

Heat Pumps in New England

Consultant Team Presentation

Date: October 5, 2026

Outline



- Introduction and Intended Outcomes
- Ongoing Efforts to Promote Heat Pumps
- Heat Pump Program Evaluations
- Council Discussion

Intro: Griff Keating (Consultant Team)



- Consultant to the Massachusetts and Delaware Energy Efficiency Advisory Councils
- Led the heating electrification demand forecast for ISO New England
- Conducted a Clean Heat Standard Potential Study for the Vermont Public Service Department
- Led development of the building electrification segment of the Michigan Public Service Commission Statewide Potential Study



Intended Outcomes



- Learn about different mechanisms and program designs used to promote heat pump adoption
- Understand linkage between program design and market outcomes, as shown through evaluation
- Discuss the relevance of other heat pump offerings and evaluation findings to the Rhode Island market



Ongoing Efforts to Promote Heat Pumps

Summary of Ongoing Efforts to Promote Heat Pumps and Fuel Switching



- **Vermont (Efficiency Vermont):** Incentivizing heat pumps via midstream incentives
- **Maine (Efficiency Maine):** Incentives for one-to-one upgrades, with legislative goals measured in units sold
- **Connecticut (EnergizeCT):** Incentives based on installed capacity
- **Massachusetts (Mass Save):** Incentives based on capacity, with an extra incentive (and requirements) for full displacements
- **New England Heat Pump Accelerator:** Midstream incentives with a pass-through guarantee to bolster programs throughout the region

Ongoing Efforts: Efficiency Vermont



- Efficiency Vermont incentives largely focus on unit numbers of heat pumps, with a small incremental incentive for larger heat pumps
 - Minisplit Heat Pumps:
 - \$375/unit, up to 2 tons of capacity
 - \$475/unit, over 2 tons of capacity
 - Ducted Heat Pumps:
 - \$1,200/unit, up to 2 tons of capacity
 - \$1,700/unit, 2-4 tons of capacity
 - \$2,200/unit, 4 or more tons of capacity.

Ongoing Efforts: Efficiency Vermont



- Efficiency Vermont heat pump incentives focused on the efficiency aspect of heat pumps
- Tier III Renewable Energy Standard provides mechanism for incentivizing fuel displacement through heat pumps
 - Requires distribution utilities (DUs) to acquire specified amounts of renewable energy through three tiers
 - Tier III is Energy Transformation, requiring DUs to either procure additional distributed generation (part of Tier II) OR by reducing fossil fuel consumption by customers
 - Energy Transformation must account for 7.33% of the DU's annual retail electric sales in 2017, increasing by 2/3% until reaching 12% in 2032
 - Most DUs use Efficiency Vermont as the rebate processor to reduce customer friction

