



# Environmental Sustainability Committee

## Heat Pump and Weatherization Workshop

October 15, 2025

# Workshop Agenda



- **Welcome and Introductions**
- **Weatherization**
- **Heat Pumps**
- **Economic Incentives and Financing**
- **Q&A**

# Introductions



Three Carlisle-based speakers with over 90 years of combined experience in energy efficiency and electrification

**Bob Zogg**

**Dave Boettcher**

**Glenn Reed**

# Workshop Logistic



## ***This is a hybrid workshop***

Those who are attending via Zoom, please:

- **Mute yourself**
- **Put all questions into the chat**
  - As appropriate, we will address clarifying questions relevant to the Weatherization and Heat Pump presentations at the end of each presentation

# Logical Progression Towards an Electrified Home



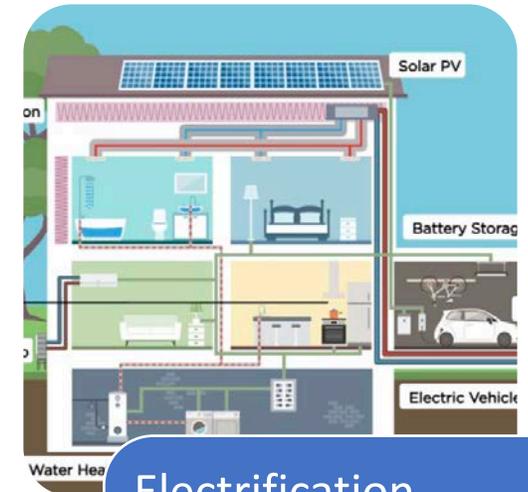
## Mass Save® Home Energy Assessment

- No-Cost
- Decarbonization Roadmap



## Weatherization

- Air sealing + insulation
- No-brainer decision
- Improve comfort
- Reduce costs
- Foundation for future improvements
- 75%-100% incentives



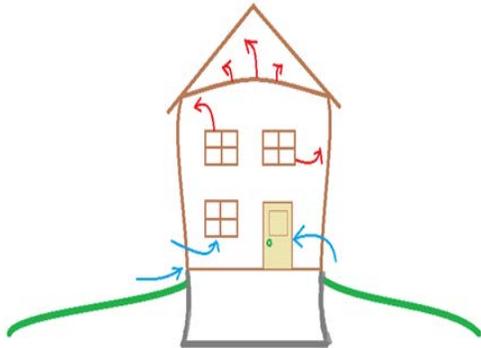
## Electrification Measures

- Heat pumps
- Heat pump water heaters
- Induction range
- Heat pump dryer
- EV + charging
- Lawn equipment

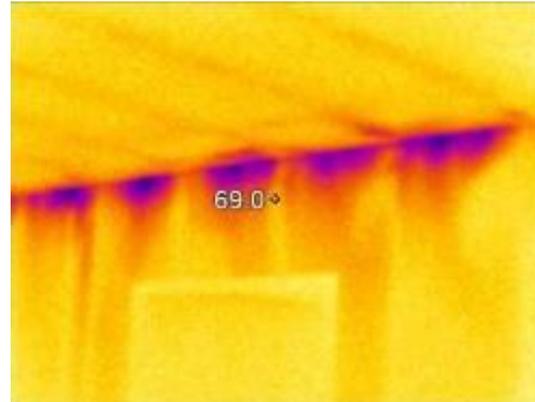


# What Does Weatherization Do?

Stack effect



Reduce air movement



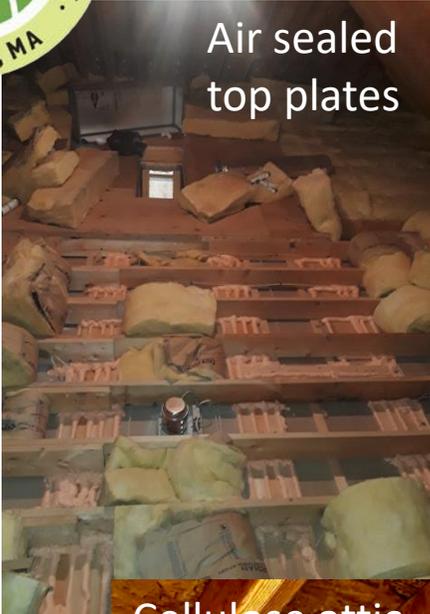
Insulate + air seal  
= weatherized





# What is weatherization

Air sealed top plates



Cellulose is recycled newspaper



Cellulose wall insulation



Cellulose attic insulation



Foamboard insulation in a crawlspace



Cellulose wall insulation





# Why Weatherize First?

- **Improved Comfort and Efficiency**
  - Retain heat, reduce drafts, and enable stable temps with heat pumps
- **Right-Sized Heat Pump Systems**
  - Enables accurate heat pump sizing, reducing costs and improving performance
- **Financial Savings**
  - Reduces lifetime operating costs
- **Incentives and Environmental Impact**
  - Qualifies homes for rebates, reduces grid strain, and greenhouse gas emissions.



