Memorandum

To: Massachusetts Program Administrators and Energy Efficiency Advisory Council Consultants

From: Guidehouse

Date: February 26, 2026

Re: Massachusetts Heat Pumps for Low-to-Moderate Income Customers with Delivered Fuels Quick Hit Study Findings

1 Background

As part of the discussion leading up to the Massachusetts 2025-2027 Energy Efficiency and Decarbonization Plan ("the plan"), the Energy Efficiency Advisory Council (EEAC) requested that the Massachusetts Program Administrators (PAs) increase "the number of planned low-to-moderate income (LMI) heat pumps (space and water heating) to advance goals of distributive justice with a priority on delivered fuel (DF) and electric resistance heat customers."[1] In the final plan, the PAs proposed to increase LMI heat pump installations to nearly 22,000 homes from 2025 through 2027.[2]

As part of the 2025-2027 Three-Year Energy Efficiency Plan, the Massachusetts PAs and EEAC evaluation consultants identified a need for research on the interest in heat pump adoption among LMI customers with delivered fuels (LMIDF customers). The Massachusetts Residential Research Area evaluation team, led by Guidehouse (referred to as "the team" throughout this document) completed a quick hit study leveraging results from the Residential Building Use and Equipment Characterization Study[3] (RBUECS) Phase 7 and Phase 8 to investigate this topic.

[1] The Massachusetts Energy Efficiency Advisory Council. "Massachusetts Energy Efficiency Advisory Council Resolution Regarding the April 1st Draft of the 2025-2027 Energy Efficiency Plan," June 26, 2024, https://ma-eeac.org/wp-content/uploads/EEAC-June-2024-Resolution-on-2025-2027-Draft-Three-Year-Plan.pdf

[2] The Massachusetts Program Administrators. "2025-2027 Three-Year Energy Efficiency and Decarbonization Plans D.P.U. 24-140 through D.P.U. 24-149, April 30, 2025, Compliance Filing," April 30, 2025, https://ma-eeac.org/wp-content/uploads/Plain-Language-Summary-April-30-Compliance-Filing5380746.pdf

[3] The Massachusetts Energy Efficiency Advisory Council. "The Massachusetts Residential Building Use and Equipment Characterization Study Phase 7," December 22,2023, https://ma-eeac.org/wp-content/uploads/Residential-Building-Use-and-Equipment-Characterization-Study-Comprehensive-Report-2023-12-22.pdf

1.1 Study Goals

The team collaborated with the Massachusetts PAs and EEAC consultants to identify the primary objectives of this study:

- **LMIDF customer interest in adopting heat pumps.** Identify and understand what proportion of LMIDF customers are willing to install a heat pump and how the willingness to install heat pumps is impacted by different variables.
- **Participation motivators.** Investigate the motivators for LMIDF customers to install heat pumps.
- **Barrier identification and mitigation.** Investigate the primary barriers (outside of pre-weatherization and pre-electrification barriers)[4] to heat pump adoption faced by LMIDF customers and explore ways in which the PAs might mitigate these barriers through the heat pump offering.
- **Opportunities for cross-promotion.** Identify opportunities to leverage other energy efficiency offerings for more heat pump adoption, such as the residential turnkey service.

4.2Appendix B outlines the specific research questions that the team investigated as part of this analysis.

1.2 Key Research Activities

The team investigated this topic in two main tasks:

1. Analyzing existing evaluation study survey data
2. Performing benchmarking through literature review and peer program administrator interviews

Task 1 used existing survey data from the RBUECS to assess customer awareness, willingness, motivators, and barriers related to heat pump installation. The RBUECS is an ongoing study intended to help the Massachusetts PAs understand how residential buildings and their occupants consume energy and identify opportunities for reducing energy consumption. The RBUECS survey asks questions related to customer awareness of heat pumps, willingness to adopt heat pumps, and barriers to heat pump adoption. All results presented in this memo are post-weighted in order to be more representative of the population. For further detail on the post-weighting methodology, see Appendix A2 in the RBUECS Phase 8 Comprehensive Report[5].

[4] Pre-weatherization and pre-electrification barriers were investigated as part of the MA25R04-B-EWxBMS (Pre-Electrification + Pre-Weatherization Barrier Mitigation Study).

[5] Guidehouse. "Massachusetts Residential Building Use and Equipment Characterization Study - Phase 8," February 3, 2026, https://ma-eeac.org/wp-content/uploads/MA24R69-B-RBU-Residential-Building-Use-and-Equipment-Characterization-Study-Comprehensive-Report-Ph8-Final-2026-02-03.pdf

Task 2 benchmarked existing heat pump programs targeting LMI customers and customers with DFs. The benchmarking task consisted of two sub-tasks: literature review and interviews with peer program administrators. The overall goal of the benchmarking task was to identify best practices, challenges, and effective program designs for similar heat pump offerings.

1.3 Key Findings

Table 1 presents the key takeaways from the study in relation to the study objectives.

Table 1. Key Findings

Study Objective	Key Findings
LMIDF Customer Interest in Adopting Heat Pumps	• LMIDF customers are interested in adopting heat pumps at similar rates to the general population but are more hesitant to remove their existing heating system. • Overall sentiment to heat pump adoption is lukewarm, with LMIDF customers providing a 41% willingness-to-adopt rate only when allowed to keep their existing system.
Participation Motivators	• The ability to obtain cooling is a large driver of LMIDF customer interest in heat pumps. • Customers indicate a desire to lower their monthly energy bills as a major motivator. • Peer program administrators with programs that cover 100% of heat pump installation costs reported that this coverage improved program participation. • The LMIDF population indicated interest in mini-split heat pumps at 10% more than market rate customers. Peer program administrators have mentioned that low-income participants without existing central cooling prefer mini-split heat pumps.
Barriers	• The four major barriers to heat pump adoption in the RBUECS survey were: cost to install, lack of knowledge to make informed decisions, increased cost of energy, and concerns around heat pump performance. • DF customers indicated concerns around cost of energy increases as a barrier to heat pump adoption at a similar rate to the general population, even though they have more to save by switching to heat pumps. • LMIDF customers who were willing to adopt heat pumps listed knowledge around heat pumps as a barrier more often than the general population. • Peer program administrators cited home readiness and presence of structural challenges as a major barrier to heat pump adoption, as many programs require a home to be weatherized to receive a heat pump.

Study Objective	Key Findings
Opportunities for Cross-Collaboration	• Like the Massachusetts PAs, peer program administrators collaborate with existing community organizations, government programs, and other nonprofits outside of the utility space to ensure customers can meet installation requirements such as weatherization, remediation, and panel upgrades.

Source: Guidehouse

2 Existing Survey Data Analysis

The Guidehouse team analyzed existing survey data from the RBUECS phase 7 and phase 8 surveys with a specific focus on heat pump willingness to adopt and barriers to adoption for LMIDF customers. The RBUECS survey is part of a comprehensive, multiyear study to characterize residential building use and equipment in Massachusetts, leveraging data collected through annual online surveys. The RBUECS aims to deepen understanding of energy consumption patterns in Massachusetts homes and is designed to provide the Massachusetts PAs and EEAC consultants with detailed, actionable insights into how residents use energy. The survey focuses on both market-rate and income-eligible households. The survey captures saturation rates for major electric and gas appliances, mechanical systems, and electronics, offering a granular view of equipment prevalence and usage across the state.

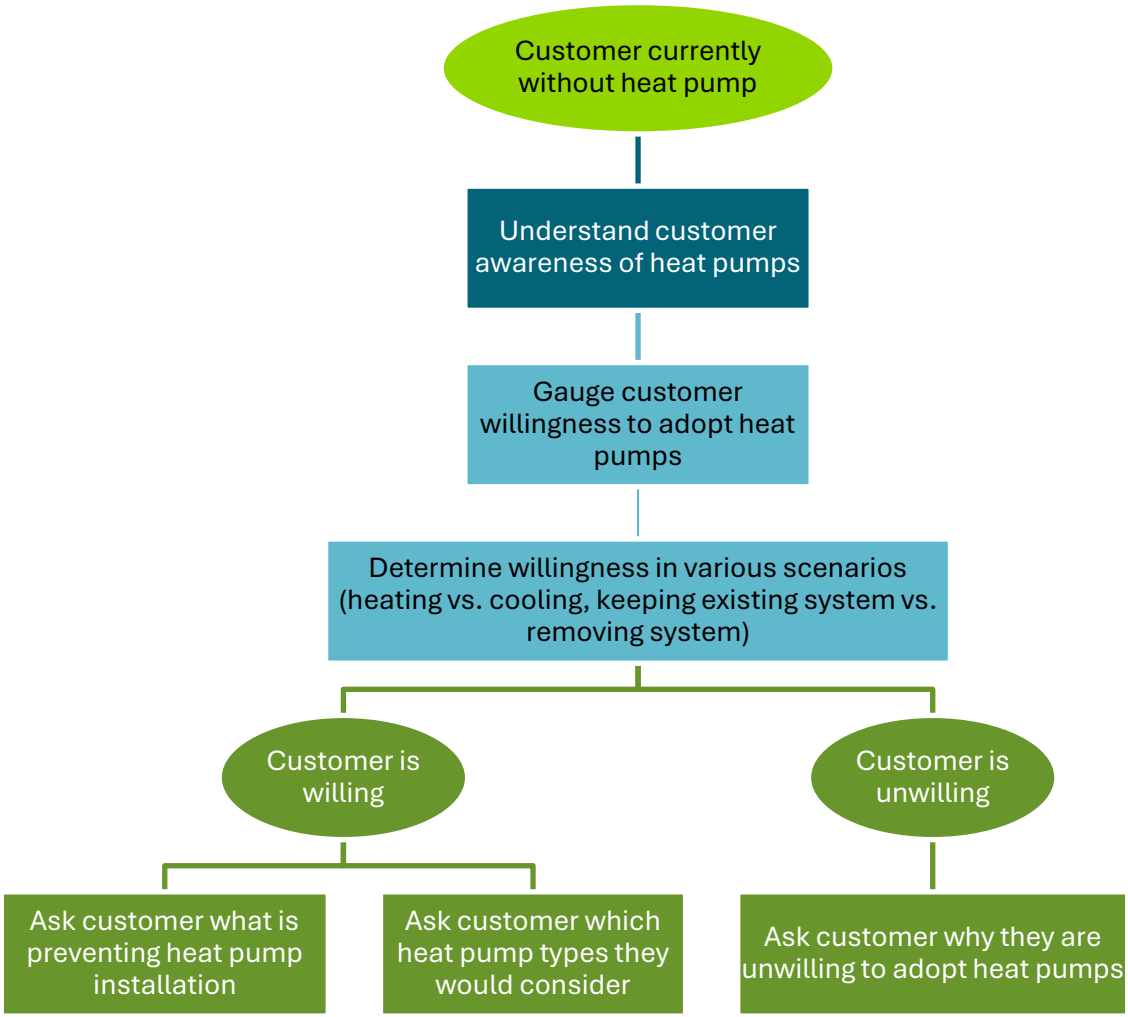
For the heat pump LMIDF study, the evaluation team reviewed results from RBUECS Phases 7 and 8, as these surveys included targeted questions on heat pump awareness and willingness to adopt. Consistent with the saturation results reported in the RBUECS reports, all results presented in this memo are post-weighted to improve representativeness of the Massachusetts population.[6]

Figure 1 demonstrates the logical flow of heat pump questions asked to survey participants. For the purposes of this study, the team investigated results from three sub-populations of interest to see how willingness to adopt and barriers to adoption may change for different participant groups. These sub-populations are:

- **Low to moderate income (LMI) customers.** LMI survey respondents, which was determined by reported household annual income.
- **Delivered Fuel (DF) customers.** Respondents who listed propane or oil as heating fuels.
- **LMIDF customers.** Survey respondents who meet the criteria for both LMI and DF customers.

[6] For further detail on the post-weighting methodology, see Appendix A2 in the RBUECS Phase 8 Comprehensive Report. https://ma-eeac.org/wp-content/uploads/MA24R69-B-RBU-Residential-Building-Use-and-Equipment-Characterization-Study-Comprehensive-Report-Ph8-Final-2026-02-03.pdf

Figure 1. RBUECS Heat Pump Question Flow



Source: Guidehouse

2.1 Willingness to Adopt Heat Pumps

For all respondents with fossil fuel heating who had not previously indicated that they have a heat pump, the RBUECS survey asked a series of questions gauging customer willingness to adopt heat pumps. Respondents were asked to rank their willingness to adopt heat pumps while keeping an existing heating system as backup versus removing their existing heating system.

Table 2 shows the questions that respondents were asked. Two additional questions (HP3 and HP11) were shown to respondents with existing central air conditioning systems.

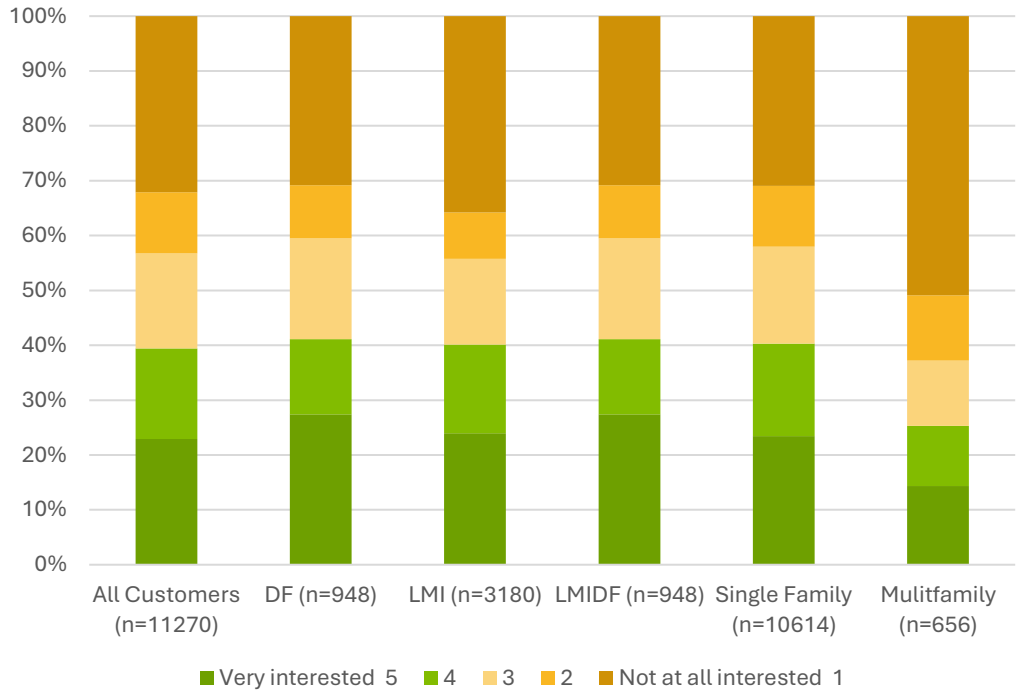
Table 2. RBUECS Heat Pump Willingness Questions

Question Number	Existing Fuel System	Question
HP1	Fuel Heat	How willing would you be to add a heat pump (central heat pump, mini-split, or geothermal heat pump) to your home to provide heating and cooling most of the time, while keeping your existing heating system as a backup?
HP2	Fuel Heat	How willing would you be to add a heat pump to your home to provide heating and cooling all of the time, while getting rid of your existing heating system?
HP3	Fuel Heat with cooling	How willing would you be to switch from your central air conditioner that provides only cooling to a central heat pump that provides both cooling and heating, while keeping your existing heating system?
HP11	Fuel Heat with cooling	How willing would you be to switch from your central air conditioner that provides only cooling to a central heat pump that provides both cooling and heating, while getting rid of your existing heating system?

