Heating up the Market? Tracking Heat Pump Adoption and Costs

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ABSTRACT

Since 2022, Program Administrators in Massachusetts have sought to reduce GHG emissions by transforming the markets for residential capacity space-conditioning and water heating equipment. This ambitious effort plans for 119,000 residential heat pump installations between 2025 and 2027.

This paper highlights results of two recent annual evaluations to understand changes in the markets. One study examined equipment and installation costs using real invoices and other market data. The other tracked market progress through surveys, interviews, and secondary data.

Previous annual cost studies found that heat pump equipment prices had risen faster than both inflation and prices for competing combustion and electric resistance equipment but found no evidence that program incentives drove this trend. The new study extends the data longitudinally and connects changes in program priorities to increasing project cost. The new market progress study investigates other potential drivers of cost changes, such as tariffs and refrigerant regulations, delves deeper into installers' equipment sizing practices, estimates space-conditioning and water heating equipment sales and market share in the Commonwealth from 2021 through 2024, and assesses qualitative evidence for program attribution. The results indicate that heat pumps continue to displace combustion equipment, driven in part by programs. They also reveal evidence of some erosion in customer satisfaction with heat pumps that fully displace existing heating systems and backsliding to non-condensing boilers.

These findings will help other program administrators understand the drivers of heat pump costs and adoption and how they can use these insights to strengthen their own initiatives.

Introduction

In 2019, the Program Administrators (PAs) that sponsor Mass Save®[1] began actively promoting and incentivizing heat pumps for space heating to support displacement of delivered fuels and electric resistance heating (NMR Group and DNV 2024). Soon after, they stopped offering incentives for cooling-only heat pumps, more commonly known as central air conditioners (CAC; Mass Save 2021a). In response to the passage of An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy in 2021, the PAs revised their programs to increase emphasis on electrification (Mass Save 2024c). This included simplifying Mass Save offerings for heat pumps supported through Residential Existing Buildings Program to eliminate pre-existing fuel-specific incentives and increasing the incentives for heat pumps while phasing out those for combustion equipment (Table 1) and undertaking other activities meant to bring about changes in the Massachusetts heat pump markets. Some of these activities and expected

[1] A collaborative of Massachusetts' electric and natural gas utilities and energy-efficiency service providers, or Program Administrators. These are Berkshire Gas, Cape Light Compact, Eversource, Liberty, National Grid, and Unitil.

outcomes include marketing to raise customer awareness of an interest in heat pumps, contractor outreach and training, to increase the likelihood that they size and install heat pumps correctly and inform customers of the need for sufficient weatherization before installing a heat pump, and encouraging distributors and retailers to routinely stock and sell both heat pump water heaters and cold-climate heat pumps.

Table 1: Mass Save Residential Water and Space Heating Incentive Summary 2021–2024

Equipment	2021	2022	2023	2024
Central AC (CAC)	$50/ton	N/A	N/A	N/A
Central Ducted ASHP or Mini-split (MSHP)	NG: $250/ton (~~MSHP~~) FO: $1,250/ton LP: $1,250/ton ER: $1,250/ton	$1,250/ton or $10,000 whole home	$1,250/ton or $10,000 whole home	$1,250/ton or $10,000 whole home
Furnace	NG: $950–$1,250 FO: $650 LP: $1,000	NG: $200–$1,250 FO: $650 LP: $200–$950	NG: $200–$1,250 FO: $500 LP: $200–$700	NG: $200–$700 FO: $500 LP: $200–$700
Boiler	NG: $2,000–$2,750 FO: $800 LP: $1,500–$2,300	NG: $200–$2,750 LP: $200–$2,300	NG: $200–$2,750 LP: $200–$2,000	NG: $200–$1,500 LP: $200–$1,500
Heat pump water heater (HPWH)	FO: $600 LP: $400 ER: $150–$600	$750 $1,500 split systems	$750 $1,500 split systems	Mid-stream
Water Heater, Storage	NG: $100–$500 FO: $400 LP: $400	NG: $100–$500 FO: $400 LP: $400	NG: $100–$500 FO: $300 LP: $300	NG: $250 FO: $250 LP: $250
Water Heater, Tankless	NG: $600 LP: $800	NG: $700 LP: $700	NG: $700 LP: $550	NG: $500 LP: $500

~~MSHP:~~ Homes heated with natural gas were not eligible for MSHP incentives in 2021.
ER: Electric resistance, FO: Fuel Oil, LP: Liquified propane, NG: Natural gas. *Source*: Mass Save, 2021a–2024d.