# Available Incentives



Measure	Incentive
Air Sealing	100%
Insulation	75-100%
Barrier Mitigation	\$5,000 +
Income Based Offers	
Insulation	100%
Barrier Mitigation	100%
Heat Pumps	100%

Enhanced Incentive Income Thresholds	
Number of Household Members	Annual Household Income 2025 – 2026 Heating Season
1	\$92,650
2	\$105,850
3	\$119,100
4	\$132,764
5	\$154,006
6	\$175,248
7	\$179,231
8	\$183,214

# Heat Pumps for Homes

Bob Zogg, HeatSmart Alliance

October 15, 2025



# About the HeatSmart Alliance



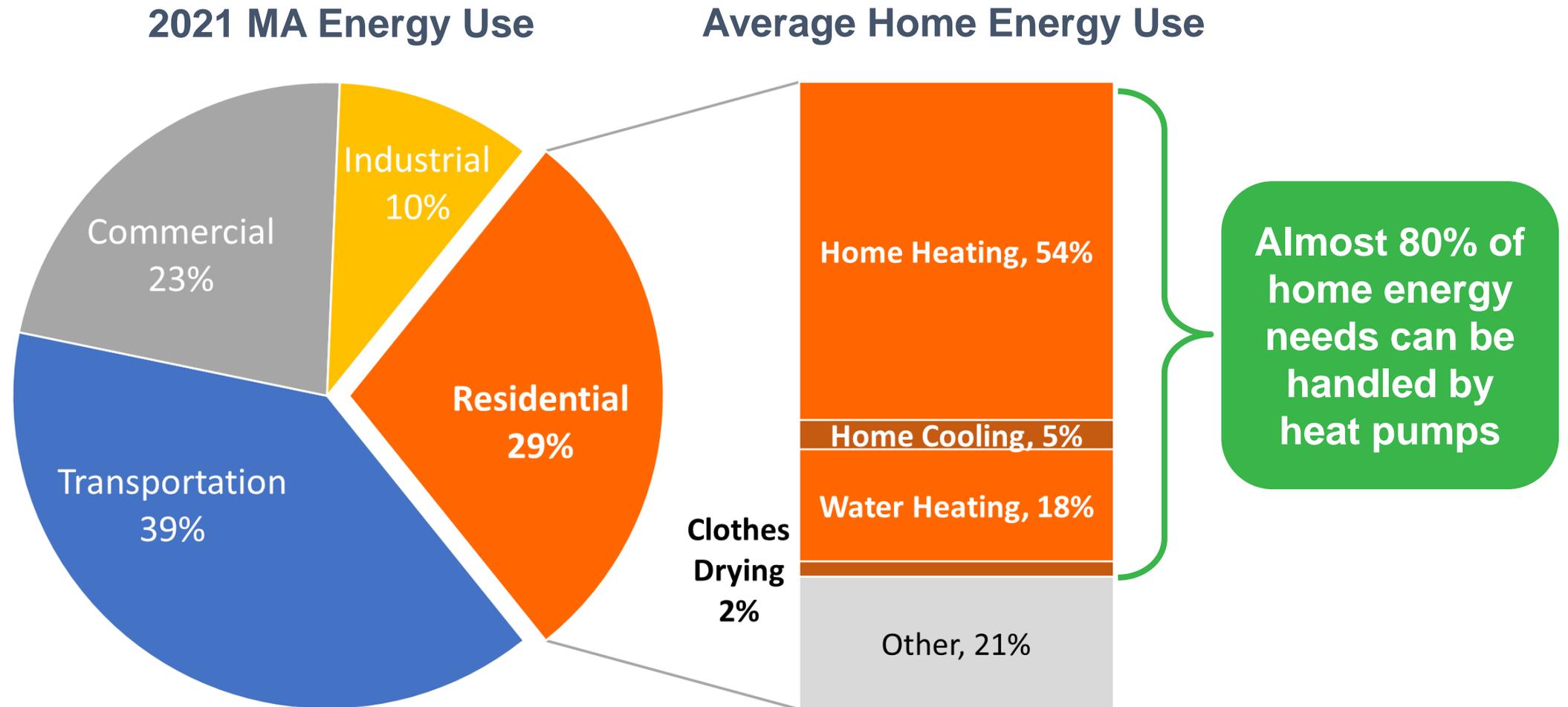
***Mission:** Reduce carbon pollution by accelerating the adoption of energy-efficient heat pumps in MA homes*

- **Applications:** Home heating and cooling, water heating
- All-volunteer organization
- Over 145 Members from over 55 MA communities, and growing
- **Approach:** Educate / Coach / Collaborate

The Alliance does not accept donations or referral fees from installers or manufacturers

