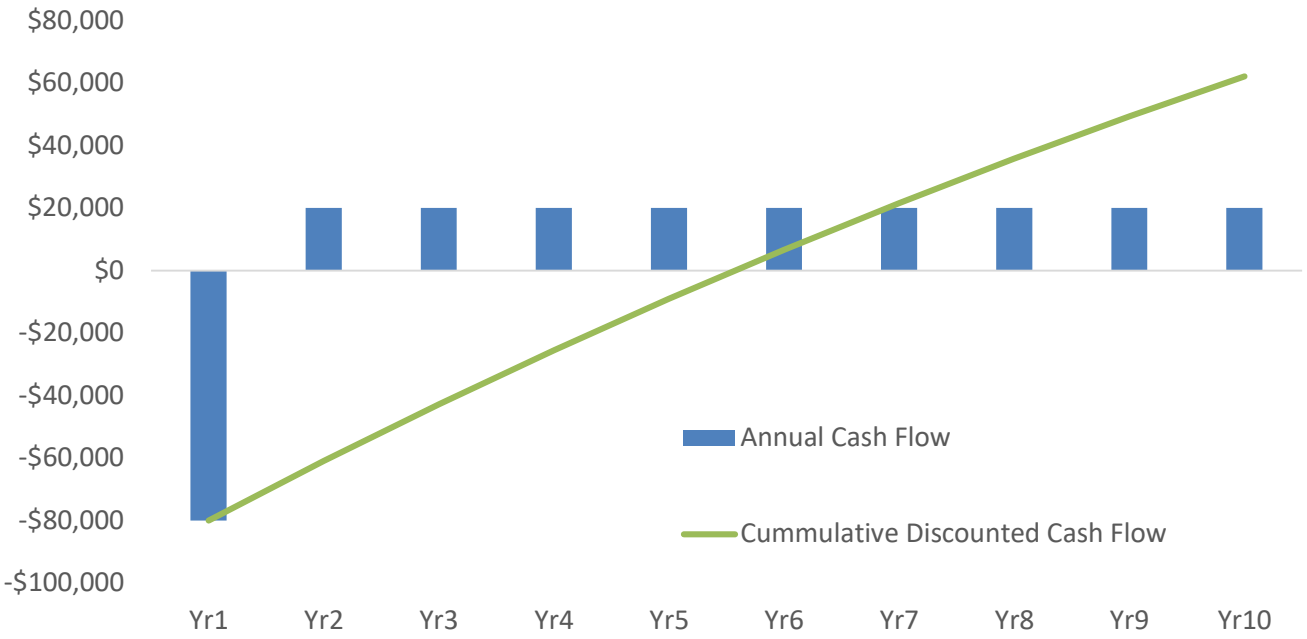
LONG-TERM: DEEP ENERGY RETROFITS

- **Need to go deeper on savings; need to find ways to make this appealing to more customers**
  - Rocky Mountain Institute defines *Deep Energy Retrofits* as 50% savings; heavy emphasis on building envelope and electrification
  - Carbon Free Boston says ZNE construction needed… also says 85% of 2050 build stock exists today and need deep energy retrofits