This paper presents findings from 1) the fourth in a series of annual market effects studies conducted by NMR Group (NMR) and DNV to assess year-over-year progress toward transforming the Massachusetts markets for residential-capacity space-conditioning and water heating (DHW) in existing buildings through electrification with heat pumps (the "market effects study"; NMR Group and DNV 2026) and 2) the second in a series of studies conducted by NMR characterizing residential-capacity heat pump market pricing (the "pricing study"; NMR Group 2026). The primary objectives of the market effects study are to understand progress toward market transformation and provide a qualitive assessment of attribution to Mass Save, size the PY2024 Massachusetts space-conditioning and DHW markets, and estimate the share of heat pumps in these markets. The pricing study updates and extends the detailed analysis of the residential heat pump costs produced in the first Residential Heat Pump Invoice Cost Analysis study (NMR Group 2024), comparing the results of the refreshed price data to baseline metrics established in the previous study. This edition also introduces multiple interstate price comparisons, and contrasts project costs among several participant sub-populations.

For additional details beyond those covered in this paper, see *Heat Pump Market Effects Indicators Update PY2024/2025* (NMR Group and DNV 2026) and *Residential Heat Pump Pricing Study* (NMR Group 2026).

Methodology

Market Share, Stocking, Satisfaction, Awareness and Willingness

To assess homeowner, contractor and distributor experiences with heat pumps and progress towards expected market outcomes from the PAs' support for residential capacity heat pumps via the most recent market effects study, NMR and DNV interviewed distributors and conducted a survey of contractors in 2025. NMR and DNV also conducted a survey of participating residential customers and added heat-pump related questions to a survey of general residential customers fielded by Guidehouse on behalf of the PAs as part of another forthcoming study (2026). Table 2 lists the sample details of these efforts. NMR and DNV developed and applied weights to the analysis to make the respondent sample representative of the applicable market actor population in Massachusetts.

Table 2: Market Effects Survey and Interview Samples

Group	Sample Frame	Valid Responses	Response Rate	Weighted by
Participant Distributor	108	15	13.9%	Market share
Participant Contractor	1,444	210	14.5%	Program project share
Participant Customer	6,880	530	7.7%	Program pop. share
General Residential Customer	230,515	4,831	2.1%	Socio-demographic

Source: NMR Group and DNV, 2026.

To estimate market shares, NMR and DNV first sized the Massachusetts space-conditioning and DHW markets, estimating sales of equipment installed in residential and commercial settings based on data obtained from multiple secondary sources, including the EIA's Residential Energy Consumption Survey (RECS) and Commercial Building Energy Consumption Survey (CBECS), HARDI, and Massachusetts residential and commercial baseline studies. The study then used interview responses, program tracking data, and previous reporting to develop estimates of market share. For brevity and consistency between equipment end uses, the market effects analysis focuses on installed unit count rather than capacity-based metrics.

Pricing

For the pricing study, NMR transcribed invoice data for a sample of 453 ductless mini-split heat pump and 594 ducted/mixed MSHP or centrally ducted air-source heat pump projects across Massachusetts in Figure 1. These projects were supported by Mass Save in program years 2023–2024 and may include more than one heat pump each. NMR combined this sample with 414 ductless MSHP and 281 ducted projects from the previous study (NMR Group 2024).

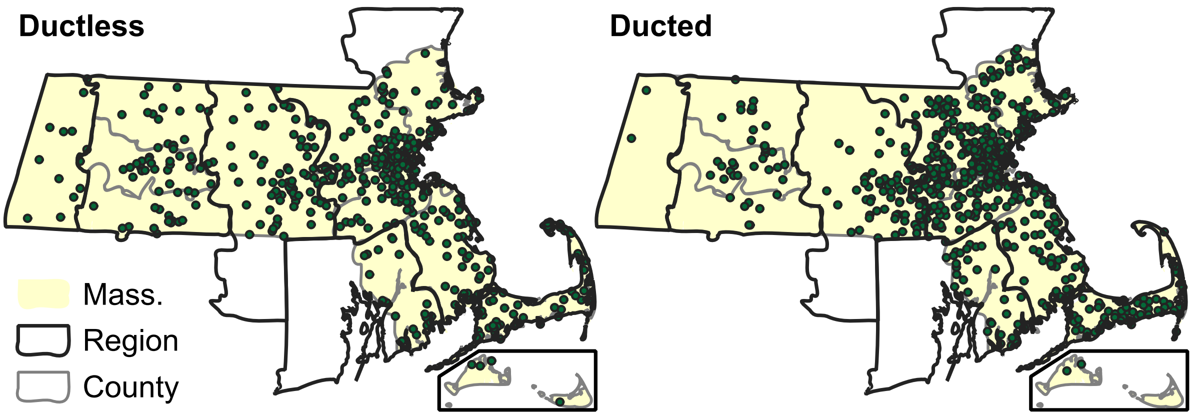

Figure 1: Mass Save Invoice Sample by Type and Region (PY2023 & PY2024). *Source*: NMR Group, 2026.