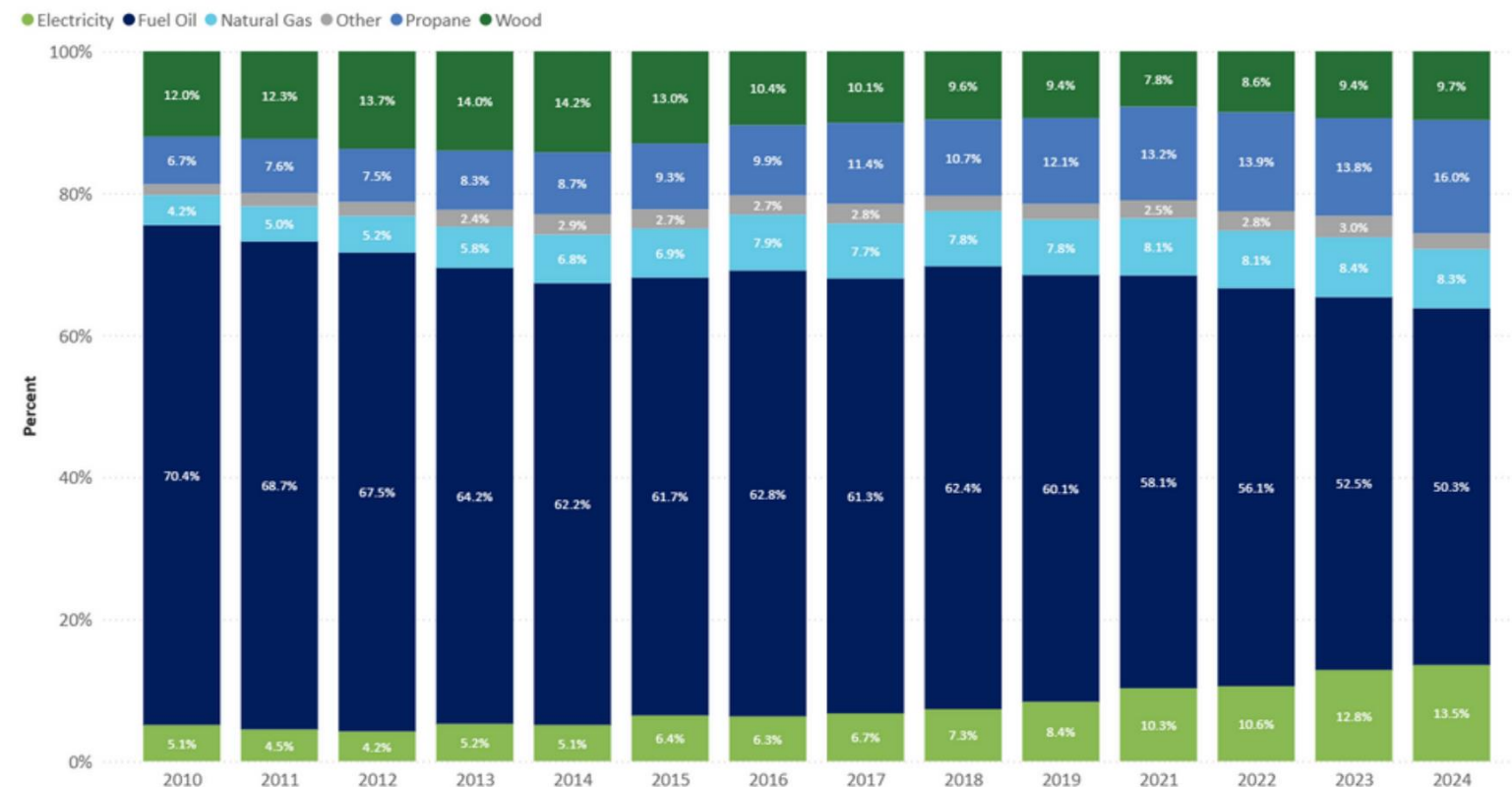
Ongoing Efforts: Efficiency Maine



Goal to maximize the number of installations coincides with rebates that incentivize maximum number of heat pumps

- Goal set in 2019: 100,000 heat pumps installed by 2025
- Goal reached in 2023 and increased to 175,000 heat pumps installed by 2027