Source: Guidehouse RBUECS survey

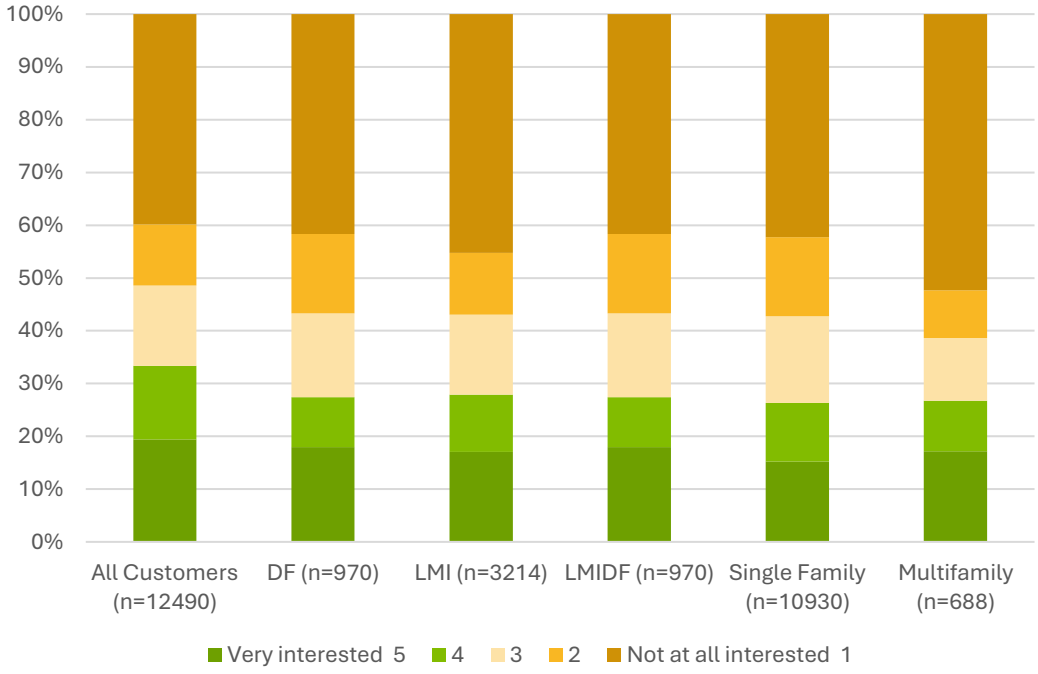
Respondents were asked to rank their willingness to adopt heat pumps on a scale from one to five with one being not interested at all and five being extremely interested. Respondents were also given the option of "don't know." Figure 2 and Figure 3 show how each sub-population answered willingness to adopt heat pump questions on a scale from one to five with five being very interested in heat pumps and 1 being not at all interested. Figure 2 shows results from questions HP1 and HP3, and Figure 3 shows results from HP2 and HP11. "Don't know" responses were omitted from this analysis. For detailed information on how each willingness question was answered across the population, please see Appendix B.1.

Figure 2. Willingness to Adopt Heat Pumps by Customer Type While Keeping Existing System



Source: Guidehouse RBUECS survey

Figure 3. Willingness to Adopt Heat Pumps by Customer Type While Removing Existing System

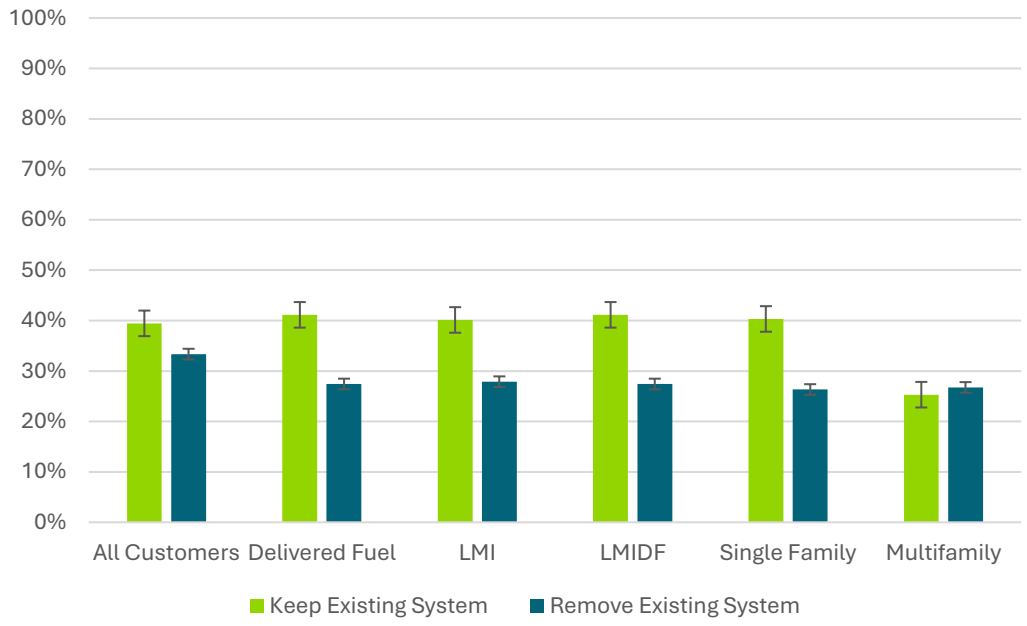


Source: Guidehouse RBUECS survey

Following the logic used in the RBUECS, any respondent that provided a score of four or five is considered "willing" to install heat pumps. As Figure 2 and Figure 3 show, overall willingness to adopt heat pumps is lukewarm with no population indicating an interest over 50%. Multifamily participants appear the least willing to adopt heat pumps even when keeping existing heat. For the rest of the populations, there is no significant difference in willingness to adopt by customer type, and percentages seem to decrease even more when requiring system removal.

To further explore this topic, the team compared the percentage change in willingness to adopt heat pumps between keeping existing systems and removing existing systems. Figure 4 shows these values broken out by DF, LMI, and LMIDF sub-populations as well as by single family and multifamily sub-populations.

Figure 4. Percentage of Sub-Population Willing to Adopt Based on Ability to Keep Existing Systems



Source: Guidehouse RBUECS survey

Across all customers, the ability to keep existing heat systems increased willingness by 7%. For DF customers, that number doubles to 14%, and LMI customers are 12% more willing to adopt heat pumps when provided the option to keep their existing heat system. The only customer population that showed no meaningful difference between removing and keeping existing systems were multifamily customers. This response might be due to the higher proportion of renters.

The willingness to adopt heat pumps is influenced by customer ability to keep existing heating systems. When designing heat pump programs for the general population, but especially for single-family LMI customers with DF, it is worthwhile to allow for partial displacement of existing heating systems.

2.2 Barriers to Heat Pump Adoption

After indicating that they are not willing to adopt heat pumps (willingness score of 3 or below), respondents were asked to select all the reasons why they are unwilling to adopt a heat pump. A similar set of questions was asked of respondents who are willing to adopt a heat pump (willingness score of 4 or 5). Willing respondents were asked to select all the reasons they have not yet adopted heat pumps. Table 3 outlines the barrier-related questions and which survey respondents were shown each question.

Table 3. RBUECS Heat Pump Barrier Questions

Question Number	Respondent Willingness	Existing System	Question
HP4	Unwilling	Fuel heat	Why are you not interested in adding a heat pump while keeping your existing heating system as a backup? Please select all that apply.
HP5	Willing	Fuel heat	What has stopped you from adding a heat pump while keeping your existing heating system as a backup?
HP6	Unwilling	Fuel heat	Why are you not interested in adding a heat pump while removing your existing heating system? Please select all that apply.
HP7	Willing	Fuel heat	What has stopped you from adding a heat pump while removing your existing heating system?
HP8	Unwilling	Fuel heat with AC	Why are you not interested in switching from an air conditioner to a heat pump? Please select all that apply.
HP9	Willing	Fuel heat with AC	What has stopped you from switching from an air conditioner to a heat pump?

Source: Guidehouse RBUECS survey

Because heat pump barriers are largely similar for willing heat pump adopters and unwilling respondents, the response options for the heat pump barrier questions remain largely unchanged for both respondent types. Table 4 summarizes the response options that were provided to customers in the RBUECS survey. For an in-depth look at how respondents answered each of these barrier questions, see Appendix 4.2C.1.

Table 4. RBUECS Heat Pump Barrier Response Options

#	Response Option	Questions
1	A contractor told me not to use a heat pump for heating	HP4, HP5, HP6, HP7, HP8, HP9
2	Adding a heat pump costs too much money	HP4, HP5, HP6, HP7, HP8, HP9

#	Response Option	Questions
3	Adding a heat pump would take too much time	HP4, HP6, HP8
4	I am concerned about heat pump performance	HP4, HP5, HP6, HP7, HP8, HP9
5	I am concerned my energy bills will increase	HP4, HP5, HP6, HP7, HP8, HP9
6	I cannot find a contractor to do this work	HP4, HP5, HP6, HP7, HP8, HP9
7	I do not know enough about heat pumps to make an informed decision	HP4, HP5, HP6, HP7, HP8, HP9
8	I do not think heat pumps work well for cooling	HP8
9	I do not think heat pumps work well for heating	HP4, HP6, HP8
10	I do not want to replace my current equipment until it fails	HP4, HP5, HP6, HP7, HP8, HP9
11	I plan to move so I do not want to invest in my home	HP4, HP5, HP6, HP7, HP8, HP9
12	I rent my home and would not be involved in this decision	HP4, HP5, HP6, HP7, HP8, HP9
13	I was not aware heat pumps were a cooling optional	HP8, HP9
14	Other, please specify	HP4, HP5, HP6, HP7, HP8, HP9

Source: Guidehouse RBUECS survey

To better understand the barriers encountered by LMI, DF, and LMIDF customers in heat pump adoption, the team investigated responses from these sub populations against the broader population. The analysis revealed several barriers that limit heat pump adoption among LMIDF customers that may be different from the general population.

2.2.1 Knowledge

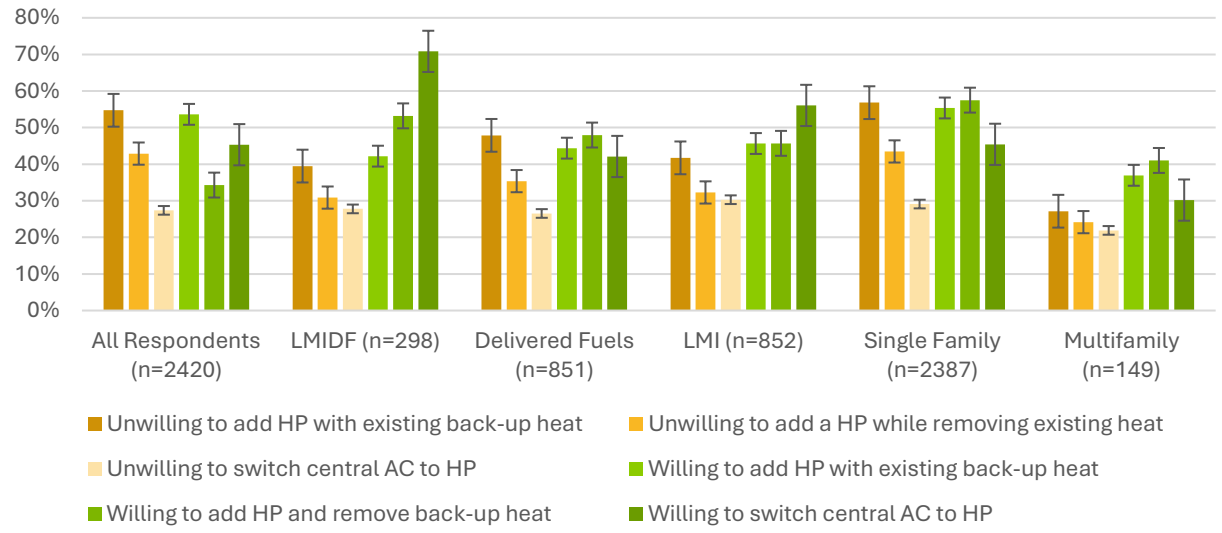
Across all sub-populations types, knowledge was consistently listed as a barrier to heat pump adoption. In fact, it was the second most common barrier selected after heat pump cost. Figure 5 shows the proportion of each sub-population of interest (DF, LMI and LMIDF) that listed knowledge, or specifically not knowing enough about heat pumps to make an informed decision, as a barrier to adoption.

Each bar in Figure 5 through Figure 8 represents the percentage of each sub-population depending on their response to the willingness to adopt questions. Unwilling participants are shown in orange hues while willing participants are shown in green. There are also differences in response type depending on whether participants were asked to keep or remove their existing heating system or if they were asked to switch their heating system or their cooling system. Note that populations are

not mutually exclusive. The error bars on these graphs demonstrate the standard error each response type shown.

