ETA
EFFICIENT TECHNOLOGY ACCELERATOR

ASHP State of the Market Report

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EXECUTIVE SUMMARY

Background and methodology

Residential air source heat pumps (ASHPs) are highly efficient heating and cooling systems that can create energy savings, bill savings, emissions reductions, and other benefits for Minnesota customers. In efforts to move the market toward greater ASHP adoption, the MN ASHP Collaborative, an initiative now under Minnesota's Efficient Technology Accelerator (ETA), works with market actors to establish heat pumps as the preferred option when upgrading heating and cooling systems. While the Collaborative supports various application types, their primary focus is centrally ducted dual fuel systems, also known as hybrid heat pump systems. In this application type, ASHP technology fully replaces a centrally ducted air conditioner and provides heating for more moderate temperatures, while keeping a furnace in place to provide supplemental heat. This maximizes operational costs and heating capacity for Minnesota's extremely cold winters, and ultimately balances fuel costs, upfront costs, and system benefits.

To learn more about the current market and track trends over time, ETA undertook several primary data collection efforts in 2024 and early 2025 including:

- Contractor surveys with 91 residential mechanical contractors
- Contractor training surveys with 130 training attendees
- Customer surveys with 721 residents who had an ASHP installed in the past three years
- A homeowner study including focus groups (N=30) and surveys (N=4,007 across the Midwest, with 1,751 from MN) for homeowners who do not currently have ASHPs
- Conversations and surveys with four distributors for additional insight

Key Findings

Contractor survey

- **Most contractors (89%) have at least some experience with heat pumps**, and almost half have a lot of experience. Because so many had a lot of experience, in addition to overall responses, we grouped survey responses by those with a lot of experience and those with less experience for comparison across other survey questions. We also compared survey responses grouped by geography (urban vs. rural).
- **70% of contractors hold a favorable opinion of heat pump technology**, with 44% saying they held very favorable opinions. Almost all those with a lot of experience (98%) held favorable opinions of heat pump technology.
- **Contractors agree that heat pumps are a good choice for many applications, and would recommend them, but confidence in the technology is weaker for heat pumps for primary heating and as a solution for natural gas-heated homes.** Most respondents agreed that heat pumps were beneficial for cooling (92%) and for customers with electric (93%) and propane heat (79%), though only 59% said they were beneficial for customers with natural gas heat, and 48% said they were a good choice for primary heating in Minnesota's cold climate (primary heating was defined as meeting greater than 50% of the annual heating load). Those with more experience were more likely to

recommend heat pumps and find heat pumps beneficial across all application types, and they were much more likely to have positive opinions around propane, natural gas, and primary heating applications.

- **Heat pump sales vary, have generally increased, and are expected to increase.** About a third indicated that heat pumps were less than 5% of their business, another third said 6–25%, and the final third said heat pumps were more than 25% of their business sales. About half indicated they had seen an increase in ducted heat pump sales over the last few years, and 71% felt ducted heat pump sales would increase over the next five years.
- **Contractors are talking about heat pumps and including them in bids**. 60% of contractors advertise or provide education to consumers about heat pumps. This is primarily done by talking to customers during visits. An additional 48% said they include heat pumps alongside standard ACs very often or all the time.
- Contractors perceived **cost savings and efficiency as top benefits** to customers**, and upfront costs and the ability for the heat pump to work at colder temperatures** as primary customer concerns.
- **Contractors are concerned about customer costs** (85%), **demand** (71%), **and callbacks** (60%), **but lack of experience and product availability concerns appear to have largely subsided** (only 35% and 27% indicated they were challenges). 88% of contractors indicated that ducted ASHP products are available in one week or less. To overcome challenges, contractors volunteered that lower pricing and costs, market assistance, and education and awareness would help.
- **Contractors look to manufacturers (75%) and distributors (70%) for information, and have strong training preferences, for spring, morning, and in-person training.** Additionally, more than half the contractors indicated they would like training on installation, controls, service and maintenance, incentives, and sizing.

Contractor training surveys

- **At least three-quarters of all training attendees reported that heat pumps were beneficial across applications** (electric, propane, and natural gas heating; cooling; and primary heating), with nearly everyone (95–97%) agreeing that heat pumps were beneficial for electrically and propane-heated homes, as well as for cooling applications. The level of agreement was higher among training attendees than with the broader population.
- **Efficiency** (45%)**, financial incentives or cost-effectiveness** (39%)**, and comfort** (28%) were mentioned by attendees as the key benefits of ASHPs.
- **Heat pump sales are expected to increase.** 62% of attendees indicated that they expect heat pump sales will comprise more than a quarter of their business by 2025, compared to only 33% who said ASHPs comprised more than 25% of their sales in 2023.
- **Trainees report heat pumps are included in their bids.** 77% of attendees indicated that they include heat pumps in at least some proposals without customer prompting. Only 2% indicated that they do not include heat pumps at all.
- **98% of respondents reported being at least somewhat satisfied with the training, and 78% of respondents said they are very satisfied with the training.** In the future,

respondents asked that training include more in-depth information about heat pumps (n=9), finances (n=6), and airflow and sizing (n=4). Three respondents also asked for more hands-on learning opportunities, ideally with equipment brought in.

Distributor insights

- The four distributors engaged indicated that **ASHP products were generally stocked and available,** and they were **increasing training and resources on ducted heat pumps.**

General Population Survey – Homeowner insights

- Customer research indicated that **75% of Minnesota-specific homeowners without heat pumps knew little or nothing about heat pumps.**
- Message framing did not significantly change interest in or likelihood of purchasing ASHPs; however, the study did indicate including **messages around efficiency, cost savings and rebates, and highlighting the equipment can both heat and cool would be important.** Costs, comfort, and longevity were important considerations for customers when considering a new HVAC system.
- **Friends and family, energy providers, and contractors were reported to be the most trusted messengers** around home heating and cooling. 42% indicated that they would first turn to energy providers if looking to replace HVAC equipment.

Customer Survey – Recent purchaser insights

- **Customers who installed heat pumps in the last three years were more likely to replace older equipment before failure** (46% replaced older equipment compared to 38% who reported replacing equipment with either a heating or cooling system failure). This behavior is different from the typical homeowner as past research suggests most people replace upon failure of existing equipment.
- **Contractors are a first stop for finding information.** When looking to upgrade an HVAC system, previous contractors were the first source customers turned to find an installation contractor (50%).
- **Contractors also have a big impact on heat pump decisions**. While 61% of customers were considering a heat pump at the start of their HVAC system change, 39% of people indicated that they weren't looking for a heat pump specifically, but that their contractor suggested one when they were looking to upgrade their system.
    - In-depth analysis by year: In a year-over-year analysis, fewer people were specifically looking for heat pumps (65% in 2022, 46% in 2023, and 38% in 2024) — rather, their contractors have suggested them, indicating broader market adoptions.
    - In-depth analysis by Collaborative interaction: Most customers (66%) were working with a contractor who was part of the Collaborative's Preferred Contractor Network or who attended a contractor training. Data suggests that **contractors who are interacting with the Collaborative are more likely to recommend and install heat pumps.** 73% of customers who were not specifically looking for a heat pump indicated that they worked with someone interacting

with the Collaborative, compared to 60% of those who knew they were interested in a heat pump at the start of their search.
    - In-depth analysis by fuel type: Customers with natural gas systems were more likely to indicate they were not looking for heat pumps specifically, but that their contractor suggested one (43% compared to 32% with propane and 38% all electric). However, for those looking for a heat pump specifically, it was harder for them to find a contractor to install one.
- For those who were looking for a heat pump, **88% said it was at least somewhat easy to find a contractor to install a heat pump**, which is an increase based on prior experience in the market.
    - In-depth analysis by year: The contractor search appears to be getting easier as the percentage of customers indicating it was "very easy" to find a contactor to install a heat pump has climbed year over year (58% in 2022, 66% in 2023, and 70% in 2024).
- 72% of customers said that **rebates were very or extremely important** for their decision to install a heat pump.
    - In-depth analysis by year: Cost and cost assistance are increasingly more important as the number of people saying rebates are extremely important jumped in 2024 (31% in 2022, 34% in 2023, and 51% in 2024).
- **Most customers perceived a decrease in their energy bills (56%), said their homes were more comfortable with their heat pump (61%), and said they liked their heat pump system more than their previous system (77%).** Most others said their bills and comfort stayed the same across their previous and new systems.
    - In-depth analysis by year: Newer customers appear to be less enthusiastic about their heat pump systems, with fewer reporting that their home is much more comfortable and that they like their system much more. But this could indicate that their previous system worked well and that the market is broadening beyond heat pump enthusiasts.
    - In-depth analysis by fuel type: Customers perceived bill decreases across all fuel types, despite different fuel rates.
- **Customers are satisfied with their heat pumps and processes to get their heat pumps.** 90% percent or greater were satisfied with the heating and cooling performance with their new heat pump, the heat pump they installed in general, and the contractor they selected (93%, 91%, 90%), with around 70% indicating they were very satisfied with each of these items. People were less likely to say they were satisfied with the bids they originally received, but they were still generally satisfied (79%). Overall, 90% said they would likely recommend a heat pump to friends and family.
- **Efficiency, cost, comfort, reliability, and noise are important to customers.** These were the primary benefits described by customers as what they liked most about their heat pump system. On the flip side, these same areas were areas of concern, with people mentioning high costs, reliability and cold climate functionality, and noise issues as things they did not like about their system.

- **Minimal challenges were reported.** Most people did not report that they had any challenges with their system, but if they did have challenges, it was most often around thermostat or switchover processes or issues with reliability like faulty parts or needing service calls.

Conclusions

1. **The market has experience with and views heat pumps favorably, though there is still some skepticism for certain applications** — especially for natural gas and primary heating uses — which tends to decrease with greater experience or training.
2. **Heat pumps are more available and reported sales are increasing**. Market actors indicated lead times are minimal, suggesting some stabilization after COVID-19 market volatility, and a growing market with increased sales.
3. **Contractors look to manufacturers and distributors for information, and the ASHP Collaborative is becoming a trusted resource,** especially for contractors with more experience. Those who attended ASHP Collaborative training were overwhelmingly satisfied with the training offerings.
4. **Utilities are key influencers in the heat pump market.** Customers and contractors turn to utilities for information, and rebates are very important to customers.
5. **Homeowners generally have low awareness of ASHPs,** and energy providers, contractors, friends, and family could be trusted messengers.
6. **Cost is a major concern, but savings and incentives can be motivating benefits, along with efficiency and comfort.** Contractors and customers alike indicated that costs are big concerns, but also indicated cost savings were a major benefit, indicating decreases in energy bills. Efficiency and comfort were also key benefits espoused by potential and current ASHP customers.
7. **Customers with heat pumps were satisfied, comfortable, and perceived savings on their energy bills.** Across multiple metrics, the vast majority of customers were satisfied with their heat pumps and the processes to install them, and noted increases or neutral differences in comfort and energy bills.
8. **The key customer base may be shifting**. A reduction in the year-over-year proportion of customers specifically looking to buy heat pumps, coupled with growing interest in benefits like reliability and noise reduction and increasing sales, suggest the customer base is expanding beyond the innovator and early adopter segments.
9. **Contractors are a key leverage point for customer decision-making.** As the customer base broadens, and a smaller proportion of homeowners are familiar with and explicitly asking for heat pumps, the contractor becomes a key influence point, and contractors trained through the ASHP Collaborative were more likely to recommend heat pumps.

Recommendations

The following are recommendations specifically for the MN ASHP Collaborative.

1. **Continue and expand contractor education opportunities.** Given high levels of training satisfaction, training is likely already hitting key topic areas. However, focusing training in the spring and morning, and highlighting propane and natural gas value propositions,

emphasizing cost resources and incentives, providing customer education resources, and expanding training around technical information could be helpful.

2. **Continue partnering with distributors, manufacturers, and utilities around contractor training and identify other opportunities.** Contractors indicated they looked to these entities for training, and advancing partnerships with these market actors can enhance contractor visibility and attendance while providing a value-add by enhancing exiting training efforts.
3. **Expand potential customer awareness and interest.** The general population has low awareness of ASHPs, and working with contractors and utilities to unify messaging, raise awareness, and provide customer decision point resources will help. Highlighting customer success stories and identifying trusted community messengers to talk about heat pumps may also increase word of mouth and confidence around ASHP technology.
4. **Identify and advocate for opportunities to reduce or offset first cost and ongoing operational costs.** Cost is a major factor for customers and a big concern for contractors. Utility rebates and other financial incentives are increasingly important, and reduced fuel prices and electric rates for heat pump users can increase the value proposition. Continuing to support and advocate for rebates, incentives, and rates to decrease both upfront and operating costs will be beneficial.

Introduction

Background

Residential air source heat pumps (ASHPs) are a highly efficient heating and cooling technology with many different applications. Given their high efficiency, they offer customers energy savings and bill savings, depending on existing home conditions, while providing quality home comfort. ASHP technology can replace central air conditioners and can also displace or replace natural gas and propane fossil fuel heating systems, which can result in carbon emissions reduction in addition to energy efficiency benefits. ASHPs can be all-electric or dual-fuel (hybrid) systems where a supplemental heat system is used at colder temperatures. Hybrid systems can future proof a home to insulate against price spikes with either fuel type. These systems have various form factors and can be applied as ducted or ductless systems depending on home type and needs.

MN ASHP Collaborative

In efforts to move the Minnesota market toward greater ASHP adoption, the Minnesota Air Source Heat Pump Collaborative (the Collaborative) was created in 2019 and implemented by Center for Energy and Environment. In 2023, Minnesota launched its Efficient Technology Accelerator (ETA) market transformation program, with the aim of accelerating market adoption of efficient technology, and the Collaborative was expanded as an initiative under ETA.

The MN ASHP Collaborative strives to establish heat pumps as the preferred option for both customers and contractors when upgrading their heating and cooling systems, offering a highly efficient alternative to traditional air conditioners that can also provide heating. Through strategic initiatives and collaborative efforts, the ultimate goal is to make ASHPs the standard choice over traditional air conditioners by 2035.

ASHP technology focus

While the Collaborative supports ductless heat pump adoption, it primarily focuses on ducted systems to replace central air conditioners to provide cooling and dual fuel heating. The Collaborative works to align utility incentive programs and has defined two different product specifications to encourage utility programs to offer incentives on. The Entry-level specification aligns with federal minimum specifications for ASHPs and is meant to be a more affordable product that can be sized to the cooling load, displace central air conditioning, and displace a fraction of the furnace heating load. The Advanced level aligns with higher-performing, cold-climate specifications and is recommended when a customer would like to meet a greater fraction of the heating load with the heat pump. This is typically beneficial for customers with more expensive fuel types such as existing electric heat or propane heat or customers prioritizing emissions reduction. Advanced products are inherently more expensive and are thus recommended to have higher incentive levels. More information about the MN ASHP Collaborative and product focus can be found at https://www.mnashp.org/about-collaborative.

ASHP Market

In the U.S., ASHPs were 43% of total sales for cooling equipment in 2024 (AC and ASHPs combined)[1]. However, with its colder climate amid other factors, the Midwest lags the national average in heat pump adoption.[2] While Minnesota-specific sales data are not available, we anticipate they are considerably lower.

When homing in on the ducted application, in Minnesota, roughly two thirds of single-family homes[3] have existing furnaces and air conditioners. This indicates there is still a large opportunity for ASHPs to replace central air conditioners and displace some furnace usage.

Previous research suggested that contractors are critical leverage points and awareness of heat pumps was low,[4] however to date, there had not been research done to better understand customers perspectives in Minnesota after installing heat pumps. Thus, this research was primarily centered around these market actors, and it serves to track market changes over the five-year tenure of the Collaborative program and identify market trends relevant for the work of the initiative.

Research goals and scope

This report describes key market trends and insights around ASHPs from a variety of primary data collection efforts. Given the Collaborative's focus, this research largely investigated experiences and perspectives around ducted heat pump applications, though some questions were asked about ASHPs as a whole or specifically ductless heat pump systems.

The key research goals included:

- Gaining an understanding of current market actor experiences and perceptions
- Discovering homeowner and customer insights for those in Minnesota, which had not previously been done
- Understanding market trends over time
- Tracking market progress indicators and providing strategic insights for the Collaborative

Additionally, the ASHP Market Characterization Report, compiled in 2023 for the launch of the Collaborative under the ETA umbrella, outlined additional research that would be helpful to better understand the market. This included ongoing contractor surveys with a broad swath of

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[1] Monthly Shipments | AHRI. Atlas Buildings Hub. https://www.ahrinet.org/analytics/statistics/monthly-shipments

[2] Jachman. April 2, 2025. "Pumped for Heat Pumps." ACHR News. https://www.achrnews.com/articles/164387-pumped-for-heat-pumps

[3] This percentage represents the total number of in-scope households (attached/detached single-family and 2–4 unit multifamily) with this HVAC application type (centrally ducted with natural gas or propane furnace and AC) compared to the total number of in-scope households. Roughly 53% of total households in Minnesota are encompassed by this HVAC application type.
EIA. 2020. "2020 Residential Energy Consumption Survey Microdata."
https://www.eia.gov/consumption/residential/data/2020/index.php?view=microdata

[4] Hansen-Connell and McPherson. November 30, 2023. "ASHP Market Characterization Report." CEE.
https://www.etamn.org/air-source-heat-pump-market-characterization-report

contractors and additional customer research. The research conducted for this report aims to fill those research gaps.

Methods overview

Multiple primary data collection efforts were conducted to get an overall picture of the market. These included:

- A contractor survey with 91 contractors (or N=91) who hold a mechanical contractor bond in MN
- A recent purchaser customer survey (N=721) for those with an ASHP installed in the past three years
- Broad homeowner research including focus groups (N=30) and surveys (N=4,007 across the Midwest, with 1,751 from Minnesota) with those who do not currently have ASHPs
- Conversations and surveys with distributors (N=4)
- A contractor training survey (N=130)

More information about each of these efforts is included in each section, and more detailed descriptions of contractor and customer methodologies can be found in Appendix A. Detailed methodology.

CONTRACTOR INSIGHTS

Background

Contractor insights are critical to understanding the market and any changes felt in the market. Contractors are a key leverage point as they intersect directly with the products and distributors and can speak to installations and upstream conditions. They also intersect directly with customers, presenting HVAC solutions for homeowners replacing heating and cooling systems. The options contractors present may or may not include ASHPs, and many customers may not be familiar enough with heat pumps to ask for them. This often means the contractor's perceptions and bid options are critical in the choice to install heat pump products. Recent research from Mitsubishi Electric Trane HVAC U.S. (METUS) indicated that 82% of homeowners with heat pumps indicated that their contractor was very influential or somewhat influential in their decision to have a heat pump installed[5].