Share of Energy Sources Consumed for Residential Heating, Maine



Ongoing Efforts: Efficiency Maine

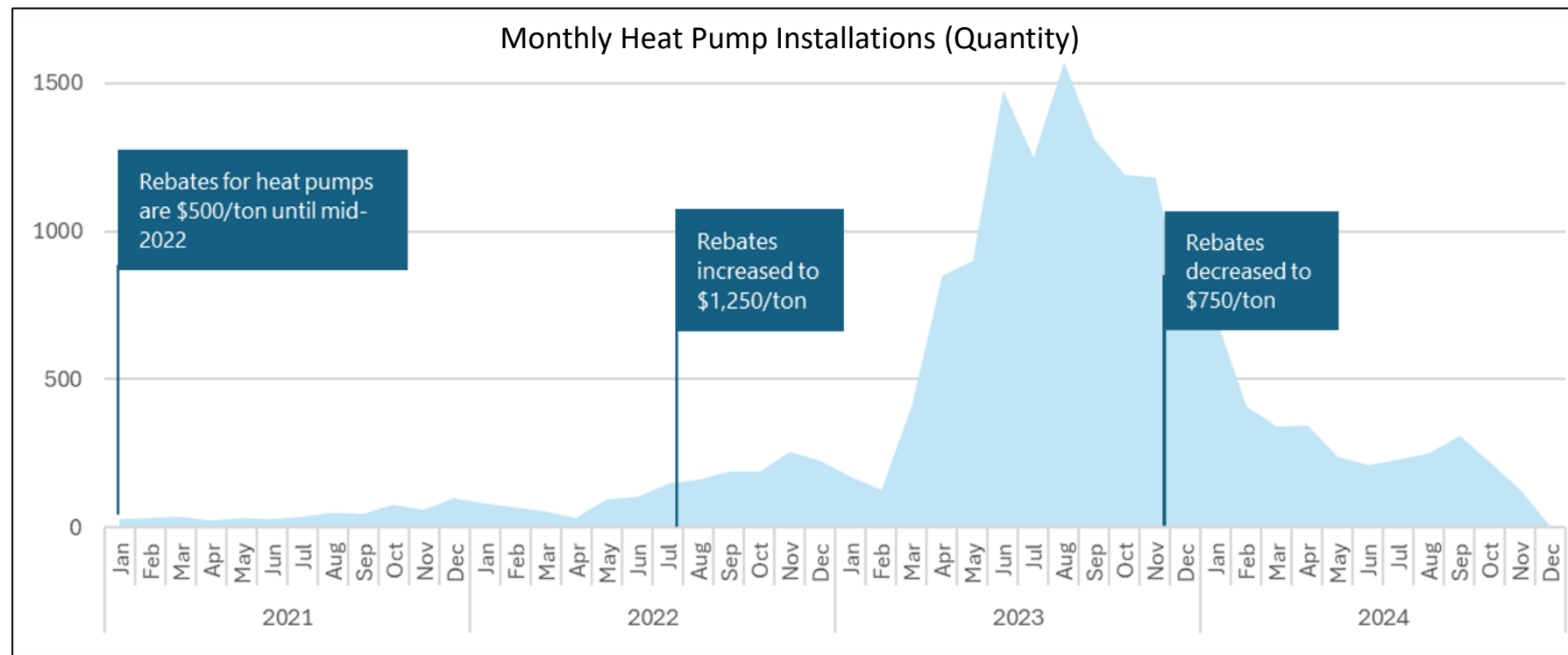


- Efficiency Maine's incentives prioritize displacement of delivered fuels
- The focus is on one-to-one installations: One indoor unit for every outdoor unit, with the heat pump(s) sized for at least 80% of the home's heating load
- Incentives are per outdoor unit, and up to three outdoor units are eligible
 - \$1,000/unit for any income (i.e., market rate)
 - \$2,000/unit for moderate income
 - \$3,000/unit for low income

Ongoing Efforts: Energize Connecticut



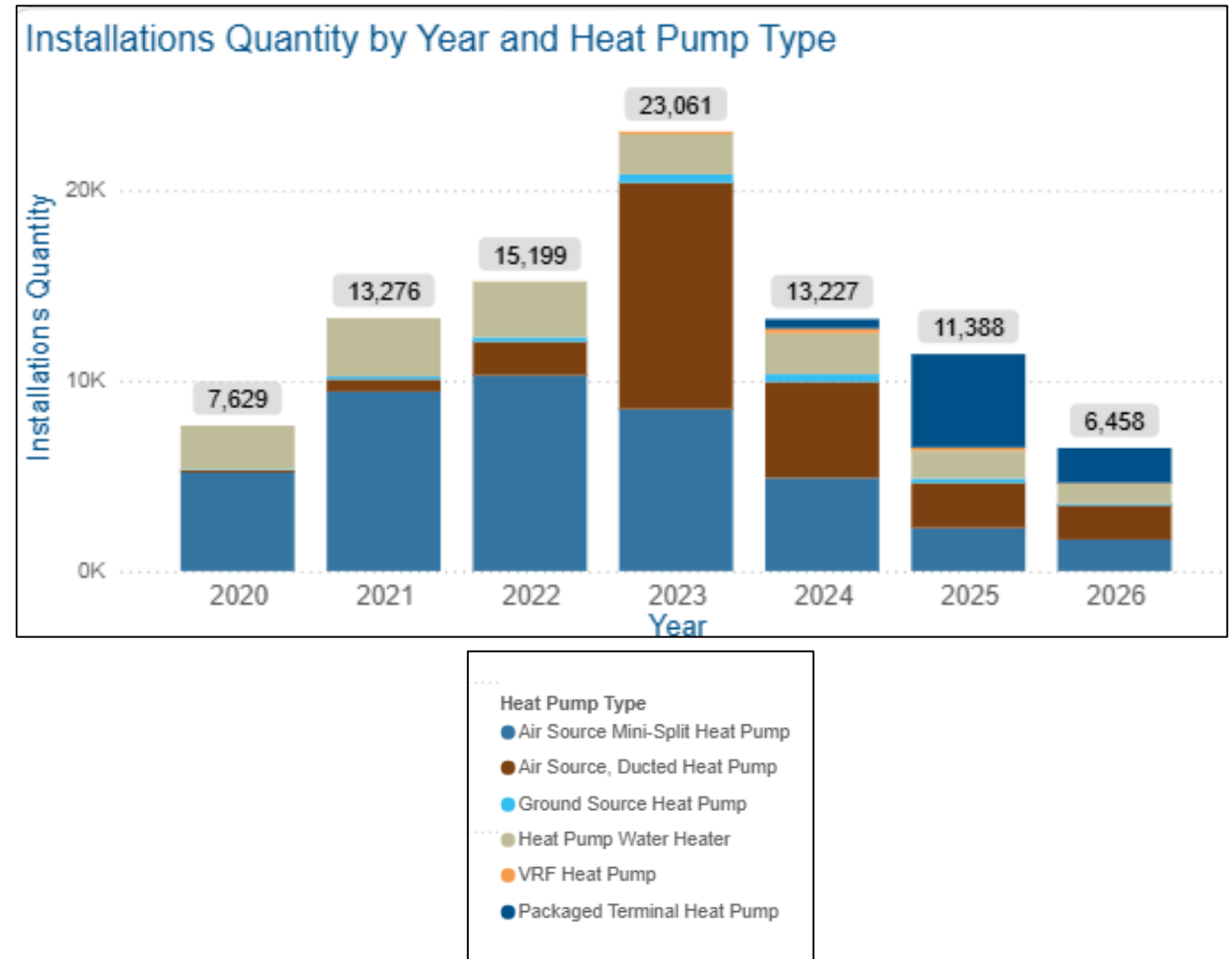
- Incentives were increased by a lot in 2022 and decreased by a lot in 2023, which led to a big rise and fall in installations corresponding to the changes