# Why Heat Pumps?

# Home Heating and Cooling Matters...



Source: U.S. Energy Information Administration, <https://www.eia.gov>

# Path to Home Decarbonization

## 1. Weatherize

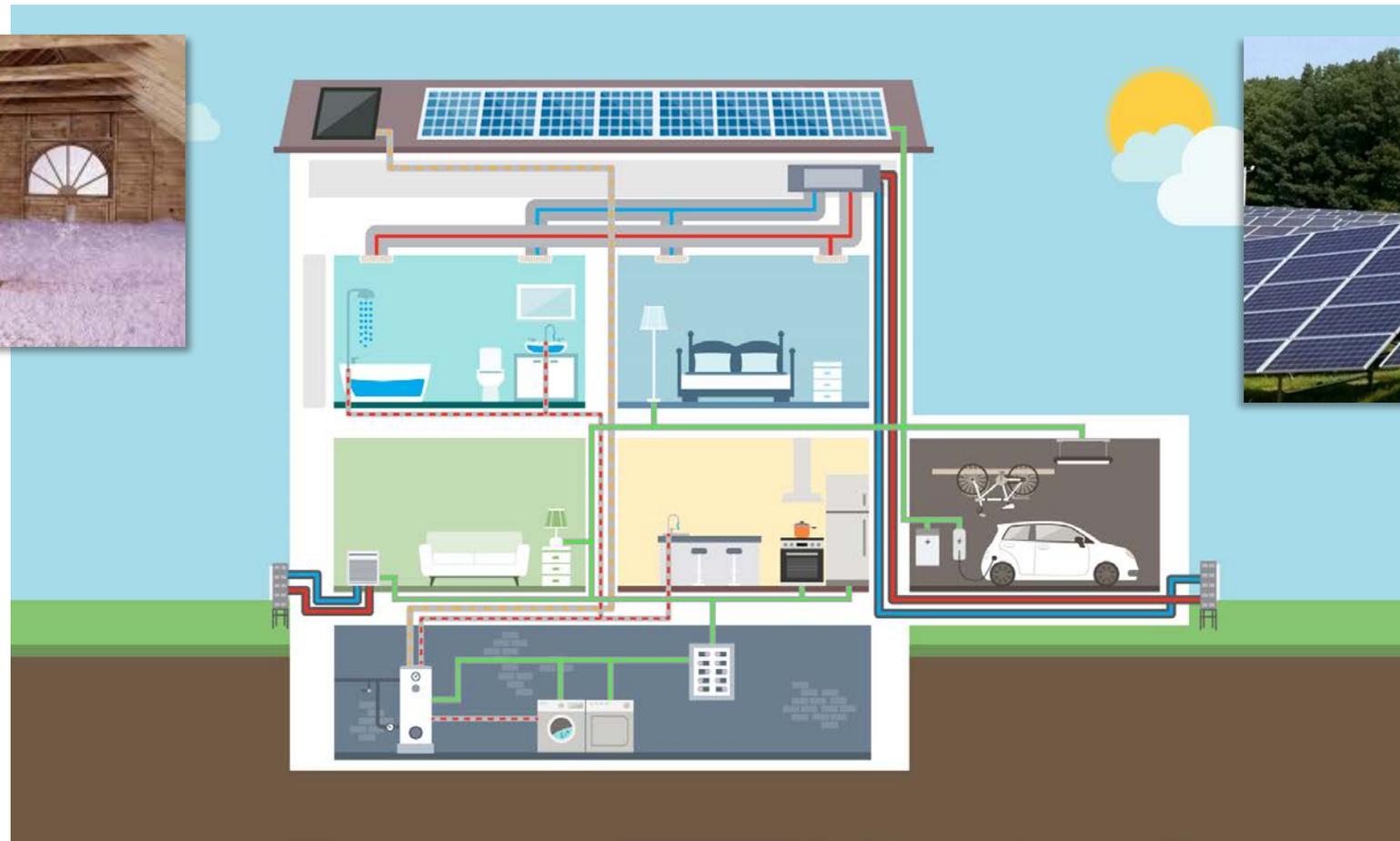
– *insulate, air seal*



Source: NEEP

## 2. Electrify

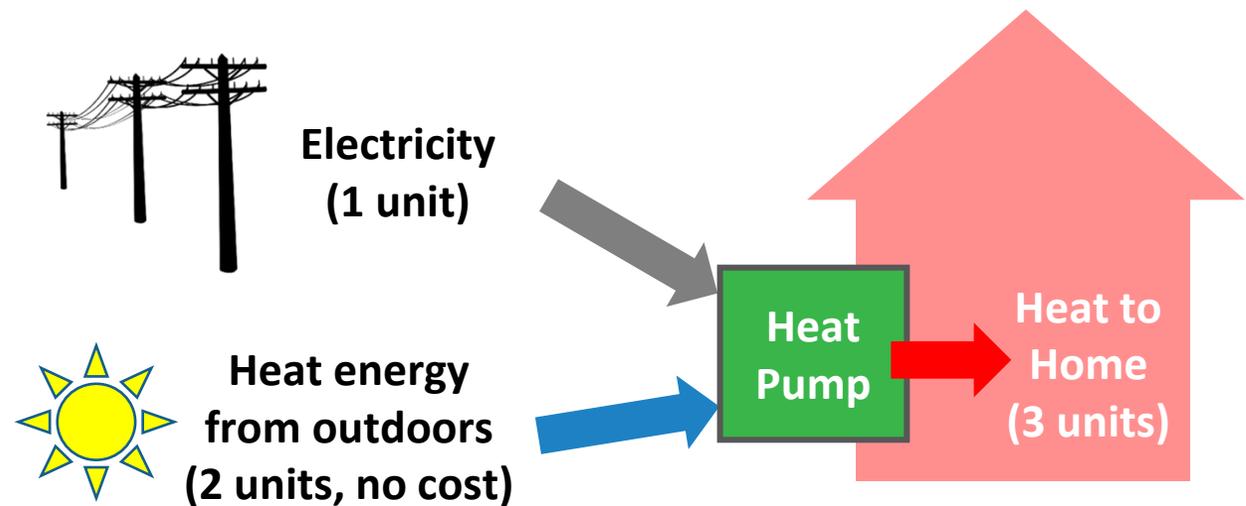
## 3. Shift to renewable electricity



Source: MassCEC

# What's a heat pump?

- Moves (pumps) heat from a **cooler** place to a **warmer** place
- Refrigerators, dehumidifiers, and air conditioners are **heat pumps**
- Available for:
  - Home **heating** and **cooling**
  - Water heating
  - Clothes drying
  - Pool heating