> *"Most customers are buying the contractor more than the equipment. They trust what we direct them toward."*
>
> – Contractor

To investigate contractor opinions, we conducted a survey of 91 residential mechanical contractors to gain insights into their experience, challenges, benefits, and preferences with heat pumps. Previous research has been done with contractors; however, the samples sizes were significantly smaller or were more narrowed in scope, making direct comparisons more challenging. Nevertheless, trends can be observed and are included in this

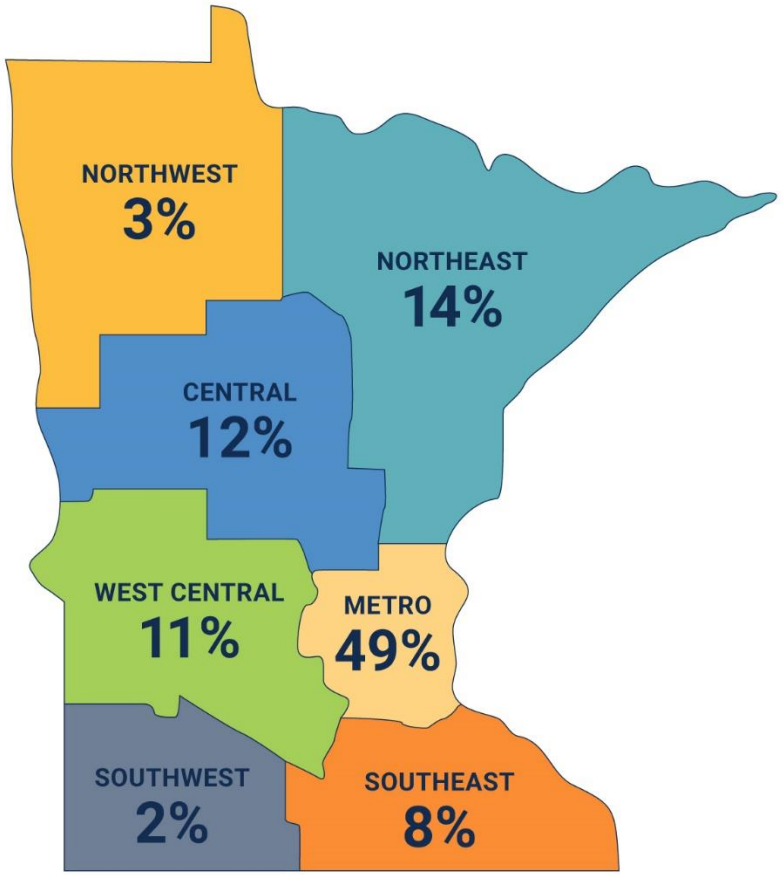
[5] Jachman. April 2, 2025. "Pumped for Heat Pumps." ACHR News. https://www.achrnews.com/articles/164387-pumped-for-heat-pumps

analysis. In addition, crosstab results were reviewed by geography and by experience with heat pumps to look for key differences between contractors in Greater MN and those in the metro, and between those with a lot of experience and those with less experience with heat pumps.

Business characteristics

To gain a better sense of who responded to the survey, we asked respondents to indicate where their company was located (by zip code) and how many employees their company had. Zip codes aligned with one of the seven CERTS regions used in energy efficiency across the state. Respondents were evenly distributed between the 11-county metro region used by CERTS (49%) and Greater Minnesota (51%). Every region of the state was represented in our data set (Figure 1).

Figure 1. Business location of respondents (N=91)

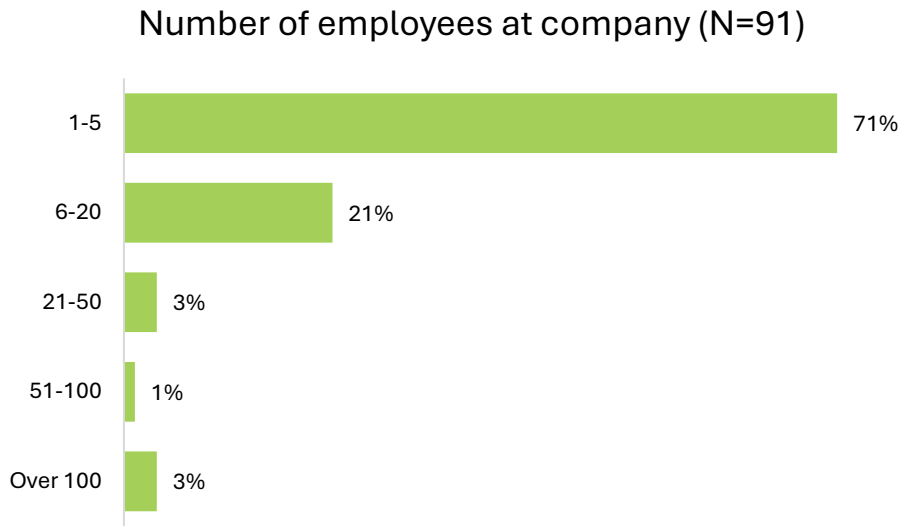


Note: Due to rounding, percentages may not sum to 100 percent.

Given that the metro area and Greater MN have different predominant fuel types affecting the value proposition and potential operating costs of heat pumps, as well as different historical incentive structures, results were examined to look for differences between Metro region and Greater MN responses. Key differences in responses are presented throughout the contractor findings of the report.

In addition to geography, respondents were asked about their company's size (Figure 2). Predominantly smaller companies comprised our sample, with 71% having only 1–5 employees, and an additional 21% having between 6–20 employees. Only 3% were from large firms with over 100 people. While this is not surprising given that bonds are issued per business rather than per person, and there are likely many more smaller HVAC contractors in the state, it should be noted that larger companies are not well represented within our data set. Responses were not reviewed based on company size.

Figure 2. Number of employees at company



Note: Due to rounding, percentages may not sum to 100 percent.

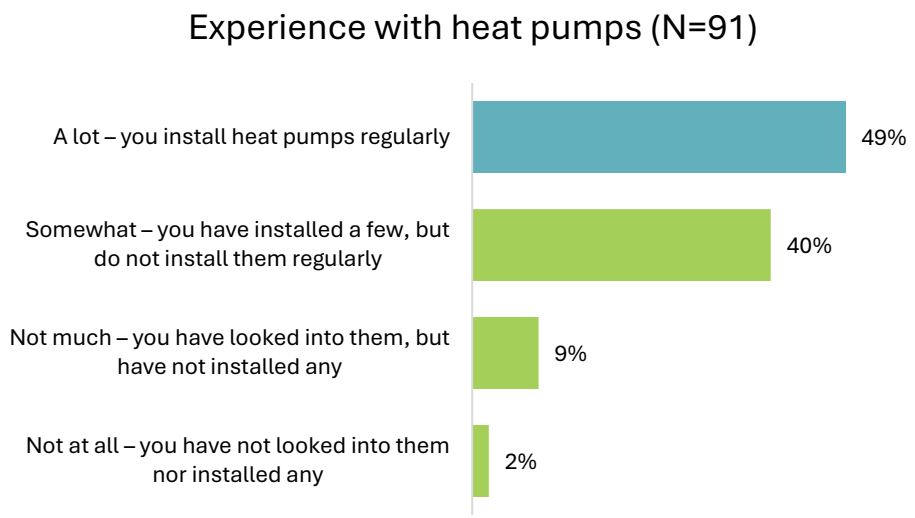
Experience with and opinions on heat pumps

Contractors were asked to describe their level of experience with heat pumps, their general opinions on heat pump technology, and their opinions about heat pumps in various applications.

Most contractors had at least some experience with heat pumps, and almost half had a lot of experience

When asked how much experience respondents had with heat pumps, about half said they had a lot of experience, and they installed them regularly (Figure 3). Altogether, 89% said they had at least some experience with heat pumps, having at least installed a few heat pumps. Heat pump experience also appears to be somewhat correlated with geography, as more of those in Greater MN said they had a lot of experience (65% to 33% in the metro).

Figure 3. Experience with heat pumps

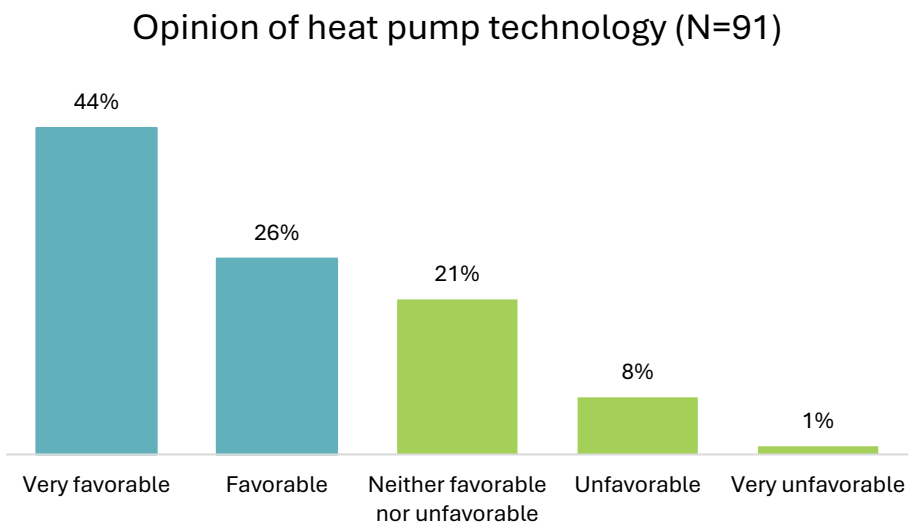


Given that those who install heat pumps regularly likely have different opinions or insights than those who have not installed many or any at all, survey responses were grouped by those who had a lot of experience (N=45) compared to those with somewhat, not much, or not any experience with heat pumps (N=46). These groups are often referred to as "high experience" and "low experience" for simplicity. Key differences among groups are presented throughout this report when relevant.

Most contractors hold a favorable opinion of heat pump technology

Similar to the contractor research conducted last year for the ASHP Market Characterization report, most contractors held favorable opinions of heat pumps, with 70% reporting a favorable opinion (Figure 4). While the sample size for last year's research was relatively small (N=17), it does appear that opinions of heat pump technology are trending more toward very favorable (44% this year compared to 17% last year), even with a few additional contractors noting unfavorable opinions (9% this year compared to 0% last year).

Figure 4. Opinion of heat pump technology



Respondents were asked to describe why they selected their responses; about a quarter to a third mentioned the following **positive responses**:

- **Positive application scenarios (30%)** including that heat pumps are good as a backup system or combined with other systems (10%), for homes with propane (6%), and as AC replacement or adding cooling (5%). This also included that ductless systems are good for homes with no ductwork (7%), and that heat pumps worked in the MN climate or for particular seasons like cooling or shoulder season (7%). There were an additional 9% of contractors who gave relatively neutral opinions on heat pump technology since their opinion is situationally dependent.
- **Efficiency, or saving energy or gas (28%)**
- **Financial incentives or costs in general (24%)** including saving money (13%), good rebates (9%) and tax credits (5%), and good utility rates for electricity (2%).

> "We did not install many heat pumps prior to 2024. There has been a significant increase in interest in heat pumps this year due to 1) the financial incentives (rebates and tax credits) and 2) the efficiency 3) the move away from natural gas as only heat source."
>
> – Contractor

Other positive opinions related to the following:

- Market changes (14%) including that the technology is promising or has improved, and that they see heat pumps as part of the future.
- Contractor preference (7%), or that they are easy to install.
- Versatility (7%), or that they have the ability to heat and cool.

Notably, positive reliability and positive environmental impact were only 3% and 2%, respectively.

On the opposite side, the key negative associations were around:

- **Reliability (19%)** including the perceptions that it doesn't work well in MN/cold climates (10%), that there are quality concerns and more complex parts that can fail (6%), and concerns that the product will not last (5%).
- **Costs (15%)** including high upfront costs (7%) and high operating costs (6%).
- The fact that most **systems require a backup or second supplemental system (11%).**

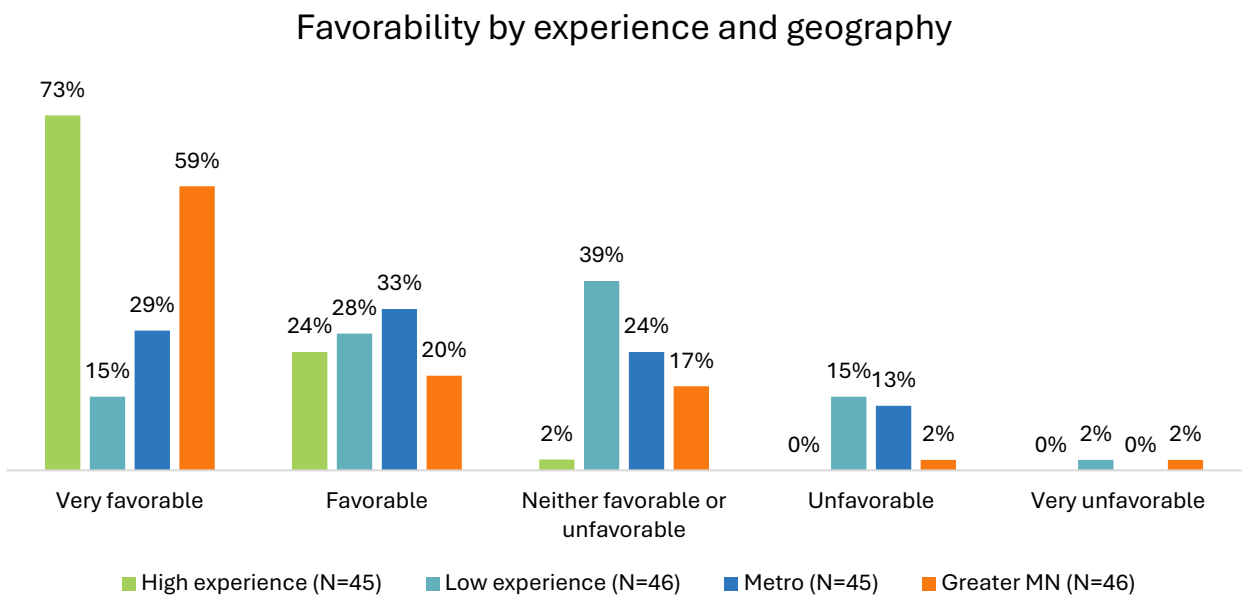
Other negative sentiments included:

- That the technology still needs improvement (7%).
- Technology or services issues for the contractor (3%) or the customer (1%).

When breaking out favorability by experience and geography, some key differences emerge. Unsurprisingly, contractors who install heat pumps regularly or have a high level of experience have favorable or very favorable opinions of heat pump technology (98%, Figure 5). Those with less experience were more likely to say they held a neutral opinion (39%). While it is uncertain whether higher favorability increases the level of experience or that more experience leads to a higher level of favorability, this does suggest that those with little experience could potentially increase their favorability, affirming that additional training and experience with the products could be beneficial.

> Technology isn't quite there to have it make sense. [Because]
> 1. upfront price is high
> 2. I have numbers showing that it doesn't save on utility costs.
> 3. because of extra use they don't last as long a regular AC
> 4. most of our local electricity is made from coal or natural gas. to turn either of those into electricity is a 60% efficient process. A furnace can be up to 97%.
> Ductless inverter units are a totally different argument and are AMAZING so hoping that it all gets like that at some point.."
>
> – Contractor

Figure 5. Opinion of heat pump technology by experience and geography



Note: Due to rounding, percentages may not sum to 100 percent.

Additionally, contractors in Greater MN also had higher levels of favorability than their metro counterparts, with 59% reporting a very favorable opinion compared to only 29% of those in the metro. Those from Greater MN were also more likely to say they had more experience and installed heat pumps regularly (65% compared to 33% in the metro). No unique trends emerged when looking at the open-ended responses across groups.

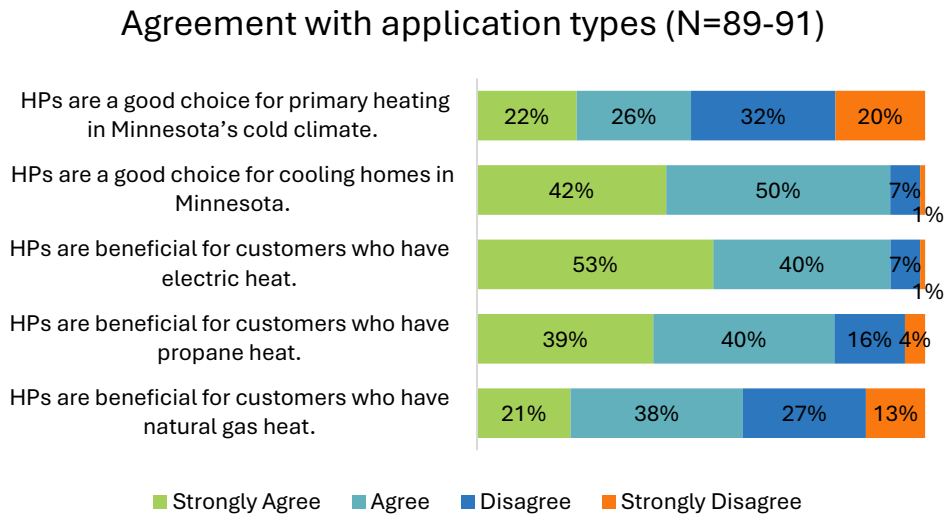
This is consistent with what we would expect given the higher volume of electric resistance- and propane-heated homes in Greater MN. As discussed in the Market Characterization report, the value proposition for ASHPs is more beneficial for homes with electric resistance and propane heat as these heating methods and fuel types are generally expensive, so the increased efficiency of an ASHP can save customers considerably on operating costs. The value proposition is also strong for those looking to add cooling, which has historically not been present in many Minnesota homes. However, due to the lower normalized cost of natural gas, which dominates the metro area for heating fuel, the value proposition can become less positive, neutral, or even cost negative depending on the utility electric rate when converting homes with natural gas furnaces to electric heat pumps. In addition, the Collaborative has historically emphasized contractor training in Greater MN due to early funding from cooperative utilities.

Contractors agree that heat pumps are a good choice for many applications, but are still mixed on heat pumps as primary heating and natural gas heated homes

In addition to their general opinion, contractors were asked about their opinions regarding particular applications for heat pumps, as different applications have different value

propositions. The vast majority of respondents agreed that heat pumps were beneficial for cooling (92%) and for customers with electric (93%) and propane heat (79%; Figure 6). The majority also agreed they were beneficial for customers who have natural gas heat (59%), but responses were more mixed. Similarly, responses for using heat pumps as primary heating in Minnesota's climate were mixed. Primary heating was defined as providing more than half the annual heating demands for the residence. These findings were similar to findings from previous research.

Figure 6. Agreement with application types

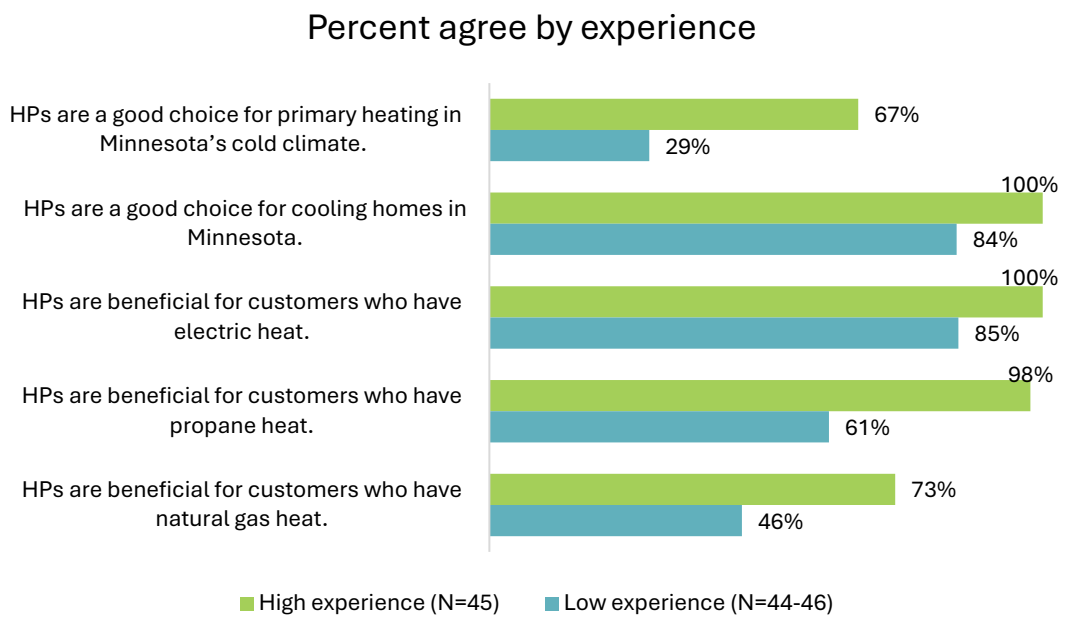


Note: Due to rounding, percentages may not sum to 100 percent.