Ongoing Efforts: Energize Connecticut



- Starting in September 2026, incentives have gone back up to \$1,500/ton
- Inconsistency in level of support for heat pumps can potentially undermine workforce development and stability



Ongoing Efforts: Mass Save



- Incentives that focus on capacity of displacement, not number of installations
 - \$2,650 per cooling ton for whole-home conversions.
 - \$1,125 per cooling ton for partial-home conversions.
 - \$250 per cooling ton for the basic rebate
- Income Eligible customers do not receive capacity-based incentives (e.g., they get 100% cost coverage)

Ongoing Efforts: Mass Save



- Incentives and associated requirements focus on the displacement of fossil fuel usage and electric resistance heating
 - To receive the whole-home rebate, the customer must disconnect the existing furnace/boiler/electric resistance and provide proof of weatherization
 - (You can keep the disconnected equipment in your house, but just have to demonstrate that it's no longer on the grid)
 - To receive the partial-home rebate, you must displace fossil fuel heating/electric resistance, meaning that it must be installed in an area that is occupied during winter and receives fossil fuel heating
 - A \$500 bonus is added to the partial-home rebate if the heat pump system is sized for the whole home, but the existing equipment stays connected
 - There is also a \$500 bonus for partial-home rebates that weatherize; however, it has not seen substantial uptake

Ongoing Efforts: NEHPA



- The New England Heat Pump Accelerator (NEHPA) is coordinated across multiple states in the Northeast (including Rhode Island)
- Incentives are passed from the distributor, through the contractor, to the customer using a pass-through guarantee
- The accelerator also provides training, funding for pilots and grants, and tracks and publishes data



Heat Pump Program Evaluations

Market Effects and Outcomes in New England

Summary of Heat Pump Program Evaluations: Vermont and Maine



- Evaluation studies of these programs show the market effects of these incentives:
 - Vermont:
 - Recent metering studies have shown more cooling usage and less heating usage than intended, potentially detracting from progress on heating electrification
 - Maine:
 - Focusing program design on whole home electrification has led to more fuel displacement
 - Customers typically keep their backup fuel, which may be good for customer sentiment.