In the example that Figure 5 shows, the left most bar shows the percentage of each sub-population who had been posed with the question "How willing would you be to add a heat pump (central heat pump, mini-split, or geothermal heat pump) to your home to provide heating and cooling most of the time, while keeping your existing heating system as a backup? (HP1)" and answered, "unwilling." They were then asked, "Why are you not interested in adding a heat pump while keeping your existing heating system as a backup? Please select all that apply (HP4)." Each bar represents the percentage of the population who marked "I do not know enough about heat pumps to make an informed decision" to that question. Each subsequent bar follows a similar logic but with a different question set.

Figure 5. Percentage of Sub-Population Who Selected "I do not know enough about heat pumps to make an informed decision" as a Barrier to Adoption



Source: Guidehouse RBUECS survey

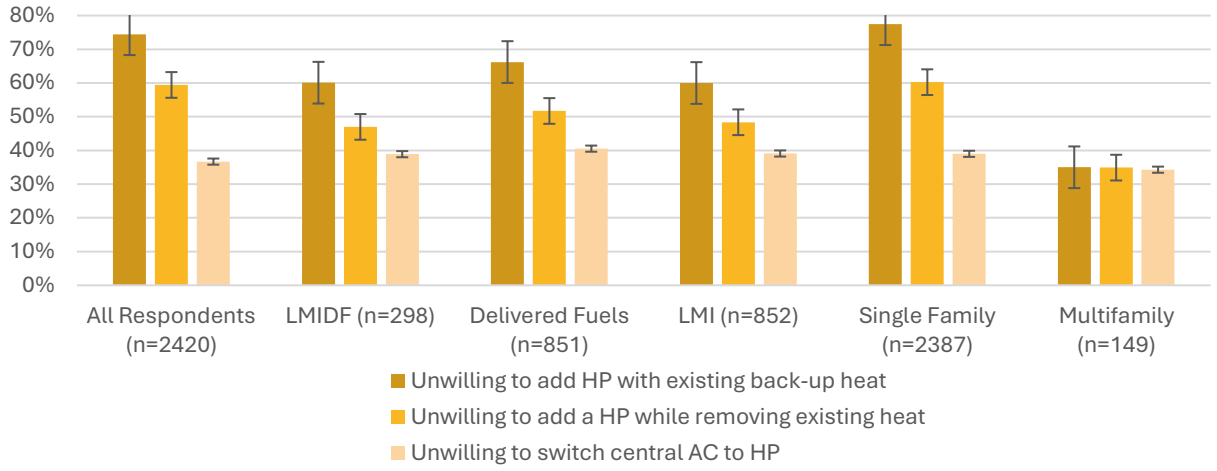
Outside of the multifamily sub-population, over 30% of all other sub-populations were likely to list knowledge as a concern. Over 50% of LMI and LMIDF customers who were willing to convert their air conditioners to heat pumps overwhelmingly listed knowledge as a barrier. Among unwilling customers, a higher percentage of DF customers listed knowledge as a barrier to willingness to install compared with LMI customers. DF customers see knowledge as a major reason they are unwilling to adopt, whereas LMI customers who are already willing see knowledge as a barrier to adoption. This finding suggests that there is an opportunity for heat pump education among all customer types.

2.2.2 Cost

As expected, cost concerns emerged as another barrier to adoption. The RBUECS survey explored cost concerns in two major ways: installation cost (cost to add a heat pump) and cost of energy increases. Figure 6 shows the percentage of each sub-population who listed installation cost as a barrier to heat pump adoption, and Figure 7 shows the percentage of reach sub-population who

listed a cost of energy increase as a barrier to heat pump adoption. The RBUECS survey asked only unwilling participants about installation cost as a barrier.

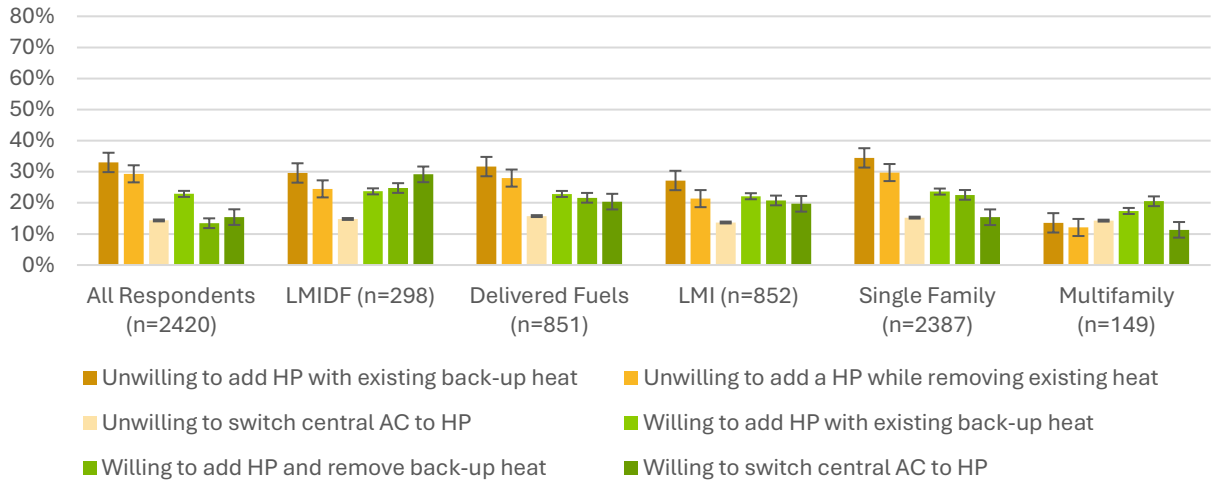
Figure 6. Percentage of Sub-Population Who Selected "Adding a Heat Pump Costs Too Much Money" as a Barrier to Adoption



Source: Guidehouse RBUECS survey

Other than the multifamily sub-population, the most common barrier to adoption that unwilling participants cited was cost. This response was the most common response for single family sub-population who were unwilling to add a heat pump while removing backup heat. This finding suggests that customers may be similarly concerned about the cost to remove the existing system in addition to the cost to install the heat pump. Interestingly, cost was cited less often as a concern for the sub-population switching their current cooling to a heat pump.

Figure 7. Percentage of Sub-Population Who Selected "I Am Concerned My Energy Bills Will Increase" as a Barrier to Adoption



Source: Guidehouse RBUECS survey

Across all populations, participants cited energy bill increases as a barrier to adoption at a lower rate than installation costs. Concerns around energy bill increases were most common among unwilling participants. However, willing LMIDF customers cited this barrier at similar rates to unwilling participants. This finding is notable as LMIDF customers will likely see energy bill decreases when switching to heat pumps, suggesting an opportunity for additional customer education here especially as these willing participants may be even more motivated to participate knowing this potential outcome. Specific heat pump rates were not available when respondents took the survey, highlighting this additional decrease in energy costs could further motivate participation.

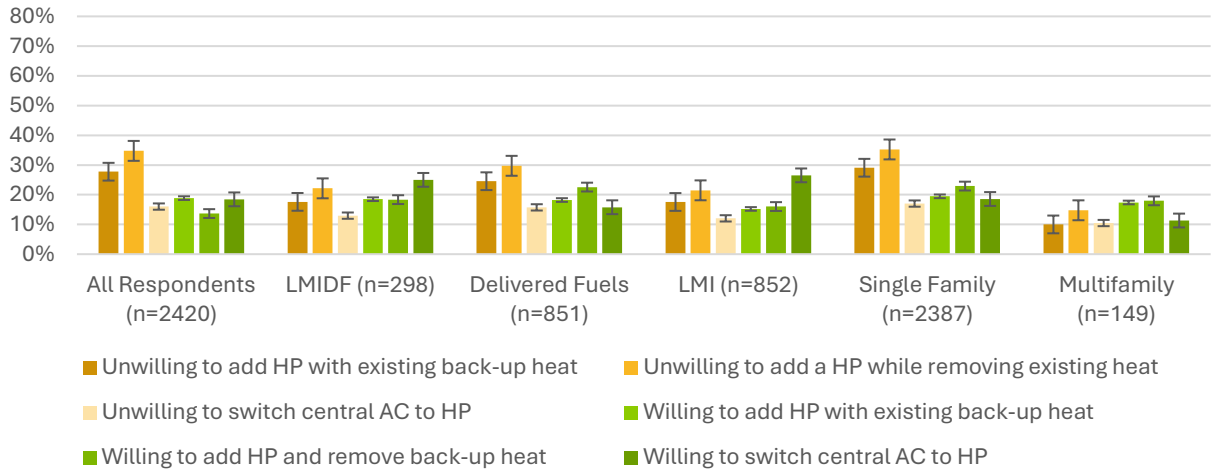
Additionally, LMIDF, DF, and LMI customers who were willing to switch their existing cooling systems to heat pumps for cooling cited energy bill increases as a concern more frequently than those who were unwilling. This finding suggests that addressing concerns around increased costs of cooling could lead to more willing heat pump respondents becoming heat pump adopters.

2.2.2 Performance

Another common barrier to adoption is perceived heat pump performance. Performance was the fourth most common reason respondents were unwilling to adopt heat pumps. When respondents were prompted to remove existing heat pumps, they were incrementally more likely to report concerns with heat pump performance. This finding is likely because with heat pumps as the only heating source, their performance becomes more important versus if there is a backup available.

DF and LMIDF willing heat pump adopters were similarly concerned about performance to the DF and LMIDF unwilling sub-population. LMI customers who are willing to switch central air conditioning to heat pumps were overwhelmingly more concerned about heat pump performance compared with other LMI customers. This finding suggests that for LMIDF customers, it is important to assuage concerns related to heat pump performance to get them to install heat pumps, especially if they are already willing.

Figure 8. Percentage of Sub-Population Who Selected "I Am Concerned about Heat Pump Performance" as a Barrier to Adoption



Source: Guidehouse RBUECS survey

2.2.3 "Other" Responses

All six RBUECS survey questions exploring barriers to adoption also offered write-in options in case the options provided in the survey did not adequately reflect the barriers faced. The team analyzed these responses for any customers that fit the description of LMIDF, LMI, or DF. During this analysis, the team grouped each response into a broader category for clarity of reporting. Table 5 shows the top eleven most common responses. For a detailed breakout of all responses, see Appendix 4.2C.3.

Table 5. Top Eleven "Other" Reasons Preventing Heat Pump Adoption

Category	LMI	DF	Total Analyzed
Has a new heating/cooling system	105	85	171
Cost concerns	71	85	121
Doesn't feel it is worth the hassle	35	39	63
Prefers existing equipment	24	30	45
Condo association limitations	32	3	35
Customer is too old	16	16	27
Aesthetic concerns	6	22	24
Customer life events - moving	12	17	24
Space concerns	8	11	19
Electricity service concerns - grid reliability	7	10	17
Misinformation about heat pumps - not suitable for cold climates	6	14	17

Source: Guidehouse RBUECS survey

The most common "other" barrier that respondents gave for not adopting heat pumps is that they already upgraded to a new heating or cooling system. Many felt that it would be wasteful to install heat pumps given how new their system is. Many LMI respondents also cited that they had received furnace and air conditioning through Mass Save. Similarly, the third most common "other" barrier was that customers did not feel it was worth the hassle. Comments like, "if it's not broken, don't fix it" were common among these customers.

The second most common "other" barrier was additional cost concerns. While cost concerns were options provided by the survey, respondents used the "other" category to shine additional light on barriers associated with cost including concerns about return on investment, concerns around system removal costs, and concerns about costs of maintenance.

The fourth most common "other barrier" was a preference for existing equipment. Customers listed specific heating and cooling systems, such as water heating systems or wood stoves. These customers are unlikely candidates for a heat pump. However, some customers also mentioned that they preferred their existing systems because they had concerns about electric grid reliability.

These customers would likely be amenable to a partial displacement scenario. This response was most common among DF customers.

Personal events in customer lives also were common in the "other" responses. In fact, the sixth most common barrier to heat pump adoption was that the customer felt too old and making a major change did not feel worth it. Other customer life barriers listed included: moving, personal anxiety, layoffs, paying off loans for other products, and generally being too busy.

Respondents also often mentioned home limitations as a barrier to heat pump adoption. Space concerns were also a common theme as many respondents did not feel that they have adequate space in or around their home for a heat pump system. One respondent mentioned that they have a combination water heater/boiler and that they do not have the physical space for two separate space heating and water heating units. Similarly, many customers mentioned not liking the look of mini-split wall units and complained about how much space they take up. In fact, aesthetic concerns were the seventh most common barrier mentioned.

Notably, the fifth most common barrier had to do with compatibility of heat pumps in condos. Many customers mentioned not wanting to go through the hassle of getting approval by a condo board. One respondent even mentioned that their condo board had looked into heat pumps and decided against it for the whole building. Other home compatibility concerns included the size of the home, having old or historic homes, requiring electric panel upgrades, requiring knob and tube wiring remediation, and having log homes or lofted homes that may not be good contenders for heat pumps.

Finally, many customers listed barriers to heat pump adoption that may not be barriers at all but may instead be informed by misinformation. The tenth most common barrier to heat pump adoption was that they are not suitable for cold climates. Other misconceptions mentioned by respondents included: they are less efficient than a space heater, cannot be installed in multifamily buildings, require existing ductwork, require existing baseboard heat, and are not a suitable primary heat source.