Heat pumps provide **heating** AND **air conditioning**

# Benefits of Heat Pumps in MA Homes

- ***Substantially reduces*** carbon pollution
- ***Safer*** (no risk of carbon monoxide or explosion)
- ***Quieter*** than most air conditioners
- ***Superior year-round comfort*** (summer and winter)

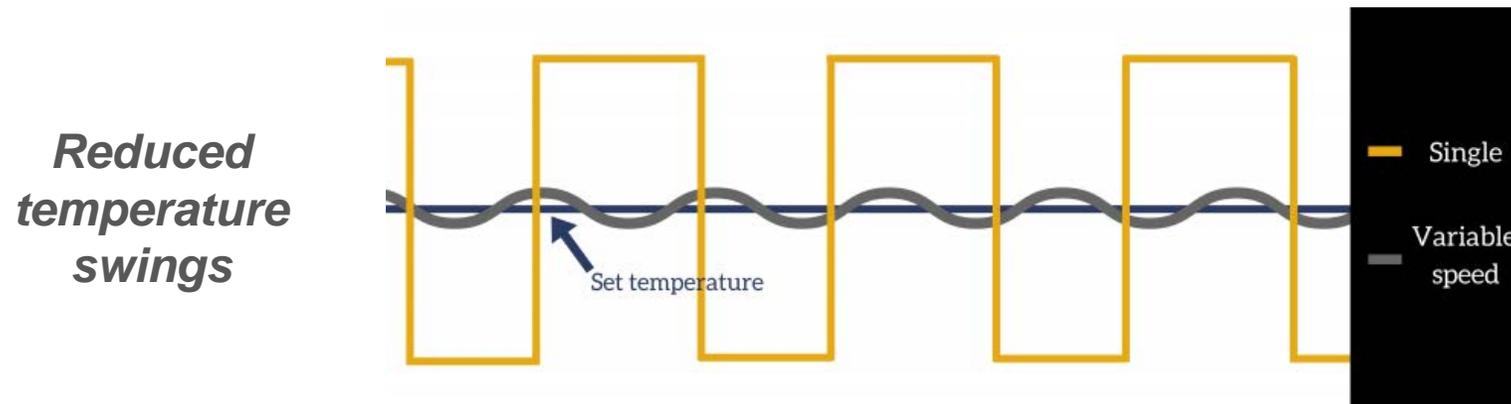


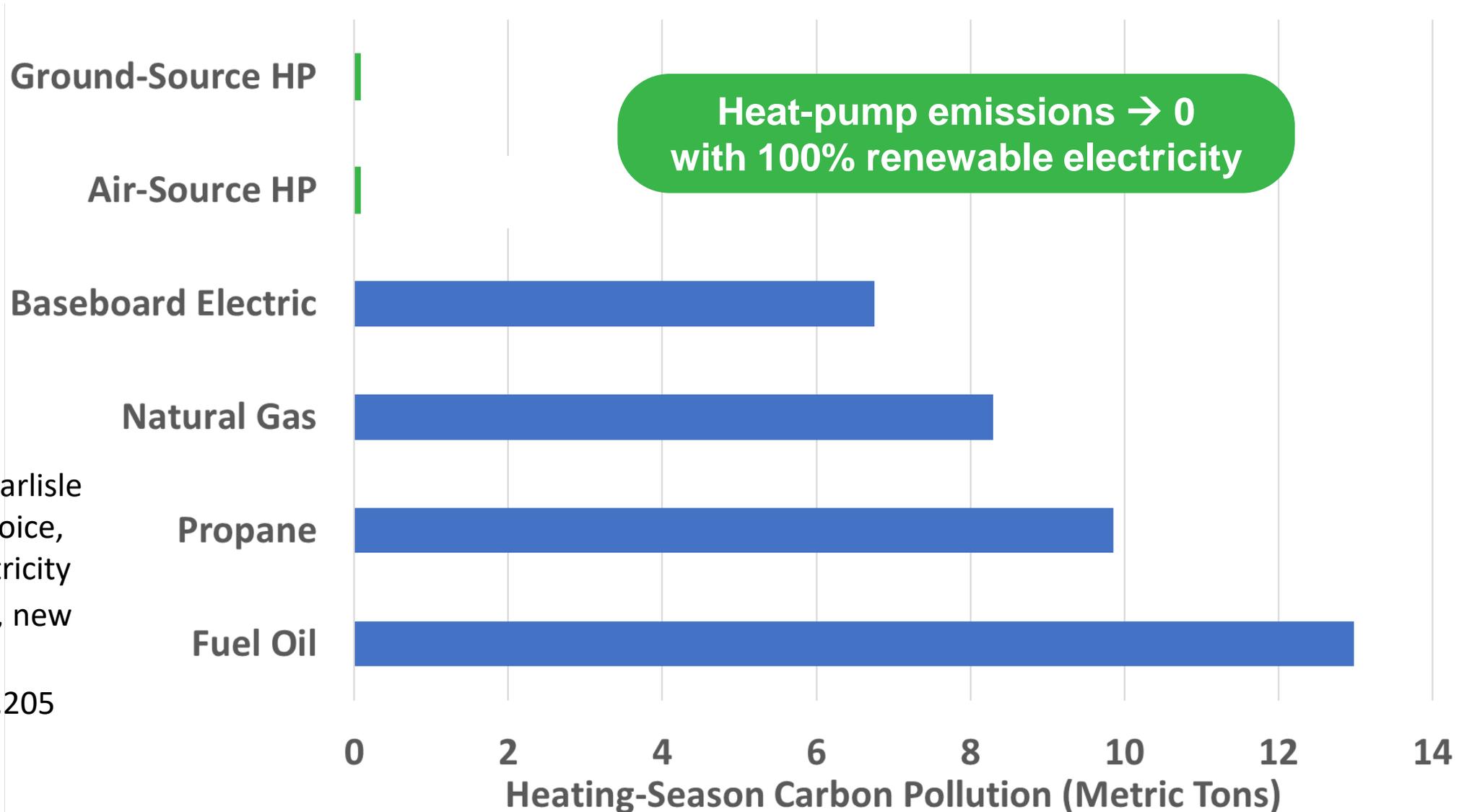
Illustration courtesy of NEEP

# Carbon Pollution Reduction

3,500 sf home  
Typical  
construction

## Notes:

- Projected for Carlisle Community Choice, Standard, electricity
