



# Commercial New Construction: Supporting Electrification and Ultra Low EUIs with Enhanced Incentives

WE ARE MASS SAVE®:



# We look forward to hearing from you

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



Q&A



# Agenda

LEGISLATIVE/REGULATORY/POLICY CONTEXT

OUR MAIN FOCUS: HEAT PUMPS AND EUI

PARTICIPATION PATHWAY DETAILS

COSTS

A NOTE ON MULTI-FAMILY SUPPORT

# Legislative/Regulatory/Policy Context

## New Building Codes



## Local Ordinances/Policies



Zero Net Carbon Building Zoning Initiative

## State Legislation

AN ACT CREATING A NEXT-GENERATION ROADMAP FOR MASSACHUSETTS CLIMATE POLICY.

## Federal Policy

**INFLATION REDUCTION ACT OF 2022**

Biden's Goal: Net zero emissions economy by no later than 2050

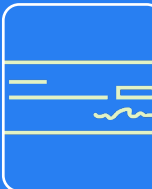
# Mass Save Commercial New Construction & Major Renovation Program Overview



**Building Electrification/Decarbonization**  
(Heat pumps)



**Low Energy Use Intensity (EUI) and Net Zero**




**Three paths to accommodate project types and customers**

## Heat Pump Support Levels are Significant

### Heat Pump Incentives for Commercial New Construction/Major Renovation Projects

Air source heat pumps:	\$800/ton
Variable refrigerant flow (VRF):	\$1,200/ton
Ground source heat pumps:	\$4,500/ton

# Definitions



## ZERO NET ENERGY BUILDING

**Buildings that produce as much energy as they consume over a year**

Heat pumps, LED lighting, improved insulation – lead to lower building energy needs that can be offset by solar energy production