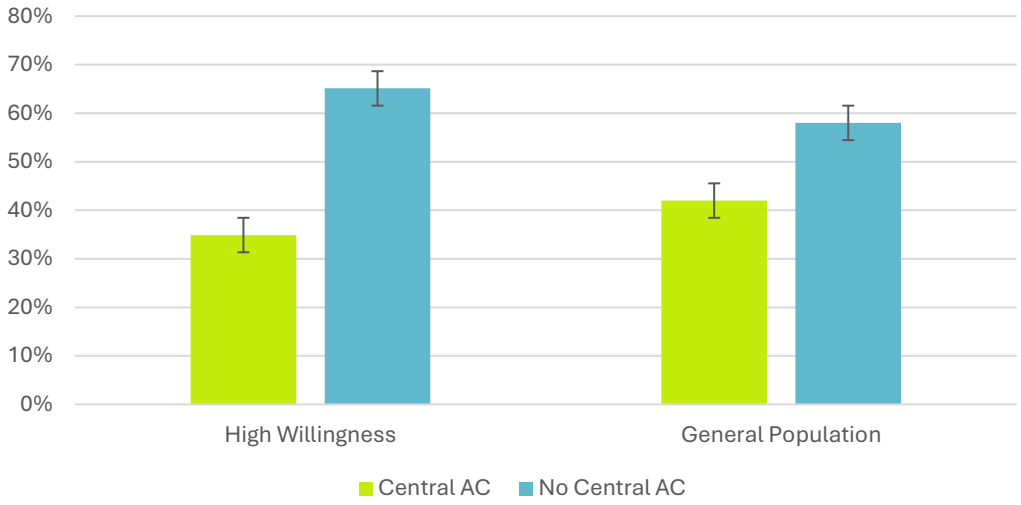
2.3 High-Willingness Respondents

In addition to sub-populations based on income, Guidehouse also investigated an additional sub-population of interest: respondents with a high willingness to adopt heat pumps. These are defined as any respondent who answered a 5 (very interested) on RBUECS survey questions HP1, HP2, HP3, and HP11. The team investigated potential trends across these high-willingness participants to see if there are any trends that may suggest easily attainable opportunities to enable heat pump adoption.

Figure 9 shows the percentage of the high-willingness sub-population with existing air conditioning systems compared with the general population. A larger proportion of the high-willingness population have no existing central AC unit. This finding could indicate a potential avenue to encourage participation by emphasizing the benefits of heat pumps for cooling, such as through the Basic heat pump rebate offering[7].

[7] The Sponsors of Mass Save offer a "Basic" heat pump incentive for customers who are not displacing fossil fuels. The rebate is offered at $250/ton. https://www.masssave.com/en/residential/rebates-offers-services/heating-and-cooling/heat-pumps/air-source-heat-pumps

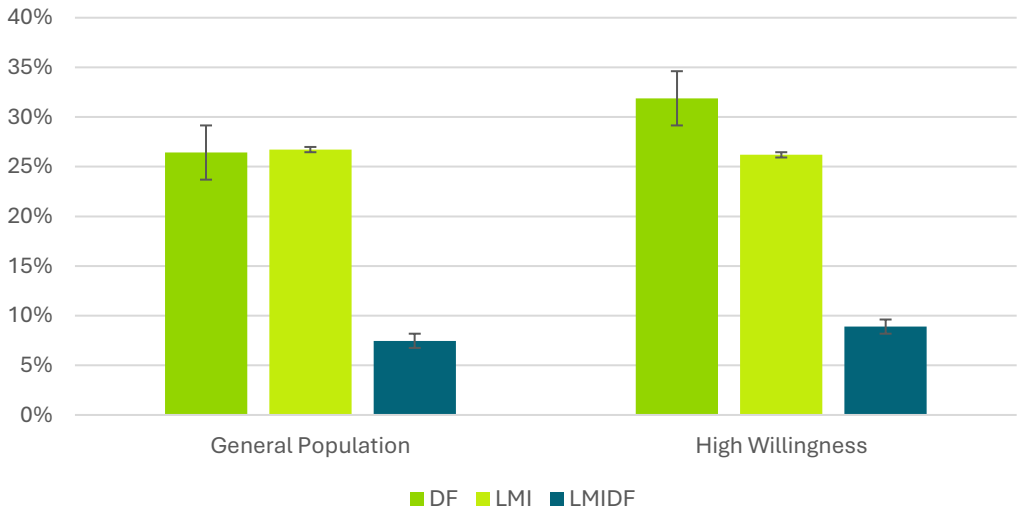
Figure 9. Existing Air Conditioning Units for High Willingness to Adopt Heat Pumps



Source: Guidehouse RBUECS survey

Figure 10 shows the income and fuel breakdown across high-willingness sub-population compared with the general population. This figure suggests that there may be slightly more high-willingness respondents with DF customers compared with the general population. However, this difference is not statistically significant.

Figure 10. Sub-Populations of Interest for High-Willingness Respondents



Source: Guidehouse RBUECS survey

Figure 11 shows the barriers to heat pump adoption for high-willingness respondents. These respondents overwhelmingly listed "adding a heat pump costs too much money" as a barrier to adoption. This finding aligns with trends observed in the broader population. However, because the survey was fielded prior to implementation of the seasonal heat pump rate, customer perceptions of heat pump costs may evolve.

Figure 11. Barriers to Heat Pump Adoption for High-Willingness Respondents

Source: Guidehouse RBUECS survey

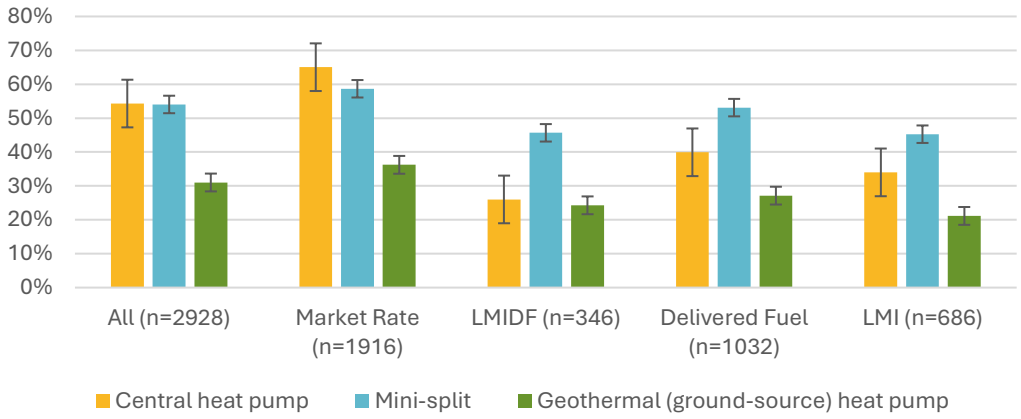
2.4 Other Notable Questions

In addition to the willingness to adopt questions and barriers to adoption questions, the team analyzed additional relevant heat pump questions with a focus on how trends differ among LMIDF customers.

2.4.1 Heat Pump Types

After indicating that they are willing to adopt a heat pump (willingness score of 4 or 5), respondents were asked what type of heat pump they would be willing to install. Figure 12 shows the breakdown of the answers by sub-populations of interest. Over 50% of all respondents indicated that they would be interested in either a central air source heat pump or a mini-split. Notably, DF, LMI, and LMIDF customers generally preferred mini-splits to central air source heat pumps and geothermal heat pumps. This finding differs from market rate and multifamily customers who tend to prefer central air source heat pumps, likely because they already have existing central heating systems in place.

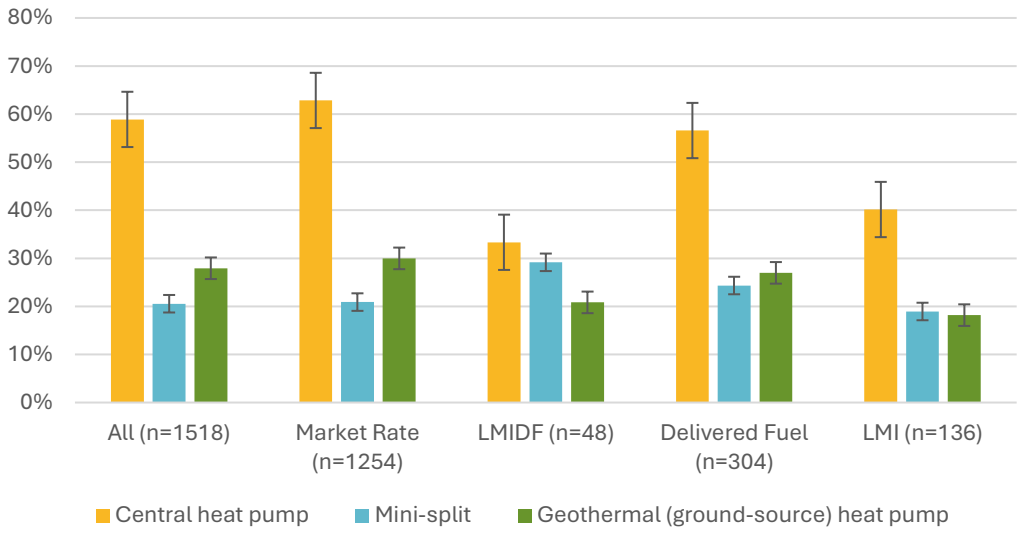
Figure 12. Percentage of Sub-Population Who Answered, "What Type of Heat Pump Would You Consider Installing?"



Source: Guidehouse RBUECS survey

To investigate this further, Guidehouse analyzed the same question specifically for customers with a central cooling system. Figure 13 shows the results for this sub-population. The team found that the willingness to adopt central heat pumps is significantly higher for customers with existing central cooling systems. Interestingly, the LMIDF sub-population with central cooling still show less of a preference for central cooling systems compared with their market rate counterparts.

Figure 13. Percentage of Sub-Population with a Central Cooling System Who Answered, "What Type of Heat Pump Would You Consider Installing?"



Source: Guidehouse RBUECS survey

2.4.2 Heat Pump Awareness Over Time

Before asking any questions about willingness to adopt heat pumps, the RBUECS survey asked respondents how familiar they were with heat pumps prior to reading about them in the survey. Table 6 shows the heat pump awareness questions asked in the RBUECS survey.

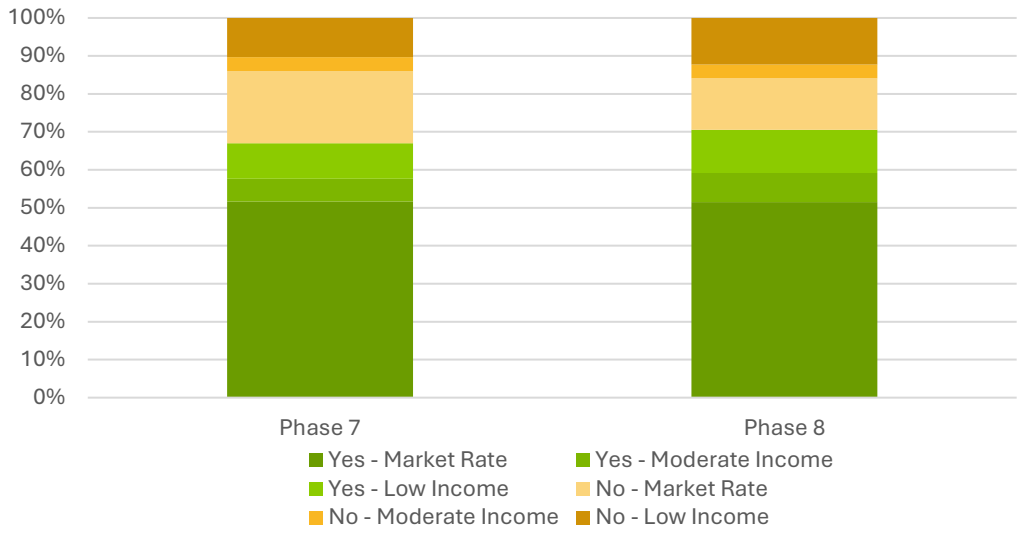
Table 6. Heat Pump Awareness Questions

Question Number	Question
AW1	Before today, had you heard of heat pumps for your home?
AW2	To your knowledge, what can heat pumps do?

Source: Guidehouse RBUECS survey

Figure 14 shows the distribution of responses to AW1. More than 60% of survey participants indicated that they were aware that heat pumps are both a heating and cooling option. Overall heat pump awareness increased by three percentage points from Phase 7 of the survey into Phase 8 of the RBUECS survey. There was no meaningful increase in awareness among LMI customers.

Figure 14. Response to the question "Before Today, Have You Heard about Heat Pumps for Your Home?" for Phase 7 and Phase 8



Source: Guidehouse RBUECS survey

3 Benchmarking

To identify best practices and challenges encountered by other heat pump offerings for LMIDF customers, the Guidehouse team conducted a market scan of peer programs with similar heat pump offerings targeting LMI or DF customers. This market scan consisted of a benchmarking literature review and peer program administrator interviews.

The benchmarking activity identified similarities and differences in program design, particularly regarding outreach, incentive structure, and cross-promotion across programs and strategies to mitigate barriers to participation. For the benchmarking literature review, Guidehouse reviewed published program documents and evaluation reports and conducted a web search to identify additional publicly available information from peer programs. Guidehouse then reached out to six peer program administrator programs and interviewed three of those peer program administrators.

3.1 Benchmarking Literature Review

Guidehouse reviewed published program documents to understand program design, successes, and lessons learned. Programs reviewed include:

- Efficiency Vermont Income Bonus Heat Pump Rebates
- Efficiency Maine Low- and Moderate-Income Heat Pump Rebates
- Philadelphia Energy Authority (PEA) Built to Last Program
- Clean Heat Rhode Island ([CHRI] program started on July 21, 2025)

- NYSERDA EmPower+
- NYSERDA Low-to-Moderate-Income Heat Pump Demonstration Pilot Program

Table 8 outlines which customer sub-populations of interest each of these programs is targeting. Only the NYSERDA LMI HP Demonstration Pilot Program specifically targeted LMIDF customers.

Table 7. Benchmarking Literature Review Peer Program Administrator Programs' Targeted Customer Base

State	Administrator	Program Name	Low Income	Moderate Income	DF
RI	CHRI	Heat Pump Incentive Program	TRUE	FALSE	TRUE
ME	Efficiency Maine	Low-Moderate Income Heat Pump Rebates	TRUE	TRUE	FALSE
VT	Efficiency Vermont	Income Bonus Heat Pump Rebate	TRUE	TRUE	FALSE
NY	NYSERDA	EmPower+	TRUE	TRUE	FALSE
NY	NYSERDA	LMI HP Demonstration Pilot Program	TRUE	TRUE	TRUE
PA	PEA	Built to Last	TRUE	FALSE	FALSE

Source: Guidehouse

3.1.1 Incentive Structures

Guidehouse reviewed the incentive structures of six peer program administrators. Table 8 outlines the differences across peer program administrators. Three of the programs, Built to Last, NYSERDA LMI HP Demonstration Pilot Program, and CHRI, offer full coverage of heat pump systems and their installation costs. NYSERDA EmPower+, Efficiency Vermont, and Efficiency Maine offer tiered incentive structures for low- versus moderate-income customers.

