

3/28/2023

NESEA BUILDING ENERGY BOSTON 2023

# Bringing 2050-Ready Electrofits to Scale: Strategies from MassCEC's Decarbonization Pathways Pilot

PETER MCPHEE, SENIOR DIRECTOR, BUILDINGS

MASSCEC



## Mission:

The Massachusetts Clean Energy Center's mission is to accelerate the clean energy and climate solution innovation that is critical to meeting the Commonwealth's climate goals, advancing Massachusetts' position as an international climate leader while growing the state's clean energy economy.

## *How we approach our work:*



### **Innovation**

MassCEC supports innovation to develop new solutions to unmet challenges, and reduce cost and increase performance of existing solutions.



### **Workforce Development**

MassCEC ensures we have a diverse and equitable workforce that is trained and ready to take part in the growing clean energy industry.



### **Market Development**

MassCEC de-risks commercially ready technologies paving the way for broad adoption, filling gaps unmet by the private sector.

# Buildings: Energy, Carbon, and Affordability



**2.5 million**

**Number of  
buildings in MA**

**95%**

**Residential emissions  
reductions 1990 – 2050**

**35%**

**MA emissions from  
buildings' onsite fuels**

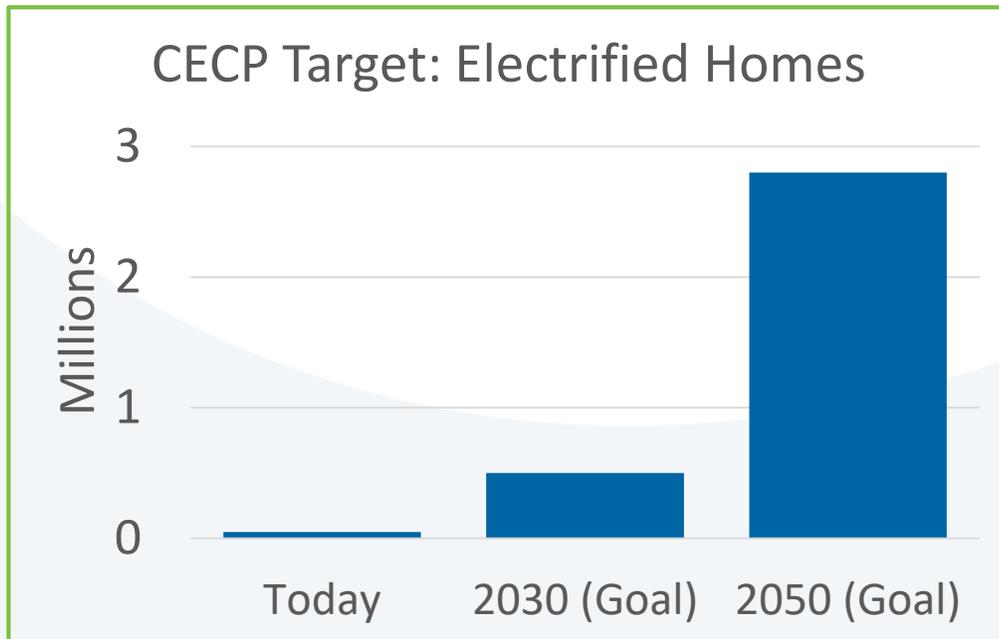
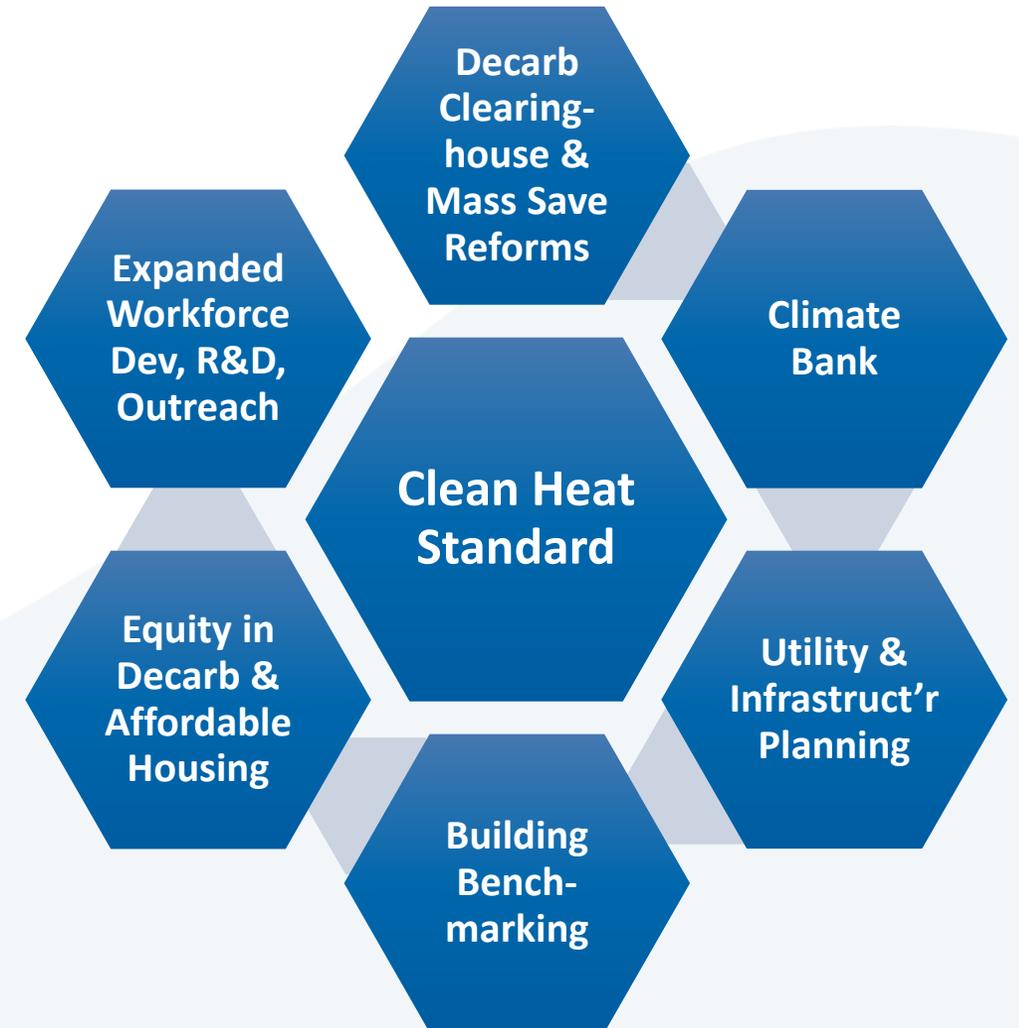
**\$2,800**

**Annual household  
energy spending**

# Policy Drivers For Building Decarbonization

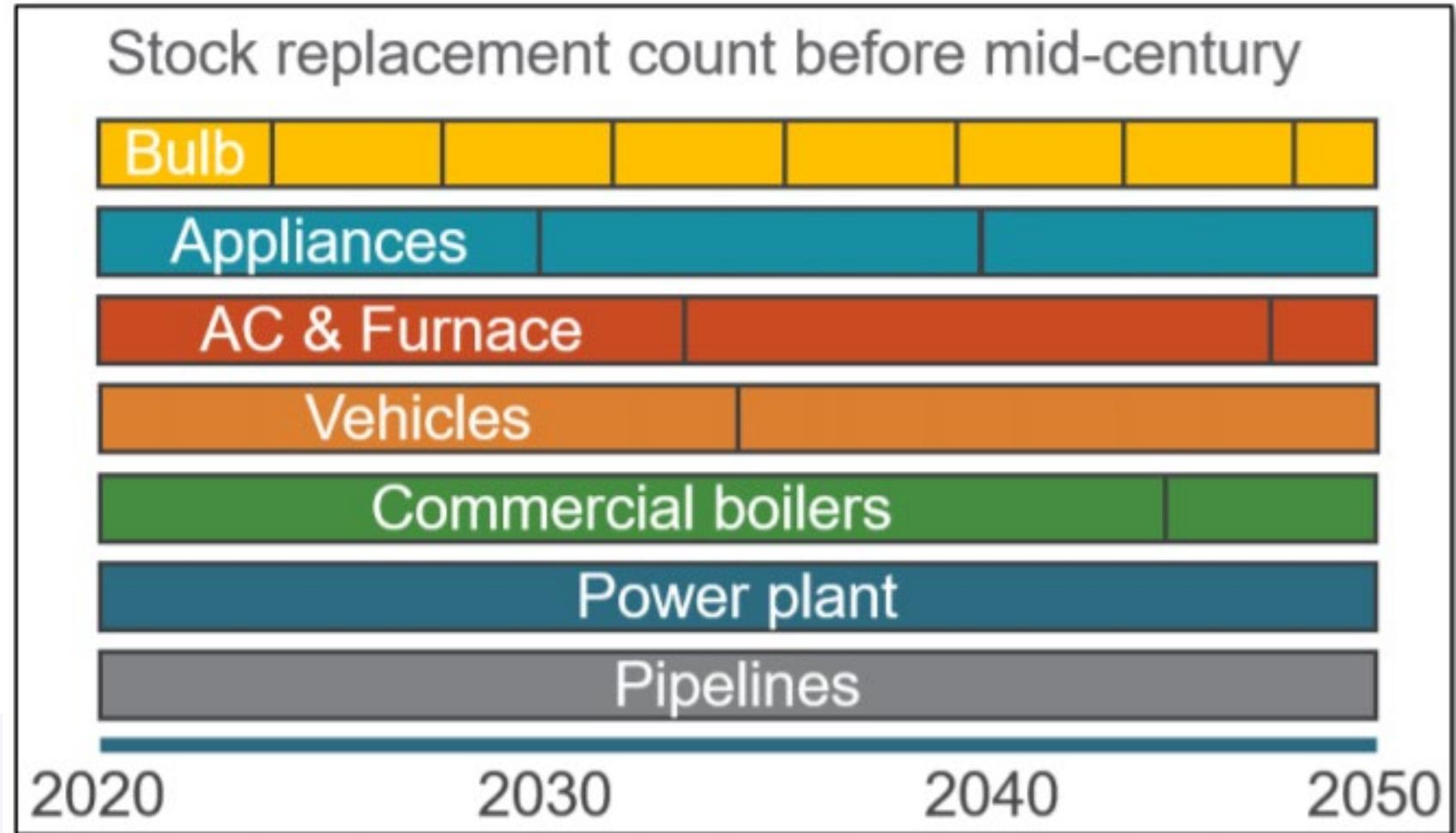
- ▶ Clean Energy & Climate Plans: 2025, 2030 & 2050
  - ▶ Established emissions sublimits for buildings
- ▶ Commission on Clean Heat (2022)
- ▶ Decarbonization Roadmap (2020)
  - ▶ Vast majority of buildings electrified and made efficient
- ▶ Municipal Ordinances (e.g., Boston's BERDO 2.0, Net Zero Codes)