Where possible, NMR recorded separate costs for the heat pump itself, installation labor, and other items listed in Table 3. Just over half (55%) of the sampled invoices include some level of itemization, but few invoices provide a full breakdown. NMR took care to exclude non-heat pump expenses such as furnaces or humidifiers,[2] and discarded invoices when this was not possible. Similarly, NMR reversed any discounts or “prebates”[3] applied by the contractor and omitted service contracts or warrantees to reflect the true market rate cost of the work before calculating $/ton of cooling. Price per ton provides an intuitive and readily scalable cost metric which also aligns with the partial displacement incentive structure in Table 1.

Table 3: Project Cost Summary

Component	Project (Total)	Equipment	Labor	Wiring	Ancillary
Compressor and air handlers	✓	✓	–	–	–
Delivery	✓	✓	–	–	–
Equipment installation	✓	–	✓	–	–
Electrical work (e.g., connection, sub-panels, service upgrade)	✓	–	–	✓	–
Misc. supplies (e.g., line sets, footings, brackets)	✓	–	–	–	✓
Thermostats & controls	✓	–	–	–	✓
Permits	✓	–	–	–	✓
Removal	✓	–	–	–	✓
Ductwork	✓	–	–	–	✓
Electric resistance backup (if present)	✓	–	–	–	–
Sales tax	✓	–	–	–	–
Rebates	✗	✗	✗	✗	✗
Warrantees	✗	✗	✗	✗	✗
Non-heat pump work (e.g., furnaces,[2] humidifiers)	✗	✗	✗	✗	✗

Source: NMR Group, 2026.

To provide a reference point for market rate equipment costs, NMR collects advertised price, model numbers, equipment specifications, and shipping fees for both program-eligible and lower-performance models as a part of the residential heat pump invoice study series. In this round, NMR collected updated prices for heat pumps from 14 online stores in 2025, including home improvement, plumbing supply houses and web-only retailers. The timing differs from the

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[2] Furnaces can serve as part of an air handler, but the burner and gas connection costs distort the project total.
[3] A practice where the program rebate is assigned to the contractor, who reduces the upfront cost accordingly.

web-scraping performed for the previous residential heat pump invoice study (NMR Group 2024), and the August 2020 costs collected in the first residential new construction energy optimization study (NMR Group 2021), but all online prices and invoice costs are adjusted for inflation using the Bureau of Labor Statistics' monthly national Consumer Price Index (CPI-U) to align them with a common reference year before they are fed into analyses.

Results

An expanded discussion of the highlights below and other findings follows in the remainder of this section.

- Both space-conditioning and DHW heat pump market shares have increased since 2021.

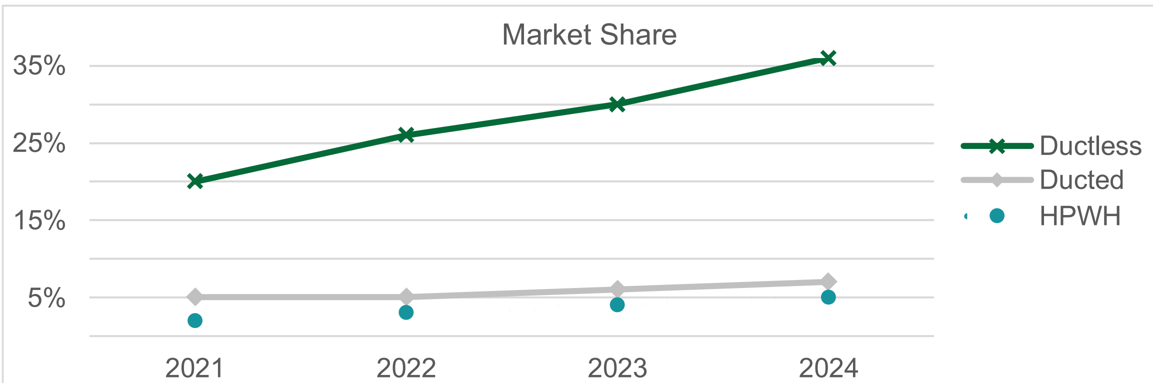

Figure 2: Inflation-adjusted project cost per ton over time. *Source*: NMR Group, 2026.

- Customers report higher levels of satisfaction with heat pump water heaters than with space-conditioning heat pumps.
- Ductless heat pump project costs per ton have outpaced inflation (a flat line) in Figure 3.