Table 8. Peer Program Administrator Incentive Structures

Administrator	Program Name	Covers Full Cost of Heat Pump?	Incentive Structure
NYSERDA	LMI HP Demonstration Pilot Program	Always	Full cost covered for all eligible participants
PEA	Built to Last	Always	Full cost covered for all eligible participants
CHRI	Heat Pump Incentive Program	Always	Full cost covered for all eligible participants

Administrator	Program Name	Covers Full Cost of Heat Pump?	Incentive Structure
NYSERDA	EmPower+	Sometimes	Covers heat pump installation and equipment cost up to $8,000
Efficiency Vermont	Income Bonus Heat Pump Rebate	Sometimes	Low-income households: 100% of the equipment and installation costs up to $5,000 Moderate-income households: 90% of equipment and installation costs up to $4,500
Efficiency Maine	Low-Moderate Income Heat Pump Rebates	No	Low-income households: 80% of the cost up to $8,000 Moderate-income households: 60% of the cost up to $6,000

Source: Guidehouse

Programs that utilized incentive caps instead of covering the full cost (EmPower+, Efficiency Vermont, and Efficiency Maine) cited a benefit of avoiding inflated project cost and consistency in financial forecasting. Programs that offer full cost coverage (NYSERDA Pilot, PEA, CHRI) cited the importance of offering full cost coverage in increasing participation and satisfaction rates for LMI customers.

3.1.2 Means Testing

Programs confirm LMI eligibility through a variety of means tests that can be grouped into one of two categories:

- **External means testing** in which the program confirms customer participation in other low-income programs.
- **Self-attestation** in which the customer provides documentation confirming their level of income.

Table 9 outlines the different means testing that evaluated programs use to confirm LMI status.

Table 9. Peer Program Administrator Means Testing Summary

Administrator	Program Name	External Means Test	Self-Attested	LMI Eligibility Requirements
CHRI	Heat Pump Incentive Program	Active participation in HHS programs (SNAP, HEAP) or RI Energy discounted rate	Program verifies self-attested income eligibility via iVerify	Households must earn up to 150% of the state area median income (AMI)

Administrator	Program Name	External Means Test	Self-Attested	LMI Eligibility Requirements
Efficiency Vermont	Income Bonus Heat Pump Rebate	None	Program requires participants to report all forms of household income anticipated in the next 12 months	Single household average gross income (AGI) $60k-$70k depending on the county; multifamily AGI $75k-$100k depending on the county
Efficiency Maine	Low-Moderate Income Heat Pump Rebates	Active participation in MaineCare, HHS programs (HEAP, SNAP, or TANF)	Program requires participants to report IRS tax return	Single household AGI up to $70k; multifamily AGI up to $100k
NYSERDA	EmPower+ LMI HP Demonstration Pilot	Active participation in HEAP, SNAP, or TANF or evidence of supplemental security income dated within the past month	Program requires participants to report all forms of income (paystubs, IRS reported quarterly earnings)	Households must earn at or below 60%-80% of the state AMI
PEA	Built to Last	N/A	Program verifies eligibility based on customer-provided proof of income	Single household AGI up to $50k; multifamily AGI up to $60k-$100k

Note: HHS = Department of Health and Human Services, SNAP = Supplemental Nutrition Assistance Program, HEAP = Home Energy Assistance Program, TANF = Temporary Assistance for Neady Families

Source: Guidehouse Research

Across peer program administrators, it is common to utilize partnerships with existing low-income programs as a means tests. Many programs (RI, ME, NY) lean on Department of Health and Human Services (HHS) or state-sponsored health services to verify income eligibility, but all programs also offer an avenue via self-attestation. Interestingly, the PEA does not utilize external means tests because their program partners do not recognize those tests and would require customers to be re-tested. Instead, the PEA utilizes data sharing software across program partners, so participants tested through PEA do not have to be re-tested when referred to other programs.

3.1.3 Whole vs. Partial Displacement

As part of this benchmarking activity, Guidehouse investigated the following displacement strategies of peer program administrators:

- Full (whole) displacement requires that customers fully replace the existing fossil fuel heating system. In these cases, backup heat is removed/disconnected or only used in extreme emergencies. Customers may need to sign a verification form confirming the old system is disconnected.

- Partial displacement does not require that customers fully replace the existing fossil fuel heating system. Instead, customers switch over between heat pumps and the legacy system. Systems with partial displacement tend to have integrated control systems that allow customers to set a switchover temperature where the controls will automatically switch from the heat pump system to the legacy fossil fuel systems seamlessly.

- Majority displacement is a form of partial displacement that prioritizes heat pumps over legacy heating systems. Like partial displacement, systems with majority displacement systems tend to have integrated control systems. Similar to full displacement, customers may be required to sign a form indicating their intention to use heat pumps as the primary heating source.

Table 10 shows the displacement strategies for each of the program administrators researched. Of these peer program administrators, all of them allowed for some level of partial displacement and none of them required whole system displacement. Some programs, like CHRI, Efficiency Maine, and Efficiency Vermont prioritize majority displacement over partial displacement but still allow for partial displacement.

Table 10. Peer Program Administrator Displacement Strategies

Administrator	Program Name	Displacement Scenario
CHRI	Heat Pump Incentive Program	Partial and majority
Efficiency Maine	Low-Moderate Income Heat Pump Rebates	Partial and majority
Efficiency Vermont	Income Bonus Heat Pump Rebate	Partial and majority
NYSERDA	EmPower+	Partial
NYSERDA	LMI HP Demonstration Pilot Program	Partial

Source: Guidehouse Research

Benchmarked heat pump programs incentivize LMI customers to upgrade their heating and cooling systems to include heat pumps to reduce fossil fuel usage incurred by heating systems. The programs offer incentives with partial displacement scenarios to accommodate various home types and layouts and help customers control electric costs. These incentives utilize integrated controls platforms to allow the customer to use their heat pumps as a primary heating system but retain the use of their legacy fossil fuel system for backup. The integrated controls system allows the customer to set a switchover temperature where the controls will automatically switch from the heat pump system to the legacy fossil fuel system. This configuration helps customers maintain comfort and manage heating bills.

3.1.4 Barriers to Adoption

Throughout the benchmarking activity, Guidehouse reviewed key barriers faced by peer program administrator programs. One of the most significant obstacles is cost and financing concerns for contractors working with LMI customers. Delays in rebate processing and the fact that heat pump incentives often cover equipment costs but not installation have created financial strain. Programs such as NYSERDA's Heat Pump LMI Pilot Program, Efficiency Maine's Residential Heat Pump Program, and CHRI have all reported experiencing these issues.

Another common barrier is the lack of home readiness and structural challenges, which can prevent successful installation of heat pumps. Many programs such as Efficiency Maine, Efficiency Vermont, and CHRI, require homes to be weatherized to receive a heat pump. This requirement poses challenges for LMIDF customers who might require weatherization, knob and tube wiring remediation, panel upgrades, or other home upgrades before they are heat pump ready. NYSERDA's pilot initiative was unique in that it covered the costs of these upgrades. Similarly, Built to Last Philadelphia works with partners and contractors to find funding sources for these remediation projects but does not cover the costs themselves. These challenges highlight the need for additional support to prepare homes for energy upgrades, particularly in older housing stock.

Additional barriers include customer preferences for traditional heating systems, such as wood stoves or delivered fuel, which limit the use of heat pumps to cooling rather than heating. Efficiency Maine and Efficiency Vermont have noted this trend in their programs. This trend is in line with challenges Massachusetts may be seeing, as several RBUECS survey responses indicated preferences for wood stoves.

Similar to Massachusetts, many programs cited challenges with capacity constraints. Programs such as CHRI and PEA have a waitlist in the thousands. These programs cite struggles to manage funds with high levels of customer interest. Both programs manage this demand by partnering with local nonprofits and other organizations to ensure participants get all non-heat pump needs addressed ahead of their installation.

Finally, Efficiency Maine cited barriers to participation related to too heavy of a reliance on low-income verification processes such as the Low Income Home Energy Assistance Program (LIHEAP) and HHS databases, which might systematically overlook certain LMI populations such as veterans and older adults or many moderate-income customers.

3.1.5 Motivators to Adoption

Of the literature reviewed, only the NYSERDA Single Family LMI HP Demonstration Study investigated the motivations to install heat pumps from program participants. Table 11 summarizes the motivation questions asked as a part of this study. Participants were asked to rank the influence of each motivator on a scale of 1 to 5 with 1 being the least influential and 5 being the most influential. This study found that saving money and improving comfort with better cooling were the most influential factors when deciding to adopt heat pumps.

Table 11. NYSERDA LMI HP Demonstration Pilot Participation Motivators

Motivation	Average Score
Saving money	4.62
Improving home comfort with better cooling	4.37
Improving home comfort with better heating	4.33
Reducing environmental impacts	4.24
Adding heating	3.55
Replacing old equipment	3.74

Source: NYSERDA Single Family LMI HP Demonstration Study

Similarly, the NYSERDA study asked contractors which benefits they found from participating in a heat pump program, and based on their experience, what they would suggest the program should do to improve heat pump adoption. Table 12 shows the contractors' motivation to participate in the program and Table 13 shows the contractor suggestions for program improvement.

Table 12. NYSERDA Contractor Motivations for Participating in a Heat Pump Program

Contractor Benefit	Percentage of Surveyed Contractors
Customer heat pump affordability	54%
Improved close rate for projects	51%
Expansion of offered services	11%
Improvement of business processes around heat pumps	6%
Shift of business focus to heat pump	6%

Source: NYSERDA Single Family LMI HP Demonstration Study

Over half of contractors appreciate working with a program that improves heat pump affordability for customers. Over half of contractors mention that the program improved their ability to close sales, likely due to the improved affordability of projects.

Table 13. NYSERDA Contractor Suggestions for Program Improvement

Program Improvement Suggestions	Percentage of Surveyed Contractors
Additional incentives	91%
Additional customer educational materials	51%
Staff training	37%
Program-provided marketing materials	34%
Program endorsement of contractors to increase credibility with customers	26%

Source: NYSERDA Single Family LMI HP Demonstration Study

In addition to contractors' overwhelming suggestion to increase incentives, they mention that the program should create additional customer educational materials, train staff, and create program marketing material to increase program participation.

3.2 Peer Program Administrator Interviews

Based on the findings from the program material review, Guidehouse reached out to six peer programs and was able to conduct interviews with three program administrators to better understand their heat pump program offerings and expected outcomes. The peer program administrators interviewed are outlined in Table 14. Please see 4.2Appendix A for detailed information about the interviews and their findings.

The Built to Last Program supports LMI residents as they transition their existing heating and cooling systems to heat pumps by working with other businesses and nonprofits. Efficiency Maine offers incentives to customers, including LMIDF customers, who install heat pumps. The team found through their interviews that Built to Last and CHRI are not only designed to incentivize the adoption of heat pumps as a primary heating solution but also provide significant financial assistance to income-eligible households. This assistance ensures that the benefits of clean energy are accessible to a broader population. Despite these successes, several barriers to heat pump adoption persist across all regions and programs. Chief among these are the readiness of homes and the presence of structural obstacles, as many programs require pre-weatherization before installation can occur. CHRI has sought to address these hurdles by offering not just financial incentives but also public education initiatives and support in preparing homes to be heat pump ready. Efficiency Maine cited requirements for full displacement as a barrier to participation.

These interviews also highlighted several motivators that drive heat pump adoption. Most notably, programs that cover 100% of installation costs said that it was the major driver of program success, underscoring the importance of program participation. The promise of lower monthly energy bills and the appeal of cooling are additional key motivators for LMI customers.

Table 14. Peer Program Administrators Interviewed

Program Administrator	Funding Source	Program Name	Description	Program Impact
CHRI	State funded and operated	Heat Pump Incentive Program	A program that helps residents, businesses, and nonprofits replace fossil fuel heating and cooling systems with high-efficiency electric heat pumps.	4,017 heat pump rebates dispersed between October 2023 and July 2025[8]
Efficiency Maine	Quasi-state agency, state and federal funding	Low-to-Moderate Income Heat Pump Rebates	A program designed to incentivize the installation of high-efficiency heat pumps as their primary heating system. Offers financial assistance for income-eligible households.	5,539 heat pump rebates dispersed to LMI customers in FY2025[9]
PEA	Publicly and privately funded	Built to Last Program	A "one-stop shop" that coordinates various home repair programs, offering services such as weatherization, installation of efficient appliances, and renewable energy solutions.	220 heat pumps installed between FY2023 and FY 2025[10]

Source: Guidehouse

[8] State of Rhode Island Office of Energy Resources, Clean Heat Rhode Island Statistics Heat Pump Residential Rebates Dispersed: https://energy.ri.gov/heating-cooling/clean-heat-ri/clean-heat-rhode-island-statistics

[9] Efficiency Maine Executive Directors Summary Report, Low-and-Moderate-Income Initiatives whole home heat pump installations rebated: https://www.efficiencymaine.com/docs/ED-Report-7-23-25.pdf

[10] Philadelphia Energy Authority FY 2025 Budget Testimony built to last heat pump installations: https://phlcouncil.com/wp-content/uploads/2024/04/FY25-Budget-Hearings-Testimony-Philadelphia-Energy-Authority.pdf

4 Conclusions and Considerations

4.1 Conclusions

The Guidehouse analysis resulted in the following conclusions:

1. Barriers to Heat Pump Adoption

    a. The four major barriers to heat pump adoption in the RBUECS survey were cost to install, lack of knowledge to make informed decisions, increased cost of energy, and concerns around heat pump performance.

    b. From benchmarking research, program administrators cited home readiness and presence of structural challenges as a major barrier to heat pump adoption, as many programs require a home to be pre-weatherized to receive a heat pump.

2. Motivators to Heat Pump Adoption

    a. From benchmarking interviews, program administrators mentioned that customers, especially LMI customers, are very responsive to heat pump installations to obtain cooling.

    b. From benchmarking research, cost was a major motivator for heat pump adoption. Programs that covered 100% of heat pump installation costs saw better participation. Customers also demonstrated a desire to lower their monthly energy bills.

    c. LMIDF RBUECS survey respondents prefer mini-splits over central heat pump systems.