- High-efficiency, new equipment
- Metric Ton = 2,205 lb.



# Which Type of Heat Pump is Right for Your Home?

*Every Home is Unique*

# What is Your Existing Heat Distribution Type?

Hydronic (Hot Water or Steam)



Boiler



Baseboards



Steam Radiators

Also, Radiant Floors

or

Forced-Air



Furnace

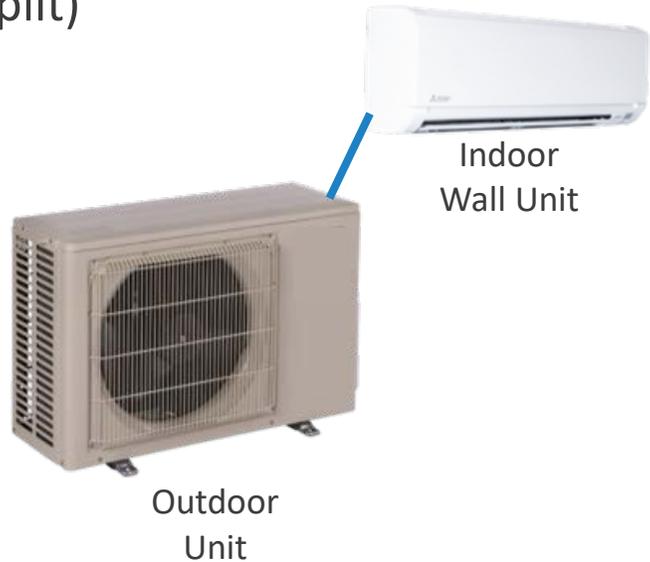


Supply and Return Vents,  
floor- or wall-mounted

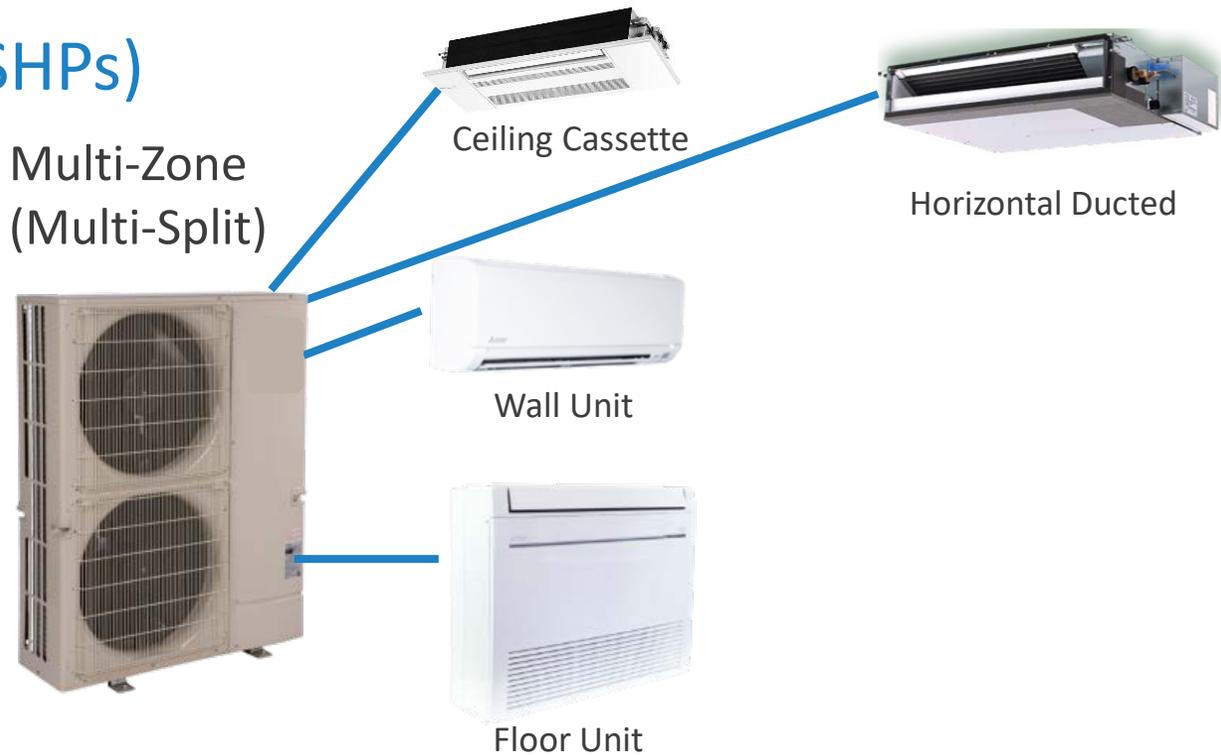
# Heat-pump options for hydronic distribution