## Clean Heat Commission Recommendations



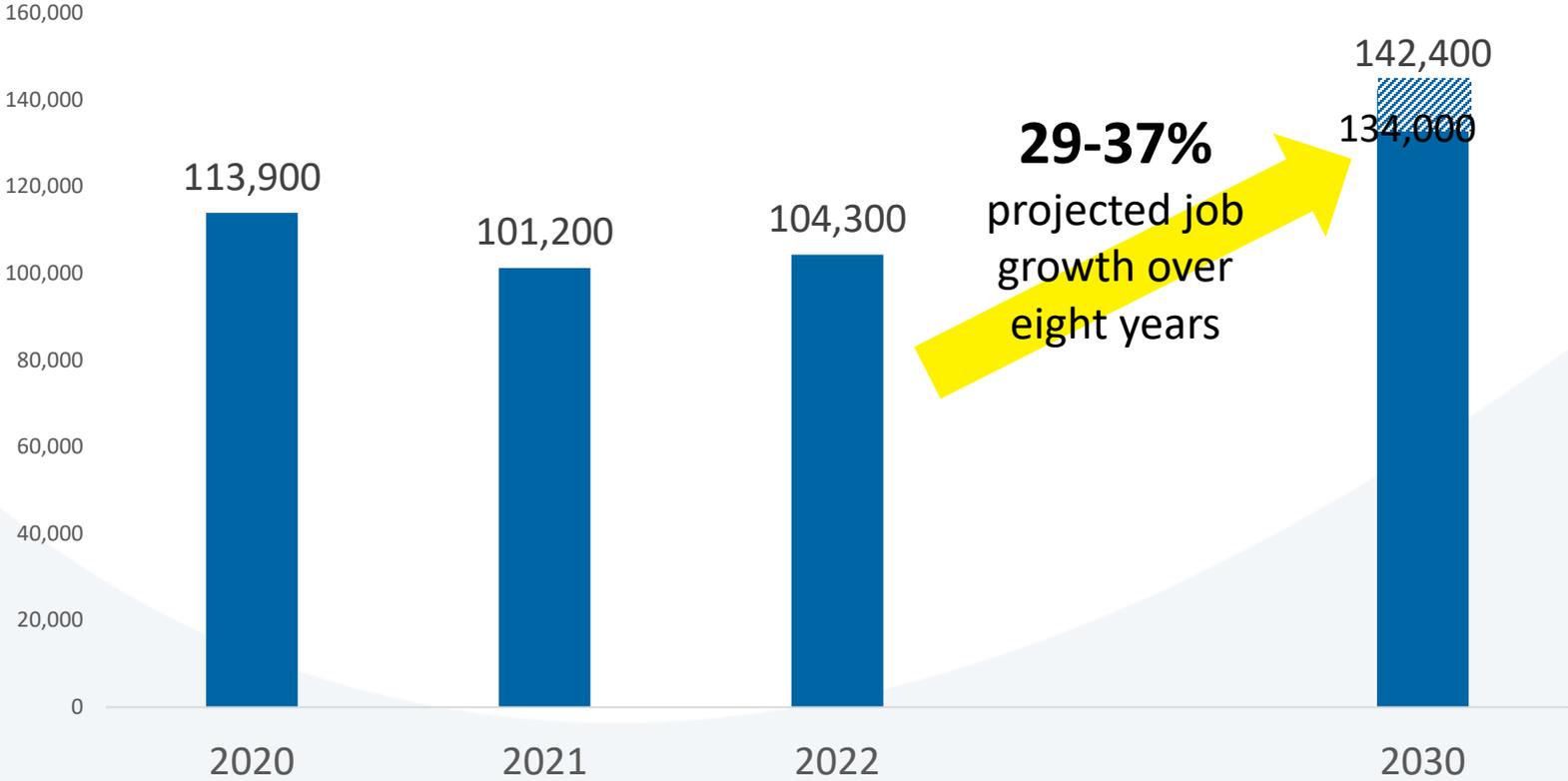
# Fundamental Challenges in Building Decarbonization

- Stock Turnover in buildings is very slow!
- Replace on failure: does not leave enough time to transition
- Inertia toward the status quo
- Cost differentials make upfront and operational costs challenging
- Awareness is low
- Consumer and industry not yet scaling at needed pace



# Our Clean Energy Workforce Today & Tomorrow

## MA Clean Energy Jobs



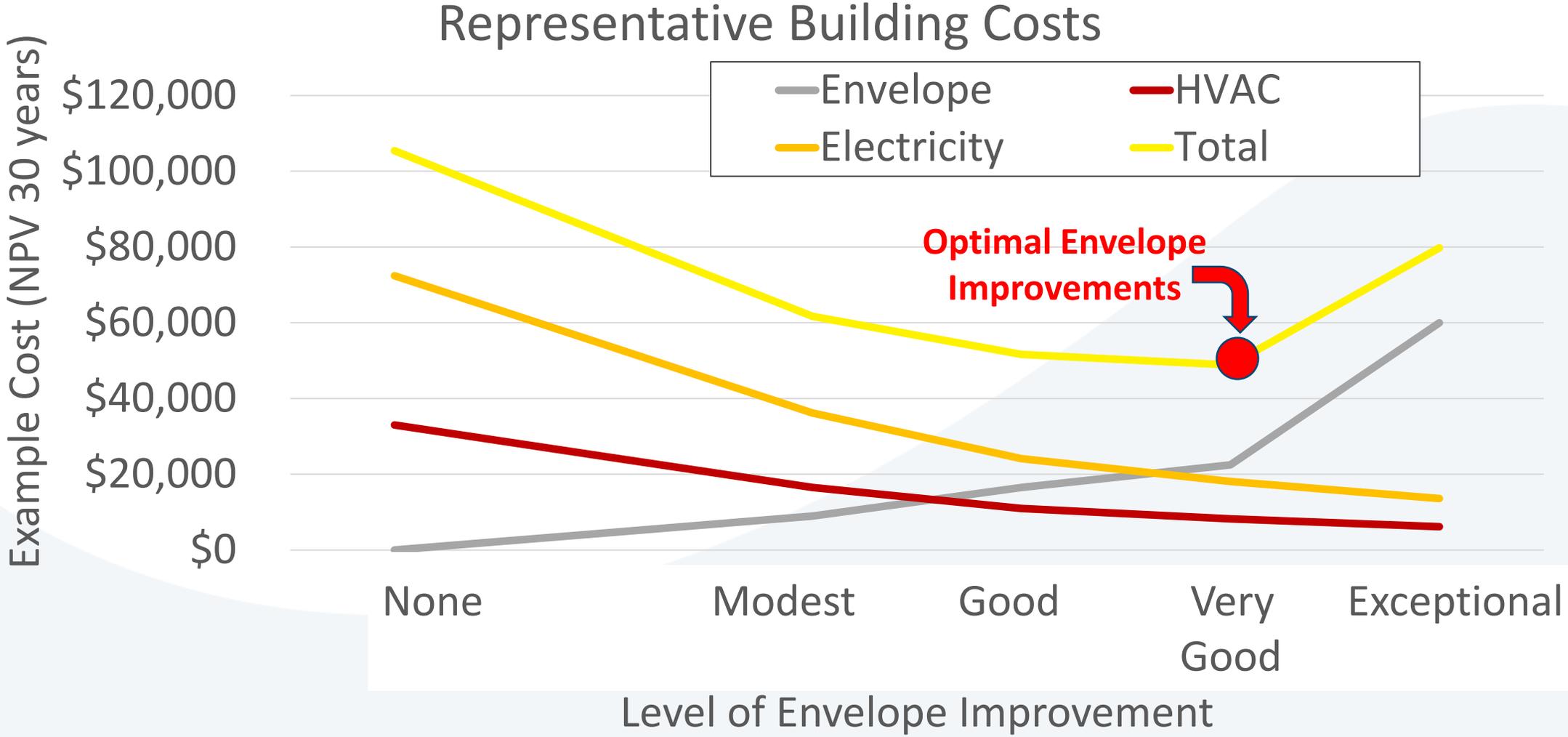
Clean energy sector employers are already citing **insufficient employee pipelines as a limiting factor** slowing growth

Many of the **fastest growing jobs** in the clean energy industry from Electricians to Plumbers to General Managers are also growing in the broader economy and have **existing supply gaps**.

**Strong numbers of new entrants to the industry are needed.** Training providers consistently report recruitment challenges, and many programs have unfilled seats.

Sources: 2021 MA Clean Energy Industry Report and preliminary data from forthcoming Clean Energy Workforce Needs Assessment from BW Research

# Cost-Effectiveness in Electrification



# Building Electrification & Transformation Accelerator (BETA)



## DECARBONIZATION APPROACHES

Demonstrate approaches for electrifying and decarbonizing individual buildings of varying typologies, as well as building portfolios.



## DECARBONIZATION POLICIES

Inform building electrification and decarbonization policies using pilot study and implementation programs.