3. Full vs. Partial Displacement

    a. Customers are more willing to install heat pumps if they can retain their existing heating system.

    b. All peer program administrators allow for partial displacement of existing heating systems. All benchmarked programs opted for partial displacement with some having rules on majority displacement.

    c. Cold climate programs (Efficiency Maine and Efficiency Vermont) indicated that requiring whole displacement with their heat pump program was a barrier to customers, as many customers require or would prefer backup heating in winter.

4. Cost Coverage

    a. Covering 100% of the heat pump equipment and installation cost has been shown to increase participation and customer satisfaction and trust.

5. Pre-Installation Upgrades and Weatherization

    a. A majority of benchmarked programs cited that low-income customers have a high frequency of needed pre-installation upgrades and weatherization efforts to tackle their physical barriers prior to installing a heat pump. Physical barriers to meet program requirements include weatherization, knob and tube wiring, and panel upgrades. In 2025, the MA PAs studied the frequency and characteristics of pre-weatherization and pre-electrification barriers among moderate income and market rate customers and identified similar barriers to what were listed by low-income peer program administrators.

    b. Peer program administrator programs collaborate with existing low-income support and weatherization programs to ensure customers can meet installation requirements.

6. Capacity Limits

    a. From benchmarking research, peer program administrators mentioned program capacity limits to handle the level of customer interest.

7. Energy Efficiency Leadership

    a. Peer program administrators look to Massachusetts as an industry leader in the energy efficiency and heat pump space.

4.2 Considerations

The Sponsors of Mass Save should:

1. Continue to **offer enhanced incentives** to install heat pumps for LMIDF customers.

2. Continue to **offer partial displacement installation for customers interested** in heat pump incentives, especially LMIDF customers.

3. When marketing heat pumps to LMIDF customers, **focus on cooling benefits and cost-saving benefits for customers with pre-existing fuel-fired heat.**

4. Continue to **collaborate with the turnkey program** and look to community organizations and nonprofits **for support with pre-installation barriers** in addition to leveraging the findings from the pre-electrification and pre-weatherization study.

5. As LMIDF customers indicate increased willingness to install **mini-split heat pumps**, consider emphasizing these system types in program marketing.

6. Continue to promote **pre-weatherization and pre-electrification barrier mitigation incentives** for eligible customers.

Appendix A. Peer Program Administrator Interview Summaries

A.1 Philadelphia Energy Authority Interview

Guidehouse interviewed a member of the Philadelphia Energy Authority (PEA) leadership team on their Built to Last program. Established in 2021, PEA Built to Last is a partner affiliate program of PECO that coordinates a 100% cost coverage whole home repair program for low-income households installing weatherization, efficient appliances, and renewable energy solutions. The program will have performed 400 whole home repairs by the end of FY2025. PEA invests on average $20k into each whole home repair project with an individual project cost average of $40k when all sources of repair are included. PEA Built to Last utilizes an installation contractor that manages the home assessment, general contractors, and overall project management.

PEA Built to Last customers are eligible to participate if they meet the following criteria:

- Residents of Philadelphia and have a verified income level below 60% of the area median income (AMI).
    - Customers are verified low income through data-sharing agreements with partners and are maintained in Salesforce.
- Customer homes must be stabilized for heat pumps (i.e., they have already received electrical panel upgrades and weatherization).

PEA Built to Last customers are mainly motivated to participate through financial incentives. The program covers 100% of the cost for all weatherization, measure installation, and whole home upgrades whether through its own funding streams or by braiding partner dollars. PEA Built to Last has marketed the program primarily through word of mouth. Given the high financial incentive, they have a waitlist of 4,500 homes.

PEA shared important lessons learned and barriers as PEA Built to Last is scaling up and launching a pilot standalone heat pump program to reach more customers and provide heating and conditioning to those who need it most without the need for a whole home energy assessment. They shared key lessons learned from the 3 years since implementation and noted that because it is a holistic home upgrades program, they can address all physical and financial barriers because they cover the cost holistically. The lessons learned from PEA's Built to Last program include:

- **Recognize that community partnerships are key.** PEA can perform whole home upgrades for low-income customers with the help of their community partners who are able to provide measures, installations, funding sources, and volunteer work.
- **Handle funding and coordination for customers.** To effectively engage low-income customers, it is important to take the burden of installation coordination, project organization, and installation cost from customers.
- **Offer a specific panel upgrade service.** Most low-income homes require electrical panel upgrades for a home to install a heat pump. PEA offers electrical panel upgrades, eliminating this barrier of heat pump installation.

A.2 Clean Heat Rhode Island Interview

Guidehouse interviewed a manager at Clean Heat Rhode Island (CHRI) about their Heat Pump Incentive (HPI) program. Established in 2020, CHRI is funded through the American Rescue Plan Act ($25 million) and supplemented through the Regional Greenhouse Gas Initiative ($10 million). CHRI offers 100% coverage for income-eligible customers to replace oil and propane heating.

CHRI HPI program customers are eligible to participate based on the following criteria:

- Customers are fuel switching from propane, gas, and oil to a heat pump. Partial displacement is allowed (whole home conversion is not required). Customers sign an attestation confirming heat pumps are the primary heating system in the zones they serve.
- Customers must be verified LMI through iVerify.
- Households receiving a rebate must be fully weatherized to receive the rebate.

CHRI HPI customers are motivated to participate through financial incentives, knowing that by participating, they would receive a 100% cost coverage rebate combined with federal tax credits. CHRI also cited that heat pump air conditioning is a large motivator for customers to participate.

CHRI elaborated on barriers of participation and general program barriers faced during its years of operation:

- Confidence in heat pump abilities varies from contractor to contractor
- The presence of knob and tube wiring
- Challenges breaking into the new construction market, noting that new construction is increasingly installing propane systems

CHRI has been able to successfully disperse 5,539 heat pump rebates to customers in FY25. With this success comes lessons learned:

- **Be where customers are.** Customer outreach through virtual consultation and presence at Rhode Island Energy's low-income customer fairs was very successful
- **Stay engaged with contractors.** The program implementation contractor confirms the installation quote with the approved contractor.
- **Customers never deal with money.** Delivering rebates straight to the verified program contractor was very successful, taking the payment burden off the customer.
- **Continually improve.** CHRI educated installers on correct heat pump sizing and performed analysis on moderate income customer barriers.
- **"Just pay for the thing."** 100% cost coverage is "the best way to do it."

A.3 Efficiency Maine Interview

Guidehouse interviewed a program manager for Efficiency Maine's heat pump program. LMI residents are eligible for 80% of the cost up to $8,000, and moderate-income residents are eligible for 60% up to $6,000. In FY2025, Efficiency Maine has rebated 5,539 whole home heat pump installations, 2,387 of which were for low-income households.

Efficiency Maine's heat pump program eligibility requirements for participants include:

- The rebates are available for single-zone heat pumps for houses, duplexes, and condominiums and provide at least 80% of the home's peak heating load. Both new and existing homes qualify.
- Income is verified by a Maine piloted verification form.[11]
    - Participants are verified low income through the LIHEAP program and HHS database agreement or verified moderate income through average gross income (AGI).

Efficiency Maine's LMI customers were motivated to participate in the initiative due to the high cost of using heating oil and propane in Maine. This high cost makes it very financially incentivizing to switch to heat pumps. High rebates combined with tax credits were additional financial incentives. Efficiency Maine stated that customers were also extremely motivated by heat pump air conditioning abilities.

Efficiency Maine shared the participation, contractor, and program barriers that the initiative has faced:

- Confidence in heat pumps varies from contractor to contractor.
- New construction is still installing propane systems but heat pumps are winning over oil.
- Eligibility verification for LMI customers is important.

Efficiency Maine's heat pump program lessons learned include:

- **Give contractors tools.** Allowing three ways to calculate load was very successful.
- **Keep rebates simple**. Rebates only eligible for single-zone heat pumps were successful and allowed Efficiency Maine to not cap capacity. Having two capacity levels increased program complexity.
- **Allow backup heat.** Requiring the disablement of boilers/furnaces was not received well by stakeholders.

[11] Efficiency Maine, Income-Based Eligibility Verification, https://www.efficiencymaine.com/income-based-eligibility-verification/.

Maine relied on Department of Energy Consortium for Energy Efficiency resources for installers but has switched to the Northeast Energy Efficiency Partnerships (NEEP) list, as the CEE tax credit-eligible list is no longer relevant.

Appendix B. Research Questions

This study considered the following research questions.

B.1 LMIDF Customer Interest in Adopting Heat Pumps

- What proportion of LMIDF customers are interested in adopting heat pumps? Are there any variables (available in the data) that may influence their interest in adopting heat pumps?
  - Geography
  - Housing type
  - Existing heating system/fuel type
- Are there factors that could increase the likelihood of heat pump installation across LMIDF customers?
  - Education about heat pumps
  - Renter protection (i.e., restrictions on rent increases/evictions)
  - Lower electricity rates
  - Guaranteed coverage for service/repairs
  - Higher Incentives (for moderate income customers)

B.2 Participation Motivators

- Why are LMIDF customers interested in installing heat pumps?
  - Replacement of existing heating equipment (burn-out)
  - Free equipment/significantly reduced equipment costs
  - Reduced operating costs (depending on existing equipment)
  - Health or safety concerns
  - Environmental impact
  - A system that provides both heating and cooling
- Does leveraging known motivators increase the number of heat pump installations?

B.3 Barrier Identification & Mitigation

- What barriers exist to installing heat pumps for LMIDF customers?
  - Comfort concerns (household temperature, noise, appearance)
  - Cost barriers (installation and operation costs, maintenance costs)
  - Physical Barriers (asbestos, electrical limitations, weatherization requirements)
  - Knowledge/awareness of heat pumps
  - Negative program experiences

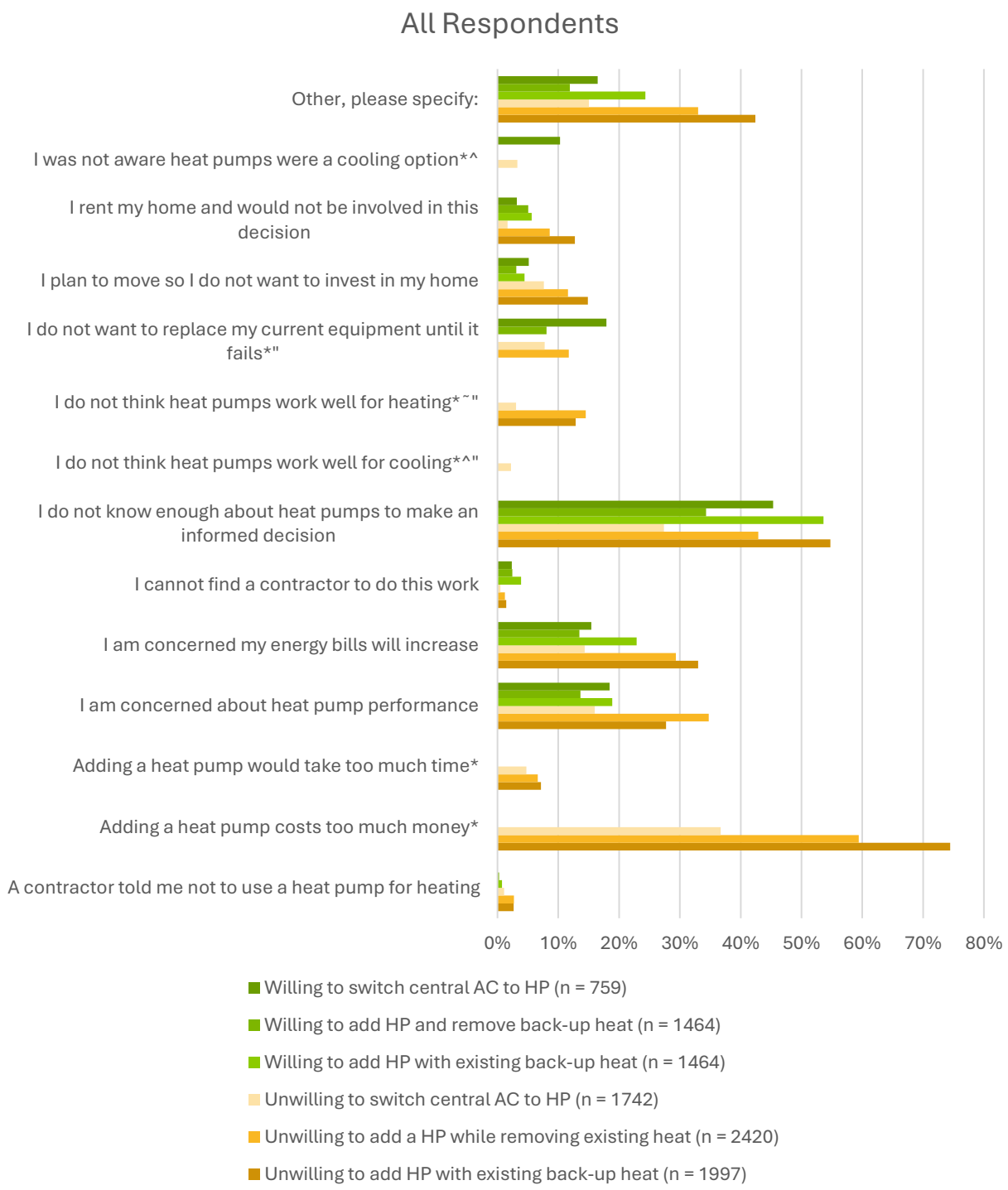
  - Time barriers (cannot be around during installation, no time to fill out application)
  - Trust of the program
  - Language access concerns
- What can the program do to mitigate barriers? Are there current offerings through the Sponsors of Mass Save that can address any of the identified concerns?