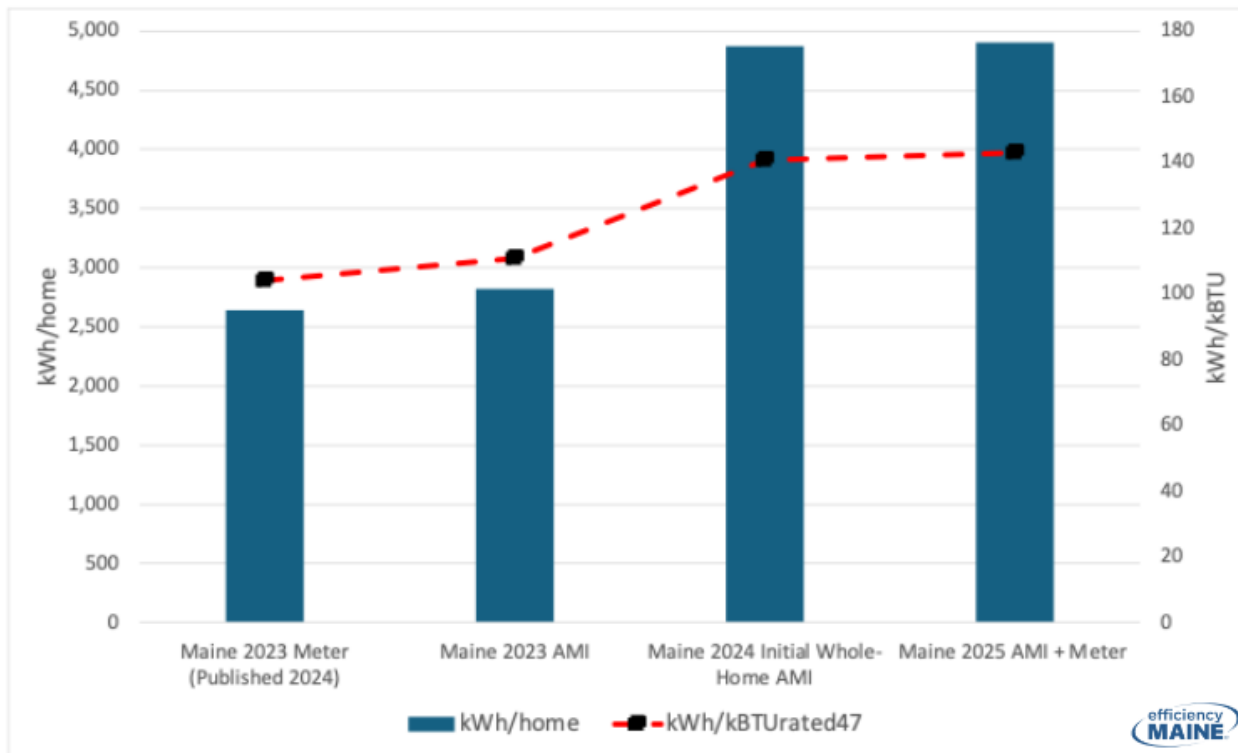
Program Evaluations: Vermont



- Vermont has some of the highest per-capita heat pump adoption in New England
- A 2025 metering study showed lower heating usage than a 2017 metering study and higher cooling usage
- This suggests that the heat pumps are supplementing fossil fuels and providing cooling to homes that previously didn't have cooling