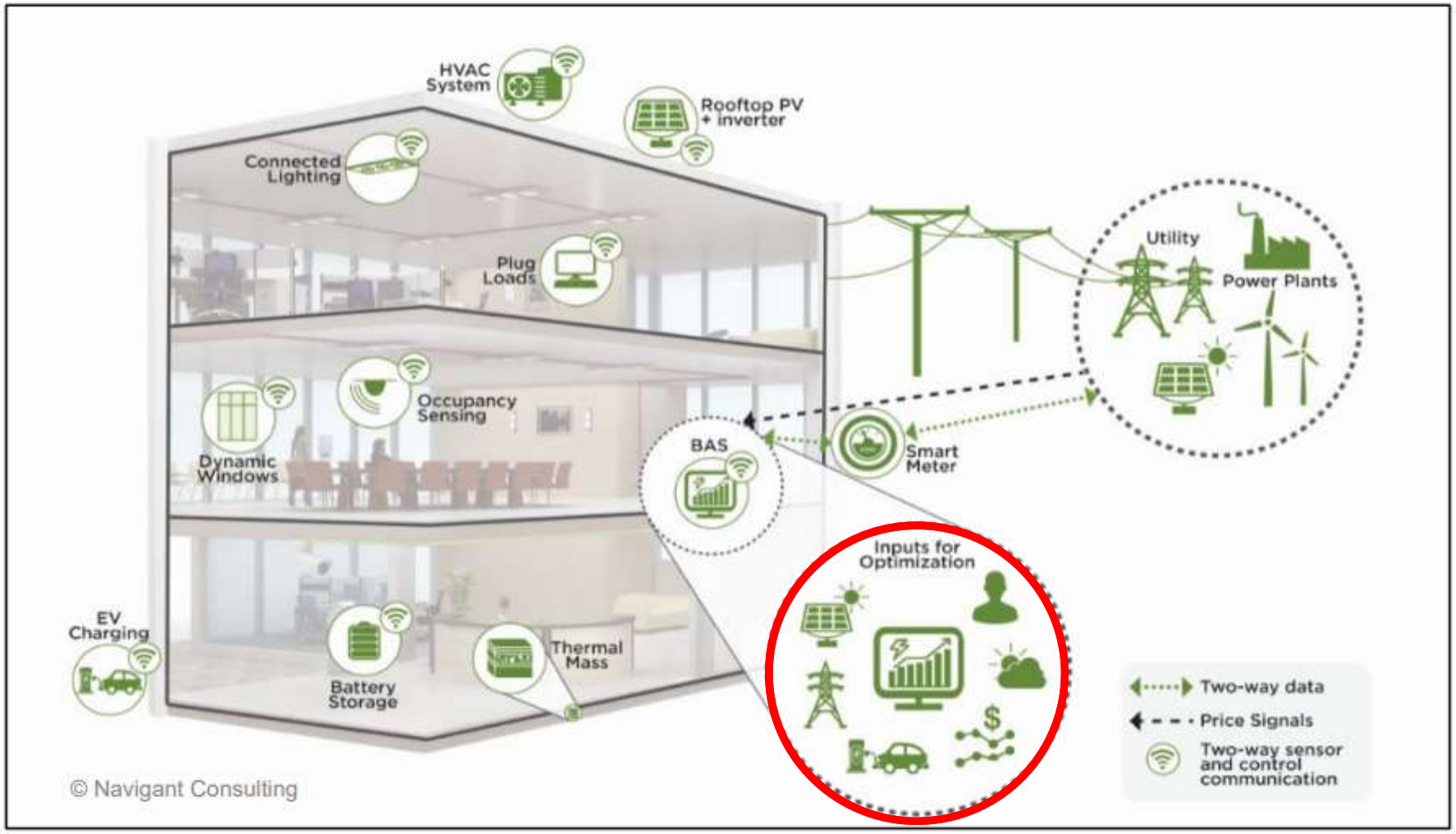
- **How do we close that gap?**
  - Move more customers away from simple measures towards comprehensive retrofits
    - Small Business Turnkey participant customers save more than twice as much as Upstream participants
  - Deep Energy Retrofits will help make buildings Zero Net Energy ready

LONG TERM: FINANCE OPTIONS TO PAY FOR COMPREHENSIVENESS

- **Financial instruments abound (on-bill finance, C PACE, Energy savings performance contracts, etc.)**
- **Key is to bundle measures with short and long paybacks to get a reasonable <u>average</u> payback for customers**



LONG-TERM: GRID INTERACTIVE EFFICIENT BUILDINGS



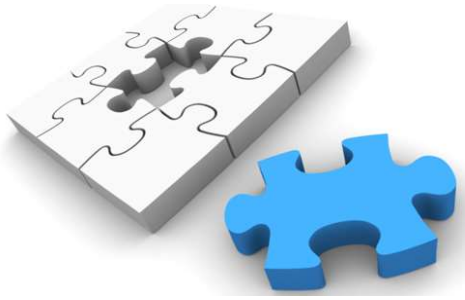
Source: US DOE Grid Interactive Efficient Buildings (April 2019)

LONG-TERM: INVESTING IN OUR FUTURE WORKFORCE IS CRITICAL

- **79% of employers reported that employees spend some of their time on C&I buildings**
- **Increasing demand for interdisciplinary knowledge**
  - "*This gap is preventing many buildings from operating at maximum efficiency*"

Massachusetts Energy Efficiency Workforce Development Needs Assessment

PRODUCED FOR THE MASSACHUSETTS PROGRAM ADMINISTRATORS



- **Need to spend much more on workforce development**
  - Mass Save spent $1.5 million between 2013-2018 (0.05% of budget)
  - PG&E spent $10.7 million in 2018 alone (2.8% of budget)

Source: Mass Save Workforce Development Needs Assessment

SUMMARY

- **Short-term: Use this time productively**
  - Pivot away from lighting savings
  - Train vendors and customers on operational best practices to lay foundation for market transformation

- **Mid-term: Shifts from equipment to operational savings and EO**
  - Double down on the good things like ESPO, SEM, NC redesign
  - Answer the hard questions like Energy Optimization and integrating EE/ADR

- **Long-term: Nobody said it would be easy**
  - Need to be more comprehensive and deliver deeper savings
  - Use financing and bundle measures w/ short and long paybacks
  - Workforce is critical to success

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QUESTIONS