## MASS SAVE

Recommend approaches to building electrification and decarbonization incentives to inform advancement of decarbonization incentive programs.

**BETA:  
Decarbonization  
Pathways  
(Single-Family)**

**BETA:  
Triple Deckers**

**BETA:  
Non-Profits**

**BETA:  
Commercial**



MASSACHUSETTS  
CLEAN ENERGY  
CENTER®

# Decarbonization Pathways Pilot

March 28, 2023



# AGENDA

Pilot Overview

Results to Date

Lessons Learned

Project Example

# PILOT OVERVIEW

Create and demonstrate a cost-effective model for eliminating emissions in homes over time

- Single-family and low-rise (i.e., three (3) stories or less) residential buildings
- Triple-deckers

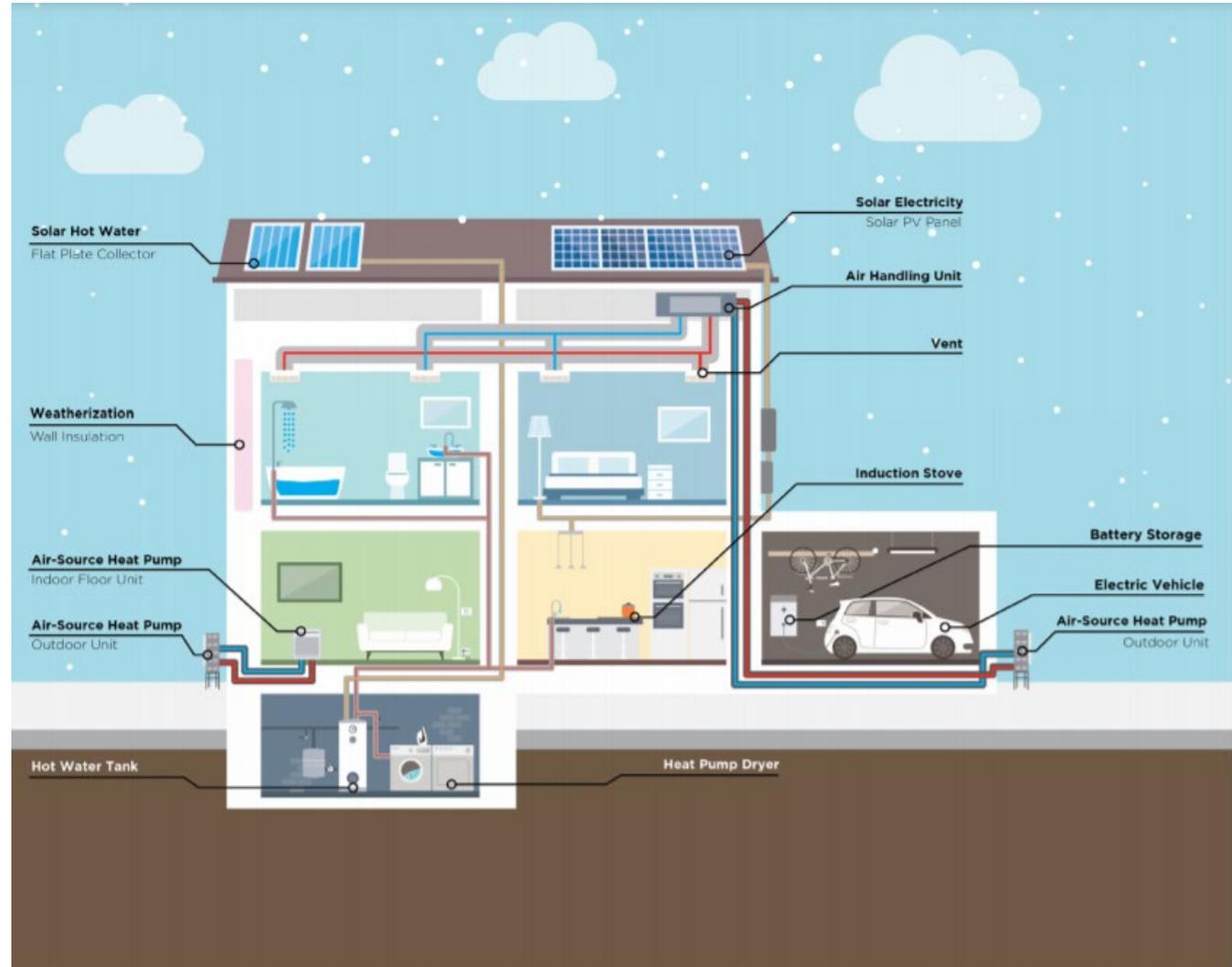
Up to \$3 million budget

Develop and test:

- Home decarbonization assessment
- Customized recommendations
- Multi-year roadmap/plan
- Pilot with ~75 homes ready to take major action.
  - Two cohorts.
  - Cohort 1 ~ 30 homes; Cohort II ~45 homes
  - Plus 10 market rate triple-deckers

Offer increased incentives (above baseline Mass Save incentives) to pilot homes to spur action

Develop lessons learned and showcases/case studies to support residents and industry



# PILOT GOALS & OUTCOMES

## Create and Test Scalable Approach

Create and test a holistic approach to decarbonizing homes that could be scaled by Mass Save® and/or other entities.

- Does this approach get people to take action?
- Is it scalable?

## Collect Data

Collect data on costs, best practices, and performance of decarbonization measures.

- Feedback from participants and contractors
- Final report with case studies
- 2 years of bill analysis (as an addendum to final report)

## Lessons Learned & Case Studies

Develop lessons learned, resources, and case studies to support homeowners, landlords, and contractors that are ready and able to take action now to decarbonize their buildings.

# PILOT TIMELINE

April '21–Feb '22

Launch, Contract, Develop Home Decarbonization Assessment protocols, processes and resources

Jan '22 – May '22

Implementer RFP (DP and Triple Decker) Released and Contracted with Abode

Aug '22 - Now

Pilot Home Decarbonization with Cohort 1

March '23

Triple Decker Pilot launch

Spring 2023

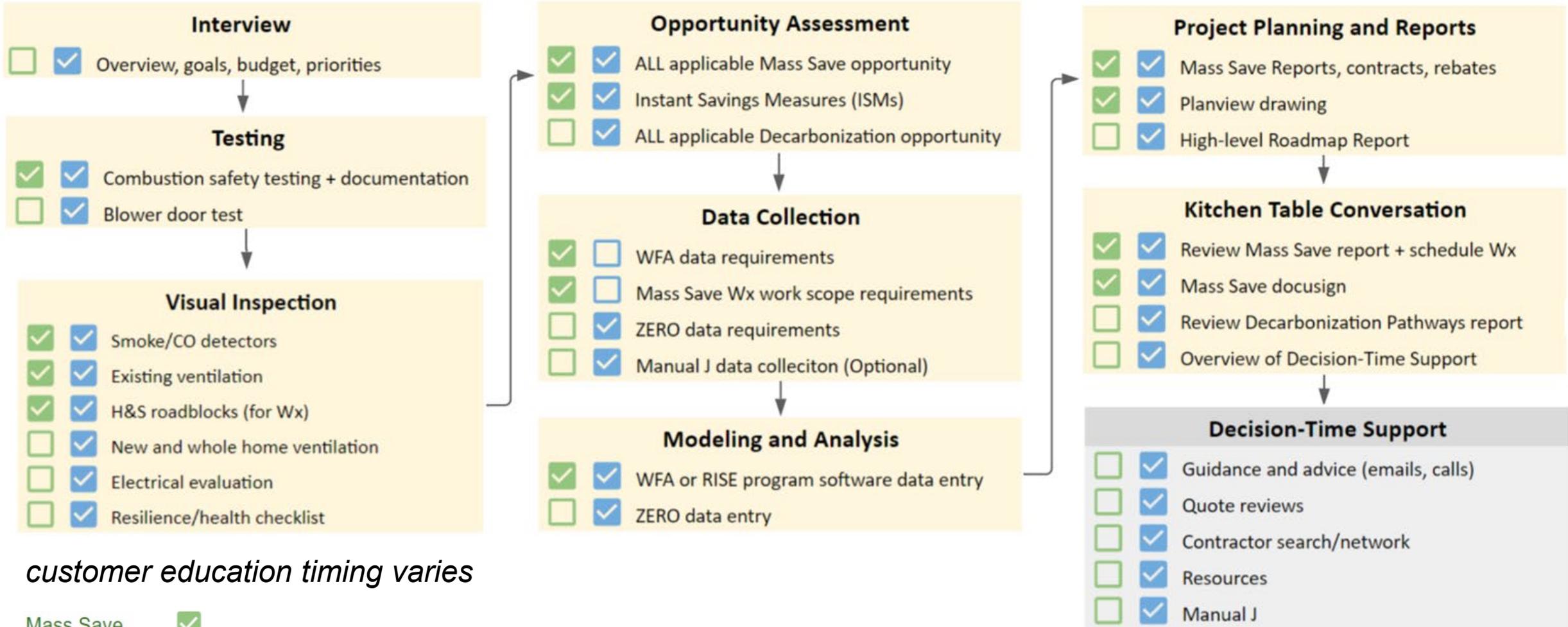
Refine and Learn More with Cohort 2

# INCENTIVE DESIGN

	<80% SMI	80 – 120% SMI	>120% SMI
Total Pilot incentive	<b>Up to \$30,000</b>	<b>Up to \$20,000</b>	<b>Up to \$10,000</b>
<b>PREREQUISITE MASS SAVE – MUST EXHAUST ALL MASS SAVE MEASURES AND INSTALL HEAT PUMP TO UNLOCK INCENTIVES</b>			
Envelope Improvement, Ventilation	Capped @ \$12,000	Capped @ \$8,000	Capped @ \$4,000
Heat Pumps	Capped @ \$18,000	Capped @ \$12,000	Capped @ \$6,000
Hot Water Solution	Capped @ \$6,000	Capped @ \$4,000	Capped @ \$,2000
Electrical Upgrades and Barrier Mitigation	No Cap – must be paired with another implementation of another measure(s)		
Appliances: Stove/range, EV charger, dryer, outdoor equip.	Capped @ \$1,500 each		
EV, Solar, Battery	Capped @ \$15,000 (eligible after Wx, HP, DHW)	Not Eligible	

Note: Incentive design is constrained by the short-term nature of this pilot. This incentive design is not proposed as a scalable model.