## EUI (Energy Use Intensity)

**A measure of a building's total annual energy use divided by its square footage (Annual kBtu/sf)**

Similar to a miles per gallon metric, but for buildings

# Understanding Zero Net Energy Buildings: Finding the Right Balance & Optimization

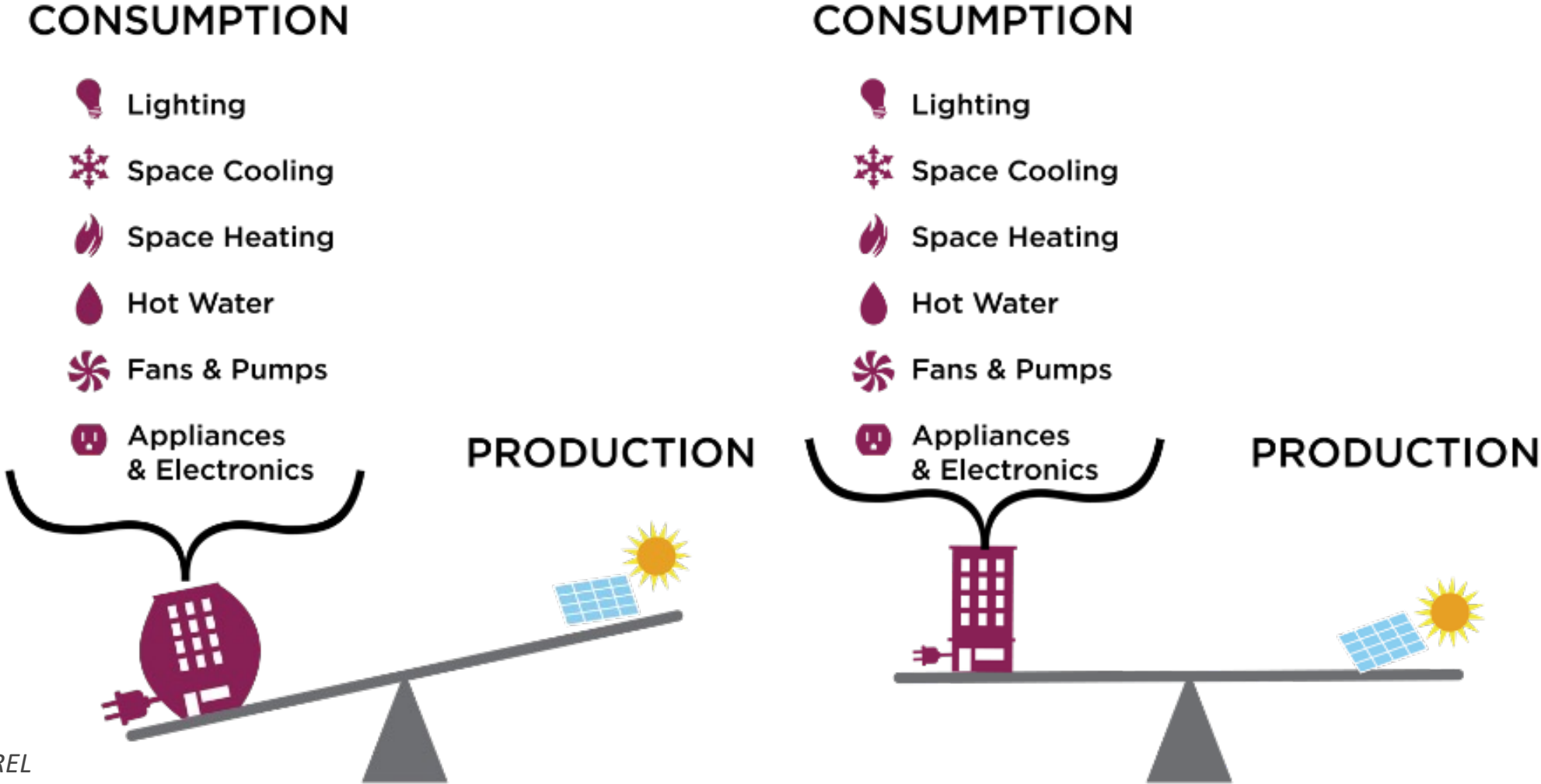


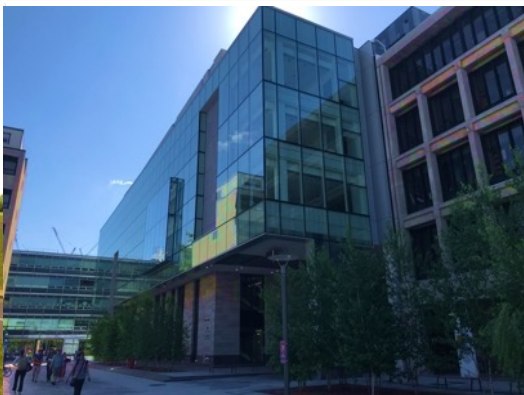

Photo Credit: P. Torcellini, NREL

# Value of Setting Early EUI Target





# New Building/Major Renovation Participation Pathways

Path 1	Path 2	Path 3
Net Zero & Low EUI Buildings	Whole Building EUI Reduction	High Performance Buildings
		



Low EUI Pathways

# Path 1: Net Zero & Low EUI Buildings



## **INTENT: For buildings 10,000 sf and greater**

Drive projects toward net zero, low carbon and low EUI in operation - focus on performance

## **KEY PROGRAM DRIVER:**

- Achieve a target site EUI in design, construction and operation
- Electrified systems

## **NET ZERO TECHNICAL SUPPORT**

- Net zero design support
- Mass Save Sponsors will pay 50% up to \$10,000
- Mass Save Sponsors will pay for optional Verification Incentive - 50% of fee up to \$10,000



## **ACTON-BOXBOROUGH DOUGLAS-GATES ELEMENTARY SCHOOL**

Opened Fall 2022 | All electric

# Path 1: Net Zero Path EUI Targets

Path 1: EUI Targets		
Building Type	Tier 1: \$2.00/sf	Tier 2: \$1.50/sf
Hotel	≤35	36-40
K-12	≤25	26-29 (high schools only)
Library	≤30	31-35
Office	≤30	31-35
Fire/Police Station	≤35	36-40
Other	≤25 or TBD	N/A

## Engage Early –

During Concept, Feasibility or early Schematic Design is best

# Path 1 Incentive Rates

Target Site EUI	Incentives			
	Payable at End of Construction		Payable at End of 1 yr. Post Occupancy Period	
	Construction Incentive	Heat Pump Adder	Post Occ. Incentive	Optional Incentive for Certification
Varies based on building type	Tier 1: \$2.00/SF  Tier 2: \$1.50/SF	Air source heat pumps: \$800/ton  Variable refrigerant : \$1,200/ton  Ground source heat pumps: \$4,500/ton	\$1.50/SF	\$3,000

# Example – New Elementary School

**172,000 SF new building**

**Solar PV:** \$2 million

**Geothermal:** 340 tons, 110 wells at 600' depth: \$20 million

**Target site EUI:** 25

Path 1 Incentives with 25 EUI Target	
\$2.00 /SF Construction Incentive	\$344,000
Electrification incentive for ground source heat pumps at \$4,500/ton	\$1,530,000
\$1.50/SF Post Occupancy Incentive	\$258,000
Total	\$2,132,000