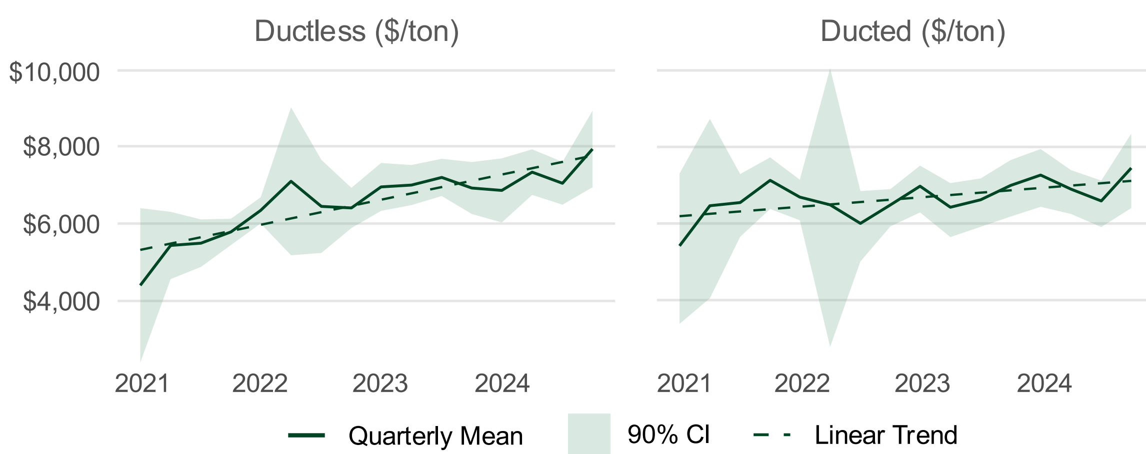

Figure 3: Inflation-adjusted project cost per ton over time (Aug. 2025$). *Source*: NMR Group, 2026.

- Ducted equipment markup exceeds that for ductless equipment and the available data on industry average rates.
- The phase out of R-410a equipment appears to have implications for heat pump affordability and efficiency.

Space-Conditioning

As Table 4 shows, residential heat pump market shares increased steadily from 2021 through 2024. Heat pump heating share rose from 25% to 42% of units sold, largely displacing furnace and boiler sales. ASHPs also surpassed traditional CAC in unit sales. While growth was driven primarily by ductless MSHP, ducted heat pump cooling share of the residential *ducted* cooling equipment sales increased from 9% to 15%, indicating substantial remaining opportunities to displace CAC sales within the ducted cooling market. Distributors' stocking practices mirror this trend. Of the 11 distributors that stocked heat pumps in 2024, 82% (9, weighted) increased their inventory of ASHPs and MSHPs in the previous 12 months (↗), while stocking of CACs, furnaces and boilers decreased or remained unchanged (~), with one exception (↬). While the market effects study did not assess the change in sales of condensing and non-condensing gas boilers, distributors' reports and comments suggest some erosion in the efficiency of stocked boilers: 64% (weighted) increased their stock of non-condensing boilers while decreasing their stock of condensing boilers. Several of these specifically cited the end of program rebates for high efficiency gas and oil space-conditioning equipment as the reason for this change. The survey focused on the direction of changes and did not collect details about the magnitude of these shifts in stocking practices. However, it is worth noting that another quarter of respondents decreased stocking of both condensing and non-condensing units.

Table 4: Residential Equipment Market Share (% of Units) & Stocking Practices

End Use	Equipment	2021	2022	2023	2024	2024–25 Stocking
Heating	Ducted ASHP/MSHP	5%	5%	6%	7%	↗
	Ductless MSHP	20%	26%	30%	36%	
	Furnaces & Boilers	75%	70%	64%	58%	↬
Cooling	Ducted ASHP/MSHP	6%	7%	8%	8%	↗
	Ductless MSHP	27%	34%	41%	44%	
	Central AC	66%	60%	51%	47%	~

Source: NMR Group and DNV, 2026.

As a qualitative assessment of attribution, the market effects study measured progress indicators of market outcomes expected from the program and compared them with baseline measurements to assess change using a preponderance of evidence approach. The observed change for most indicators (13 of 18, 72%) match the directions predicted by the program theory. Looking at the supply side of the space-conditioning market, the preponderance of evidence indicates that since the start of enhanced program support, the Massachusetts market for residential-sized space-conditioning heat pumps has moved in the directions predicted by the program theory. However, the evidence on the demand side is mixed. The results suggest that customer satisfaction with HPs that fully displace a previous heating system has eroded since the baseline, particularly for ductless systems fully displacing gas heating, with high heating costs reported as the primary driver of dissatisfaction. In addition, PY2023 participants who fully replaced their existing heating system with a central ASHP or MSHP were significantly less likely than those of previous years to report that the system meets their heating needs on the coldest days versus those who only partially displaced their existing heating system. Surveys of general residential customers also revealed declining interest in installing a heat pump, whether or not they could keep their existing heating system as a backup. In contrast, program installers' rates of recommending an ASHP or MSHP for heating in appropriate situations rose significantly from 2023 to 2025 (NMR and DNV 2026); 69% versus 86% for ducted and 71% versus 88% for ductless. According to the installer survey (NMR and DNV, 2026), installers also trust ductless systems to serve as full replacements for fossil fuel systems more than ducted (70% versus 49%).