# DECARBONIZATION ON TOP OF MASS SAVE



*customer education timing varies*

Mass Save   
 Decarbonization

# CUSTOMER REPORT (pages 1-2)

## Decarbonization Pathways Report



### Your Current Carbon Footprint



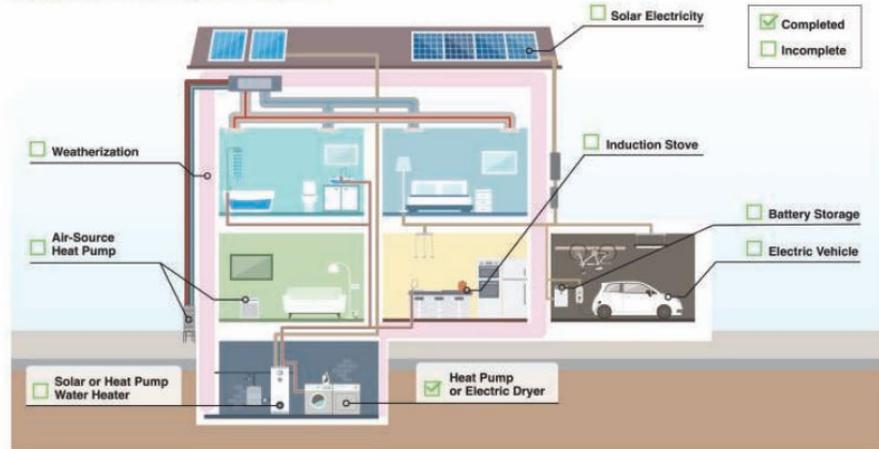
### Year 1 Financial Snapshot



### Get to Zero



### Opportunities in Your Home



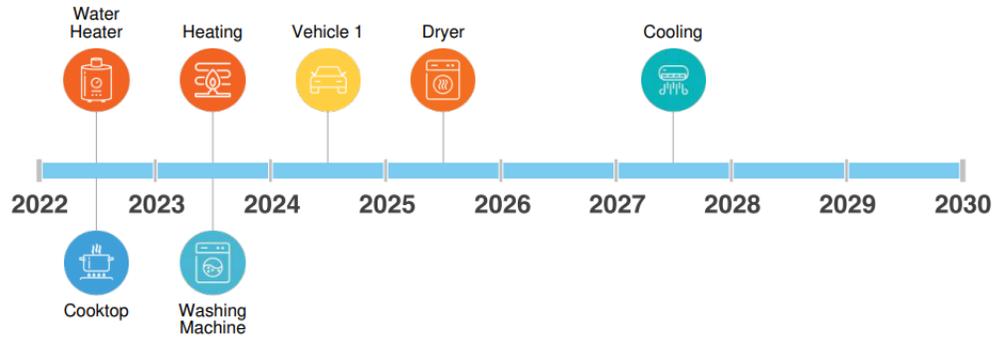
## Your Decarbonization Roadmap

<p><b>1 PLANNING</b></p> <p>Work with our Support Service Team to plan your Year 1 projects.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Complete an decarbonization assessment</li> <li><input type="checkbox"/> Address any Customer <b>Required Actions</b> from the assessment</li> <li><input type="checkbox"/> Schedule a planning session online with Support Services</li> <li><input type="checkbox"/> Schedule contractors to complete the work</li> </ul>	<p><b>2 YEAR 1</b> 19% CO2</p> <p>Complete your Year 1 projects and take full advantage of the first-year incentives available in the MassCEC Decarbonization Pathways pilot.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Mass Save List</li> <li><input type="checkbox"/> R6 Continuous Insulation</li> <li><input type="checkbox"/> Triple Pane LowE Windows</li> <li><input type="checkbox"/> All LED Lighting</li> <li><input type="checkbox"/> Kitchen Exhaust Hood</li> <li><input type="checkbox"/> Air Source Heat Pump</li> </ul>	<p><b>3 YEAR 2-5</b> 16% CO2</p> <p>Keep the momentum going on as many high impact measures possible.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Solar Thermal Water Heater</li> <li><input type="checkbox"/> Induction Cooktop</li> <li><input type="checkbox"/> Outdoor Power Equipment</li> <li><input type="checkbox"/> Electric Vehicle</li> <li><input type="checkbox"/> EV Charger</li> </ul>	<p><b>4 YEAR 5+ Down the road</b> 46% CO2</p> <p>Think decarbonization and energy efficiency with any new major purchases or home improvements.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Washing Machine</li> <li><input type="checkbox"/> Heat Pump Dryer</li> <li><input type="checkbox"/> Rooftop Solar</li> </ul>
<p><b>HELPFUL RESOURCES</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Support Services Overview</a></li> <li>• <a href="#">Support Services Online Scheduling</a></li> <li>• <a href="#">MassCEC Rebates</a></li> <li>• <a href="#">Find a Contractor</a></li> </ul>	<p><b>CONTRACTORS NEEDED</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Electrician</a></li> <li>• <a href="#">Mass Save Contractor</a></li> <li>• <a href="#">HVAC Contractor</a></li> <li>• <a href="#">Window/Door Contractor</a></li> <li>• <a href="#">Siding Contractor</a></li> </ul>	<p><b>CONTRACTORS NEEDED</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Electrician</a></li> <li>• <a href="#">Solar Thermal Contractor</a></li> </ul>	<p><b>CONTRACTORS NEEDED</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Electrician</a></li> <li>• <a href="#">Solar Contractor</a></li> </ul>

# CUSTOMER REPORT (pages 3-4)

## Expected End of Equipment Life

When you're trying to decarbonize, unexpected equipment failures can make it more difficult to find the right replacement solution on short notice. Planning ahead and replacing equipment before it breaks is the best strategy. The timeline below shows when equipment, appliances, and cars that you currently own will likely need replacement. If something on the list does break, don't panic, but instead take a look at the suggested equipment replacements provided in the following pages. By our estimates you have ~\$50,275 in replacements coming up in the next 10 years.



## Resources Library

### HELPFUL RESOURCES

- Support Services Overview
- Support Services Online Scheduling
- MassCEC Rebates
- Find a Contractor

### REBATES AND INCENTIVES

- Mass Save Rebates
- SMART Program
- MA EV Rebates
- Federal EV Rebate

### EDUCATIONAL RESOURCES

- Guide to a Clean Energy Home
- Air-Source Heat Pumps
- Ground-Source Heat Pumps
- Electric Vehicles
- Solar Electricity
- Battery Storage
- Solar Hot Water