## Ductless “mini-split” air-source heat pumps (ASHPs)

Single-Zone  
(Mini-Split)



Multi-Zone  
(Multi-Split)



**Your fossil-fuel system can provide backup in extreme conditions**

*Most photos courtesy of NEEP.  
No brand endorsement intended.*

# Heat-pump options for forced-air distribution

## Central air-source heat pump (ASHP)

Partial  
electrification  
(Hybrid)



Indoor Furnace and Coil



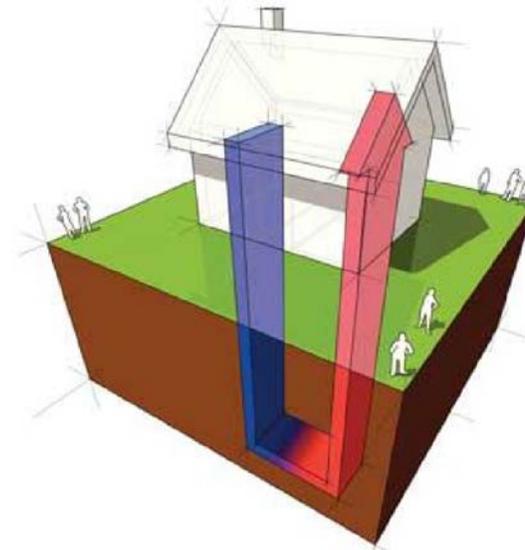
Outdoor Unit  
- looks like central AC

Complete  
electrification



Indoor Air Handler

## Ground-source heat pump (GSHP)



Complete  
electrification



or

**Existing ducting must be suitable:  
insulated, sealed and properly sized**

# Ground-Source vs. Air-Source Heat Pumps

## Ground-Source

- Larger incentives
- 50% - 70% higher efficiency
  - *Lower energy costs*
  - *Less carbon pollution*
- Better outdoor aesthetics—nothing above ground
- Factory-packaged heat pump (less risk of refrigerant leaks)



## Air-Source

- Lower first cost
- No disturbance of landscaping
- Requires small outdoor space
- More ductless options (currently)



*No brand endorsement intended.*

# Heat-pump option for domestic hot water

- Heat-Pump (*aka* Hybrid) Water Heaters
  - Over 60% savings on energy / carbon pollution
  - Fast payback compared to conventional electric
  - Installed by plumbers or HVAC installers
- New from Mass Save<sup>®</sup>: [HPWH Marketplace](#)
  - Streamlined buying process
  - “Fixed price” installs from participating contractors