# Verification Incentive – Available for Path 1 & 2 Projects



Review control strategies at end of design



Multiple trend data reviews at post occupancy



Multiple EUI data pulls at post occupancy

**Sponsors of Mass Save offers 50% cost share up to \$10,000 to cover this scope**

# Path 2: Whole Building EUI Reduction

## **INTENT: For buildings 50,000 sf and greater**

Large or complex projects, interested in setting an EUI reduction target, but not good candidates for Path 1

## **KEY PROGRAM DRIVER:**

- Lowest possible site EUI
- Building electrification

## **TECHNICAL ASSISTANCE**

- Provide energy savings and decarbonization advice
- Sponsors of Mass Save will pay for energy modeling, charrette support, and mid design review - up to 75% of the cost/Customer pays 25%
- Sponsors of Mass Save will pay for optional Verification Incentive - 50% of fee up to \$10,000

**Note:** This design-focused pathway does not have a post occupancy performance component, which is the hallmark of Path 1

# Path 2 Incentive Rates

Path 2: EUI Reduction Incentive Tiers					
% Reduction Required to Participate					
	Incentive Rate	Heat Pump Adder	All sectors other than office/labs	Office	Lab/office
<b>Tier 4</b>	\$0.35/sf	Air Source Heat Pump: \$800/ton  Variable Refrigerant Flow: \$1200/ton  Ground Source Heat Pump: \$4,500/ton	10%-15%	5%-10%	15%-20%
<b>Tier 3</b>	\$0.50/sf		15%-20%	10%-15%	20%-25%
<b>Tier 2</b>	\$0.75/sf		20%-25%	15%-20%	25-30%
<b>Tier 1</b>	\$1.25/sf		25% and above	20% and above	30% and above



# Path 3: High Performance Buildings



## INTENT:

Reduce building energy and decarbonize – measure by measure approach versus an EUI-based approach

## TECHNICAL ASSISTANCE:

Expert support in identifying energy conservation and decarbonization strategies

## TYPICAL PROJECTS

Customers with small and fast paced projects where customers do not wish to set and pursue an EUI target

Projects that are not whole buildings (e.g., tenant fit outs, open air parking garages).

Projects where heavy process loads are the major energy savings focus (e.g., cannabis, industrial).

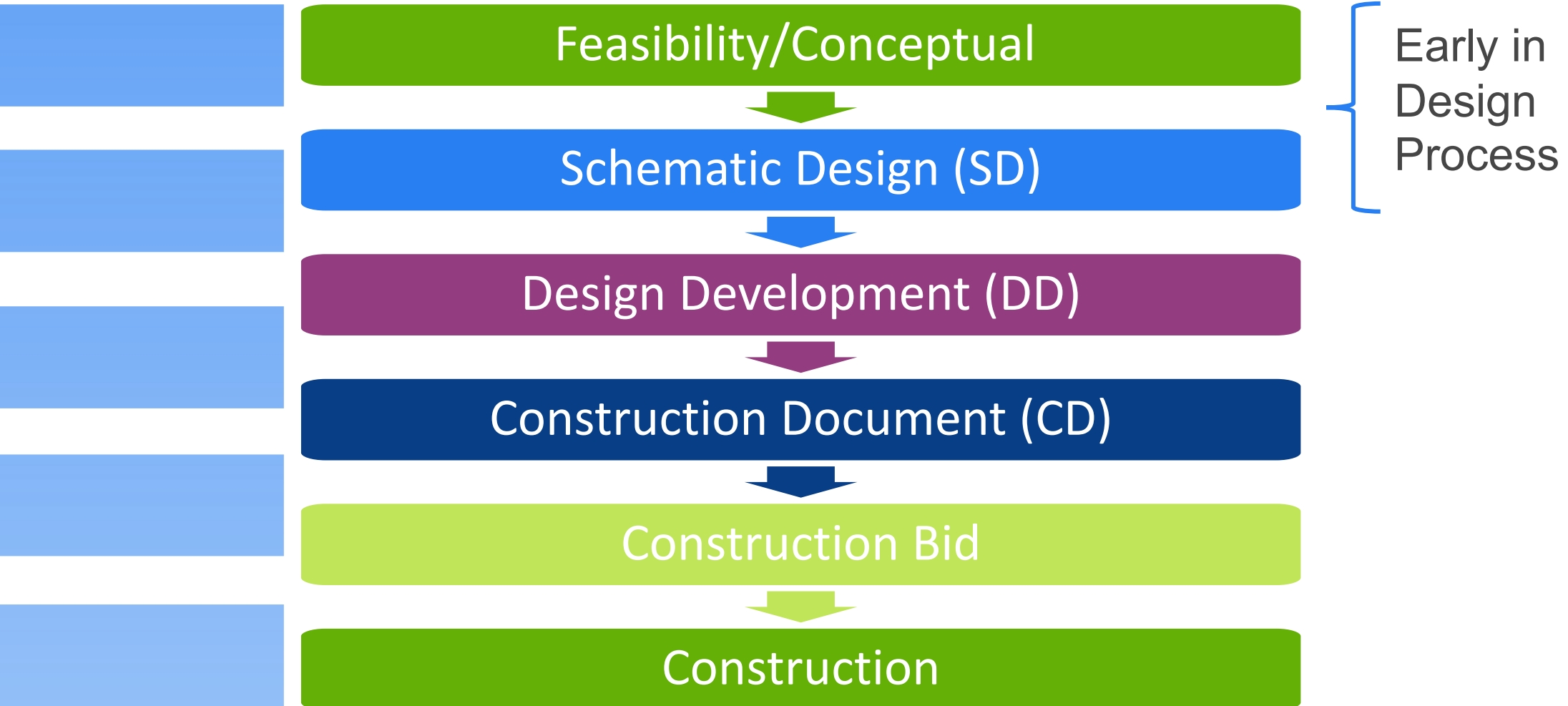
Projects where customers have interest in discrete measures only