The 2025 market effects study expanded upon the assessment of contractor sizing practices introduced in the previous study by asking how frequently installers override the results of ACCA Manual J, S or D calculations using their professional judgement and when they do, why. The results suggest that it may be prudent for the PAs to consider offering refresher or supplemental training or messaging to installers about the importance of adhering to the results of code-approved load calculation and equipment selection procedures, potentially addressing myths about common reasons contractors give for modifying the approved methods' results.

During the same period that ductless market share increased 80% when controlling for inflation, the average cost per ton for program incentivized ductless projects has increased approximately 27% in Table 5, despite average markup rates of 145% for equipment and 550% for labor among itemized invoices (NMR Group 2026). While these rates are slightly higher than other sources, they have remained relatively consistent over time.

Table 5: Ductless MSHP – Installed Cost per ton of Cooling Capacity (Aug. 2025$)

	2021	2022	2023	2024
N	*221*	*225*	*225*	*184*
Mean cap. (tons)	2.6	2.9	3.1	3.3
Mean	$5,658	$6,374	$7,052	$7,203
Std. Dev.	$2,108	$1,955	$2,074	$2,315

Source: NMR Group, 2026.

At this time, a plausible candidate contributing to the upward trend in ductless project costs appears to be the increase in installation complexity shown in Figure 4. The authors suspect that with the program's increased emphasis on whole home heat pump installations (as evidenced by the larger incentive afforded to these projects in Table 1), more/larger multi-zone installations are being pursued. This increases the cost per ton, since additional air handlers do not specifically provide additional capacity (tonnage), but they do require more equipment and installation labor. However, as shown in Table 5, project capacity has also been increasing.

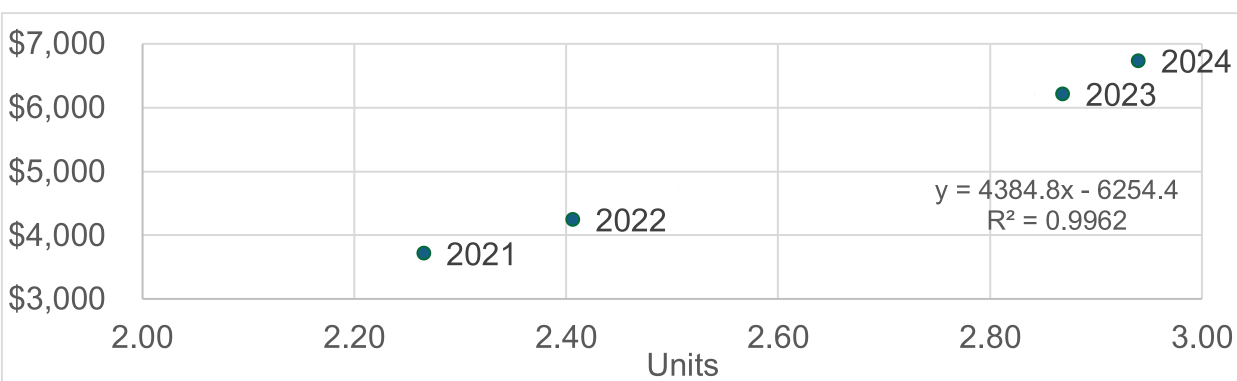

Figure 4: Average Labor Cost vs. Average Air Handlers per Compressor (Aug. 2025$) *Source*: NMR Group, 2026.

Meanwhile, the average installation costs per ton for ducted projects in Table 6 have increased by a modest 4% since 2021, despite apparent consistency in the average project size/complexity. However, the average estimated markup rate for ducted equipment is much higher than ductless, 188% of wholesale cost (vs. 145%) even though the markup rate for labor is similar at 150% (vs 155%). It is unclear what drives this higher equipment markup rate, but the authors hypothesize that it might be related to the previously mentioned confidence installers have in ductless versus ducted systems to meet a home's heating requirements, i.e., that they may charge a premium for equipment they anticipate being associated with more frequent callbacks.

Table 6: Ducted – Installed Cost per ton of Cooling Capacity (Aug. 2025$)

	2021	2022	2023	2024
n	*131*	*174*	*292*	*266*
Mean cap. (tons)	3.6	3.7	3.7	3.6
Mean	$6,755	$6,648	$6,819	$7,015
Std. Dev.	$2,960	$2,355	$2,835	$2,855

Source: *NMR Group, 2026.*

NMR calculated the equipment markup rates described above by comparing invoiced equipment costs to the web-scraped cost of equivalent equipment.[4] As a part of the web-scraping NMR collected prices from two comparison locations with similar climates to Massachusetts but more modest heat pump incentives: New Hampshire and Ohio. Table 7 compares prices between these states and shows no significant difference between the small number of central ASHP models (right third of table). While there is a significant difference between MSHP in Ohio and Massachusetts/New Hampshire (left third of table), it disappears when limiting the comparison to models available in all three states (middle of table). Thus, the apparent difference in pricing of MSHP seems to be due to the selection of models in stock rather than local market forces.