*Photos courtesy of manufacturers.  
No brand endorsement intended.*

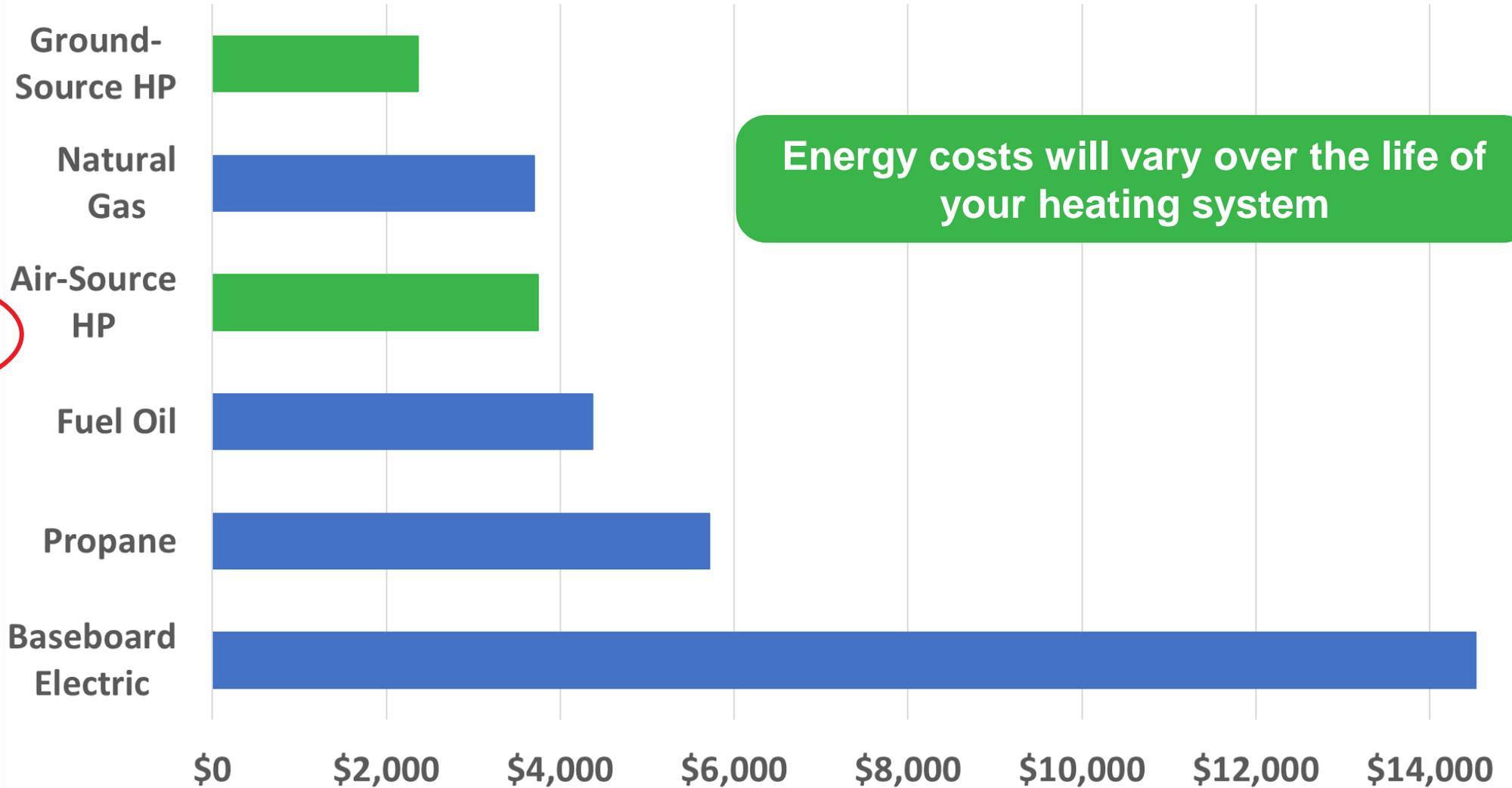
# How Much Will It Cost?

# Annual Heating Cost Comparison

3,500 sf home  
Typical  
construction

**Notes:**

- Carlisle Community Choice, Std, with HP Discount
- Natural gas: \$2.36/therm
- Oil: \$3.43/gal
- Propane: \$3.33/gal
- High-efficiency, new equipment



Energy costs will vary over the life of your heating system

# Financial Analysis

- Look at first-cost ***difference***
  - heat pump vs. conventional equipment
    - ✓ Include ***both*** heating ***and*** cooling equipment
- Include incentives (rebates, loans, tax credits, reduced electricity rates)
- Consider
  - ✓ Assigning a price to carbon pollution
  - ✓ Possible increase in home resale value
  - ✓ Value of comfort improvements
- Accept uncertainties about future energy costs



# Your Action Plan

# Convert to a heat pump when ...

**Plan Ahead! Don't wait for failure when replacement becomes urgent**

## 1. Existing equipment is aging

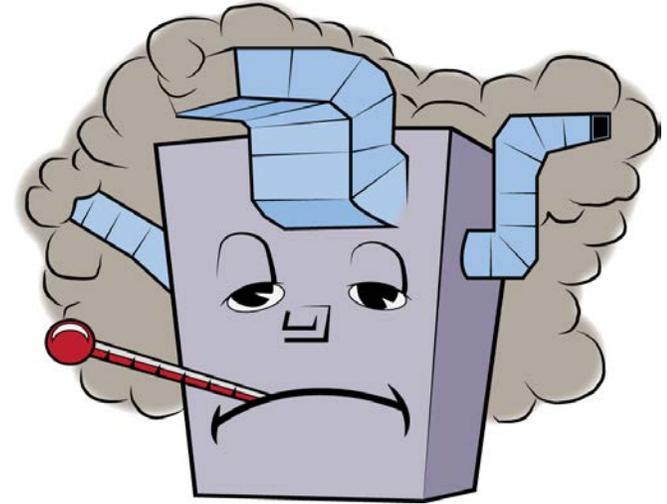
- *Heating OR cooling equipment over 15 years old*
- *Water heater over 7 – 10 years old*

## 2. Adding AC to a home that doesn't have it yet

- *Heat pumps provide efficient heating and cooling*

## 3. Planning an addition, renovation, or a new home

- *Heat pumps can meet 100% of heating/cooling needs*



# How do I get started?

## 1. Get informed

- [HeatSmart Alliance](#)
- [Carlisle Environmental Sustainability Committee](#)

## 2. Get a no-cost Mass Save<sup>®</sup> home energy assessment

- [HomeWorks Energy](#)

## 3. Request Coaching

- [Mass Save Decarbonization Consultation](#)
  - *Ask for a Quote Comparison*
- [HeatSmart Alliance coach](#)