The proportion of contractors who agreed or strongly agreed with each of these applications was relatively consistent across Greater MN and the metro (1 to 13 percentage points different), but those from Greater MN were generally more likely to say they *strongly* agreed that applications were beneficial. This difference was especially notable with cooling, with 54% of contractors in Greater MN saying they strongly agree heat pumps are a good choice for cooling homes in Minnesota, compared to just 30% of those in the metro. When combining agree and strongly agree responses, the differences were negligible where 93% of metro contractors agreed it was beneficial for cooling compared to 91% of Greater MN contractors.

While not pronounced between geographies, differences between those who agreed (including strongly agree and agree) and those who disagreed (strongly disagree and disagree) with different application types were much more variable across experience levels (15–38 percentage points different, Figure 7). Those with more experience were more likely to agree that heat pumps were beneficial in all application types. This was especially pronounced for the idea that heat pumps are a good choice for primary heating in Minnesota's cold climate (67% with high experience agreed, compared to only 29% with low experience).

Figure 7. Percent agree by experience level

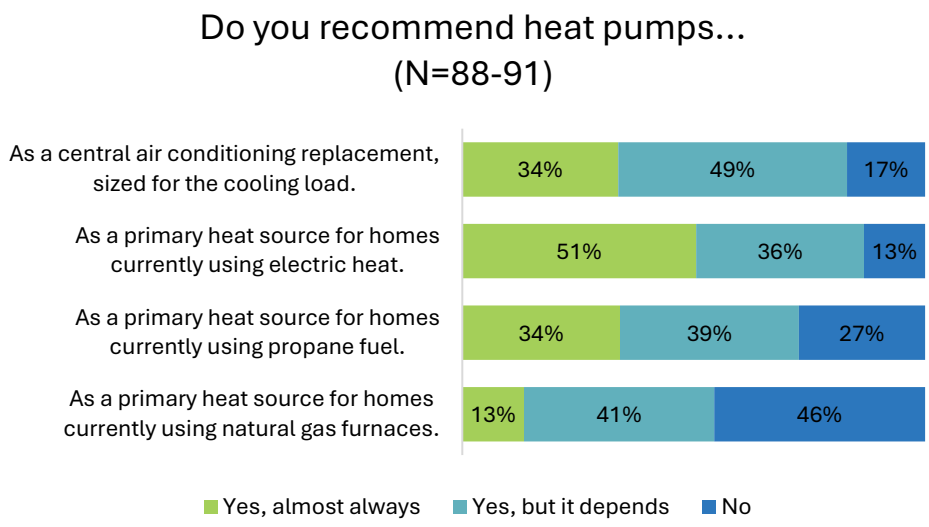


Contractors recommend heat pumps across applications, though there are big differences across experience levels

More than half the contractors indicated they would recommend heat pumps across all applications (cooling, electric heat, propane, and natural gas, Figure 8), but many felt that their recommendations depend on context (yes, they'd recommend it, but it depends: 36–49%). Trends generally followed expectations based on value proposition, with more contractors indicating they would recommend heat pumps for homes with electric heat and for cooling, followed by propane, then more mixed opinions around natural gas.

Electrically heated homes were the only context in which more than half of contractors (51%) said they almost always recommend heat pumps. Very few contractors said they would almost always recommend heat pumps for homes with natural gas (13%), and 46% said they would not recommend them for natural gas heated homes.

Figure 8. Heat pump recommendations across application types

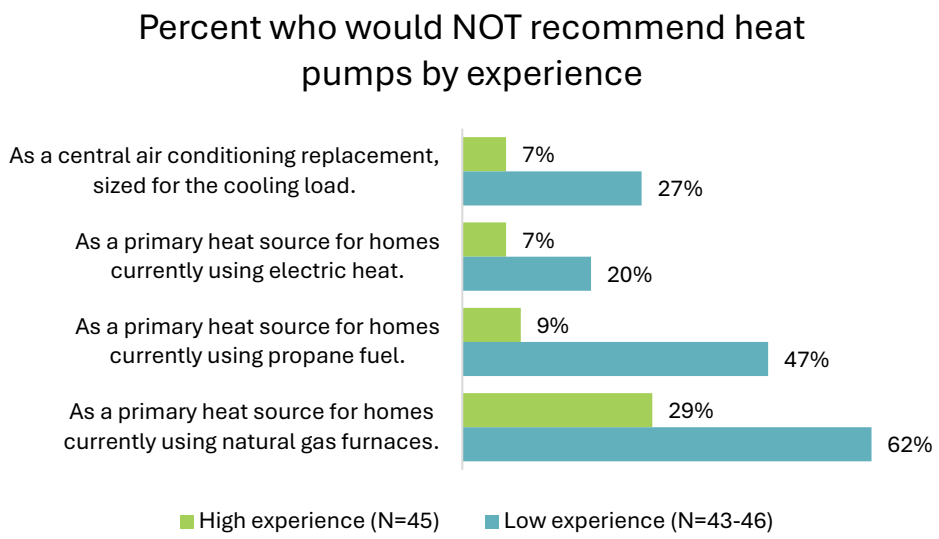


The trends remained relatively consistent across geographies, with a few exceptions; those in Greater MN were more likely to say they would recommend heat pumps "almost always" in all scenarios, especially for cooling and electrically heated homes (42% in greater MN to 25% in the metro for cooling, and 59% in greater MN to 42% in the metro for electrically heated homes). However, when combining the "yes almost always" and "yes but it depends" categories, differences were not notable. The starker differences again came when looking across experience levels.

One would expect that if contractors felt favorably about heat pumps, those with more experience would generally recommend heat pumps more than those with limited experience. This was consistent with our findings. We found very few contractors with a lot of experience would not recommend them altogether (only 7%, or 3 contractors, for cooling and electric heat, and 9% for propane would not recommend them, Figure 9). We would also expect that more contractors would not recommend them for natural gas applications because the value proposition for those scenarios is less strong, or not as consistently strong.

However, there appear to be disproportionate opinion differences across application types for those with limited experience. Contractors with limited experience seem relatively open to recommending heat pumps for electrically heated homes and cooling, but almost half (47%) said they would not recommend heat pumps for propane, and two-thirds (62%) said they would not recommend heat pumps for natural gas. These are a full 38 and 33 percentage points different from those with a lot of experience, compared to only 13 percentage points different from electrically heated homes. This could indicate that those with less experience are more familiar with the value proposition of heat pumps for electric heat and for cooling and perhaps are more comfortable with replacing like-to-like (electric) equipment, rather than fuel switching. More research should be done around this topic to further investigate perceptions with this group, especially as the value proposition for propane-heated homes should make heat pumps an attractive option financially.

Figure 9. Percent who would NOT recommend heat pumps, by experience level

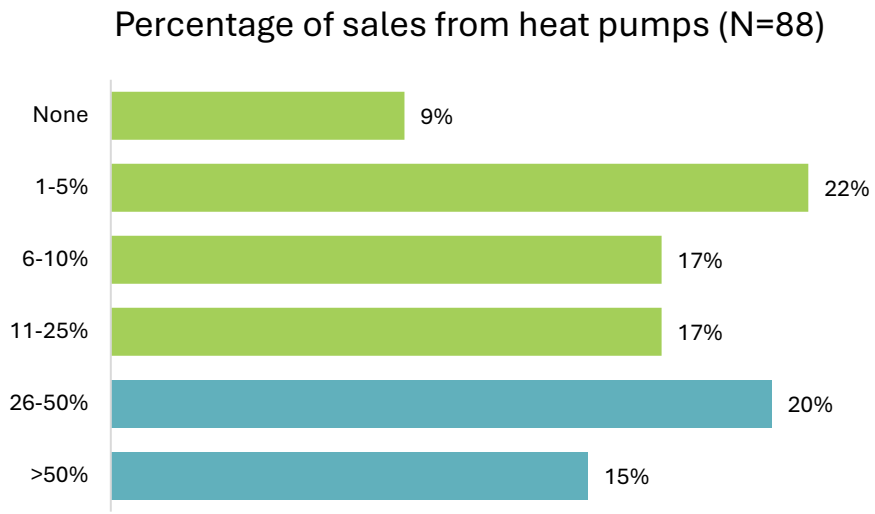


Current and projected sales

Heat pump sales and importance to businesses vary

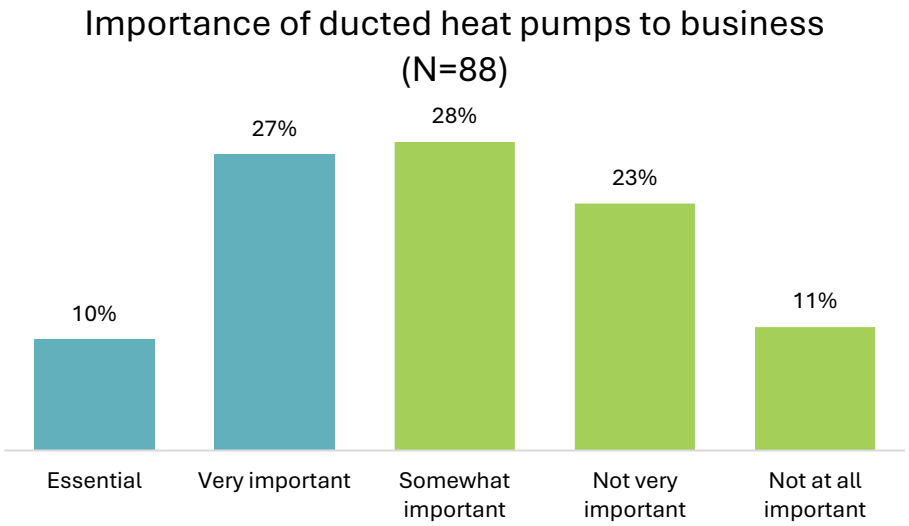
Heat pump sales volume varied across respondents, with about a third saying heat pumps comprise less than 5% of their business, another third saying they comprise 6–25%, and the final third indicating heat pumps are greater than 25% of their business (Figure 10). This indicates we have a strong mixture of respondents where heat pumps play various roles in their business models. On average, respondents also indicated that ducted heat pumps made up about 45–50% of their heat pump sales (mean 45.73, median 50), though this ranged from 0% to 100%.

Figure 10. Percentage of sales from heat pumps



This varied sentiment was affirmed by the mix of responses when asked about the importance of ducted heat pumps to their business. Thirty-seven percent indicated that ducted heat pumps were essential or very important to their business, whereas 34% said that they were not very or not at all important to their business (Figure 11).

Figure 11. Importance of ducted heat pumps to their business



Note: Due to rounding, percentages may not sum to 100 percent.

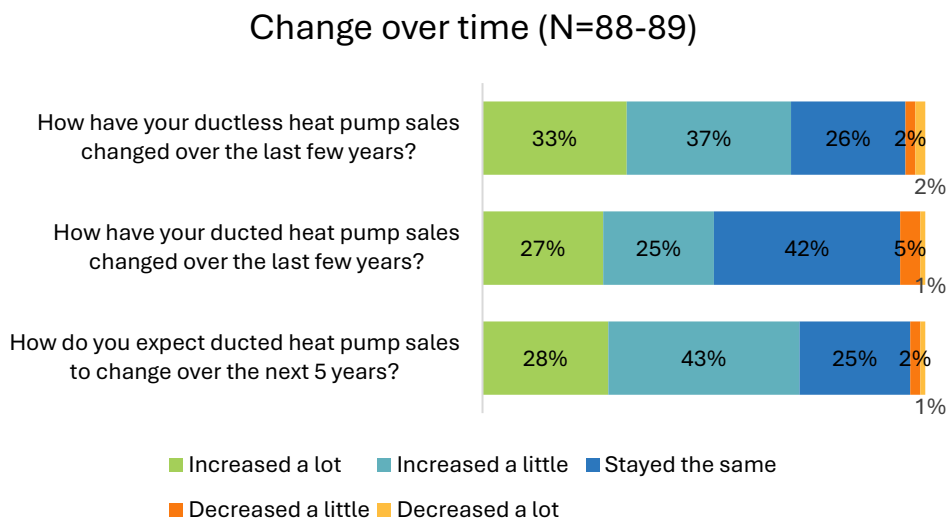
As expected, for those with a lot of experience, a larger percentage of their business comprised heat pumps (64% of those with a lot of experience said heat pumps comprise greater than 25% of their business, compared to 7% of those with little experience) and more indicated that ducted heat pumps were very important or essential to their businesses (64% vs. 11%). The percentage of ducted heat pumps among their heat pump total sales was relatively consistent across those with a lot and those with less experience (means of 48% and 43%, respectively).

Those in Greater MN were also somewhat more likely to indicate more of their business was composed of heat pumps and that heat pumps were important to their business (42% compared to 28% in the metro had sales greater than 25% of their business, and 44% vs. 30% indicated heat pumps were very important or essential).

Heat pump sales have generally increased and are expected to continue increasing for most contractors

When asked how sales trends had changed over time, most respondents indicated that *ductless* heat pump sales had increased over the last few years (70%), whereas closer to half indicated that *ducted* heat pump sales had increased (52%, Figure 12). While only half saw their sales of ducted heat pumps increase over the past few years, the majority (71%) felt their ducted heat pump sales would increase at least a little over the next five years. Very few contractors saw sales decrease or expect sales to decrease.

Figure 12. Heat pump sale changes over time



Note: Due to rounding, percentages may not sum to 100 percent.

When looking at just those who saw sales increase or expect sales to increase by geography and experience, some interesting differences emerge. As expected, those with more experience saw a greater increase or expect a greater increase across ductless and ducted sales. However, the difference between those with a lot of experience and those with little experience is much more pronounced with ducted sales over the past few years (a 55 percentage point difference for an increase in ducted sales over the past few years compared to 33 percentage point difference in ductless sales increases, Table 1).

When looking at geography, ductless heat pump sales have seemingly taken off in Greater MN, with 87% of Greater MN contractors saying they saw an increase in ductless sales compared to 52% in the metro. The differences between Greater MN and the metro are less pronounced for increases in ducted sales over time and looking forward.

Table 1. Contractors who saw or expect an increase in sales

Source of information	Total (N=88-89)	High Experience (N=44)	Low Experience (N=44–45)	Metro (N=43–44)	Greater MN (N=45)
Saw increase in **ductless** sales over the last few years	70%	86%	53%	52%	87%
Saw increase in **ducted** sales over the last few years	52%	80%	25%	47%	58%
Expected increase in **ducted** sales over the next 5 years	72%	86%	57%	70%	73%

Note: Differences of greater than 35% are highlighted in blue.

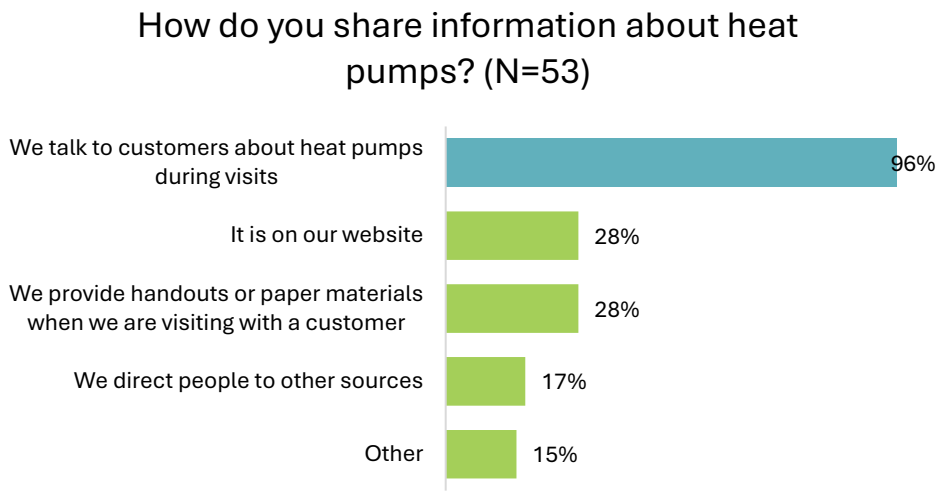
These differences suggest that the ductless heat pump market has already taken off, especially in Greater MN, and are more familiar for those with less heat pump experience. However, there are expectations that ducted product sales will increase over the next few years.

Heat pump promotion

Contractors talk to customers about heat pumps and include them in bids

We were interested to see how opinions about heat pumps translated into heat pump promotion and bidding. Sixty percent of respondents said they currently advertise or provide education to consumers about heat pumps. Almost all the respondents who said they provide heat pump education said they talk to customers about heat pumps during their visits (96%, Figure 13). However, only about a quarter said they provide handouts or materials about heat pumps when visiting with customers or that they have information about heat pumps on their website (28% for both).

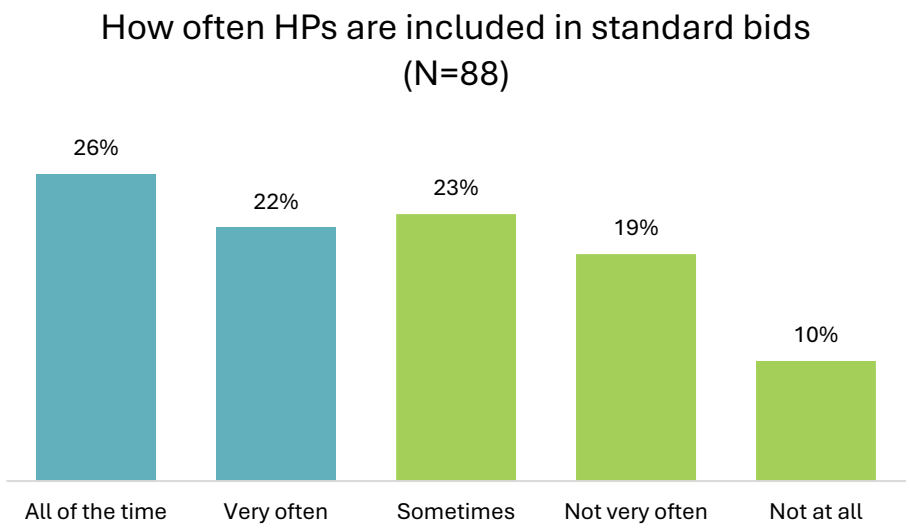
Figure 13. How contractors share information about heat pumps



In addition, 75% of those who install ASHPs regularly said they advertise or provide education compared to 45% of those with less experience. Similarly, 71% of those in Greater MN said they promote them compared to 49% in the metro.

When asked how often heat pumps are included in standard bids alongside ACs, almost half (48%) said that they include heat pumps all of the time or very often (Figure 14). This is expectedly much higher for those with a lot of experience (82% compared to 14%) and is somewhat higher in Greater MN (58% to 37%).

Figure 14. How often heat pumps are included in standard bids alongside AC



Perceived customer benefits and challenges

Cost savings and efficiency were top benefits

Contractors were asked an open-ended question to describe what they thought were the top two to three potential benefits of heat pumps for customers. This is especially enlightening as contractors speak to customers regularly and we anticipate the benefits they perceive are largely what they describe to customers when selling and installing heat pumps.

Most contractors (63%, total N=78) **offered financial incentives or cost savings as top benefits**, with 40% indicating it could save the customer money or was otherwise a good value for the customer, 28% specifically mentioning that there were good rebates, and 17% mentioning that tax credits were a benefit. While related to cost savings, but also distinct, 50% mentioned heat pump **efficiency or energy savings** as a major benefit. Efficiency can often lead to cost savings, but as mentioned previously, depending on the cost of energy fuel sources and fuel-switching temperatures, it may not equate directly to cost savings, so energy savings were specifically included with efficiency.