Program Evaluations: Maine

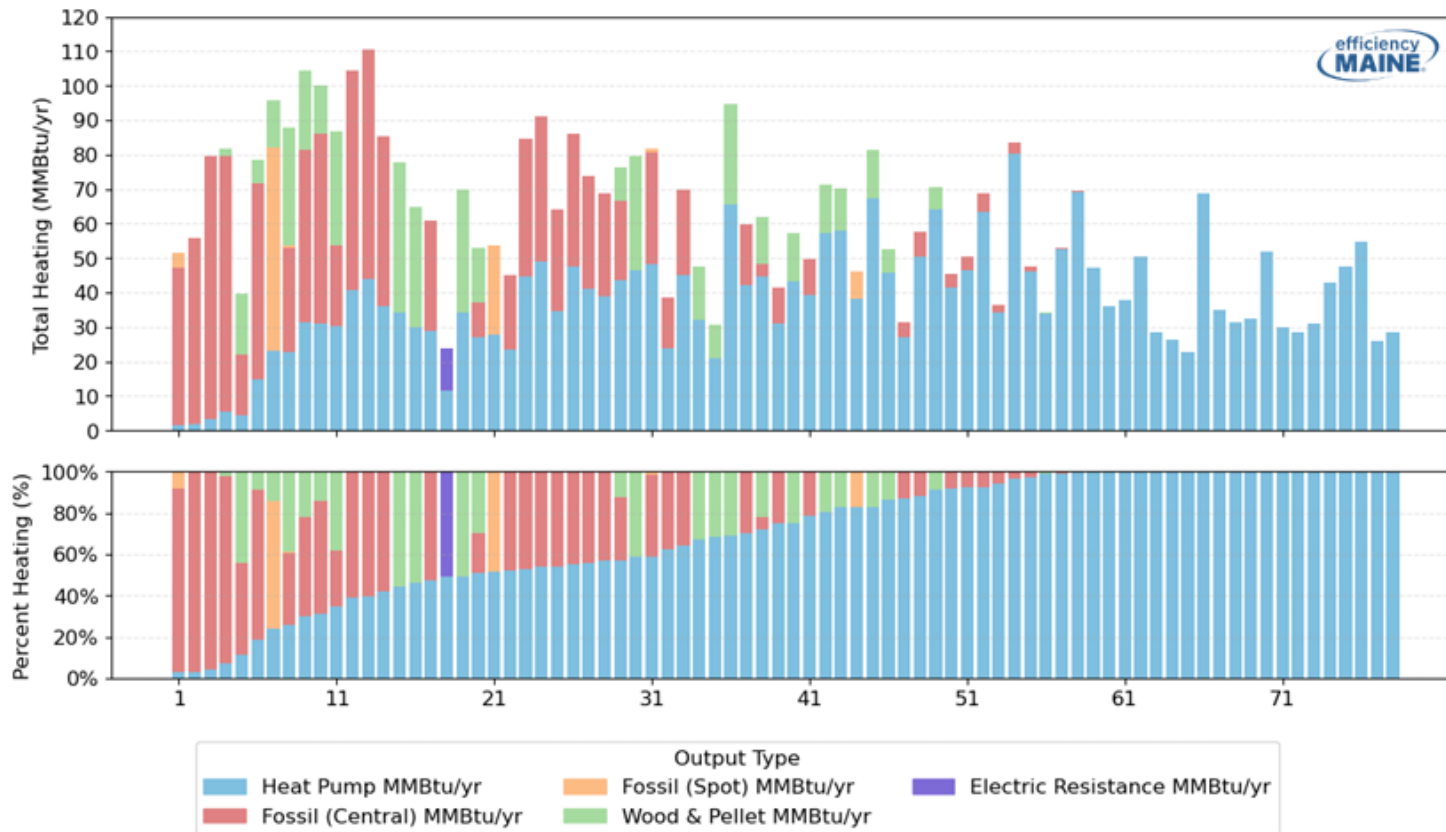
Figure 1. Heat Pump Consumption (kWh) Across Multiple Maine Studies^{2 3}



- 2023 Metering Studies showed less heat-pump usage than desired
- In response, Maine started its whole-home program, which included sizing requirements
- Subsequent Metering Studies identified increase in heat pump usage over time

Program Evaluations: Maine

Figure 4. Total Heating by Home Ordered by Percent Heat Pump Heating (n = 78)



- Each column in chart represents a home that has received a whole-home heat pump rebate
- Despite increase in heat pump adoption, many customers still have substantial fossil fuel heating usage

Summary of Heat Pump Program Evaluations: Massachusetts

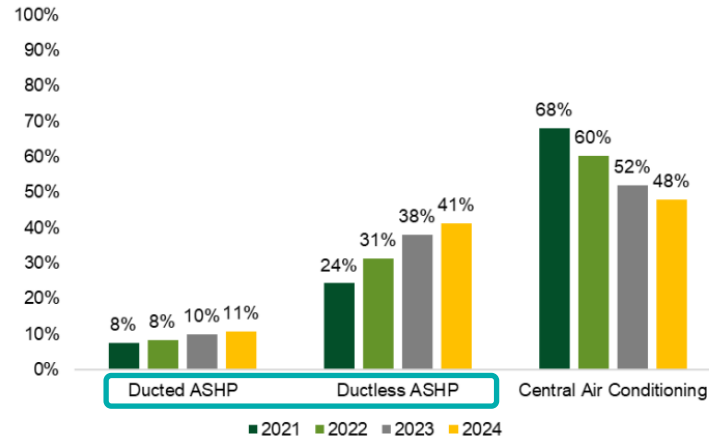


- Evaluation studies of these programs show the market effects of these incentives:
 - Massachusetts:
 - Broad adoption leading to significant progress in both heating and cooling markets
 - Mixed customer sentiments, with over 30% of whole-home heat pump customers dissatisfied with performance at low temperatures