Table 7: Comparison of Program-eligible Wholesale Equip. Price by State (Aug. 2025$/ton)

	MSHP: MA & NH/OH			MSHP: Sold in All 3 States			Central Ducted ASHP		
	MA	NH	OH	MA	NH	OH	MA	NH	OH
n	333	316	271	249	249	249	42	27	42
Mean	$2,050	$2,061	$1,669*	$1,654	$1,651	$1,661	$1,292	$1,302	$1,290
Std. Dev.	$1,040	$1,061	$531	$550	$543	$537	$602	$563	$564
Mean SEER2	21.9	21.9	21.6	21.5	21.5	21.5	16.6	16.4	16.6
Mean HSPF2	9.6	9.7	9.5	9.5	9.5	9.5	9.1	9.0	9.1

* Significantly different at the 90% confidence interval. *Source*: NMR Group, 2026.

This finding is further supported by the RSMeans City Cost Index values for localizing mechanical equipment costs shown in Table 8; the national average is 100%. Although there is some variation between the sampled cities. It is worth noting that this relative uniformity is not a fundamental feature of the City Cost Index. An examination of construction costs for materials

[4] The heat pump pricing report (NMR 2026) includes some historic wholesale pricing information, but it has large gaps and is insufficient to say much about overall market pricing beyond the fact that the mean cost per ton of cooling capacity for program-eligible ductless equipment has fluctuated, and apparently increased by a few percent above inflation since 2020.

like masonry, cement and lumber—which incur high freight costs if they are not used near their points of extraction/manufacture—exhibit more pronounced regional differences.

Table 8: RSMeans Mechanical Equipment Materials City Cost Index

Period	Boston, MA	Springfield, MA	Manchester, NH	Cleveland, OH
2023 Q3	101.1%	101.0%	101.2%	100.7%
2024 Q3	97.7%	97.7%	97.7%	97.4%
2025 Q3	101.2%	101.2%	101.2%	100.4%

Source: *Gordian, 2023; Gordian, 2024; Gordian, 2025.*

In the analysis of market pricing for heat pumps and central air conditioners, the pricing study found no clear evidence that PA support for heat pumps leads to higher wholesale heat pump prices in Massachusetts. Based on the multi-state comparisons, wholesale heat pump and central air conditioner pricing appears to be commoditized and fairly uniform between Massachusetts, New Hampshire and Ohio.

Water Heating

Despite high customer satisfaction with HPWH, adoption of heat pumps for water heating lags behind that of space-conditioning. This is unsurprising given that three-fifths of the population have not heard of them (Guidehouse 2026). Table 9 reveals that although the pricing study estimates the unit market share of residential heat pump water heaters sold has more than doubled in four years, the overall market share remains low (5%). Fortunately, distributors have reported an increase in their inventory of HPWHs (↗) relative to other water heater types (~). Since two-fifths (37%) of water heater replacements occur due to unit failure (Cadeo 2018), ready access to HPWH stock is important to ensure that the technology be considered as a viable replacement in these scenarios. The recent additions of 120 Volt and dual-voltage options by manufacturers further reduces the friction of adoption by removing the need for access to a 220V line and should contribute to future increases in HPWH market share.

Table 9: Residential Equipment Market Share (% of Units) & Stocking Practices

End Use	Equipment	2021	2022	2023	2024	2024–25 Stocking
Water	HPWH	2%	3%	4%	5%	↗
	Resistance WH	27%	27%	26%	26%	~
	Combustion WH	70%	70%	70%	69%	~

Source: NMR Group and DNV, 2026.

On both the supply and demand sides of the water heating market, the preponderance of evidence shows that the Massachusetts markets for residential-sized heating have moved in the directions predicted by the program theory since the start of the enhanced program support.

Other

Service upgrades remain an uncommon part of participant heat pump installations (4%). The pricing study also noted the installation of two smart panels/breakers, a potentially lower-cost alternative to a service upgrade in a home with lower-Amperage service, which allows the installation of multiple high current appliances by preventing simultaneous use. This finding of infrequent upgrades is consistent with Goebes, Battisti and Davis's analysis of over 40,000 heat pump installations in California (2025). There are several possible reasons for the apparent rarity of service upgrades, including but not limited to:

- **a)** that ratepayers forgo heat pumps in homes that would require an upgrade to avoid that added expense.
- **b)** that some service upgrades are not documented in the rebate files reviewed by NMR.
- **c)** the possibility that upgrades are simply not necessary due to:
  - **i)** sufficient unallocated capacity.
  - **ii)** the displacement of other high-Amp loads like resistance heating or central air conditioners.