Additional benefits with more than 10% of contractors mentioning them included:

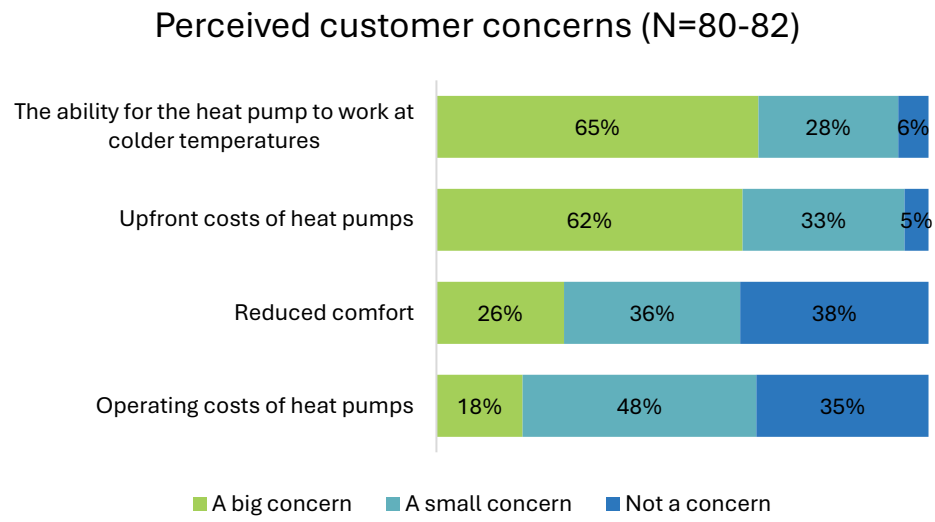
- That ASHPs provide system redundancy or backup heat, or more generally the dual fuel flexibility and ability to work with other systems (28%)
- Versatility of the equipment (17%), including the ability to heat and cool (9%) and variable capacity (6%)
- Environmental benefits (15%), including reduced fossil fuels and carbon emissions
- Comfort (14%), including humidity control and even or continuous temperature control

Contractors also mentioned that they were good for particular applications like homes with propane (12%), electric heating (8%), or for those without ductwork (5%).

The ability for the heat pump to work at cold temps and upfront costs are the biggest perceived customer concerns

From past research, we were aware that upfront costs, operating costs, reduced comfort, and the ability for the heat pump to work in colder temperatures have all been customer concerns. We asked contractors to rate how big of a concern these four items were, either a big concern, small concern, or not a concern. The majority of contractors indicated that the ability for the heat pump to work at colder temperatures and upfront costs were big concerns for customers (65% and 62%, respectively, Figure 15). Fewer contractors felt that reduced comfort and operating costs were big concerns, but the majority still indicated they were at least a small concern.

Figure 15. Perceived customer concerns about heat pumps



Note: Due to rounding, percentages may not sum to 100 percent.

When looking across geography and experience, most concerns were consistent, but a couple notable differences arose. While most contractors felt that the ability for the heat pump to work at colder temperatures was at least a small concern across both groups, contractors with less experience were much more likely to indicate that was a big concern (78% to 54%). All other concerns were relatively consistent across experience.

Looking across geography, those in Greater MN were more likely to say that operating costs were a big concern (26% vs. 8%), though the percentage who indicated it was not a concern at all was equal across the groups. Those in Greater MN were also much more likely to say that comfort was at least a small concern (73% vs. 49%).

> As stated, the biggest complaint is the operating temps for heat pumps in MN. Customers love the heat pumps but complain about having to also pay to have backup heat source, in addition to the costs of the heat pump. Overall, customers are mostly happy given they perform well for 95% of the year, but that last 5% can get a little tricky."
>
> – Contractor

When asked if there were additional concerns for customers, several contractors reiterated costs as a challenge, especially upfront costs, as well as operating costs, comfort, and skepticism around functionality in cold climates. At least 5 people mentioned the following additional concerns:

- **Reliability or durability** including perceived reduced longevity/life expectancy of the equipment, quality issues or more part failures with complicated equipment, and the fact that it requires a backup
- **Lack of customer knowledge**, including a general understanding of benefits or how to maximize savings and how the technology works
- **Maintenance concerns**, including ice buildup, and serviceability or costly repairs

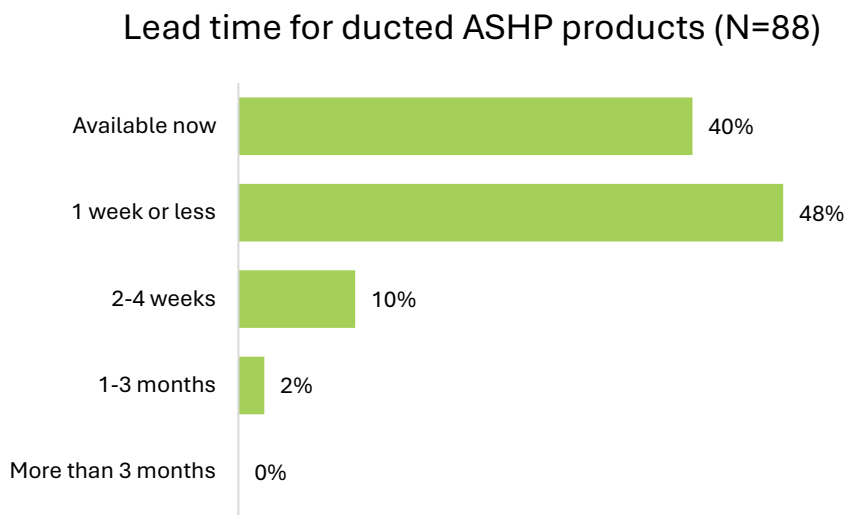
Additional concerns mentioned by at least two people were around noise, system or thermostat complexity, the fact that it's newer technology, structural limitations (e.g., existing ductwork, electrical, etc.), and efficiency. Two people also mentioned that it's less about the equipment and more about the contractor trust.

Contractor challenges

ASHPs are available

Over the past few years with supply chain shortages and disruptions due to the COVID-19 pandemic, lead times were a challenge for HVAC equipment. These challenges appear to have largely subsided as the vast majority of contractors said that ducted heat pump products were either available now or within one week or less (88%, Figure 16). This is particularly important given that the market is largely replace-on-fail as noted in the Market Characterization report, and ideally, the 40% of those saying heat pumps are available now would continue to grow. Notably, the perception of availability was largely consistent across experience levels and geography (0–11 percentage points different). It is worth noting that at the end of 2024 when this survey was conducted, this challenge appears to have diminished, but changes to the U.S. economic policies around tariffs and market fluctuations in 2025 may shift pricing and availability.

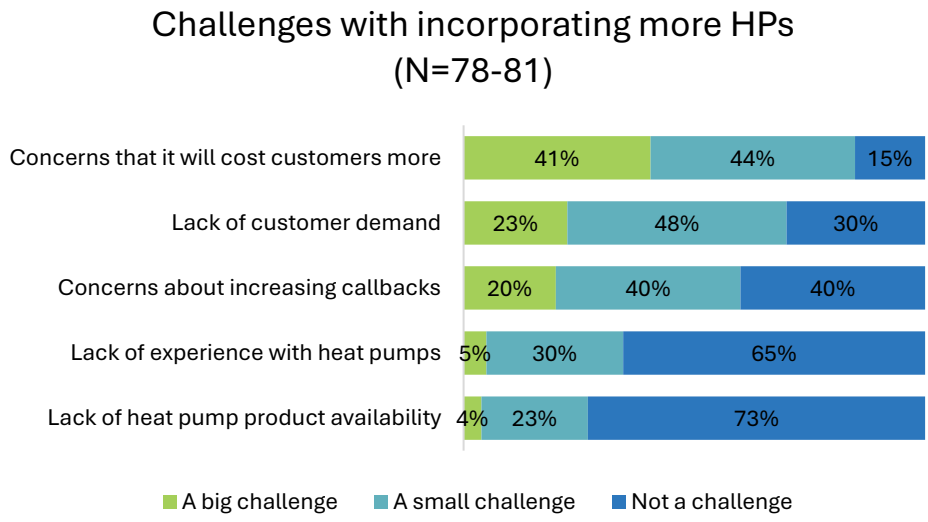
Figure 16. Lead time for ducted ASHP products



Contractors are concerned about customer costs, demand, and callbacks

When asked explicitly about challenges with incorporating more heat pumps into their business, availability was the least likely to be noted as a challenge (73% said this was not a challenge, Figure 17). Lack of experience was also not a challenge for most respondents (65%). Instead, concerns that it will cost customers more was the most noted challenge (85% said it was a challenge, with 41% saying it was a big challenge). This was followed by a lack of customer demand and concerns about increasing callbacks.

Figure 17. Challenges with incorporating more heat pumps into contractors' businesses



Note: Due to rounding, percentages may not sum to 100 percent.

While the order of these challenges is slightly different from previous research and sample sizes in the past were small, when looking at the percentage of those who said things were a challenge (not distinguishing between big and small challenges), it appears that product availability and lack of experience could be decreasing as concerns. Last year 69% said lack of experience was a challenge compared to 35% this year, and last year 51% said that heat pump availability was a challenge compared to 27% this year, though there were only 16 respondents for those questions last year.

Additionally, challenges varied somewhat by experience and geography. While those with more experience were less likely to say that something was a "big challenge" for each item we asked about, when combining the "big and small challenge" categories, some interesting trends emerged. For example, we anticipated that metro area contractors would indicate concerns about customer costs as a challenge, which was the case. Interestingly, contractors with more experience were more likely to indicate that customer costs and availability were a challenge (90% vs. 78%, and 33% vs. 19%, Table 2). This may indicate that these contractors are more acutely familiar with the challenges seen in the market.

Table 2. Challenges with incorporating more heat pumps into contractors' businesses, by experience and geography

Challenge	Total (N=78-81)	High Experience (N=42)	Low Experience (N=36-39)	Metro (N=35-38)	Greater MN (N=42-43)
Concerns that it will cost customers more	85%	90%	78%	89%	81%
Lack of customer demand	70%	64%	76%	73%	67%
Concerns about increasing callbacks	60%	50%	71%	65%	56%
Lack of experience with heat pumps	35%	26%	44%	42%	28%
Lack of heat pump product availability	27%	33%	19%	26%	28%

Note: Differences of greater than 10 percentage points are highlighted in blue.

We also asked if there were other major challenges contractors faced in incorporating more heat pumps into their business. About half said there were not any additional challenges (45%). Although some repeated similar concepts to those asked about in the closed-ended questions, more than 10% of people mentioned the following:

- **Heat pump technology or service issues or limitations** (17%), including things like sizing or ductwork, electrical service, and servicing in cold weather
- **Market issues** (14%) like the lack of customer interest or leads, lack of industry interest in transitioning or selling them, and poor marketing or negative perceptions from the past or present
- **High cost** (13%), including high upfront and operating costs
- **Knowledge gaps** (13%) for both customers and contractors around things like benefits, operation, and pricing/savings

Notably, only two people (3%) cited the challenge with heat pumps not working as well in the cold Minnesota climate. Four people (5%) also mentioned quality issues or a greater complexity of parts that could lead to more failures.

We also asked contractors what would make them more likely to install more heat pumps.

- Half (49%) volunteered that **lower pricing or costs** would make them more likely to install more heat pumps. This specifically included better or more rebates (16%), better or more tax credits (9%), better electric rates (or if natural gas prices rose) (5%), and financing (5%).
- About a quarter also offered that **market assistance or drivers like customer demand** or leads would be helpful, with others suggesting things like a push to sell them from the industry, government mandates, and better marketing would lead to selling more.
- Twenty-one percent also said **education and awareness** would help, with 9% explicitly saying customer education would be beneficial.
- Finally, 14% indicated that **continued technological improvement** around cold climate functionality, especially to reduce the need for backup heat systems, and proven reliability would help.

> "The incentives... the rebates for the customers, tax credits are huge... and incentives for us, we tend to push them more."
>
> – Contractor
>
> "Really just getting the information out there about the efficiencies and how much of the heating season they can take care of. Just informing people."
>
> – Contractor

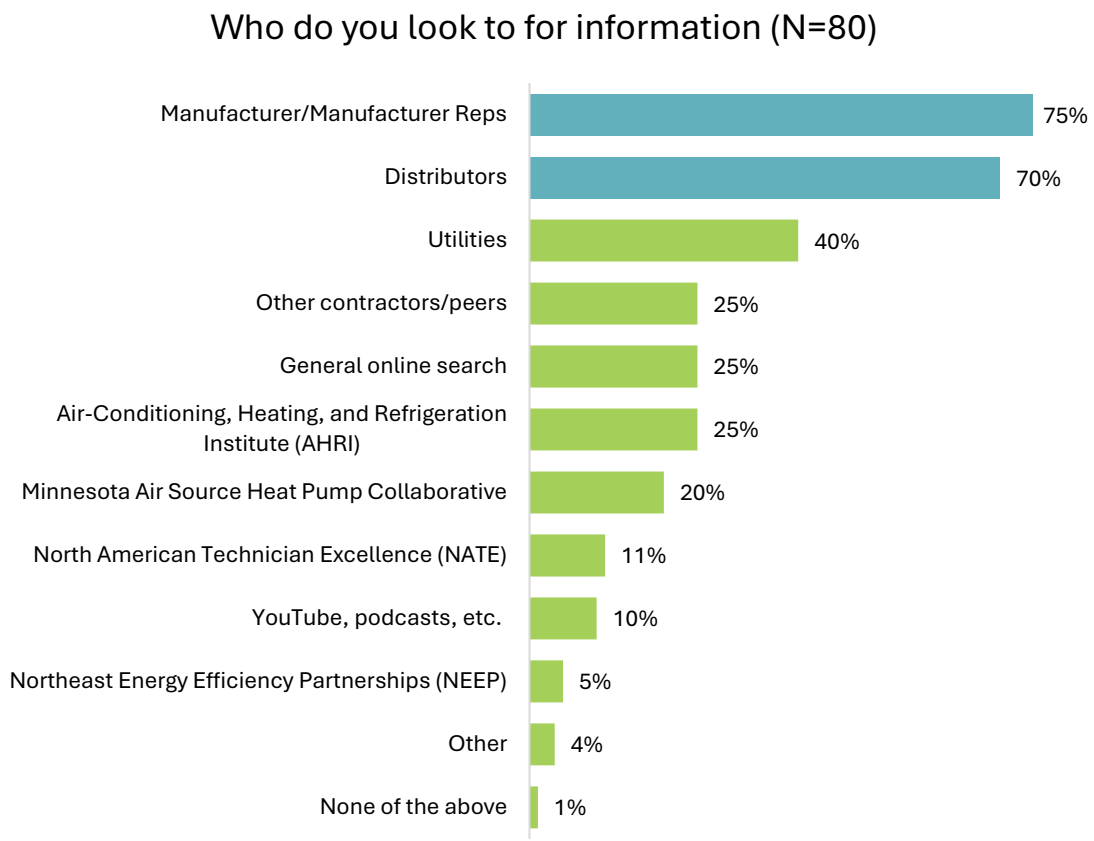
Training and information

Training and education have been and will remain critical pieces for increasing contractor familiarity, confidence, and appropriate installation of heat pump technology. To ensure training efforts are best aligned to contractors' preferences and needs, we asked several questions regarding information and training.

Contractors generally look to manufacturers and distributors for information

Nearly three-quarters of contractors said manufacturers/manufacturer representatives and distributors were who they look to for information about heat pumps or to stay updated in the industry (75% and 70% respectively, Figure 18). This indicates that these market actors continue to be critical leverage points and partners for disseminating information and training. Utilities were also a common source of information (40%).

Figure 18. Who contractors look to for information



The Minnesota Air Source Heat Pump Collaborative was mentioned by 20% of respondents — given that this was a broad contractor population survey rather than a targeted participant survey indicates a robust presence of the MN ASHP Collaborative in the contractor sphere. This was only slightly behind AHRI, a national source and directory of all HVAC products, and was ahead of other national and peer organizations such as NATE and NEEP.

When looking at contractors with a lot of experience with heat pumps, the MN ASHP Collaborative rose above all other single organizations listed, including AHRI, with 29% saying they look to the Collaborative for information (Table 3). This was only behind manufacturers, distributors, and utilities. Notably, for those contractors with less heat pump experience, manufacturers and distributors remained the key resources, but utilities dropped sharply so they were on par with general online searches, AHRI, and other contractors.

When looking at metro versus Greater MN, responses were more similar with the exceptions that metro area contractors looked to distributors and their peer contractors more often than their Greater MN counterparts (Table 3).

Table 3. Who contractors look to for information, by experience and geography

Challenge	Total (N=80)	High Experience (N=41)	Low Experience (N=39)	Metro (N=38)	Greater MN (N=42)
Manufacturer / Manufacturer reps	75%	85%	64%	76%	74%
Distributors	70%	76%	64%	79%	62%
Utilities	40%	51%	28%	42%	38%
Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	25%	27%	23%	21%	29%
Other contractors / peers	25%	24%	26%	32%	19%
General online search	25%	22%	28%	26%	24%
Minnesota Air Source Heat Pump Collaborative	20%	29%	10%	18%	21%
North American Technician Excellence (NATE)	11%	12%	10%	13%	10%
YouTube, podcasts, etc.	10%	12%	8%	13%	7%
Northeast Energy Efficiency Partnerships (NEEP)	5%	10%	0%	3%	7%
Other	4%	5%	3%	8%	0%
None of the above	1%	0%	3%	0%	2%

Note: Differences of greater than 10 percentage points are highlighted in blue.

Contractors prefer morning, in-person training in the spring

When inquiring about their preferred training formats, contractors most often chose in-person training, with half-day trainings being preferred over shorter lunch or breakfast trainings (71% and 56% respectively, Figure 19). This was consistent across all geographies and experience types. After in-person training, metro contractors tended to prefer YouTube videos over other forms of training, while those from Greater Minnesota favored eLearning modules and webinars (Table 4). Those with more experience also tended to prefer eLearning modules, almost as much as shorter in-person training (Table 4).

Figure 19. Valuable training formats

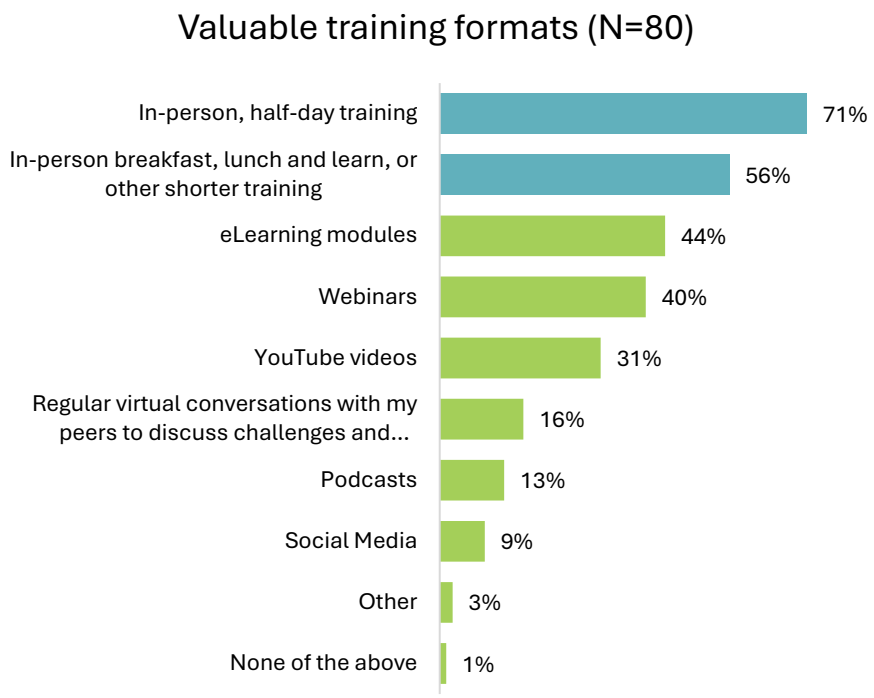


Table 4. Valuable training formats, by experience and geography

Source of information	Total (N=80)	High Experience (N=41)	Low Experience (N=39)	Metro (N=38)	Greater MN (N=42)
In-person, half-day training	71%	76%	67%	76%	67%
In-person breakfast, lunch and learn, or other shorter training	56%	54%	59%	61%	52%
eLearning modules	44%	51%	36%	39%	48%
Webinars	40%	41%	38%	37%	43%
Podcasts	31%	10%	15%	16%	10%
YouTube videos	16%	37%	26%	45%	19%
Regular virtual conversations with my peers to discuss challenges and opportunities	13%	17%	15%	18%	14%
Social media	9%	12%	5%	11%	7%
Other	3%	5%	0%	0%	5%
None of the above	1%	2%	0%	0%	2%

Note: Participants were able to select multiple responses, so responses do not sum to 100%. The top three responses for each breakdown are highlighted in blue.