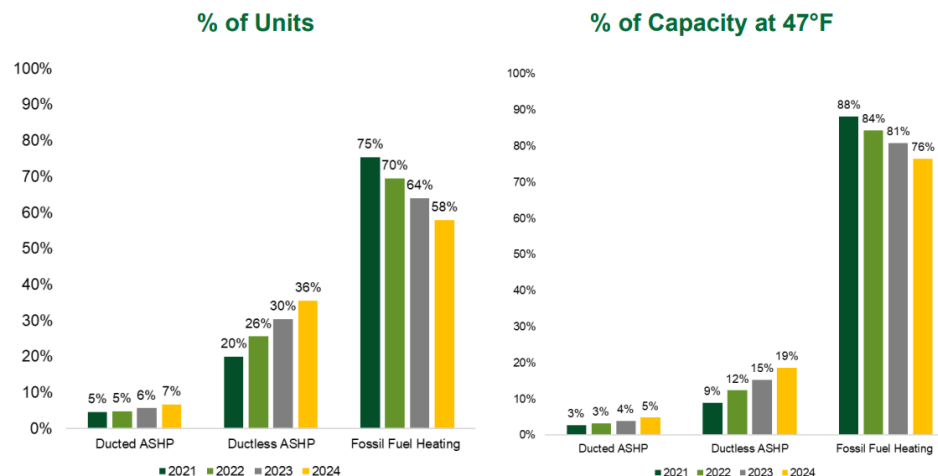
Program Evaluations: Massachusetts



Figure 5: Massachusetts Market Shares – Residential Permanent Cooling (% of Capacity)



ES1: Estimated Massachusetts Residential Heating Market Shares, 2021–2024



- In 2024, heat pumps made up 52% of the sales in the residential cooling market, up from 32% in 2021
- The heating market has taken longer to displace fossil fuels but is still making substantial progress
- These results surpass the goals set for the 2022-2024 triennium

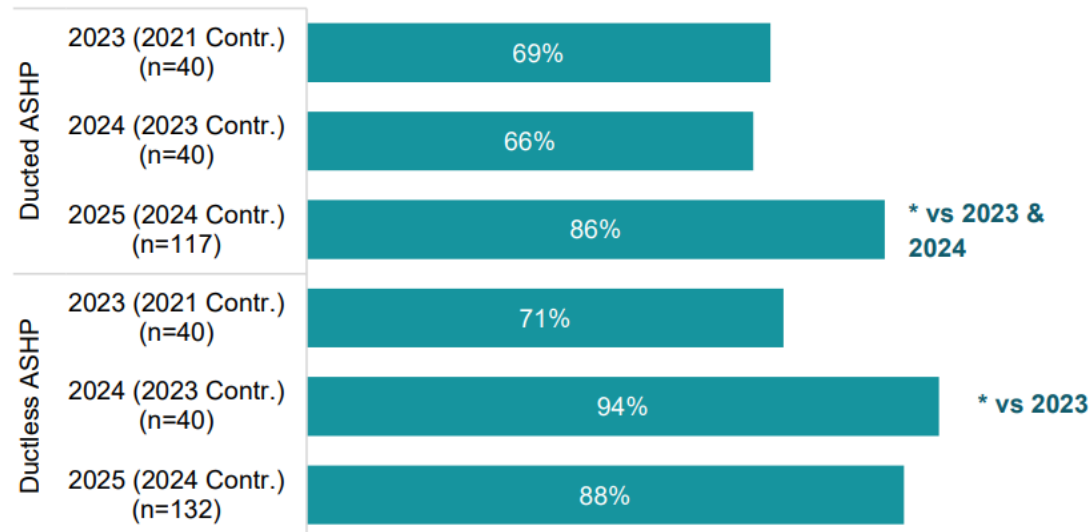
Source: Heat Pump Market Effects Indicators Update PY2024/2025 Final Report

Program Evaluations: Massachusetts



Figure 45: HVAC Contractors Often or Always Recommend ASHPs for Space Heating When Appropriate¹