A potential factor impacting future studies are recent changes in refrigerant regulations by the EPA; required under the Kigali Amendment to the Montreal Protocol. The United States began phasing-out of new residential HVAC equipment employing high global warming potential (GWP) refrigerants such as R-410A, with initial restrictions on the import and installation of some classes of these products taking effect January 1, 2025, with others to follow (EPA 2023). The phase-out may introduce new influences on equipment pricing trends as manufacturers retool, technicians adapt their practices to comply with revised standards around the handling of class A2L refrigerants, etc.

Table 11 shows that as of December 2024, low-GWP models still represented a minority of the heat pump models listed for sale. R-32 ductless units are more common than R-454B, and the web-scraped costs of R-32 models have a lower average cost per ton than either R-454B or the older R-410a. Thus, the prevalence of R-32 ductless models should moderate the impact of the refrigerant phase-out on the average cost of ductless equipment. In contrast, NMR encountered no R-32 ducted heat pump models in the data collection, but unlike ductless units the average cost per ton of R-454B models seems to be lower than that of the phased-out R-410a.

Table 11: Web-scraped Model Statistics by Refrigerant (Aug. 2025$/ton)

	Ductless			Ducted		
	R-410a	R-32	R-454B	R-410a	R-32	R-454B
n	8,851 (81%)	1,961 (18%)	113 (1%)	478 (91%)	0 (0%)	49 (9%)
Mean $/ton	$2,241[b,c]	$2,170[a,b]	$2,621[a,c]	$2,523[d]	–	$1,493[d]
Std. Dev. $/ton	$649	$387	$1,490	$775	–	$523
Mean SEER2	20.9[b,c]	20.6[a,b]	22.4[a,c]	17.8[d]	–	17.3[d]
Mean HSPF2	10.1	10.1	10.0	9.4[d]	–	9.2[d]

a, b, c or d: Statistically significant from one another at the 90% confidence level. *Source*: NMR Group, 2026.

Finally, although equipment using the replacement refrigerants is capable of achieving the same levels of energy efficiency as those based on R-410A, the heat pump models that NMR collected data for—and could determine the refrigerant type of—generally have slightly lower average efficiencies than the older models they are displacing. Consequently, in the near term some customers or programs may need to invest in/promote more premium models to achieve similar levels of savings to previous projects, particularly those focused on cooling.

Conclusion

The market effects study (NMR Group and DNV 2026) provides evidence that heat pump adoption in the residential heating, cooling, and water heating markets continued to increase in Massachusetts from 2021 through 2024, The study found evidence of ongoing progress in the direction predicted by the program theory for all of the anticipated demand-side outcomes for both space-conditioning and water heating and all of the supply side outcomes for water heating. Surveyed participating residential customers indicated that the Mass Save support had more influence on their decision to install a heat pump than federal tax credits or other factors. In addition, qualitative evidence from distributors suggests that the PAs' support for heat pumps contributed substantially to changes in the markets for residential-capacity heat pumps in 2023 and 2024. Together, these results suggest that the growth was driven at least in part by the PAs' efforts to encourage and facilitate adoption. Seasonal heat pump electric rates introduced in 2025 seem likely to help address the low satisfaction reported by customers with ductless ASHPs for full displacement. Should satisfaction continue to be low despite the new rates, it could be a major impediment to meeting the Commonwealth's climate goals.

Although the market effects study offers evidence that ending program support for furnaces and boilers in 2025 may have contributed to backsliding in distributor stocking practices, we do not yet have data about the impacts on actual installations. However, based on the general residential customer survey series by Guidehouse (2019, 2022, 2023, 2026), we find that the end of support for CACs in 2022 has not adversely affected the efficiency of the surveyed units in Figure 5. Rather, the average efficiency of CACs has increased, which we hypothesize is due to a spillover of technical improvements from heat pumps. These findings suggest that program administrators may want to consider ending support for CACs when seeking to promote heat pump adoption and/or electrification.

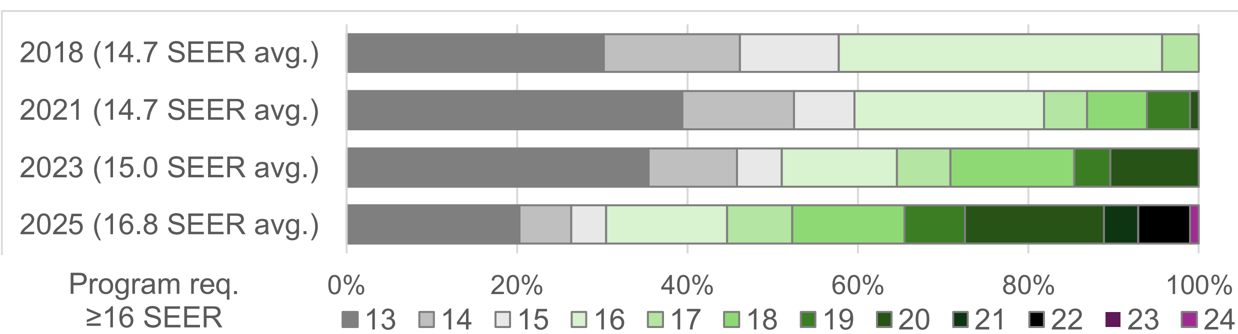

Figure 5: SEER of New CAC Installations in Existing Homes *Source*: Guidehouse, 2019–2026.