When asked about the time of year they preferred training, the majority preferred spring training, followed by winter training (69% and 54% respectively, Table 5). Very few people wanted training in the summer (15%), so this time should generally be avoided, with an emphasis on spring training. If there is flexibility in the training schedule, there could be some room to differentiate trainings — for example, those with a lot of experience were much more likely to say spring over winter and early morning trainings were best for them, but those with less experience were equal in their winter vs. spring training preferences, but preferred mid-morning training. Therefore, perhaps more foundational trainings could happen in late winter in the mid-morning, then the more in-depth or advanced trainings for those with more experience could happen solidly in the spring and start earlier in the day.

Table 5. Training timing preferences

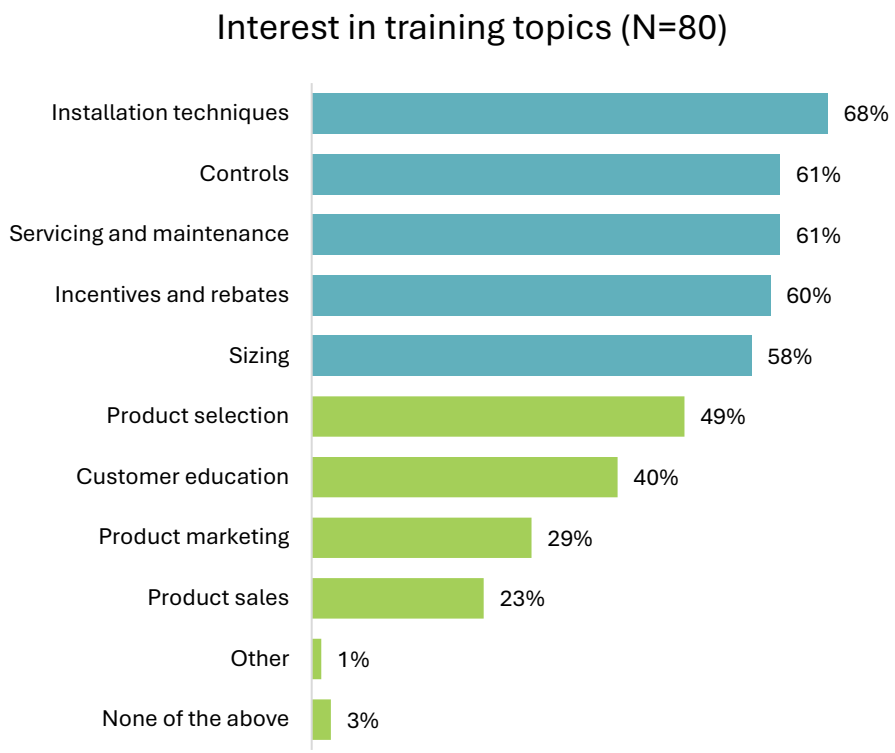
Training season	Total (N=80)	High Experience (N=41)	Low Experience (N=39)	Metro (N=38)	Greater MN (N=42)
Winter	54%	46%	62%	55%	52%
Spring	69%	76%	62%	66%	71%
Summer	15%	10%	21%	13%	17%
Fall	36%	29%	44%	50%	24%
Training time of day	Total (N=80)	High Experience (N=41)	Low Experience (N=39)	Metro (N=38)	Greater MN (N=42)
Early morning	64%	76%	51%	63%	64%
Mid-morning	58%	49%	67%	61%	55%
Lunchtime	28%	20%	36%	24%	31%
Afternoon	13%	7%	18%	13%	12%
Evening	10%	5%	15%	8%	12%

Note: Differences of greater than 10 percentage points are highlighted in blue.

Contractors would like more training on installation, controls, service and maintenance, incentives, and sizing

When asked what topics were worth their time and energy, most contractors indicated they would be interested in trainings on installation techniques, controls, servicing and maintenance, incentives and rebates, and sizing (Figure 20).

Figure 20. Interest in training topics



While these remained the top five options across all breakdowns, and installation techniques were the top one or two for each group, there were some slight differences where those with more experience wanted more emphasis on controls and incentives and rebates, and those with less experience wanted more on servicing and maintenance and sizing (Table 6).

Table 6. Interest in training topics by experience and geography

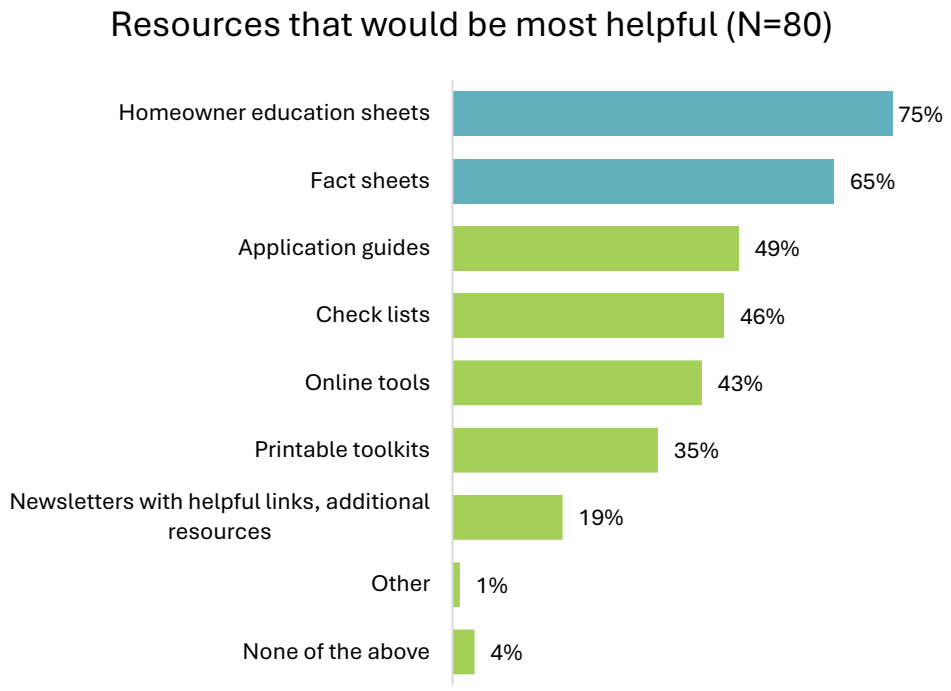
Training topic	Total (N=80)	High Experience (N=41)	Low Experience (N=39)	Metro (N=38)	Greater MN (N=42)
Installation techniques	68%	66%	69%	74%	62%
Controls	61%	68%	54%	61%	62%
Servicing and maintenance	61%	56%	67%	66%	57%
Incentives and rebates	60%	66%	54%	61%	60%
Sizing	58%	51%	64%	55%	60%
Product selection	49%	41%	56%	53%	45%
Customer education	40%	44%	36%	45%	36%
Product marketing	29%	41%	15%	26%	31%
Product sales	23%	24%	21%	32%	14%
Other	1%	2%	0%	3%	0%

None of the above	3%	0%	5%	3%	2%

Note: Participants were able to select multiple responses, so responses do not sum to 100%. The top three responses for each breakdown are highlighted in blue.

In addition to training, most contractors thought homeowner education sheets (75%) and fact sheets more generally (65%, Figure 21) would be the most helpful resources. While the percentage of people interested varied, those two items remained the top two most desired resources across all geographies and experience levels.

Figure 21. Resources that would be most helpful



CONTRACTOR TRAINING INSIGHTS

Background

Contractor education has been a focus of the Minnesota ASHP Collaborative since its inception in 2019, and the Collaborative has been conducting contractor training since 2021. Training and education are critical for increasing contractor familiarity, confidence, and quality installation of heat pump technology, which are all foundations for market changes. Training evaluations can therefore provide us with information about perception change due to the training itself, as well as overall market trends. Because of this, key information related to training evaluation is included in this report.

In the spring of 2024, CEE hosted ASHP contractor trainings at 10 locations across Minnesota and North Dakota. Training locations were selected through GIS analysis to target key areas effectively, while attendees were recruited through diverse channels including distributor and utility partners. CEE-hosted trainings were held as three-hour-long morning events.

The ASHP Training series was strategically planned and executed to maximize impact and engagement. The training sessions focused on several primary learning objectives including:

- Understanding incentives and financing opportunities
- Exploring customer research and trends
- Supporting homeowner education
- Analyzing benefits and considerations across application types
- Addressing sizing and design considerations
- Mastering equipment selection with tools like the NEEP Heat Pump List and Sizing for Heating Tool
- Optimizing control strategies
- Highlighting key installation considerations

After each contractor training, facilitators passed out paper surveys to attendees or asked attendees to participate online via QR code. Overall, 130 attendees provided insights and feedback on the training. Results were analyzed by CEE staff.

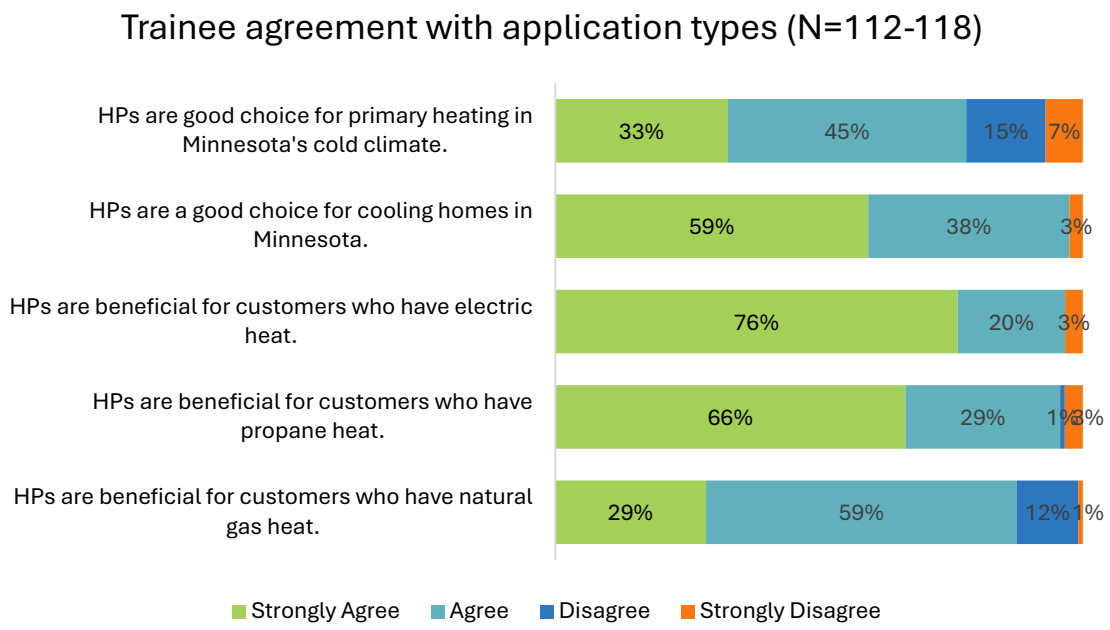
ASHP Perceptions

Attendees agree that heat pumps are a strong choice for propane, electrically heated homes, and cooling applications

Similar to the contractor survey, training attendees were asked a series of questions related to their perceptions of heat pump performance in various settings. Overall, 96% of respondents agreed or strongly agreed that heat pumps are beneficial for customers with electric heat, and 95% reported the same for propane heat (Figure 22). Additionally, 88% of respondents agreed or strongly agreed that heat pumps are beneficial for those with natural gas heat, suggesting slightly less confidence in heat pump appropriateness in natural gas settings, consistent with previous findings.

In addition, 97% of respondents agreed or strongly agreed that heat pumps are a good choice for cooling in the state. However, only 78% reported the same for heat pumps' cold climate heating capability, and 22% disagreed or strongly disagreed that heat pumps are a good choice for primary heating in Minnesota.

Figure 22. Trainee agreement with application types



Note: Due to rounding, percentages may not sum to 100 percent.

When comparing training results to that of the broader population, relative trends across application types were similar and the approval of the electric application and cooling benefits were close to that of the general contractor population (higher than 90%). However, belief in the benefits of the other applications was considerably higher among those attending training:

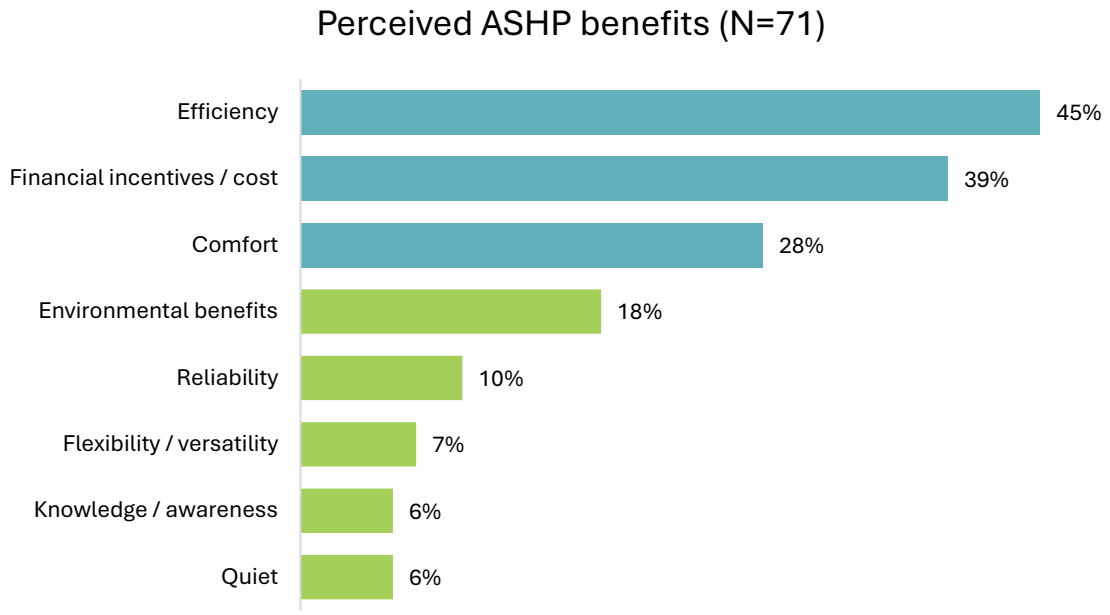
- For training attendees, agreement that ASHPs are beneficial for those with propane (95%) was on par with the electric application (96%). This was not the case for the general population, where propane confidence was lower than electric applications (79% vs. 93%).
- While there was slightly less confidence in natural gas applications in the training population than other application types, it was considerably higher than in the general population (88% vs. 59%).
- Belief in cold climate capabilities was also lower compared to other applications for training attendees, but it was much higher in the training population than the broader population (78% vs. 48%).

This suggests that training helps illuminate opportunities and highlights heat pump value for natural gas and propane applications, as well as cold climate functionality. It is worth noting that there may also be some selection bias as those who already have a stronger belief in heat pumps may be more inclined to attend training.

Heat pumps are recognized for their efficiency, cost-effectiveness, and comfort

Seventy-one attendees provided their thoughts on the key benefits of ASHPs (Figure 23). Within these open-ended responses, efficiency (45%, n=32), financial incentives/cost (39%, n=28), and comfort (28%, n=20) emerged as the top three advantages, with respondents specifically remarking on heat pumps' energy savings, lower operating costs, and consistent temperature control, among other things.

Figure 23. Perceived benefits of ASHPs



ASHP Sales insights

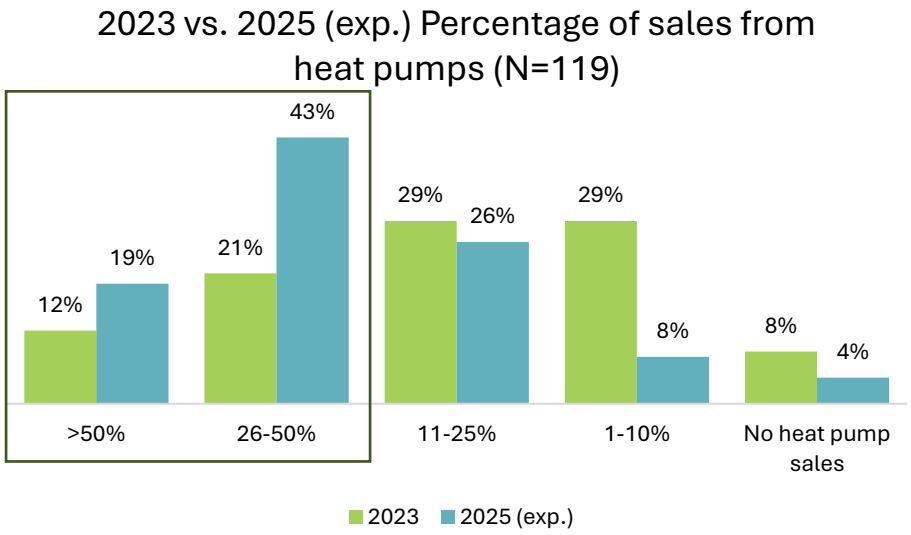
Training attendees were asked a series of questions related to their past, present, and future heat pump sales. Reports from nearly 120 attendees projected significant sales growth in the heat pump market, as well as contractor willingness to include heat pump proposals as part of their bids. These insights suggest that both contractors and customers are increasingly considering ASHPs as a viable HVAC option.

Market share is expected to trend upward

To assess market evolution, training attendees were asked what percentage of their 2023 sales were ASHPs and what their sales might be by 2025 (Figure 24). In general, respondents expected to sell more heat pumps in 2025 than they were currently selling. In 2023, only a third, said that heat pumps comprised more than a quarter of their sales. For 2025, that number nearly doubled with 62% indicating that they expected heat pump sales would comprise more

than a quarter of their business. These past and future estimates suggest that heat pump sales are gaining steam and representing larger proportions of contractors' annual sales.

Figure 24. Percentage of sales from heat pumps in 2023 vs. expected sales in 2025



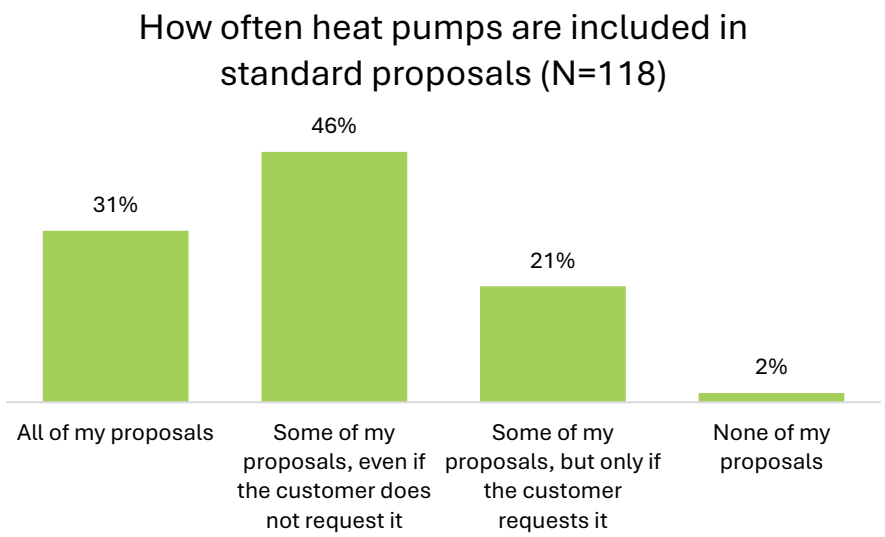
Note: Due to rounding, percentages may not sum to 100 percent.

It is also helpful to compare current sales volumes for training attendees to the broader population sales values to get a sense of who attended training. Both had similar proportions of contractors with heat pump sales at the lower and upper ends of the spectrum (9% sold no ASHPs in the broader population compared to 8% in the training population, and 35% had heat pumps make up more than a quarter of their sales compared to 33% in the training population). There were some differences, however, in the middle categories, where the broader population was more likely to be in a 1–10% sales range (39% compared to 29%), and those attending training were more likely to be in an 11–25% sales range (29% compared to 17%). This indicates that heat pumps may be somewhat more popular with those who attended training.