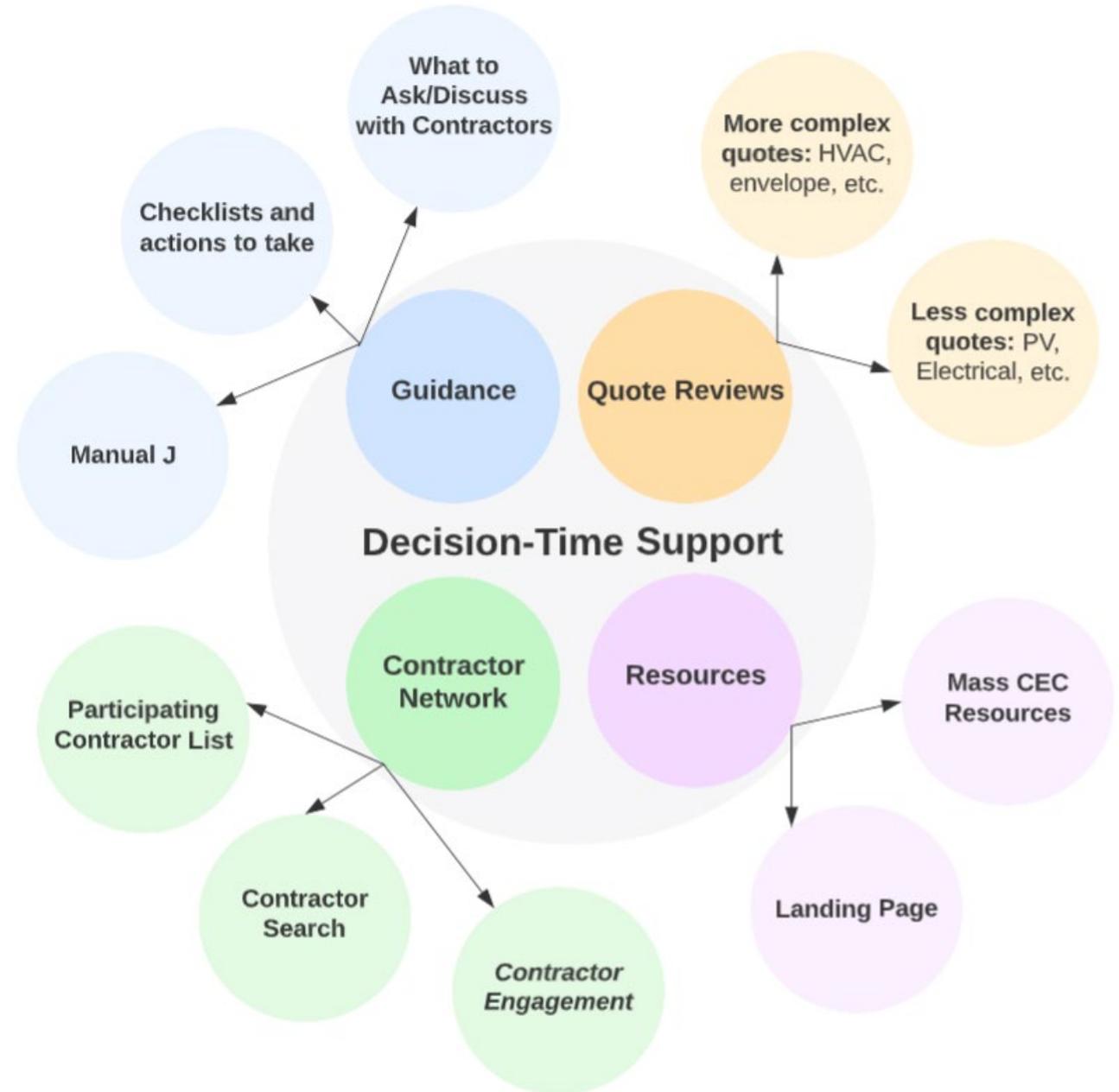
## Year 1

PROJECT	ESTIMATED BILL SAVINGS	EST. CO2 REDUCTION	ESTIMATED COST BEFORE INCENTIVES	MASS SAVE INCENTIVES	STATE TAX CREDIT	FEDERAL TAX CREDIT	DECARB PATHWAYS INCENTIVE	TOTAL COST AFTER INCENTIVES	CONTRACTORS NEEDED	EFFORT LEVEL	PROJECTS TO COMPLETE BEFORE/WITH
<b>Mass Save</b>											
- Air Sealing	\$548	-	\$3,200	\$2,400	-	-	Group 1G See below	\$800	Mass Save Contractor	Low	-
- Rim Joist Insulation								\$900 - \$900			
- Attic Floor Insulation											
<b>Air Source Heat Pump</b>	\$25	12%	\$20,300 \$15,050 - \$25,550	\$10,000	-	-	Group 2G See below	\$10,300 \$5,050 - \$15,550	HVAC Contractor Electrician	High	Mass Save and Envelope Improvements, Electrical Upgrade
<b>All LED Lighting</b>	\$131	2%	\$142 \$126 - \$158	-	-	-	-	\$142 \$126 - \$158		Low	-
<b>Kitchen Exhaust Hood</b>	-	-	\$1,500 \$900 - \$2,100	-	-	-	Group 1G See below	\$1,500 \$900 - \$2,100	HVAC Contractor	Med	-
<b>R6 Continuous Insulation</b>	\$128	2%	\$11,368 \$7,656 - \$15,080	-	-	-	Group 1G See below	\$11,368 \$7,656 - \$15,080	Siding Contractor	High	Siding, Windows, Interior/Exterior trim
<b>Triple Pane LowE Windows</b>	\$240	3%	\$26,000 \$22,100 - \$32,500	-	-	-	Group 1G See below	\$26,000 \$22,100 - \$32,500	Window/Door Contractor	Med	Siding, Continuous Wall Insulation, Air Sealing, Interior/Exterior trim
<b>Total Package</b>	\$678	19%	\$62,510 \$49,032 - \$78,588	\$12,400	\$0	\$0	See Below	\$50,110 \$36,632 - \$66,188	-	-	-

# DECISION-TIME SUPPORT

## Goals

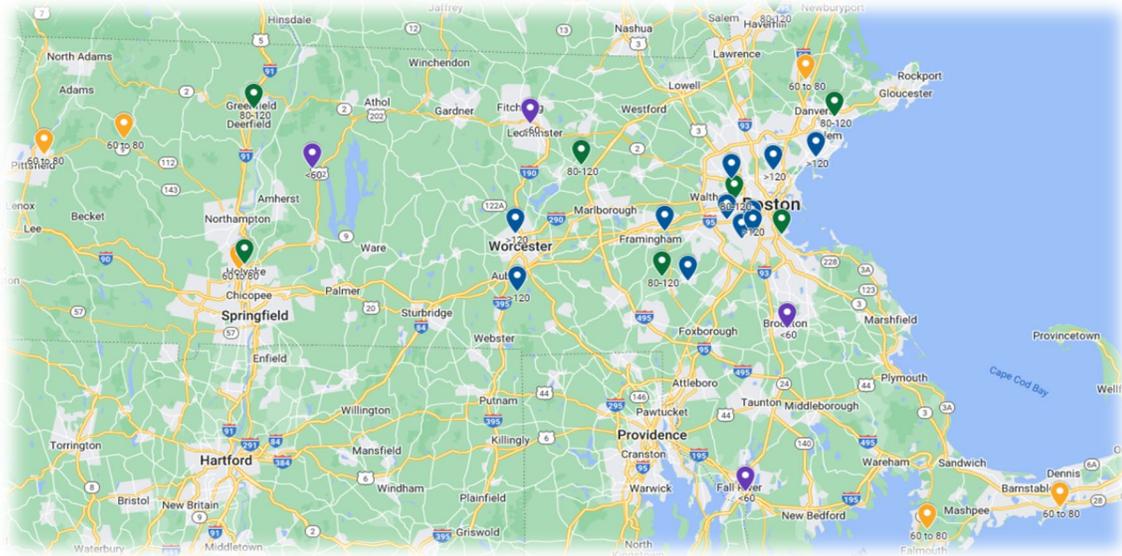
- Project specific guidance when it's needed
- Reduced customer burden of being their own GC
- Centralized resources
- More challenging marketplaces = More support





**RESULTS TO DATE**

# COHORT 1 MAKEUP AND PROGRESS



## Makeup

- 29 homes (1-2 family)
- Income – 1/3 low income, 1/3 moderate income, 1/3 high income
- Diverse building stock – varied age, size, fuel type
- Strong opportunity – required to install heat pumps and complete weatherization + planning or willing to consider other decarbonization measures

## Progress So Far

- All assessments completed
- Decision Time Services and Quote Reviews are ongoing
- ~35% of measures are in-process or complete

# PLANNED MEASURES

Measure Category	Measure	Year 1	Year 2+
Mass Save <i>Required</i>	Wx	46%	
Ventilation	Bath	35%	4%
	Kitchen hood	65%	4%
	ERV	27%	
Heat pumps <i>Required</i>	ASHP	85%	
	Geothermal	8%	
	Air to water	8%	
Water heaters	HPHW or solar assisted	46%	35%
Electrical upgrade	Panel upgrade	58%	
Deeper Envelope	Attic SPF	31%	4%
	Basement wall insulation	15%	19%
	Continuous wall insulation	19%	19%
	Windows	38%	8%
EV	EV charger	27%	54%
	EV	12%	69%
Renewables and Storage	Green Power/Community solar*	70%	
	Battery	12%	46%
	Solar PV	31%	38%
Appliances and Lighting	Dryer (HP or standard)	27%	31%
	Range (Induction or standard)	54%	15%
Outdoor Power Equipment	Equipment	27%	12%

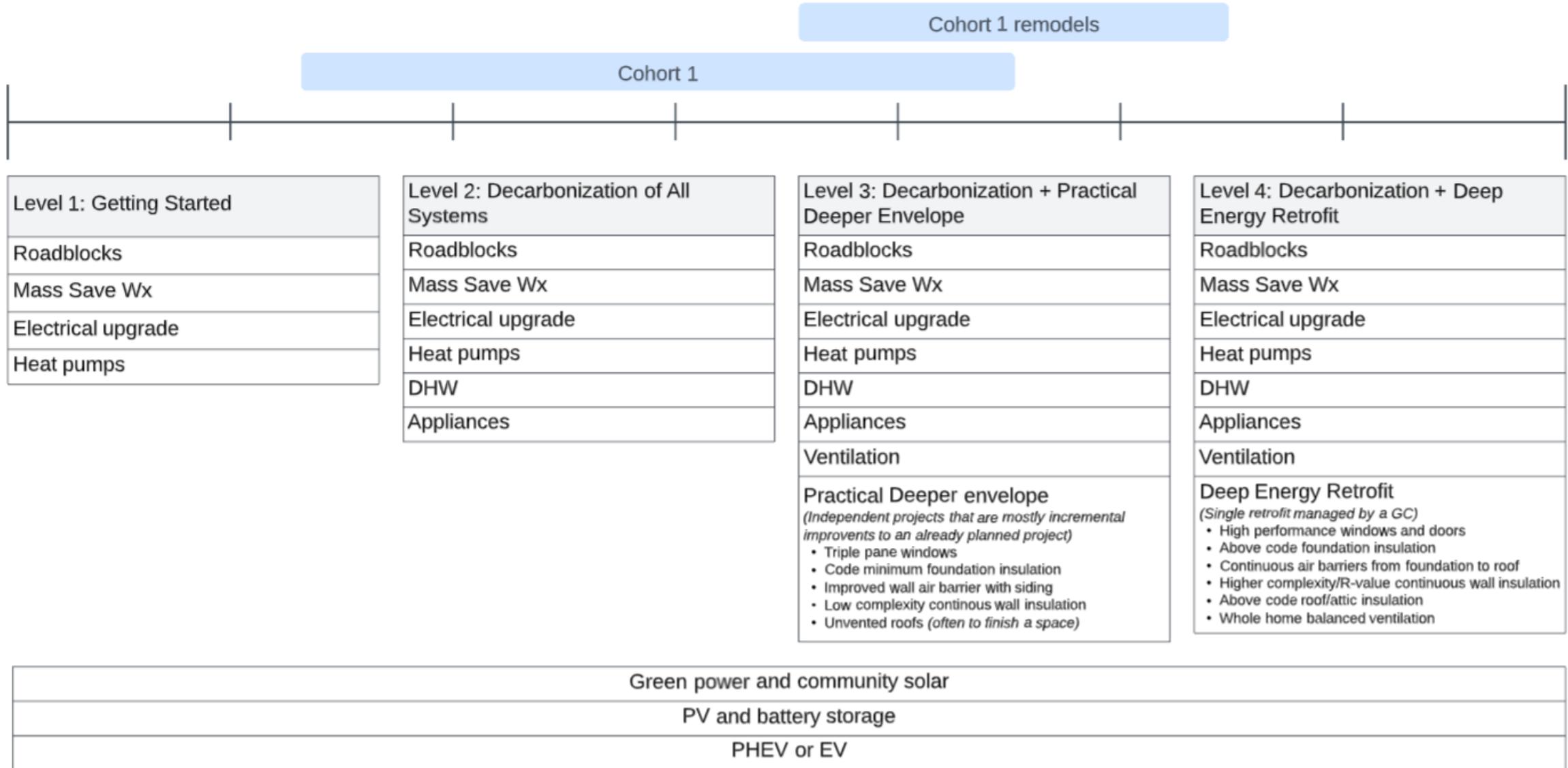
## Planned Measures

- **7** – Average # of year 1 measures
- **\$25k to \$130k** - Year 1 cost range
- **\$1K to \$75k** – Net year 1 cost range
- Plans are evolving