## 4. Get quotes from heating/cooling installers

- *Every home is unique – you'll learn from each installer*
- *Consider all factors (equipment offered, installer reputation, and cost)*



**Thanks for Listening!**

**Website: [HeatSmartAlliance.org](http://HeatSmartAlliance.org)**

# Economic Incentives and Financing for Weatherization and Heat Pumps



**They are significant economic incentives and financing options to address the first costs for both weatherization and for heat pumps**

- Mass Save<sup>®</sup> Incentives
- 0% interest HEAT Loan
- Energy Saver Home Loan Program
- Expiring Inflation Reduction Act (IRA) Tax Credits

**And the operating costs of heat pumps**

- New Eversource Heat Pump Rate

# Mass Save Incentives



## Heat Pumps and Heat Pump Water Heaters (HPWH)

	2025		2026	
	\$/ton	Cap	\$/ton	Cap
<b>ASHP - Partial Displacement<sup>*∞</sup></b>	\$1,250	\$10,000	\$1,150	\$8,500
<b>ASHP - Whole House</b>	\$3,000	\$10,000	\$2,650	\$8,500
<b>GSHP<sup>∞</sup></b>	\$15,000		\$13,500	
<b>120 or 240 volt HPWH</b>	\$750		\$750	
<b>Split-system HPWH</b>	\$1,500		\$1,500	
<i>* \$500 Bonus if system sized to meet full heating load</i>				
<i>∞ \$500 Bonus if weatherization recommendations installed for partial displacement</i>				
<i>\$/ton incentives are based on cooling load</i>				

# Mass Save Incentives (cont.)



## Income Qualified Mass Save Services & Incentives

- Mass Save has raised the income thresholds for *free* weatherization and heat pump installations

### [Mass Save® Income Eligible No-Cost Energy Efficiency Programs](#)

- If you use the Mass Save website to schedule a Home Energy Assessment, it will take you through an income verification process

### [Home Energy Assessments | Residential | Mass Save](#)



# 0% Mass Save HEAT Loan

- Mass Save supported weatherization and heat pump installations are eligible for a 0% interest-free loan
  - Up to \$25,000
  - Up to a 7-year loan period, depending on lender
    - \$298/month for \$25,000 over 7 years
    - Starting in 2026, loan period may be tied to income

[0% Interest Financing | Residential | Mass Save](#)



# Energy Saver Home Loan Program (ESHLP)

Offered by the Massachusetts Community Climate Bank

- 20% savings requirement
- Broad measure coverage including rooftop PV & battery storage
- \$10K to \$100K loan amount
  - Treated as a second home mortgage
- 20-year loan term
- Interest rate of:
  - 0.5% - \$121,680 household income cap
  - 2.0% - \$205,335 household income cap

[Energy Saver Home Loan Program](#)



# Expiring IRA Tax Credits

## Tax credits expire December 31

- Equipment must be *installed* by this date
- Initially were to have been available through 2032

***Up to a total of \$3,200 for ASHPs, HPWHs, insulation, windows, doors, and electric panel upgrades***

### 25C Tax credit

For Qualified Electrification Upgrades

<b>Total annual credit</b>	<b>\$3,200</b>
Heat pumps and heat pump water heaters	<b>\$2,000</b>
Other upgrades	<b>\$1,200</b>
<b>Annual credit for heat pumps and/or heat pump water heaters</b>	<b>\$2,000</b>
Heat pump	<b>\$2,000</b>
Heat pump water heater	<b>\$2,000</b>
<b>Annual credit for other upgrades</b>	<b>\$1,200</b>
Insulation and air sealing (products only, labor costs not eligible for credits)	<b>\$1,200</b>
Doors	<b>\$500</b>
Windows	<b>\$600</b>
Electrical panel	<b>\$600</b>

# Expiring Tax Credits (cont.)



**30% tax credit for ground source heat pumps (GSHPs) with no cap**

[Frequently Asked Questions | Mass Save](#)

# New Eversource Heat Pump Rate



## Must have a heat pump that partially or fully heats your home

- Just a heat pump water heater does ***not*** qualify
- In effect from November 1-April 30
- Applies to ***all*** electricity use during the 6 months
- \$0.0745 reduction in \$/kWh charge through December 31
  - New rate for 2026 yet to be filed & approved
- Eversource estimates that the average HP customer will save 23% off their electricity bill

# New Eversource Heat Pump Rate (cont.)



- Customers that received a Mass Save heat pump incentive after 1/1/2019 will be automatically enrolled
- Other heat pump customers will be able to enroll on the Eversource website beginning on November 1

**Heat Pump Rate**

# Resources



## **Mass Save Home Energy Assessment**

- [Home Energy Assessments | Residential | Mass Save](#)

## **Mass Save Weatherization Services & Incentives**

- [Insulation and Air Sealing | Residential | Mass Save](#)

## **Mass Save Decarbonization Consultation**

- [Decarbonization Consultations | Residential | Mass Save](#)

## **Mass Save Air Source Heat Pump Resources and Incentives**

- [Heat Pumps | Mass Save](#)

## **HeatSmart Alliance**

- [facilitator@heatsmartalliance.org](mailto:facilitator@heatsmartalliance.org)

## **HomeWorks Energy**

- [Mass Save Home Assessments in MA | No-Cost Energy Audits](#)