B.4 Opportunities for Cross-Promotion

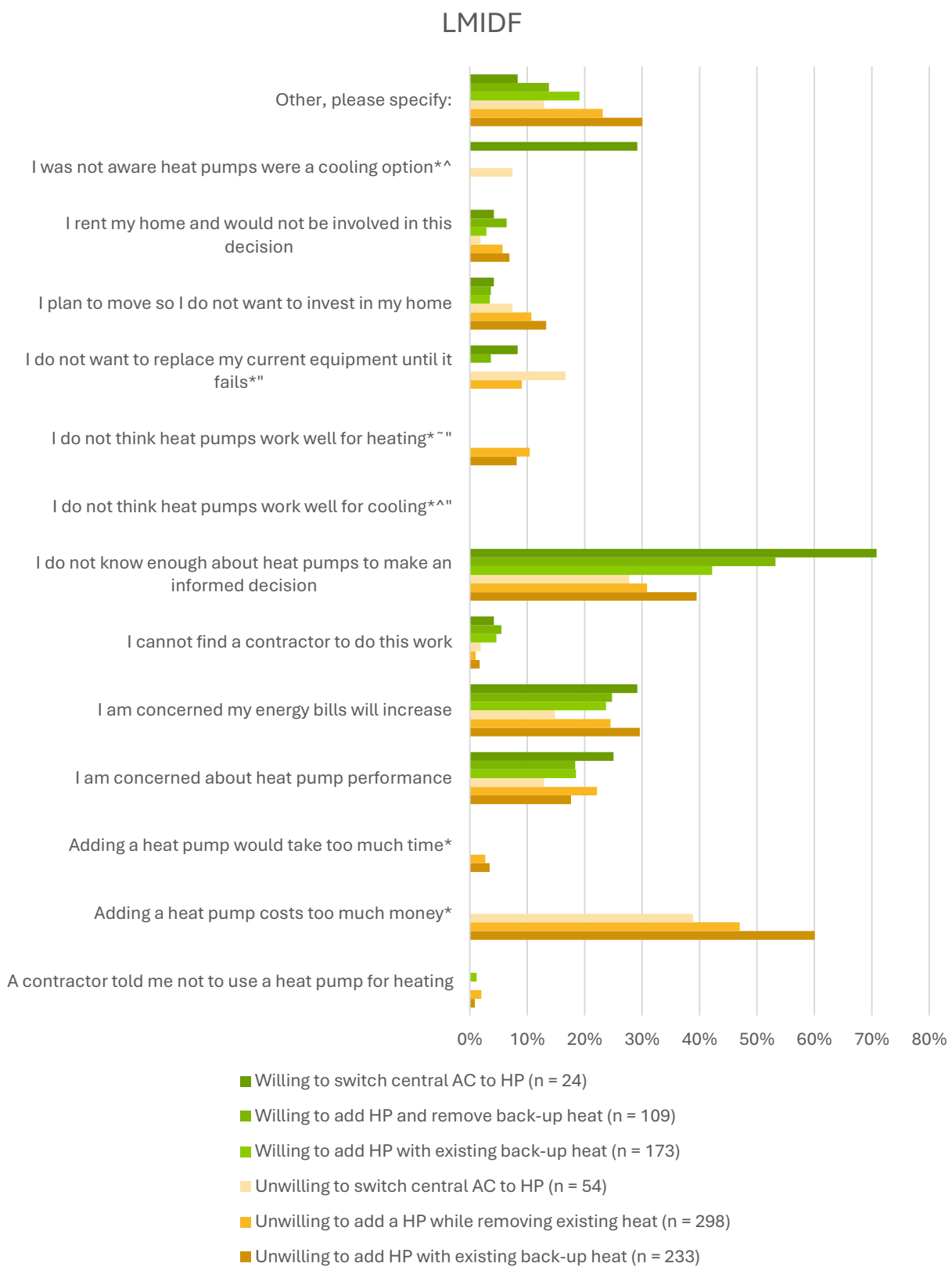
- Which programs and offerings could the Sponsors of Mass Save leverage to increase interest in heat pump adoption and mitigate barriers?

Appendix C. RBUECS Heat Pump Responses

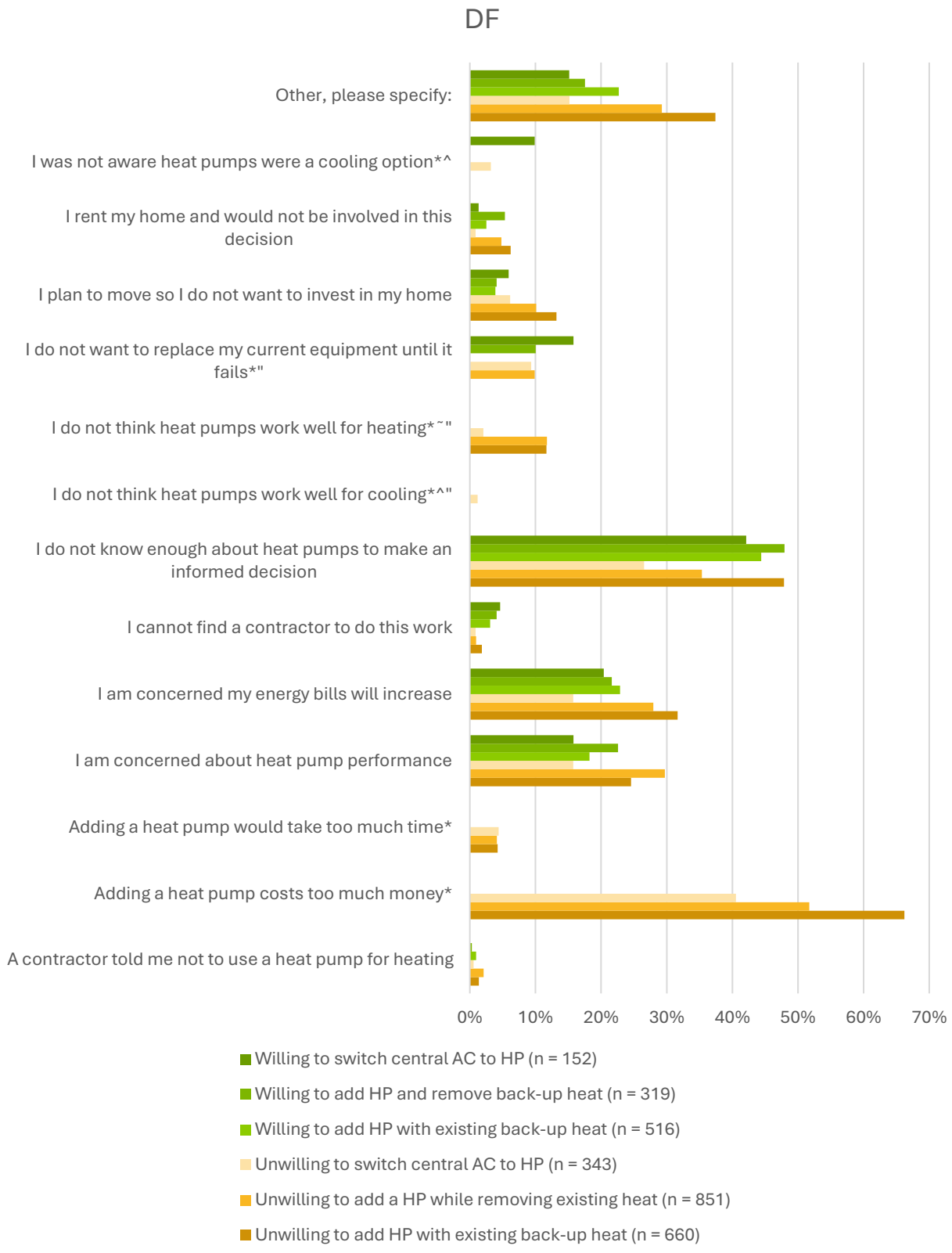
C.1 Customer Concerns about Heat Pump Adoption