Heat pumps are included in many contractor bids

Attendees were also asked how often they currently include a heat pump proposal as part of their bids (Figure 25). Of 118 respondents, nearly a third indicated that they include heat pumps as a part of all their bids, whereas only 2% (two respondents) indicated that they did not include heat pumps at all. The remainder, or nearly two-thirds, indicated that they include heat pumps in some proposals, with 46% saying they include heat pumps with proposals even if the customer does not request it, and the remaining 21% indicating they include it only if the customer asks for it.

Figure 25. How often heat pumps are included in standard proposals



Training insights

Attendees are overwhelmingly satisfied with current training

ASHP training evaluations sought to gauge participant satisfaction with the experience at large. Approval ratings at present are high — 98% of respondents reported being very satisfied or somewhat satisfied with the training in its current state (Figure 26).

Figure 26. Overall training satisfaction

Participants were also asked to provide open-ended feedback on the training content. Of the 22 respondents who made content recommendations, 41% (n=9) requested additional specifics about heat pumps, such as their expected lifespan, static or high pressure, and thermostat and operation. Another 27% (n=6) wanted more information about finances, especially rebates and

tax incentives, and 18% (n=4) desired more information about airflow and sizing. Finally, 41% (n=9) of respondents also provided suggestions about the training structure and execution, including more hands-on learning experiences with equipment.

DISTRIBUTOR INSIGHTS

Background

In addition to contractor insights, distributors are key market actors, especially related to product availability and stocking practices. The ASHP Collaborative maintains relationships with a number of distributors that are key to the market. We were able to survey four of them to better understand stocking and availability. While a small sample, it does provide insights into market changes and supports findings from larger contractor research.

Market insights

ASHP products are generally stocked and available

All four distributors indicated that they stock both Advanced (25C tax credit eligible) and Entry-level (federal minimum) products. For these distributors, it appears stocking and demand for both products has generally increased.

For Advanced products, all four indicated that their stocking has increased with three saying it increased a little and one indicating it increased a lot. Respondents indicated that demand similarly increased, with three indicating it increased a little and one indicating demand increased a lot.

For Entry-level products, three indicated that their stocking increased over last year, one of whom said stocking increased a lot. The other distributor indicated that practices remained the same as last year. Distributors said that demand was largely consistent with their stocking practices, but one distributor reported that demand increased a lot when they had indicated that their stocking of these products had only increased a little.

Three of four distributors indicated that ducted heat pump products (either Advanced or Entry-level) were available now, and one indicated they were available with a 1–3-month lead time. Lead times were widely recognized in the industry as being longer and more volatile due to the COVID-19 pandemic, and this supports similar findings in the contractor research that indicate these challenges appear to have largely subsided. However, this pulse was taken in December, and national tariff pricing and volatility may influence lead times.

Training around ducted heat pumps is increasing

All four distributors indicated that they provide in-person training and offer printed resources on ducted heat pumps for contractors, and three indicated that they provide webinars. All four also said the amount of training they offer on heat pumps has increased over the past few years, three of whom said it has increased a lot.

All four also said that their trainings currently include information on product selection, servicing and maintenance, and incentives and rebates. Two to three said they provide information on product sales, sizing, controls, ductwork/airflow, product marketing, and customer education. Those who did not provide trainings or resources on those topics indicated that they would like to offer them.

CUSTOMER INSIGHTS

Background

While contractors may be a key leverage point for installing more heat pumps, customers are the ultimate decision makers, and their awareness, satisfaction, and experience with the equipment are essential for greater adoption. Recent national research from METUS suggests that 90% of homeowners with heat pump systems would recommend heat pumps and showed a national year-over-year rise in heat pump sales, which is corroborated by AHRI sales data[6]. However, the same sources also indicate that the Midwest lags other regions in heat pump adoption. In addition, the Midwest had the largest knowledge gaps around heat pumps of any region, as 60% of survey respondents in the Midwest indicated that they had no in-depth knowledge of heat pumps or had not heard of them. Commentary suggests that the Midwest could be a major source for heat pump growth if this awareness changes.

General population homeowner research on awareness and messaging

This knowledge gap in the Midwest is consistent with previous MN-specific studies and was corroborated by our ETA ASHP Market Characterization[7]. Because of this lack of awareness, the ETA anticipates a new focus around building customer awareness. To ensure an effective understanding of potential customers and messaging that resonates with them, CEE contracted Behavioral Insights Team (BIT) to conduct focus groups (N=30) and a large, randomized control trial and panel survey with Midwest homeowners to gain their insights (N=4,007 for Midwest, N=1,751 for MN specifically). Full results of this research are available in the "Messaging strategies to drive heat pump adoption in Minnesota" report on the ETA website, but highlights are presented here as they relate to full market trends.[8]

Per the homeowner research, awareness of heat pumps was low across the Midwest in our study, with 78% indicating that they knew nothing or only a little about heat pumps. This number was roughly the same, or just slightly better, for Minnesota-specific homeowners, with 75%

[6] Jachman. April 2, 2025. "Pumped for Heat Pumps." ACHR News. https://www.achrnews.com/articles/164387-pumped-for-heat-pumps

[7] Hansen-Connell and McPherson. November 30, 2023. "ASHP Market Characterization Report." CEE. https://www.etamn.org/air-source-heat-pump-market-characterization-report

[8] CEE & BIT. August, 2024. "Messaging strategies to drive heat pump adoption in Minnesota" https://www.etamn.org/messaging-strategies-drive-heat-pump-adoption-minnesota

indicating they had little to no awareness. It should be noted that this study only included those who did not already have heat pumps. The study identified four different customer segments to target for increasing awareness:

- **Lifetime value seekers** (47% of Minnesotans) – Risk-averse group, primarily concerned with costs, ease and frequency of maintenance, and longevity
- **Discerning investors** (32% of Minnesotans) – See HVAC purchases as an investment in their comfort, health or the environment; still concerned with costs, but it's not the only deciding factor
- **Eco-conscious innovators** (21% of Minnesotans) – Excited about new technology to reduce their carbon footprint; less concerned about costs
- **Nearly-there converts** (35% of Minnesotans) – Excited about ASHPs, but do not have one yet as it has not been the right time to replace or they are unsure if it would be a good fit

Various messaging was tested across the different customer segments, but the message framing did not significantly impact the likelihood of participants to consider buying a heat pump. Thus, providing information in general is likely more important than framing. However, the study did indicate that highlighting efficiency and including information addressing cost, especially rebates, as well as emphasizing that the equipment can both heat and cool, would be beneficial.

Costs (including upfront and operating costs) were the most important factor for customers to consider when purchasing a new HVAC system, followed by comfort. Most participants also indicated that longevity was "very important." Very few indicated that carbon emissions were the top deciding factor, even among the eco-conscious innovator group, though messaging statements about carbon emissions did pique more interest among this group.

Finally, the study indicated that trusted messengers about home heating and cooling systems include friends and family, energy providers, and contractors. Minnesotans were most likely to first turn to energy providers and their service installation services/plans (42%) if they are looking to replace HVAC equipment, illustrating that utilities and service plans are critical in awareness building and starting the process for homeowners to adopt heat pumps.

ASHP customer survey methodology

While the homeowner research provided strong insight into the general population, CEE wanted to better understand insights from those with heat pumps to investigate customer satisfaction and experience. This had been identified as a gap in current literature, as we could not uncover information around the customer experience and heat pump satisfaction specifically in Minnesota regarding ducted heat pumps. CEE thus conducted a large customer survey (N=721) of those who had installed ducted heat pumps in the past three years.

To conduct the survey, CEE worked with six different utilities — Xcel Energy, Otter Tail Power, Great River Energy, Lake Country Power, Lake Region Electric Cooperative, and East Central Energy — that identified customers who had received a heat pump rebate through their programs in the past three years. The utilities then sent out a survey to their customers and

results were collected by CEE for analysis and reporting. CEE worked with Wilder Research for full analysis of the data. More information about the methodology can be found in Appendix A.

It should also be noted that while this survey was specifically designed for those with ducted heat pumps, utilities do not always distinguish their rebates between ducted and ductless products, and homeowners were invited to participate without full knowledge of their system. We included screener questions to include only those with ducted systems. Additionally, we anticipated most homeowners would have replacement equipment, but about 8% of our sample indicated that their homes were new construction or a major remodel.

The remainder of the Customer Insights section of this report focuses on findings from this survey.

Respondent distribution and system characteristics

Respondents to the ASHP customer survey were from five different utilities, with the most representation coming from Xcel Energy (45%, Table 7). This was expected as Xcel Energy is the largest electric utility in the state and covers the majority of the metro region population centers. However, there was a strong showing from the other utilities.

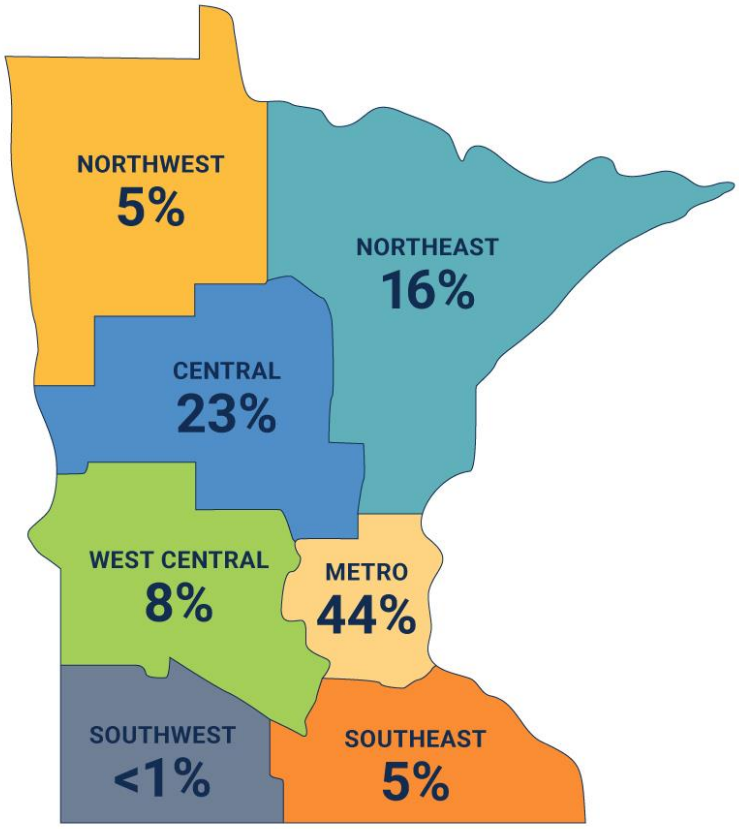
Table 7. Utility of respondents

Utility company	N	%
Xcel Energy	324	45%
Otter Tail Power Company	136	19%
East Central Energy*	107	15%
Lake Region Electric Cooperative*	85	12%
Lake Country Power*	67	9%

* These three cooperatives are member co-ops of Great River Energy, which helped facilitate participation.

Respondents also represented a large swath of geography, with respondents from 55 of the 87 Minnesota counties participating, and respondents from every region of the state (according to Clean Energy Resource Teams regions, Figure 27). The metro region was the most well represented (44%), followed by Central (23%), and Northeast (16%), which aligns with the utility geographies.

Figure 27. Respondents by CERTs region

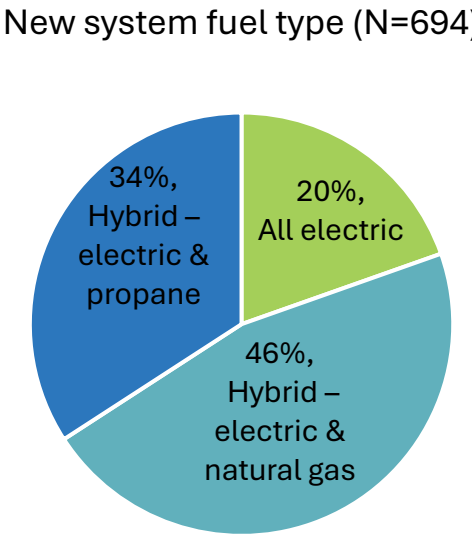


Note: Due to rounding, percentages may not sum to 100 percent.

Respondents had their heat pump installed between January 2022 and December 2024 with 9% having a heat pump installed in 2022, 37% in 2023, and 54% in 2024. Given that some homeowners have not had their heat pump for very long, for some questions it was too soon to give an opinion, and the question was not applicable. The most popular months for installation were May, June, and July (42% cumulatively).

The systems that respondents installed were largely hybrid systems, with 46% having a natural gas backup, and 34% having a propane backup. Twenty percent have all-electric systems (Figure 28). Almost half (49%) indicated that their heat pump was a “cold climate” model.

Figure 28. Replacement situation for heat pump installation



Heat pump installation decisions and processes

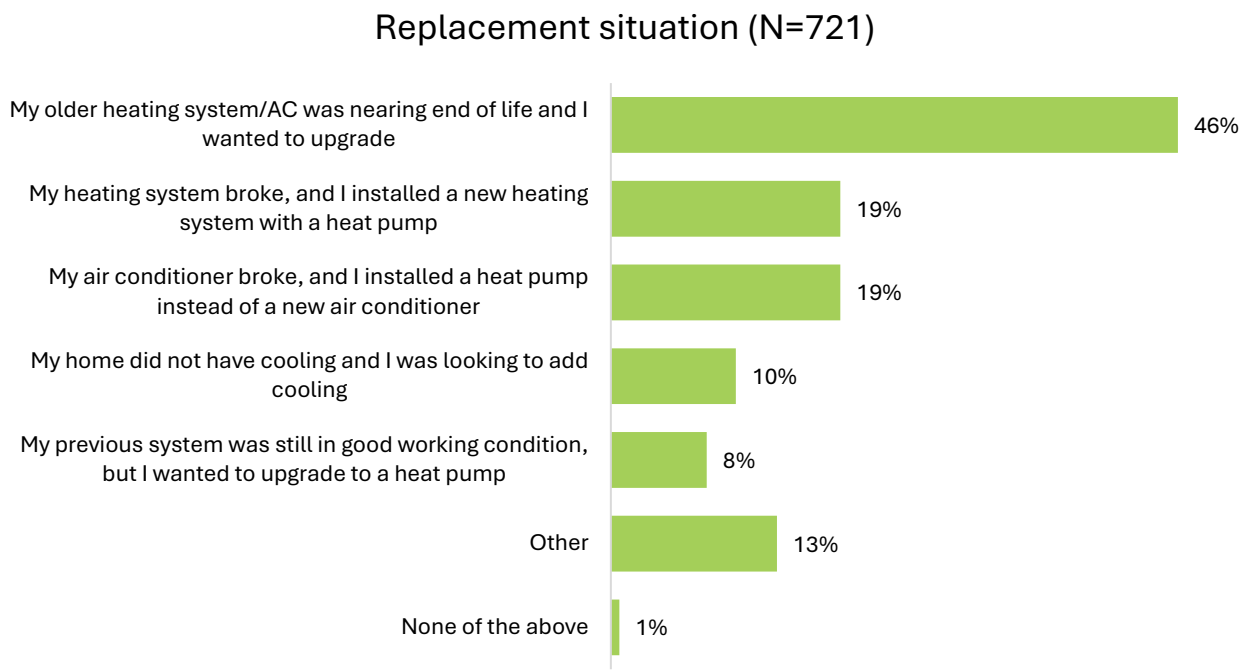
Respondents who installed heat pumps were more likely to replace older equipment before failure

Past literature indicates the HVAC market is largely replace-on-fail, with the majority of respondents from a 2022 AC replacement study indicating failure is the most likely time for replacement.[9] However, for this survey, respondents were asked what situation led them to seek a heat pump and more people said it was because of their equipment's old age rather than a failure situation (46% compared to 38% combining both heating and cooling system failure, Figure 29). This discrepancy between replace on fail tendencies in the broader population may indicate that customers selecting heat pumps may be doing so more proactively than the typical consumer and have more time to investigate choices.

Interestingly, replacement was evenly split between heating system and cooling system failure prompting heat pump installation. An additional 10% mentioned they installed a heat pump because they were looking to add cooling. In the other category, 8% of respondents mentioned that they had a newly constructed home or major remodel, and another 2% indicated that they were replacing a prior heat pump. Other responses people gave for wanting to get a heat pump included cost savings, reducing propane dependency or wanting all electric, right-sizing equipment, efficiency, or that their previous system just didn't work well.

[9] Quinell et al. December 2022. "Investigation of Air Source Heat Pumps as a Replacement of Central Air Conditioning." CEE. https://www.mncee.org/investigation-air-source-heat-pumps-replacement-central-air-conditioning

Figure 29. Replacement situation for heat pump installation

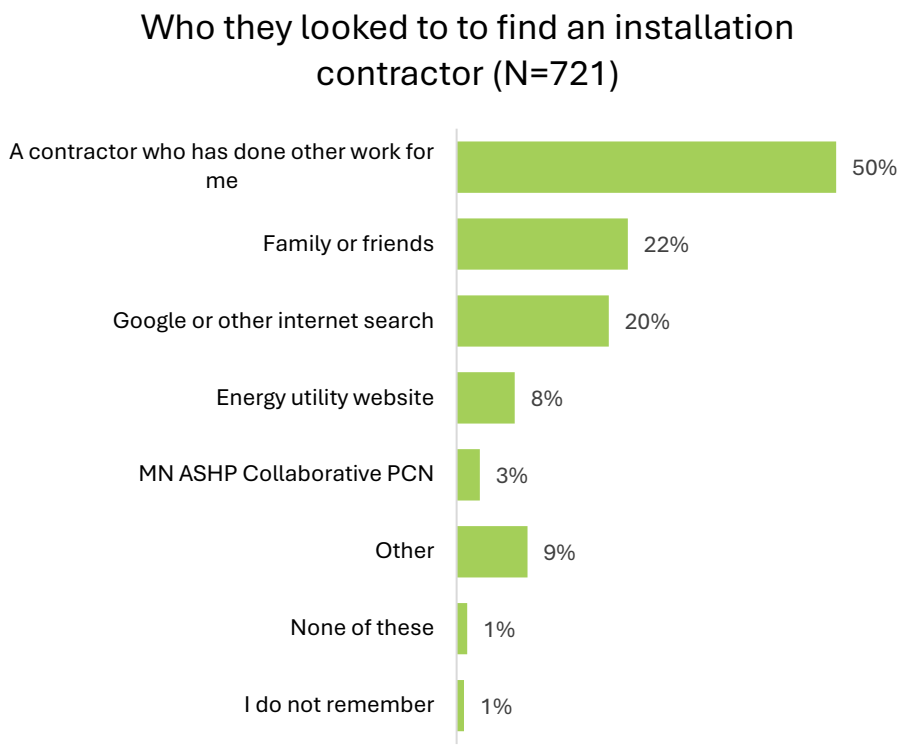


Contractors are a critical leverage point for installation

When starting the search to replace their HVAC equipment and install a heat pump, half of people surveyed said they turned to a contractor who has done other work for them (50%, Figure 30). This highlights the importance of contractor-customer relationships and positive experiences. Customers also turned to family or friends or general Google or other internet searches (22% and 20%, respectively). Interestingly, while the BIT general population homeowner research indicated that utilities were a first stop for potential customers, for those who installed a heat pump, only 8% said they looked to find their contractor via an energy utility website. There is some nuance there, however, in that utilities may be the first place they look for information about replacement, but that for the actual contractor search, this is less of a utilized resource. The MN ASHP Collaborative Preferred Contractor Network was not heavily utilized by customers (3%).