Projects engaging too late in design to participate in Path 1

# Path 3 Incentive Rates

Path 3: Summary Customer Incentives			
Incentive	Energy Conservation Measure (CM)	Rate	
Custom Incentive	Various	\$0.35/ kWh	\$2.00/ therm
Heat Pumps	Air Source Heat Pumps	\$800/ton	
	Variable Refrigerant Flow	\$1,200/ton	
	Ground Source Heat Pump	\$4,500/ton	

# When Should Customers/Design Teams Reach Out?



# Testimonials



"**The Town of Swampscott** has partnered with National Grid on our new Elementary School Project from a very early stage. National Grid's technical support and incentive programs have helped us remain focused on building a highly efficient building and targeting a very low EUI. The Mass Save programs were also a major factor in helping us move towards full electrification of the building. The Mass Save incentives were critical during the VE analysis and helped us avoid deep cuts to efficiency measures in a very difficult budget climate. The relationship with National Grid has been instrumental in the development of this project which has now started construction with a modeled EUI of 25."

**Max Kasper**

**Facilities Director, Town of Swampscott/Swampscott Public Schools**

**Gloucester Sawyer Free Library** "Our board set sustainability as a critical goal for our project. Working with Mass Saves enables us to have a higher level of confidence that we are going to achieve our goal."

The Mass Save Zero Net Energy Consultant brings an added level of expertise to our project that has been helpful in making sure that we are on track to achieve our targeted EUI.

Being eligible for the Mass Save incentive program helped confirm that our choice of a high efficiency heat pump HVAC system was the right choice for our Library project."

**Simon Paddock**

**Chair, Capital Projects Committee, Gloucester Lyceum & Sawyer Free Library**

# Testimonials



“Eversource has been a critically important partner for the District in the Boardwalk Elementary School project. Their very early support gave credibility to the net zero concept, and the incentive structure provided momentum. Their engagement throughout the process helped educate stakeholders on what can be achieved with an all-electric Zero Net Energy school building. In coordination with Eversource, we set a clear EUI target at the very earliest stages of design - doing so was essential in guiding the team’s work and in setting the project up for success.”

**Kate Crosby, Energy Manager, Acton-Boxborough Regional School District**

# What Does It Cost?

*Zero Energy Buildings in Massachusetts: Savings Money from the Start* – a 2019 study by USGBC – MA (now Built Environment Plus)

- Net zero buildings can have zero added cost
  - Range is from 0-7%



# Multi-Family High Rise Passive House Incentive Offer

Passive House Incentive Structure for Multi-Family (5 units or more)			
Incentive Timing	Activity	Incentive Amount	Max. Incentive
Pre-Construction	Feasibility Study	Up to 100% of Feasibility costs	\$5,000
	Energy Modeling	75% of Energy Model cost	\$500/unit, max. \$20,000
Post-Construction	Pre-Certification	\$500/unit	N/A
	Certification	\$2,500/unit	
	Net Performance Bonus	\$0.75/kWh	
		\$7.50/therm	

<https://www.MassSave.com/saving/residential-rebates/passive-house-incentives>

## Key Take Aways

- Trend is moving to electrification
- Engage early in design
- Program main focuses:
  - Heat pumps (electrification)
  - Reducing building EUI
  - Operational not just design energy performance
- We want to work with you (our Business Partners) to provide added technical assistance and incentives for our customers







**More at MassSave.com**  
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# Thanks for listening.

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