## Survey Data: Likelihood to complete

	Very Likely	Likely	Total
Year 1	84%	16%	100%
Years 2-4	44%	52%	96%
Year 5+	24%	56%	80%

# LEVEL OF DECARBONIZATION WE ARE SEEING



# THEMES

1. **Impact of evolving cost landscape**
2. **Designing programs around homeowner GCs**
3. **The potential of practical deeper envelope measures**

**LESSONS LEARNED**

# INCREASING UPFRONT COSTS OF HEAT PUMPS

## Eastern MA Rebate Data

Q3 2022: \$6,470 per ton

Q4 2022: \$6,641 per ton

**Q1 2023: \$7,295 per ton**

*Based on 365 rebate applications  
Not all whole home*

## Pilot Quoted Costs

**Quoted Average: \$8,930 per ton**

*Based on 48 quotes across 14 participants*

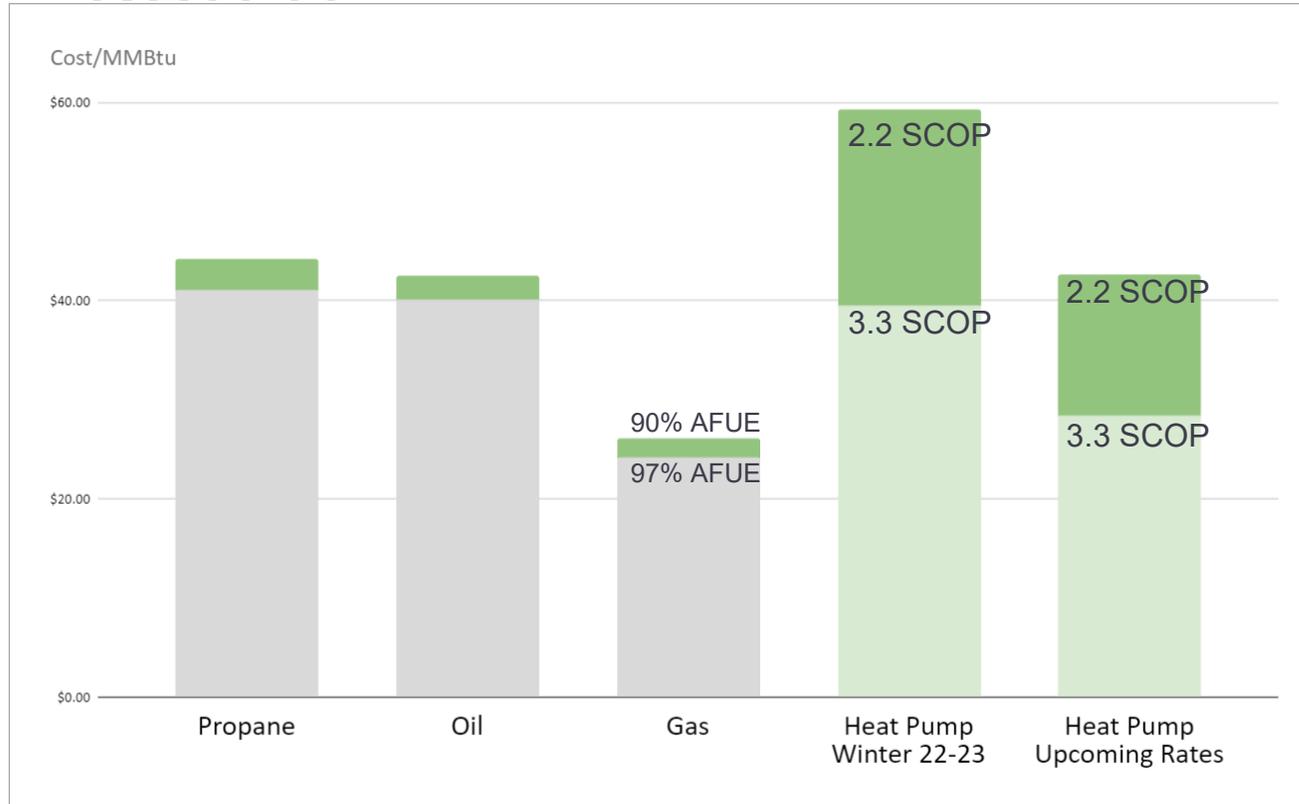
## Impact

- "Shocking" and "frustrating" for customers
- Year 1 plans are being scaled back
- Budgets can be used up primarily on heat pumps
- Could have a real impact on scaling decarbonization

Eastern MA (inside 495)	\$9,226
Eastern MA (outside 495)	\$8,495
Central MA	\$6,289
Western MA	\$7,982

Ducted w/ existing ductwork	\$6,165
Ducted w/ new ductwork	\$11,227
Ductless	\$8,158
Combination	\$9,060

# OPERATING COST UNCERTAINTY FROM ELECTRIC/FUEL RATES



## Impact

- Many Roadmaps required cost dependent "alternative routes"
- Some Roadmaps were changed to dual fuel
- Raises the stakes when choosing equipment (adds complexity)

Fuel	Propane Winter 22-23	Oil Winter 22-23	Gas Winter 22-23	Electric Winter 22-23	Electric est. upcoming rates
Cost	\$3.64	\$4.84	\$2.35	\$0.45	\$0.32
UM	gal	gal	therm	kWh	kWh

# SUCSESSES AND CHALLENGES PUTTING HOMEOWNERS IN THE GC ROLE

## Why is the homeowner the GC

- 6-10 specialized contractors
- Not the typical project for a GC
- Limited affordable decarb GCs
- Specialized contractor networks only get you so far
- Someone has to own the plan

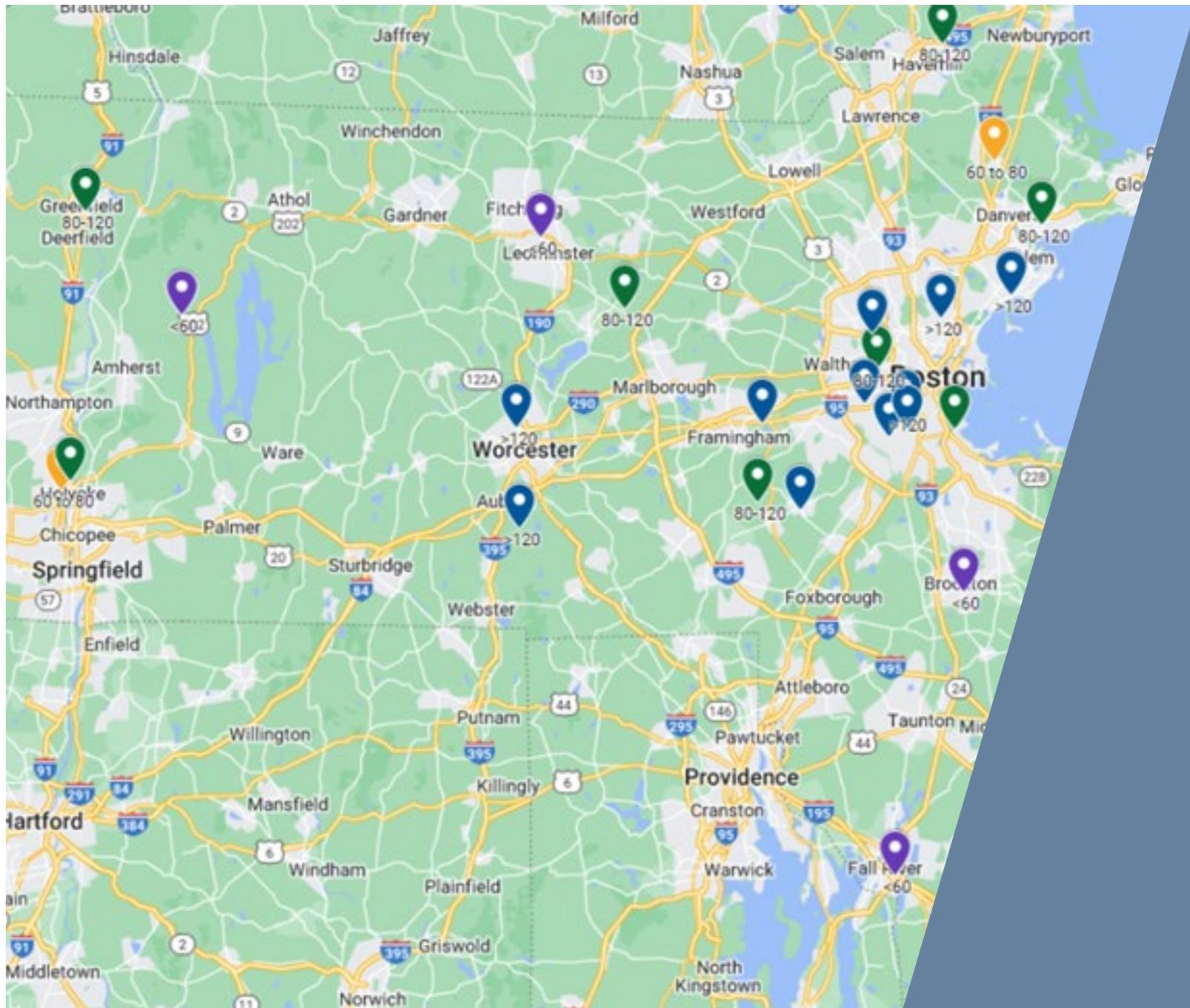
	More Scalable	Less Scalable
<b>Pre-assessment</b>	-Research -Projects in mind	-General decarbonization interest
<b>Assessment</b>	-Part education -Part planning session	-Primarily 101 education and presenting options
<b>Post Assessment</b>	-Ready to get started -Less support needed -Multi-project thinking	-Discussing options -More support -One project at a time
<b>Contractor Search/Selection</b>	-Casts a wide contractor net -Follows "what to ask contractors" guidance -Better outcomes	-More hand holding -Contractor interventions needed