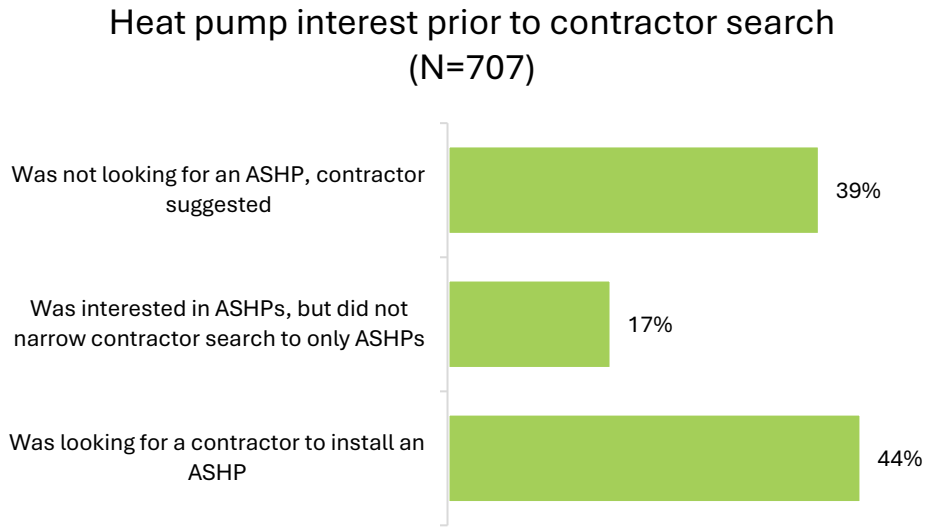
Other sources of information mentioned by at least five respondents included: specific businesses or local businesses or installers, Home Depot, builder or building contractor recommendations, and advertisements via radio, TV, or social media. Seven respondents also indicated they installed the equipment themselves, work for an HVAC company, or in some way were connected to the equipment and installation.

Figure 30. Where customers looked to find a contractor to install their heat pump



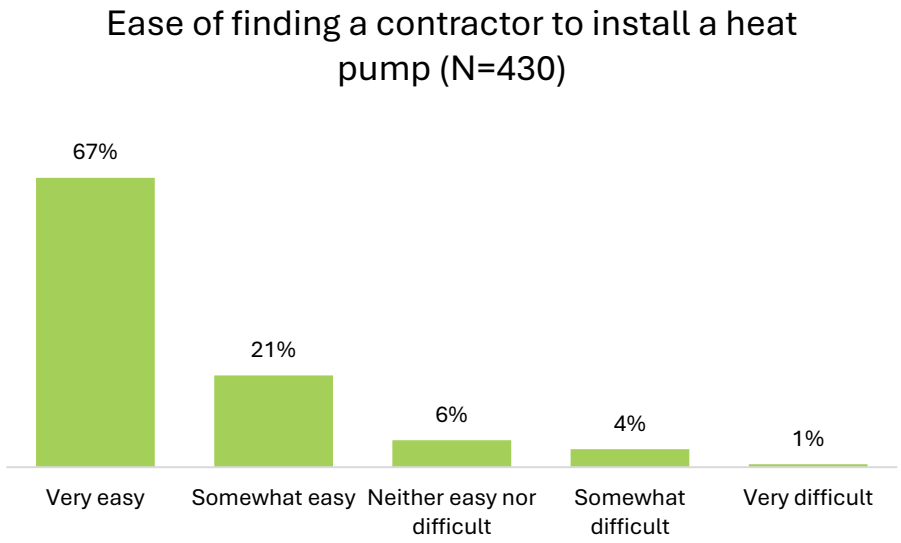
Most people who installed their heat pumps (61%) were previously aware of and at least interested in ASHPs, with 44% saying that they were explicitly looking for a contractor to install a heat pump (Figure 31). However, for almost as many people (39%), they weren't looking for a heat pump, and it was suggested by their contractor. This reinforces the importance of contractor bidding and discussion for increasing heat pump adoption, especially with customers who may not be aware of or initially looking for a heat pump.

Figure 31. Heat pump interest prior to contractor search



For those who were previously aware of and interested in looking at heat pump options (N=430), the vast majority felt it was easy to find a contractor to install a heat pump (88%), with 67% indicating it was very easy (Figure 32). Based on past anecdotal experience, this may suggest a shift in the market as it was previously reported as challenging to find contractors to install a heat pump. On the other hand, these were people who were successful in their installation, and we may not be capturing people who were interested in heat pumps but were unable to find a contractor to install one.

Figure 32. How easy or difficult it was to find a contractor to install a heat pump



Note: Due to rounding, percentages may not sum to 100 percent.

We also asked respondents to indicate the number of bids they received to put in their heat pump. A quarter said they did not receive bids (24%), 38% said they received one bid, and 38% said they received two or more bids. For those that received multiple bids, 75% said that all the bids they received included a heat pump option.

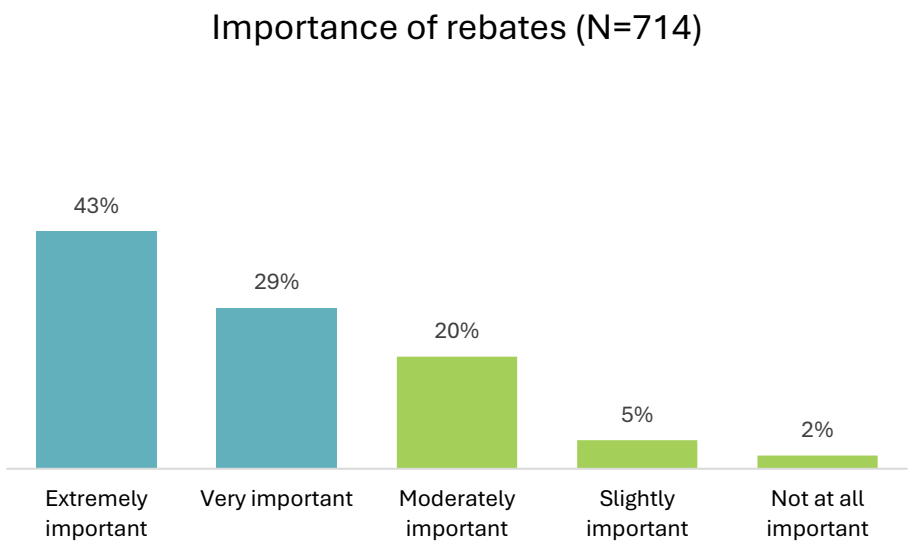
When asked which contractor they used for the work, over 220 different contractors were indicated. Only 2 installers comprised 5% or greater of the responses: All Season Heating and AC and Aquarius Heating and AC.

Rebates are very important in the installation decision

As indicated in the BIT general population homeowner research, cost is a critical driver for people considering a heat pump or HVAC replacement. Rebates can help lower the upfront cost and are being offered by all the utilities included in this survey. Almost three-quarters of respondents said that the rebates were very or extremely important to their decision to install their heat pumps (72%, Figure 33). It is important to note that everyone in this survey received a rebate, so this does not capture those for whom the rebate was not important enough to apply. However, these findings underscore the continued importance of rebate programs in moving

the market toward heat pump adoption. This will be especially important as the state and federal landscapes around rebates and tax credits are in flux with political shifts.

Figure 33. Importance of rebates to heat pump decision



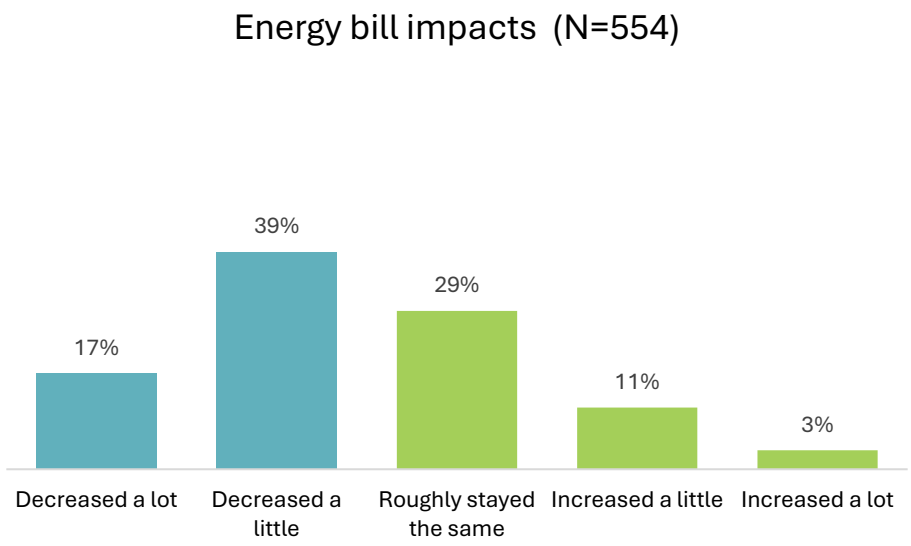
Note: Due to rounding, percentages may not sum to 100 percent.

Heat pump impacts

Most customers saw a decrease in energy bills

Depending on fuel type and electrical rates, bill impacts can be variable, even with more efficient technology. We asked customers to indicate the impacts they noticed on their overall energy bills, and most said they perceived decreases (56%, Figure 34). Another 29% said their bill stayed the same, and 14% said their bill increased. Notably, 23% of the sample said it was too soon to gauge bill impacts, and those were excluded from these calculations.

Figure 34. Energy bill impacts

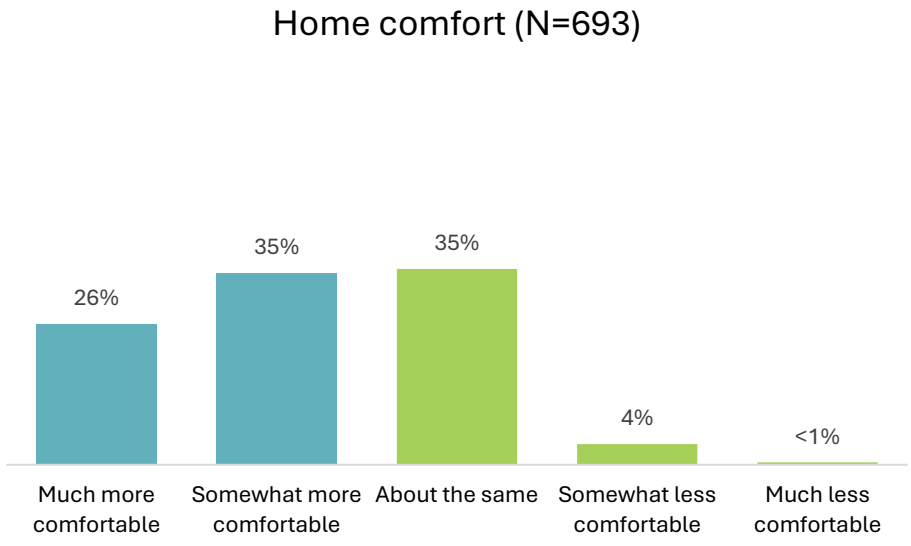


Note: Due to rounding, percentages may not sum to 100 percent.

Most customers were more comfortable with their new heat pump system

We also asked customers to indicate whether their home was more or less comfortable with their new heat pump system. Most indicated that they were more comfortable with their heat pump system compared to their previous system (61%, Figure 35), and another third said their comfort was about the same. Only 4% indicated that they were less comfortable with the new system.

Figure 35. Home comfort compared to previous system



Note: Due to rounding, percentages may not sum to 100 percent.

When asked more about why they indicated that level of comfort, 25% said that the new system provided more even heating and cooling or better temperature control. Another 22% indicated that it was generally similar to their previous system or that they didn't notice a difference. Ten percent indicated that their system provided superior heating and cooling. Other positive attributes to comfort mentioned by at least 15 people included:

- Added cooling or heating capabilities (8%)
- That the system is more reliable than the past equipment or they have peace of mind with the new equipment (7%)
- Relative quiet of the system (6%)
- Humidity control (4%)
- Better airflow or circulation, or a general appreciation for how much the system runs (3%)

> "The new system distributes temperature much more evenly around the house, without hot or cold spots. The heat pump, unlike the gas heater, is seamless, there is no harsh hot air flow, it just smoothly becomes warmer or cooler and stays that way. It is like having the right climate without remembering a heating system."
>
> – ASHP Customer

In addition, there were some negative comfort impacts people mentioned. Five percent indicated that they had a harder time getting the temperature comfortable or that the house was colder or warmer than they would like. Four percent mentioned not liking the cooler discharged air coming out of their vents. Other negatives were mentioned by fewer than 15 people.

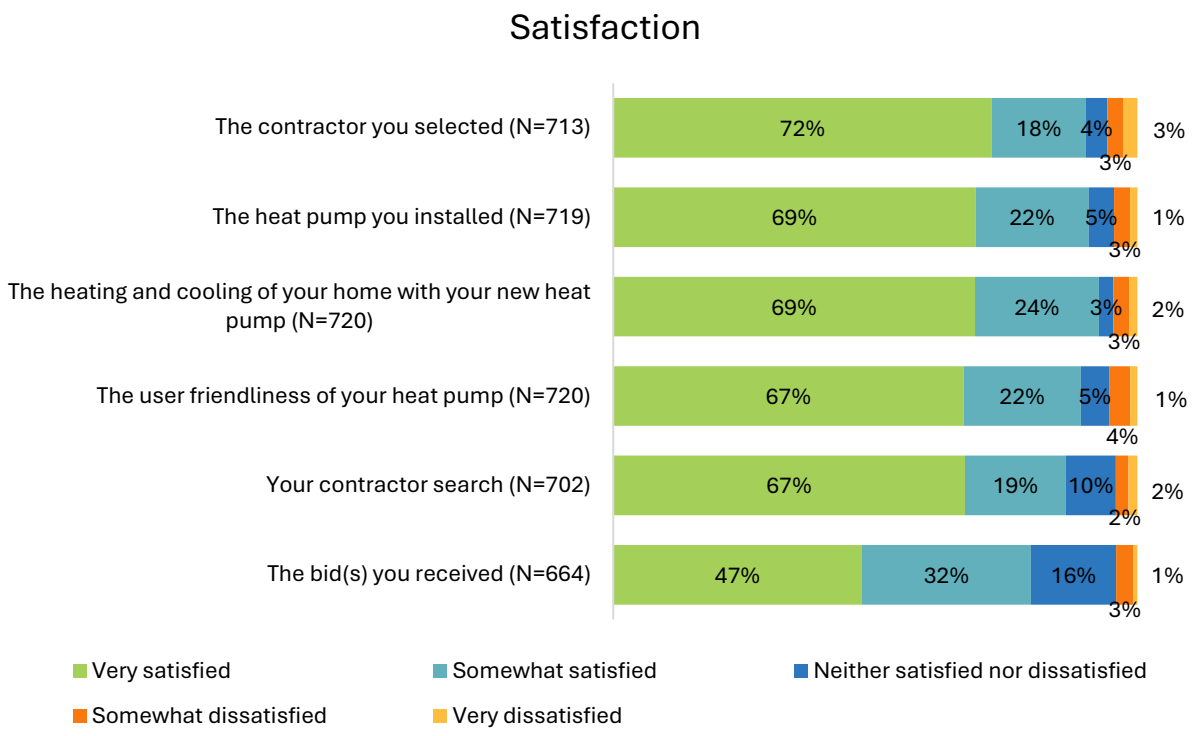
Satisfaction, benefits, and challenges

Customers are generally satisfied with their heat pumps and the heat pump processes

In addition to home impacts, we wanted to know customers' level of satisfaction around different components of the installation process and equipment. In general, customers were satisfied with all aspects of the process and equipment, with most indicating that they were very satisfied (Figure 36). Ninety percent or greater were satisfied with the contractor they selected, the heat pump they installed, and the heating and cooling performance with their new heat pump (90%, 91%, 93%), with around 70% indicating they were very satisfied with each of these items. Falling just under the 90% threshold were the user friendliness of the heat pump and satisfaction with the contractor search. People were less likely to say they were satisfied with the bids they originally received, though they were still generally satisfied (79%).

> "The best home improvement choice I have made."
>
> – ASHP Customer

Figure 36. Satisfaction with installation process and equipment



For those who said they were dissatisfied, they were asked to provide insight into why they were dissatisfied. About half mentioned challenges with contractors or installation, a third mentioned thermostat or tech issues, and a quarter mentioned issues with reliability. Twenty percent mentioned cost issues. More specifically, these issues were mentioned by at least 5% of people responding to the question (or 4 people) when discussing dissatisfaction within those categories:

- Contractor issues (47%, n=35):
  - Contractor installation problems (e.g., parts were installed incorrectly by the contractors or equipment was not sized appropriately) (n=16)
  - Didn't like or trust their contractor (n=7)
  - Hard to get heat pump bids with lack of
  - awareness, or the contractor tried to talk them out of it (n=6)
  - Wide variety in bid costs (n=5)
  - Lack of information from the contractor about how to use the heat pump (n=5)
  - Didn't feel like they got what they wanted or anticipated (n=4)
- Thermostat or tech issues (37%, n=28)
  - The user interface or app problems with the new thermostat (n=5)
  - Longer run times, or things blowing more often (n=4)
  - Lack of user programmability (n=4)

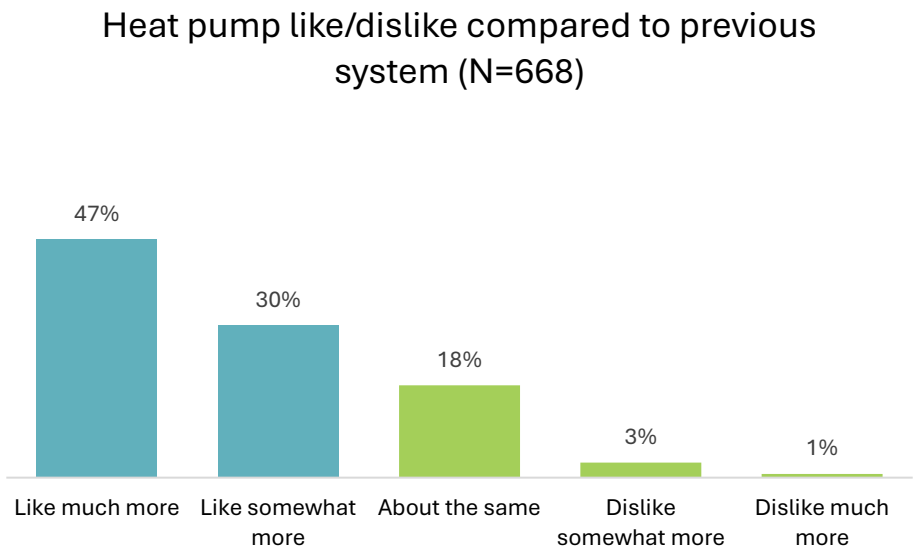
> "We got 3 bids from different contractors and found a huge variation both in the quality of product and overall cost across the three different contractors."
>
> – ASHP Customer

- Reliability (28%, n=21)
  - Needing service calls or repairs with faulty parts (n=9)
  - The heat pump struggling at colder temperatures (n=6)
- Cost (20%, n=15)
  - High operating cost, or lower savings than initially anticipated (n=10)

Customers like their heat pumps better than previous systems and would recommend them

When asked more generally if customers liked their heat pump more or less than their previous system, 77% said they liked it more, and 18% said they liked it about the same — only 4% said they liked it less than their previous system (Figure 37).

Figure 37. Whether they liked their heat pump system more or less than their previous system



Note: Due to rounding, percentages may not sum to 100 percent.