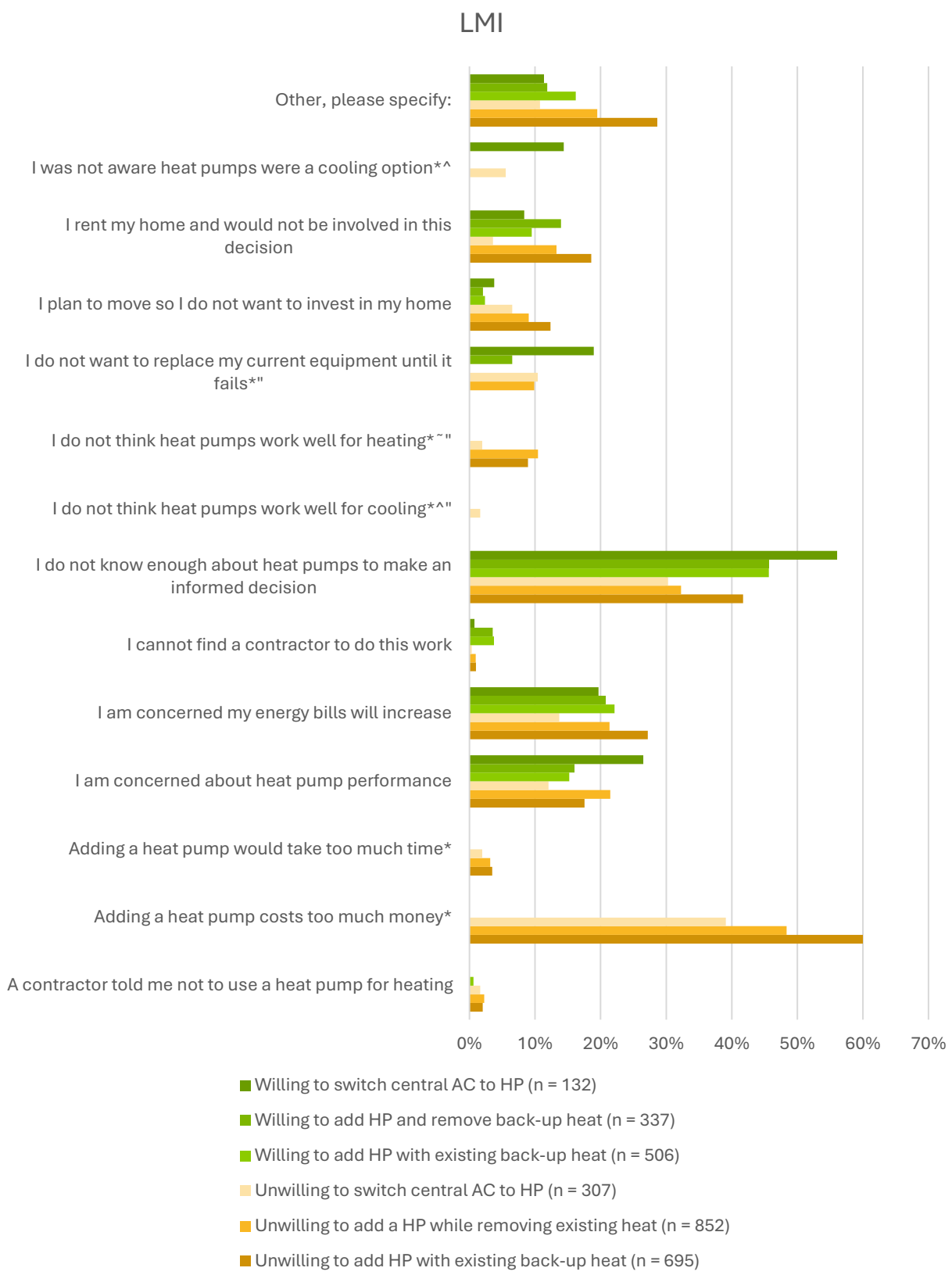
Source: Guidehouse RBUECS Survey



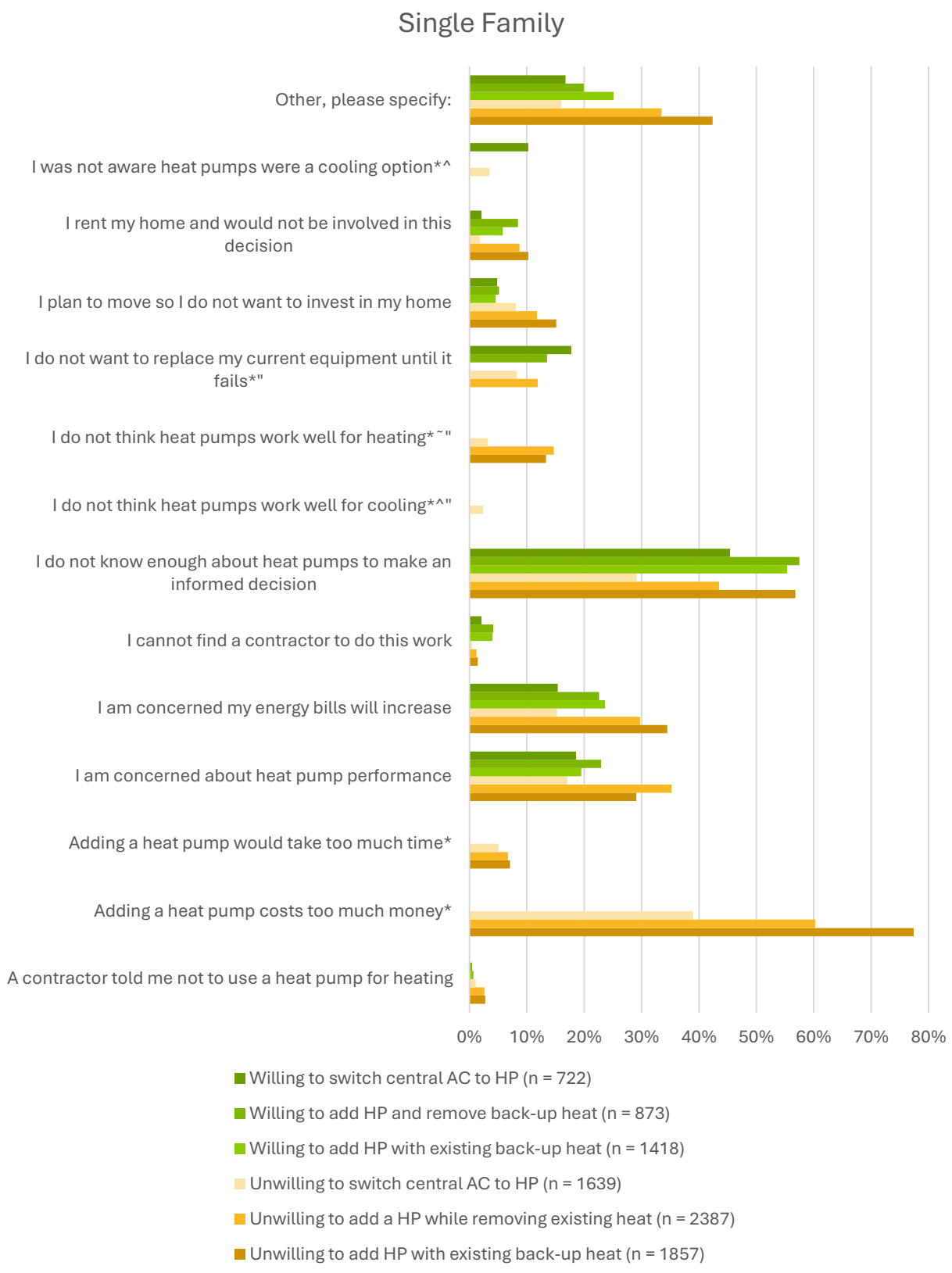
Source: Guidehouse RBUECS survey



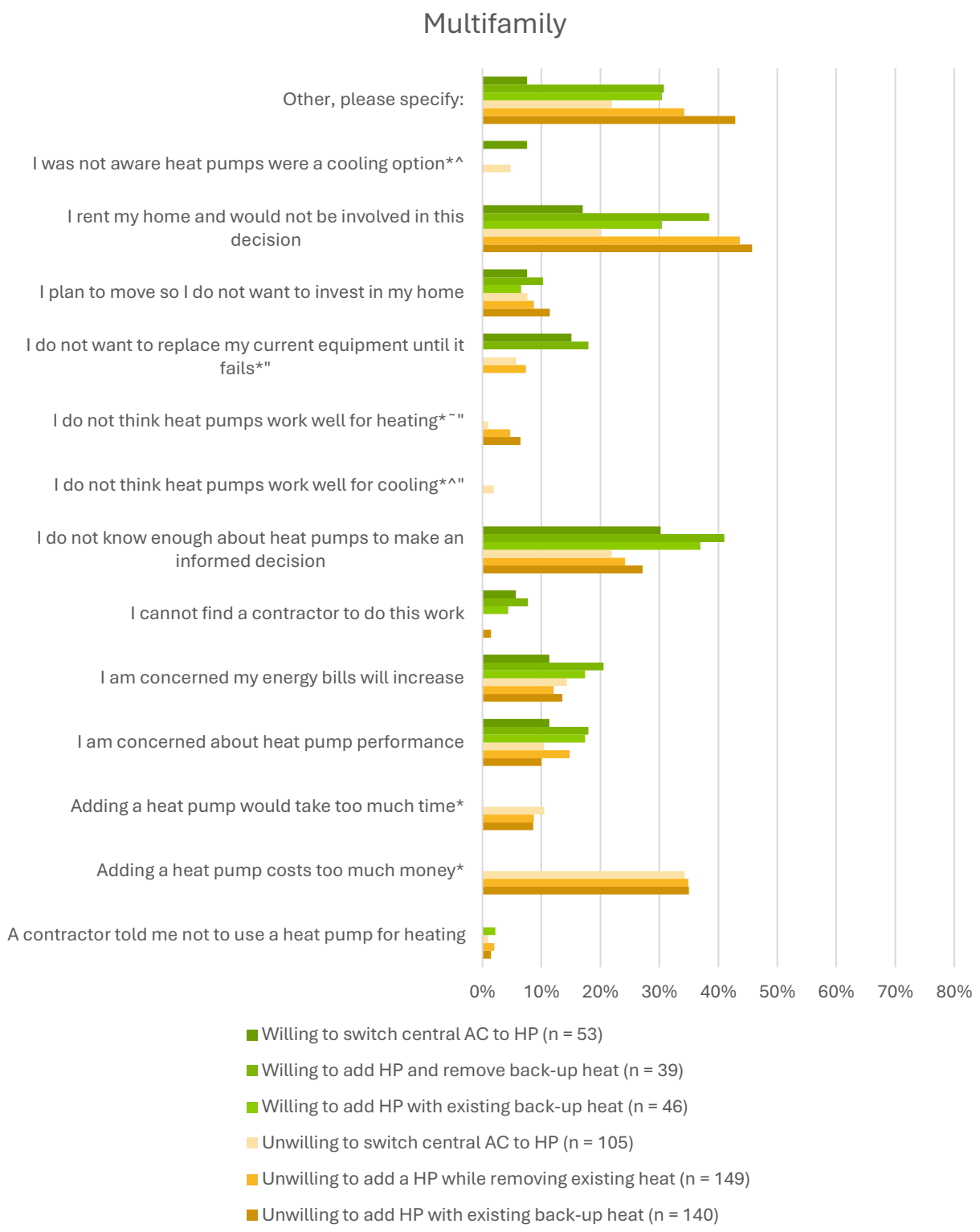
Source: Guidehouse RBUECS survey



Source: Guidehouse RBUECS survey

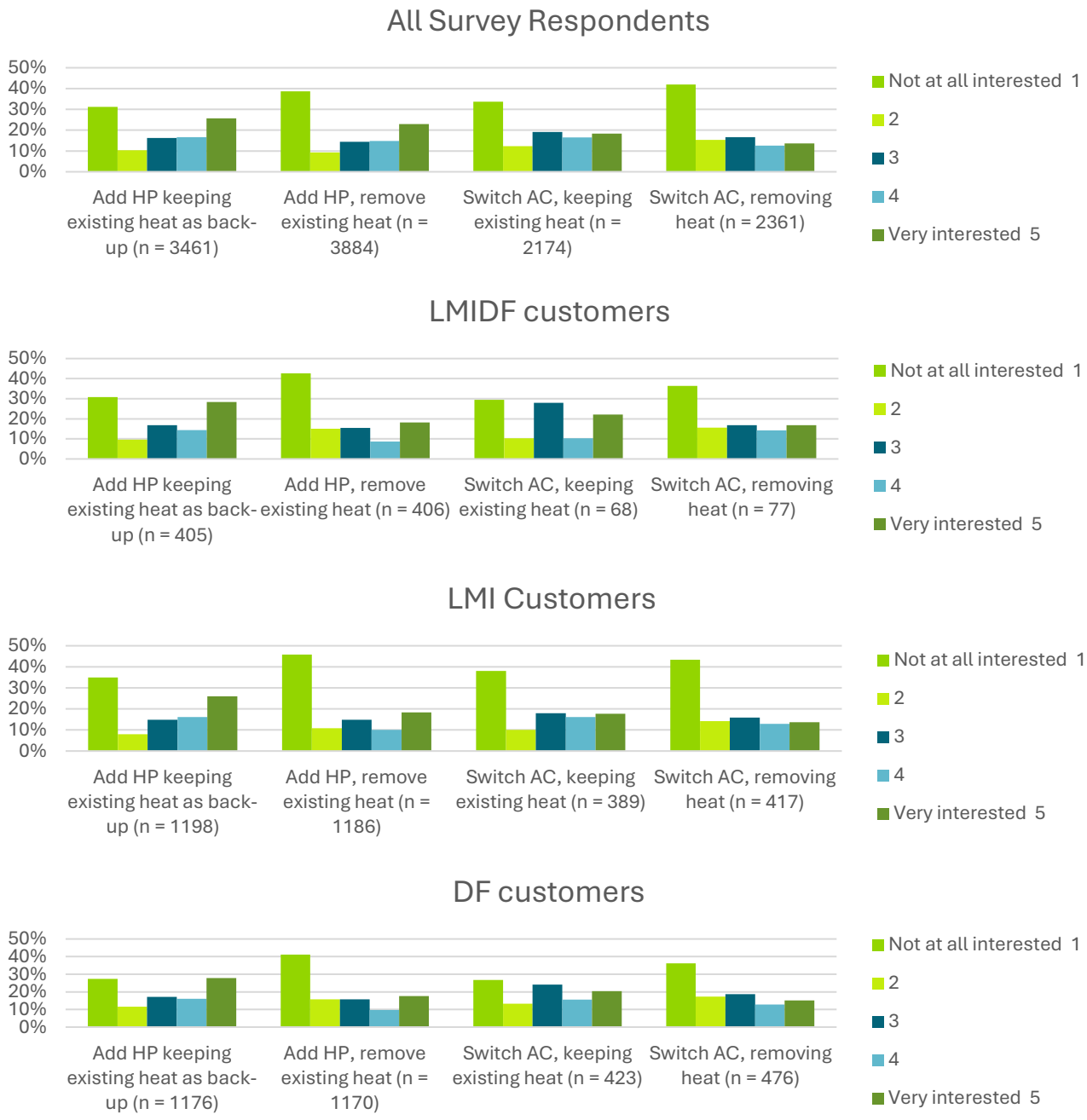


Source: Guidehouse RBUECS survey



Source: Guidehouse RBUECS survey

C.2 Willingness to Adopt Heat Pumps



Source: Guidehouse RBUECS survey

C.3 "Other" Customer Responses to Barriers Question

Category by Willingness	Unwilling	Willing	LMI	DF	Total Analyzed
Has a new heating/cooling system	140	31	105	85	171
Cost Concerns	76	45	71	85	121
Doesn't feel it is worth the hassle	57	6	35	39	63
Prefers Existing Equipment	43	2	24	30	45
Condo Association Limitations	24	11	32	3	35
Customer is too old	24	3	16	16	27
Aesthetic concerns	21	3	6	22	24
Customer Life Events - Moving	18	6	12	17	24
Space Concerns	17	2	8	11	19
Electricity Service Concerns - Grid Reliability	15	2	7	10	17
Misinformation about HPs - Not Suitable for Cold Climates	17		6	14	17
Prefers Backup	16	1	8	15	17
Renter	14	3	17		17
Home Compatibility Concerns - Renovations/Remediation	13	1	7	10	14
Cost Concerns - Increased Fuel Cost	13		7	10	13
Home Compatibility Concerns - Old House	12	1	7	7	13
Still Researching	11	1	10	6	12
Home Compatibility Concerns - House Type	11		7	4	11
Cost Concerns - Return on Investment	8	2	4	7	10
Cost Concerns - Installation	9		3	9	9
Home Compatibility Concerns	8		3	5	8
Prefers Existing Equipment - Combo Hot Water/Heating	7		1	7	7
Cost Concerns - Customer Affordability	6		3	5	6
Home Compatibility Concerns - House Size	6		2	4	6
Mass Save Specific Concerns	6		3	4	6

Category by Willingness	Unwilling	Willing	LMI	DF	Total Analyzed
Waiting for Existing Equipment to Burnout	2	4	2	4	6
Customer doesn't use a lot of energy currently	5		4	2	5
Customer Life Events - Affordability	3	2	5	1	5
Prefer Different Technology	3	2	1	4	5
Prefers No Backup - Wants New Heating System	5		4	2	5
Comfort Concerns	4		2	4	4
Contractor Availability	1	3	2	2	4
Doesn't use AC		4	2	2	4
Misinformation about HPs - Requires Existing Ductwork	4		3	3	4
Prefers No Backup - Two System Maintenance	4		1	3	4
Cost Concerns - Maintenance	3		1	2	3
Customer Life Events - Financial Concerns	3		0	3	3
Electric Service Concerns - Requires Panel Upgrade	1	2	1	3	3
Lack of Awareness	3		1	2	3
Misinformation about Heat Pumps - Requires existing ducting system	3		2	3	3
Noise	3		0	3	3
Prefers No Backup - Would Like to Remove Oil	3		1	3	3
Reliability Concerns	3		3	1	3
Combination water heater and heating system	1	1	2	2	2
Concern about HP lifetime	2		1	2	2
Cost Concerns - Contractor Communication	1	1	1	1	2
Cost Concerns - Mass Save Rebate Not Enough	1	1	0	2	2
Cost Concerns - Removal of Existing System	1	1	1	1	2
Customer Life Event - Construction		2	1	1	2

Category by Willingness	Unwilling	Willing	LMI	DF	Total Analyzed
Customer Life Events - Busy	2		2		2
Equipment Availability	2		0	2	2
Home Compatibility Concerns - Dual Family Home	1	1	2		2
Installing as part of a larger renovation project	2		1	2	2
Local Requirement	2		2		2
Looking for incentive/rebate		2	2		2
Mass Save specific		2	1	1	2
Prefers No Backup		2	0	2	2
Comfort Concerns - Allergies from Blown Air	1		0	1	1
Cost Concerns - Increased Fuel Costs	1		0	1	1
Cost Concerns - interested in installment payments		1	0	1	1
Cost Concerns - Loans	1		1		1
Cost Concerns- Installation	1		0	1	1
Customer Life Event - Allergies	1		0	1	1
Customer Life Events - Anxiety	1		0	1	1
Customer Life Events - COVID	1		0	1	1
Customer Life Events - Home Disruptions	1		0	1	1
Customer Life Events - Other	1		0	1	1
Decision Making		1	1		1
Electricity Service Concerns - Requires Upgrade	1		1		1
Electricity Service Concern - Grid is Not green enough	1		1		1
Family Member is HVAC Contractor	1		1	1	1
Home Compatibility Concerns - Weatherization	1		1	1	1
Home is already energy efficiency		1	1		1
installation timing		1	1		1
Looking to renovate first		1	1		1
Maintenance concerns	1		1		1
Misinformation about HPs	1		1		1

Category by Willingness	Unwilling	Willing	LMI	DF	Total Analyzed
Misinformation about HPs - Electricity Efficiency	1		0	1	1
Misinformation about HPs - Not Suitable for Apartments	1		1		1
Misinformation about HPs - Not suitable for cold temperatures		1	0	1	1
Misinformation about HPs - Primary Heat Source	1		1		1
Misinformation about HPs - Usage Baseboard Heat	1		0	1	1
Misinformed about Heat Pumps - Usage with Solar	1		1		1
No Concerns		1	1		1
Prefers Backup - For coldest days	1		0	1	1
Prefers Existing Equipment - Open to HP for AC	1		1		1
Prefers HP as Backup	1		0	1	1
Prefers Radiant Heat		1	0	1	1

Source: Guidehouse RBUECS survey