# PRACTICAL DEEPER ENVELOPE MEASURES

Measure	Related Projects	Opportunity + Interest
Triple pane windows (or) double pane casements	- Stand-alone - Siding replacement	<b>32%</b>
Foundation insulation (code min)	- Stand-alone - Basement finish	<b>34%</b>
Low complexity continuous Wall insulation (or improved wall air barrier only)	- Siding replacement	<b>38%</b>
Unvented roof spray foam	- Stand-alone - Attic finish	<b>35%</b>
Vaulted ceiling spray foam	- Roof replacement	No opp

## Why focus on practical deeper envelope

- Middle ground to deep energy retrofit strategies
- Most items are "off-menu" for Mass Save
- Strong interest and opportunity
- Most are incremental costs to already planned projects



# PROJECT OVERVIEW S

# SOUTH YARMOUTH

Focus on Climate Impact and Comfort



## Project Overview

- 1960, 3 bedroom, 1 bath
- Area: 770 square feet
- Heating fuel: Gas

## Previously Completed

- Mass Save Wx
- Windows

## Estimated Impact

Year 1 CO2 Reduction	47%
Cost Reduction	TBD

## RECOMENDATIONS

Year	Measure
1	Basement Insulation
1	200 Amp Panel
1	Ductless ASHP
1	HPHW
1	ERV
1	Solar PV
2-4	Exterior Insulation/Siding
2-4	Induction Range
2-4	HP Dryer
5+	EV

*This homeowner is taking advantage of the incentives in year 1, but plans to fully decarbonize over time. Will finish basement and consider continuous wall insulation in the next few years.*

# Holyoke

Focus on Climate Impact and Operating Cost



## Project Overview

- 1920, 4 bedroom, 2 bath
- Area: 1645 square feet
- Heating Fuel: Gas

## Previously Completed

- Electric range

## Estimated Impact

Year 1 CO2 Reduction	28%
Cost Reduction	TBD

## RECOMENDATIONS

Year	Measure
1	Insulation + Air Sealing
1	200 Amp Panel
1	Combination ASHP
1	HPHW
1	Kitchen hood
1	Bath fan
2-4	Solar PV
5+	Battery
2-4	Washing Machine and HP Dryer
5+	EV + Charger

*This homeowner was motivated and already had engaged with a contractor to install heat pumps. We had to work with the contractor on design and sizing, but the end result was positive.*

# Arlington

Focus on Climate Impact and Comfort



## Project Overview

- 1931 3 bedroom, 2 bath
- Area: 1925 square feet
- Heating Fuel: Gas

## Previously Completed

- N/A: complete remodel

## Estimated Impact

Year 1 CO2 Reduction	83%
Cost Reduction	66%

*This was a new purchase and a complete gut renovation. Homeowner has completed all of the year 1 recommendations.*

## RECOMENDATIONS

Year	Measure
1	Wall/roof spray foam
1	Windows
1	200 Amp Panel
1	Ducted ASHP
1	HPHW
1	Kitchen Hood/Bath Fan
1	Solar PV
1	Induction Range
1	Washing Machine and HP Dryer
2-4	ERV
2-4	EV and charger
2-4	Electric Outdoor Power Equip

[info@AbodeEM.com](mailto:info@AbodeEM.com)

abode

1% FOR THE PLANET



## Clean Energy Lives Here

- Building decarbonization website and marketing campaign

**Susan Mlodozeniec**  
**Marketing Director, MassCEC**



**Clean Energy Lives Here** is a public awareness campaign that educates and informs MA residents about decarbonized alternatives to common household systems and appliances

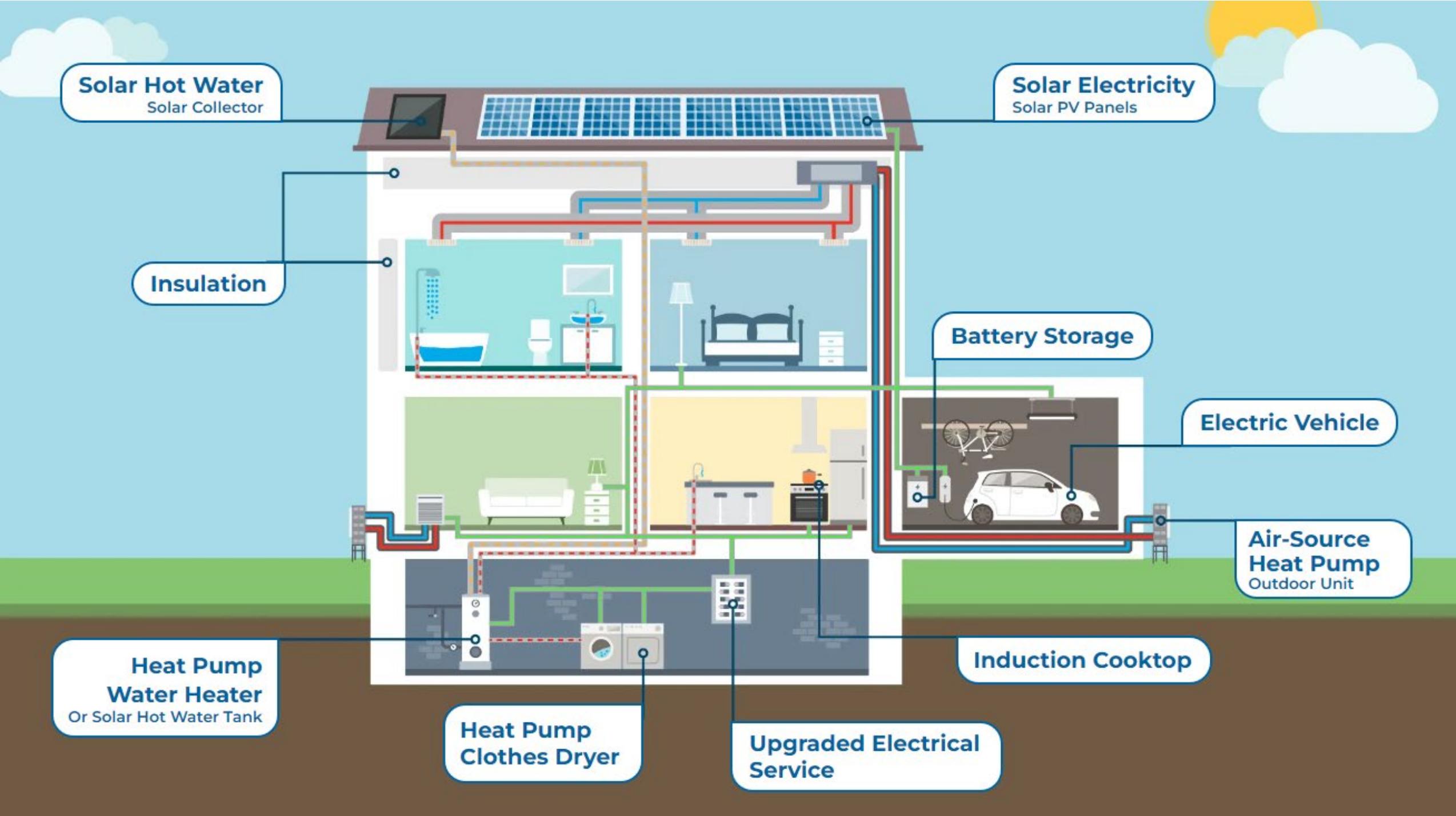


# Goals

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- ✓ Engage consumers on opportunities for home electrification, efficiency, and renewables
- ✓ Provide resources to inform consumer evaluation and decision-making
- ✓ Support residents in developing a long-term plan for transitioning home energy systems prior to failure
- ✓ Connect residents with installers, quote comparison portals, energy coaches, rebates, incentives, and financing options





## 30 second commercial





English

CLEAN ENERGY SOLUTIONS BENEFITS + SAVINGS INSTALLERS RESOURCES CUSTOMER STORIES



MASSACHUSETTS CLEAN ENERGY CENTER  
**CLEAN Energy**  
LIVES HERE™  
DEPARTMENT OF ENERGY RESOURCES  
www.goclean.masscec.com



English

- CLEAN ENERGY SOLUTIONS
- BENEFITS + SAVINGS
- INSTALLERS
- RESOURCES
- CUSTOMER STORIES



### Clean Energy Solutions for Your Home

Adding clean energy to your home just got easier.

[Let us show you!](#)

### WEATHERIZATION

About Weatherization  
*(Air Sealing & Insulation)*

Weatherizing Doors & Windows

Weatherizing Walls & Ductwork

Weatherizing Your Attic

Weatherizing Your Basement

Weatherizing Fireplaces & Recessed Lights

Weatherization Programs

### HEATING & COOLING

Air-Source Heat Pumps

Automated Wood Heating

Ground-Source Heat Pumps

### SOLAR

Community Solar

Solar Electricity

Solar Hot Water

Battery Storage

### APPLIANCES

Heat Pump Clothes Dryer

Heat Pump Water Heater

Induction Cooking

### ELECTRICITY

Buying Clean Electricity

Electrical Service Upgrade

### TRANSPORTATION

Electric Vehicles



## Window Air Sealing Techniques

Ask This Old House | 5 min. 42 sec.