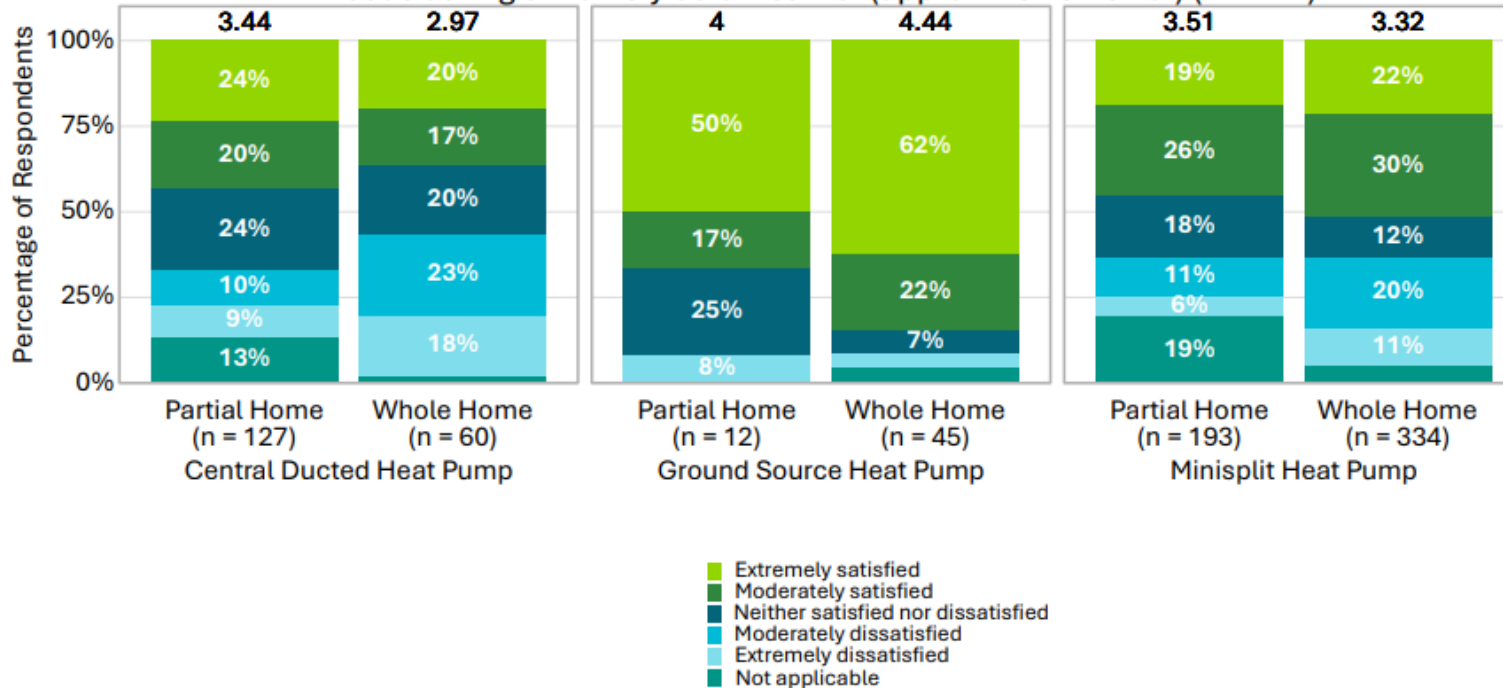
(2023 & 2024: In situations where it would be appropriate to install a ductless/ducted air source heat pump *for space heating as well as cooling*, how often do you recommend one? 2025: In situations where it would be appropriate to install an air source heat pump *for heating*, how often do you recommend one?)
("Often" or "Always")



- This market trend is matched with generally positive perceptions from installers and contractors
- Contractors also report mixed confidence in ability for heat pumps to meet all heating needs, indicating some potential preference for partial displacement

Program Evaluations: Massachusetts

C5. Please rate your satisfaction with the following aspects of your heat pump(s) compared to your prior heating/cooling system(s) for meeting heating needs during extremely cold weather (approx. 10F or lower) (n = 771)



- However, cold weather performance for full displacements remains a challenge for customer sentiment
- Mix of potential causes:
 - Customer behavior
 - Installation quality
 - Disconnection requirement



Council Discussion

Council Member Discussion



- What does this tell us about the heat pump market? What haven't we addressed?
- What would a heat pump offer look like if:
 - We are expected to keep an emphasis on decarbonization?
 - We are expected to prioritize bill savings?