The heat pump pricing study (NMR Group 2026) found no conclusive evidence that program incentives are affecting the market pricing of ductless or ducted heat pumps. While the inflation-adjusted costs of ductless installations *per ton* increased by 27%, other factors can explain at least part of this trend, in particular, higher labor costs associated with more complex designs. These in turn may be a response to the program's increased emphasis on whole home (full displacement) installations, and a prime example of unintended consequences since the resulting increase in multi-zone installations also reduces equipment efficiency (Cadmus 2016).

Overall project, labor and equipment costs for ducted heat pump installations in the samples of participants from 2021 through 2024 are flat. However, estimated markup rates for ducted equipment are substantially higher than those reported in the literature or those the study calculated for ductless systems. The elevated markup of ducted versus ductless systems could reflect some program-related influences on pricing, but it may also stem from other factors. For example, contractors may be charging more for ducted equipment because they find ducted heat pump installations more complex or risky. The market effects study identified tangential evidence of this in the contractor survey's indications that contractors are significantly more confident in ductless systems than ducted ones as full heating system replacements (NMR Group and DNV 2026).

The pricing study results narrow the range of plausible program-induced price effects, though they do not rule out or fully characterize all potential mechanisms. Determining whether the program incentives are driving up prices remains challenging given the number of potential cost drivers and variation in system configurations and installation contexts, and the limited time-series data to date. That said, based on the interstate comparison of wholesale equipment prices, any observable program-induced price effects appear more likely to occur at the contractor level than the distributor level. As the PAs continue to characterize the market and explore program interactions in upcoming studies, the evaluation team will refine methods to better address these gaps.

Future Research

Some potential avenues for future research include deeper analysis of seasonal variation and displacement type impacts on project costs, review of new combustion equipment efficiencies, exploration of contractor markup practices, and interactions with other programs and incentives. Some examples of this latter category include:

- expiration of the 25C Energy Efficient Home Improvement Tax Credit of $2,000 for heat pump at the end of 2025 (IRS 2025),
- new, lower winter electric rates for Massachusetts homes with qualifying heat pumps introduced by the investor-owned utilities introduced in November 2025 (EEA 2025),
- sizable mid-stream incentives introduced by the New England Heat Pump Accelerator (2026); $650 per unit for MSHP or central ASHP, and $300 per unit for HPWH,
- the ever-changing landscape of tariffs.

Tariffs announced in March 2025 are likely to complicate the interpretation of the changes in equipment sales between 2024 and 2025 in the next study. Since distributor interviews took place in March and April 2025, the market effects study was able to add a question at the last minute to gauge the potential impacts of tariffs on equipment costs, supply chains, customer demand, or distributors' broader business strategies. Three of 15 distributors reported that they were ordering more parts or equipment than they otherwise would have. Two reported that they were worried that sales would slow because of unaffordable prices, or that they would be stuck with unsold equipment, suggesting that they might order less equipment than usual. The next heat pump market effects study will include questions to assess the impact of tariffs on the space-conditioning and water heating markets.

While the study series began after the simplification and expansion of incentives in 2022 (Table 1), it does include data from projects incentivized in 2021. Despite the significant incentive adjustments in 2022—including the introduction of a $10,000 per home incentive for whole home heat pumps—the study found no obvious change in pricing practices associated with program incentives (Tables 4 and 5). After three years of stable incentives, the whole home incentive decreased in 2025, and it will continue to do so annually through 2027 alongside the partial home incentive (Mass Save 2024e). The whole home incentive switched from a fixed amount to $3,000/ton (capped at $10,000), providing a sharp impulse that may allow us to detect the effects of program incentives on market pricing. In particular, the next study will explicitly investigate potential pricing differences between whole-home and partial displacement projects.

Another potential avenue for future investigation is to examine seasonal variations in prices. The pricing study and other researchers have observed that some contractors provide higher quotes during the summer peak in accordance with supply and demand, but it is not clear if or how these changes interact with program incentives. Some observers have also suggested that there may be similar surges in advance of the annual cut-off before incentives are reduced.

Finally, although installers must cover overhead in order for their businesses to remain viable, various invoicing practices such as elevated markup rates provide mechanisms for them to charge more for heat pump installations, capturing a larger proportion of the program incentive and increasing rate payers' costs. Unfortunately, the literature regarding domestic residential HVAC contractor invoicing practices seems to be limited, undocumented, or dated (Dale 2004, DOE 2014, DOE 2016). A better understanding of contractors' invoicing methods may provide insights that could help programs structure incentives to maximize pass-through to rate payers.

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