The This Old House team explains different insulating techniques, including shrink wrap, weather stripping, and caulk. Anything you can do to decrease airflow and leakage will drastically increase comfort and energy savings.



Window Air Sealing Techniques | Ask This Old House



Watch later



Share

**ask** This Old **House** ▶  
**SEALING  
WINDOWS**



Watch on  YouTube

### FEATURED CUSTOMER STORY

## Nia's New Floor Mounted Air-Source Heat Pump

*"Normally the bill is anywhere from \$400 to \$500, and it was more like \$200, I was like, 'Let me look at that again!'"*

[LEARN MORE](#)



[Like this customer story here >>](#)



## BENEFITS OF INDUCTION COOKING

Induction cooktops heat up ~50% faster and are substantially more energy efficient than gas and conventional electric stoves.



### Lower greenhouse gas emissions

Lower greenhouse gas emissions compared to gas or propane cooking



### Improve indoor air quality

Eliminate toxic emissions released from gas and propane cooking that can lead to asthma and cardiovascular disease



### Easier cooking

Induction cooktops cook faster and more evenly than electric, gas, and propane. The flat surface makes cleanup a breeze



### Safer

Poses no risk of gas leaks and reduces risk of fires and accidental burns

# EVERYTHING YOU NEED TO KNOW ABOUT INDUCTION COOKTOPS



INDUCTION STOVETOP

How Induction Cooking Works

[READ ARTICLE >>](#)



INDUCTION STOVETOP

Four Things To Do Before Installing an Induction Cooktop

[READ ARTICLE >>](#)



INDUCTION STOVETOP

Questions to Ask Your Appliance Salesperson or Installer

[READ ARTICLE >>](#)

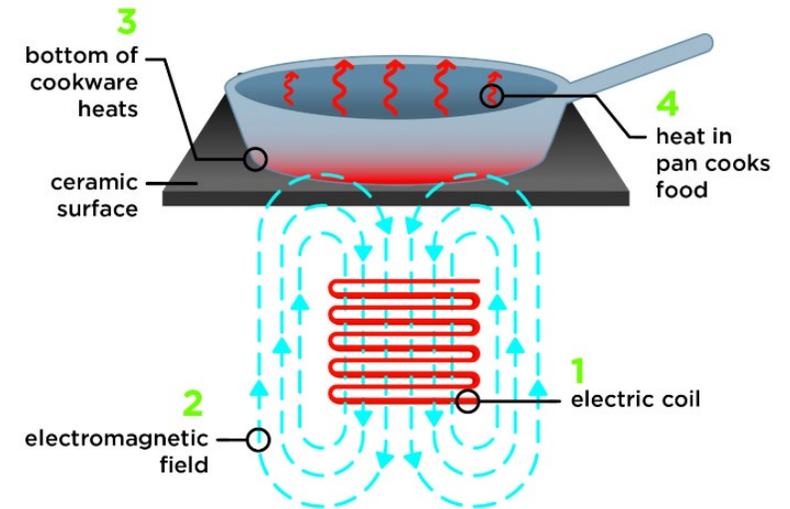


INDUCTION STOVETOP

Getting the Most From Your New Induction Cooktop

[READ ARTICLE >>](#)

Technology Explanation



With induction cooking, electricity flows through a tightly wound coil (1), which generates a magnetic field (2) at the surface of the cooktop. When a pot or pan made of ferrous (or magnetic) material meets the magnetic field, it agitates the molecules within the bottom and sides of the pan (3). The excited molecules result in heat (4)—but only within the material of the cookware itself. Any food in the pan will cook as expected, but all the heat comes directly from the pan rather than a heating element underneath.

# INCENTIVES AND FINANCING



## MASS SAVE®

**Electric Heating and Cooling Rebates:** Up to \$15,000 for a whole home ground-source heat pump system. May be up to \$30,000 if your household is eligible for **Enhanced Rebates**.



## MUNICIPAL LIGHT PLANT

If you live in a town served by a **Municipal Light Plant (MLP)**, check your MLP's website for incentives and rebates.



## MASS DEPARTMENT OF ENERGY RESOURCES (DOER)

**Alternative Energy Certificates (AECs):** One-time payment provided to homeowners installing ground-source heat pumps. A 2,000 square foot home with a whole-home system could receive around 300 AECs, worth approximately \$1,500-\$3,600.



## MASS STATE TAX CREDITS

**6.25% Massachusetts Sales Tax Exemption**



## FEDERAL TAX CREDITS

**Inflation Reduction Act:** Federal tax credit up to 30% of system cost.



## FINANCING OPTIONS

**Mass Save® HEAT Loan:** Up to \$50,000 at 0% interest over terms of up to 7 years.

## FIND AN INSTALLER NEAR YOU

For weatherization and air-source heat pumps, we encourage you to use contractor lists that other organizations maintain.



To schedule a home energy assessment and/or pick a home performance contractor, choose a provider that serves your electric utility.

[Mass Save](#) | [Energy New England](#) | [NextZero](#)



To find an air-source heat pump installer [use Mass Save's Heat Pump Installer Network](#)



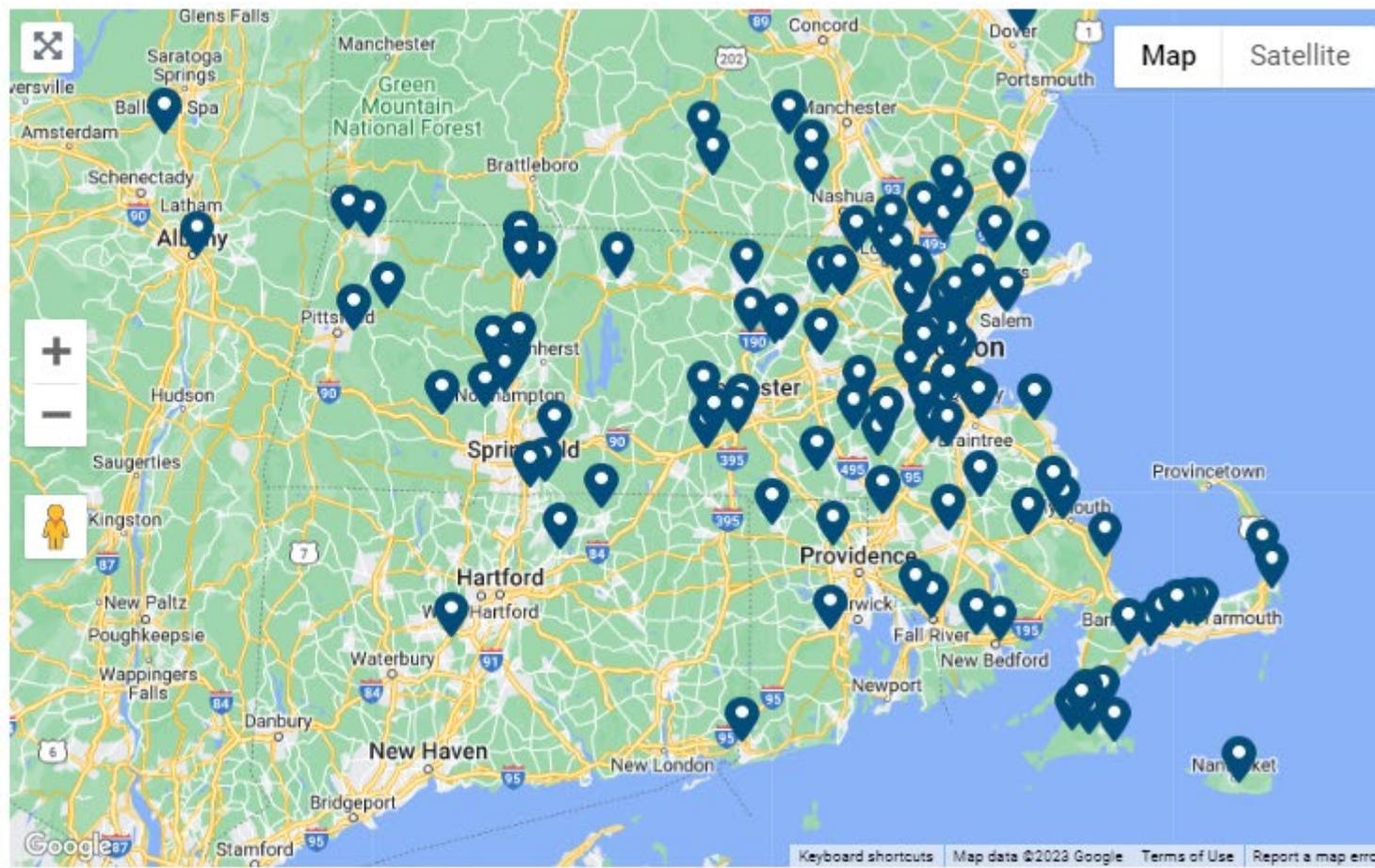
### INSTALLERS SERVING YOUR ZIP CODE

**Technology**

- Ground-Source Heat Pumps
- Heat Pump Water Heaters
- Solar Electricity
- Battery Storage

SEARCH

Installers will be listed by their office's proximity to your zip code.



# How you can benefit from this campaign

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- ▶ Be ready for increased interest in home decarbonization due to advertising from April – July
- ▶ If your business installs residential clean energy technologies, apply to be listed on our Installer page. Become part of the Mass Save® Home Energy Assessor and/or Heat Pump Installer Network if appropriate for your product(s)
- ▶ Refer your clients to [CleanEnergyLivesHere.com](https://CleanEnergyLivesHere.com) to self-educate on the benefits of clean energy technologies, how they work, and what incentives/tax credits are available
- ▶ We'd love to hear from YOU!
  - How can we improve the website and campaign?
  - Do you have clients who've finished decarbonization projects and would make a good customer stories? We'd be happy to talk to them! Email us at [goclean@masscec.com](mailto:goclean@masscec.com)