When asked to describe why they felt that way, about a quarter mentioned comfort benefits (27%), especially the consistent or even heating and cooling, added heating or cooling for their home, and generally superior heating and cooling. Another quarter mentioned efficiency or energy savings generally (e.g., it is efficient, or it saves energy or fuel). Other positive items mentioned by at least 10% of respondents included:

- Cost savings (17%), most typically with operating costs
- Reliability (17%), including that it was better than past equipment, that it works in the MN climate, or that it's otherwise good equipment
- Lack of noise or quietness of the system (14%)
- Environmental benefits (10%)

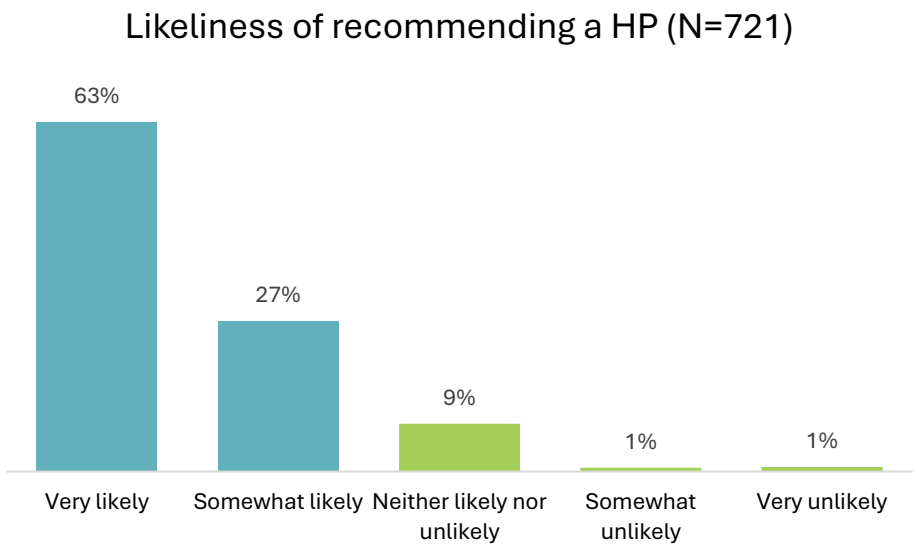
> "It feels very natural, the temperature is just right and the heating is effortless, as if I lived in Italy in Spring."
>
> – ASHP Customer

No negative response categories reached the 10% threshold, but negative responses were more often around comfort, noise, cost, and thermostat issues.

The vast majority of people, 90%, indicated that they would likely recommend a heat pump to family and friends (Figure 38).

> "I definitely recommend it to people. It might be a bit more upfront. But as far as savings and comfort it has its perks."
>
> – ASHP Customer

Figure 38. Likeliness of recommending a heat pump



Note: Due to rounding, percentages may not sum to 100 percent.

Efficiency, cost, comfort, reliability, and noise are important to customers

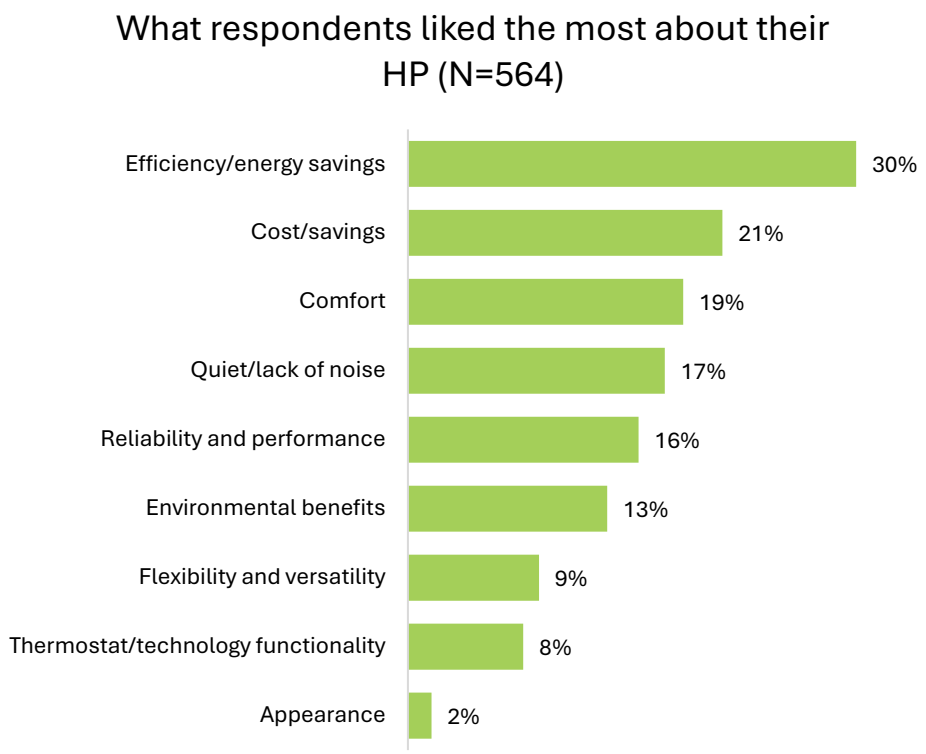
Respondents were asked an open-ended question about what they liked most about their heat pump, and responses were categorized based on theme (Figure 39). Efficiency rose to the top (30%), followed by cost savings (21%) and comfort (19%). While efficiency can be related to cost, it's worth noting that this was categorized separately and that efficiency in and of itself is an attractive feature of heat pumps. Cost savings responses largely referenced operating cost savings, and comfort predominantly included consistent or even heating and cooling, added cooling or heating, and superior heating and cooling in general, though at least 5 people also mentioned responsive or quick heating and cooling, humidity control, and airflow or circulation benefits.

> "I feel this will save money in the long run with its energy efficiency. The rebates from [our utility] and federal government helped make the decision easier."
>
> – ASHP Customer

The relatively quiet operation of the system (17%) and reliability and performance (16%) were also top benefits. Reliability and performance included that the heat pump functions well; is

better, more reliable, or easier to maintain than past equipment; that it works in Minnesota for various seasons; and that it is high quality and will hopefully last a long time.

Figure 39. What respondents liked the most about their heat pump – Open-ended response themes

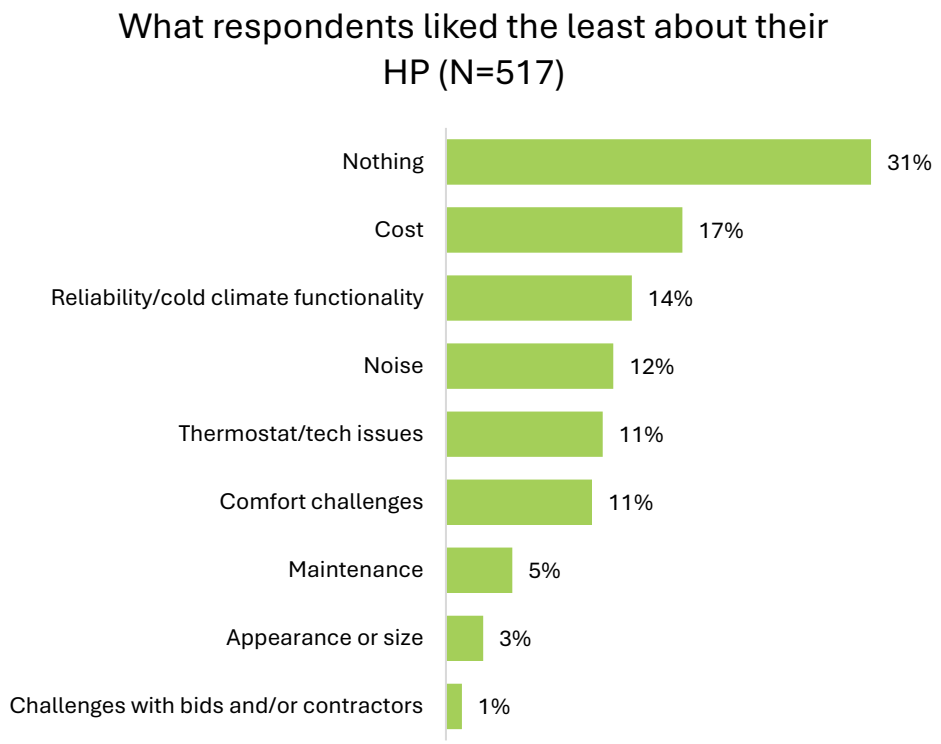


Note: this was an open-ended question categorized into themes. Respondents were not able to select options.

When asked what they liked the least about their heat pump system, a third of those who answered the question said that there was nothing they disliked. When they did mention something they disliked, responses largely were the inverse of the benefits mentioned. Most often, respondents mentioned cost, including both upfront and operating costs (17%), reliability and cold climate functionality (14%), and noise issues (12%, Figure 40). Reliability and cold climate functionality in this case largely included the heat pump struggling in cold temperatures, relying on backup heat, or a wish that it worked better in colder temperatures or didn't need a backup heat source.

> "[I dislike] the slow heat time when the temperature is around freezing (32F) outside. I also wish it could work in extreme cold, so I wouldn't need a backup gas furnace at all."
>
> – ASHP Customer

Figure 40. What respondents liked the least about their heat pump – Open-ended response themes



Note: this was an open-ended question categorized into themes. Respondents were not able to select options.

Minimal challenges reported; most often challenges were with thermostat or switchover processes and reliability

We also asked what challenges, if any, respondents have had with their heat pumps. In general, respondents were able to select yes or no for whether they had challenges, then asked to elaborate if they did have challenges. This question was asked slightly differently for the Xcel Energy customers where it was a true open-ended question — in this case, 50% of respondents explicitly said they had no challenges, and 19% did not respond, likely indicating they did not have challenges. For those who were able to select yes or no to whether they had challenges (all other utilities), 79% indicated they did not have any challenges.

For those who did have challenges (N=181), they predominantly indicated issues with the thermostat or switchover process (41%) or with reliability (39%). Reliability, when specified, was most typically a challenge with faulty parts or needing service calls (22%) and included wiring issues and the heat pump struggling at cold temperatures (7% each). Thermostat and switchover process challenges mentioned by more than 5 people (3%) included:

- General programming or configuration issues
- The switchover process not working well or correctly with the backup heat source

- Switchover temperatures initially being set incorrectly and needing a contractor to come back out to adjust
- Software challenges or error messages
- Learning curve for how to use the thermostat (that it's high tech) or how to optimize temperature setting for efficiency

> "[Our] system had some problems switching over to the furnace when temps got really cold."
>
> – ASHP Customer

Surprises were more often around contractor experience and cost

> "[Our contractor] did such a great job, they took care of the rebate and made installation so easy."
>
> – ASHP Customer

Finally, we asked people if there was anything that surprised them about their heat pump system in an open-ended question. Forty-five percent indicated that nothing surprised them, but if they did mention something surprised them, it was often about their contractor experience. Ten percent indicated something positive about their contractor experience, most often that it was a fast and easy installation, and 7% indicated something negative about their contractors. This included installation problems like parts being installed incorrectly or the system being inappropriately sized, that it was hard to get bids or contractor buy-in for a heat pump, that the installation took a while, that they expected more information about how to use heat pumps, or that they generally didn't like or trust their contractor. It is possible that since this was the first open-ended question, more people focused on providing detailed feedback that is better suited for other questions around challenges and likes and dislikes.

> "The biggest shock was that the promised federal rebate program was delayed for so many years and misinformation about dates makes it unlikely that I will receive the expected federal rebate and will have expended my savings with no return other than the local [utility] rebates. Very disappointing."
>
> – ASHP Customer

Additionally, 7% mentioned they were surprised by higher costs or rebate challenges, though 3% indicated they were surprised at cost savings or tax credits and rebates available, and another 2% indicated that while they were surprised by costs, they were also ok with the costs. Additional things that at least 10 people (2%) were surprised by included:

- Noise or lack of noise
- Appearance and size of equipment
- That it works in Minnesota's cold climate, or that it struggles at cold temperatures
- Something about how a heat pump works or what it does

In-depth segment analysis

In addition to looking at customer data as a whole, data was analyzed by several different variables (crosstabs) including by:

- Utility (Xcel Energy, Otter Tail Power, Great River Energy)
- Current system fuel type (all electric, natural gas hybrid, propane hybrid)
- Year (2022, 2023, 2024)

- If their contractor was in the MN ASHP Collaborative Preferred Contractor Network or had attended training by the MN ASHP Collaborative

Given the number of crosstabs, key differences and takeaways for each are provided below rather than presented with the overall analysis. Results by utility are not presented here but were given to each individual utility.

It is important to note that additional factors play in to any crosstab results and co-occurring phenomena can be at play. For example, even though the number of hybrid systems with natural gas rose steadily in each sample, the percentage of the sample that this represented was only 38% in 2023, but 52% in 2024. Therefore, some information presented about an increase in 2024 could also reflect a different composition of fuel type. Statistical tests and regression analyses were not conducted to isolate variables. However, only larger percentage point differences and important distinctions with market context are discussed below.

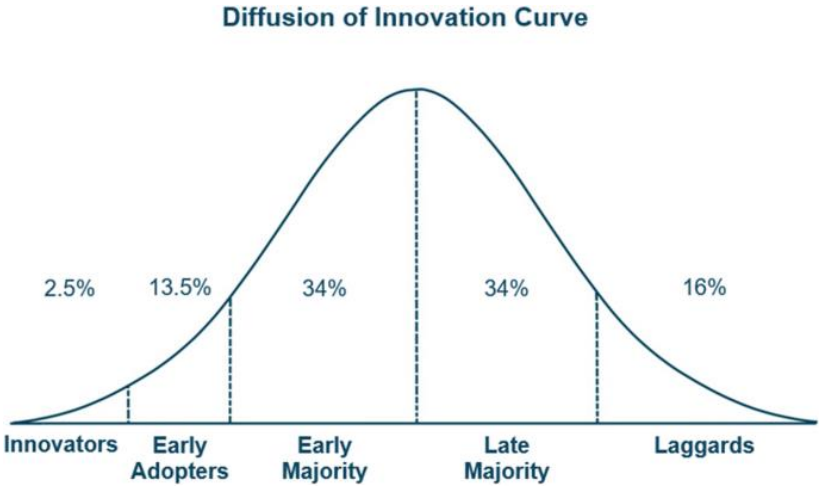
Analysis by year

To best understand changes across the years, it's important to first understand the Diffusion of Innovation Market Adoption Curve. The Diffusion of Innovation Market Adoption curve outlines five different types of adopters:

- Innovators – They want to be the first to try something, usually a very small portion of the market
- Early adopters – They are comfortable with change, but want some review of the product
- Early majority – They are still ahead of the majority of the market, but they need more reassurance and proof of functionality before adopting
- Late majority – They are skeptical of change, but will adopt the change after the majority of people have adopted it
- Laggards – They are the last to adopt a change and are often more traditional or conservative in their views of the technology

These different groups are represented in the graph below (Figure 41). Market transformation generally tries to move a technology through the market adoption curve faster than would otherwise be the case. Thus, looking at trends over time can be a useful indication of where the technology is in the market.

Figure 41. Diffusion of Innovation curve[10]



For ASHPs, as the BIT general population homeowner research described, there is an eco-conscious innovator group in Minnesota who is excited about new technology to reduce their carbon footprint and less concerned about costs. If we map that group to the Diffusion of Innovation curve, they would likely represent the innovators and early adopters of the population. The early adopters are also likely those for whom there is a very strong value proposition, which in Minnesota is likely those who have electrically heated homes or are looking to add cooling.

The market had been in this innovator and early adopter phase for ASHPs in Minnesota, but there is evidence to suggest that we may be moving beyond this group to broader appeal based on changes in customer responses across time. It's also evident that there have been changes to contractor buy-in and training based on customer sentiments over time.

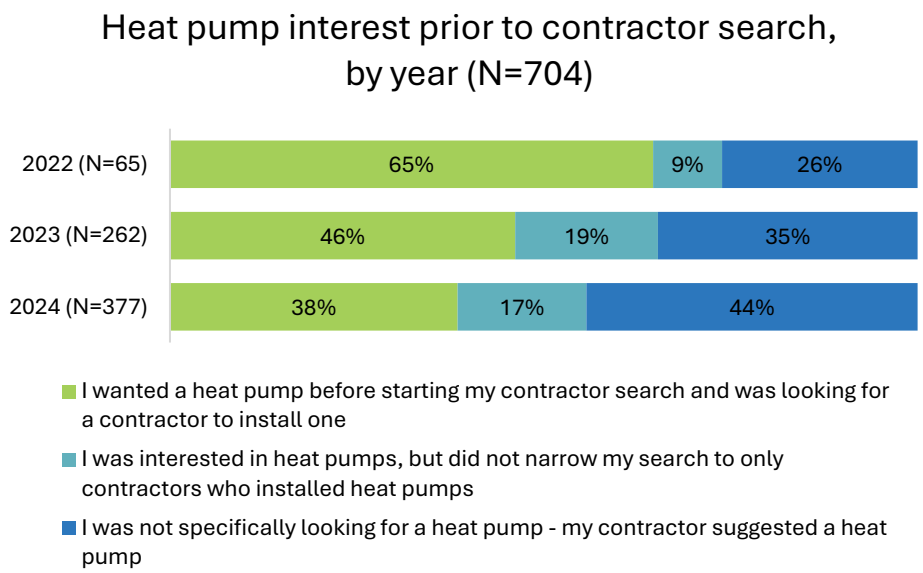
When looking at the customer research by year, many points remained relatively stable over time, but the main differences are discussed below.

Fewer people were specifically looking for heat pumps – rather, their contractors have suggested them

Year over year, the percentage of people indicating they were specifically wanting a heat pump and looking for a contractor to install them has decreased (65% in 2022 to 38% in 2024, Figure 42). Instead, the percentage of people who were not specifically looking for a heat pump, but whose contractor recommended one has increased (26% in 2022 to 44% in 2024). This indicates that the adoption market is likely moving beyond just people who are aware of a new technology looking to install them. Additionally, it underscores the importance of contractor buy-in for the technology so they can guide customers to heat pump options.

[10] Wurster, F., Di Gion, P., Goldberg, N., et al. 2024. "Roger's diffusion of innovations theory and the adoption of a patient portal's digital anamnesis collection tool: study protocol for the MAiBest project." Implement Sci Commun 5, 74. https://doi.org/10.1186/s43058-024-00614-8

Figure 42. Heat pump interest prior to their contractor search, by year

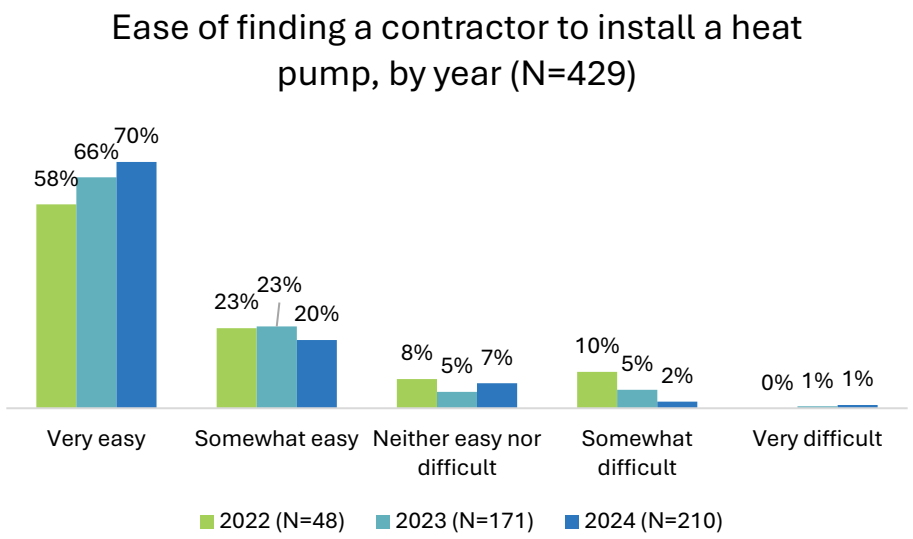


Note: Due to rounding, percentages may not sum to 100 percent.

It is getting easier to find contractors to install ASHPs, and people are largely satisfied with the search and their contractors

Several years ago, it was hard to find a contractor to install a heat pump in Minnesota, even if someone requested one. This was one reason the MN ASHP Collaborative has focused extensively on contractor education and training and creating the Preferred Contractor Network. The research suggests that this problem may be diminishing as the percentage of customers indicating that it was “very easy” to find a contractor to install a heat pump has climbed year over year, presently at 70% (Figure 43).

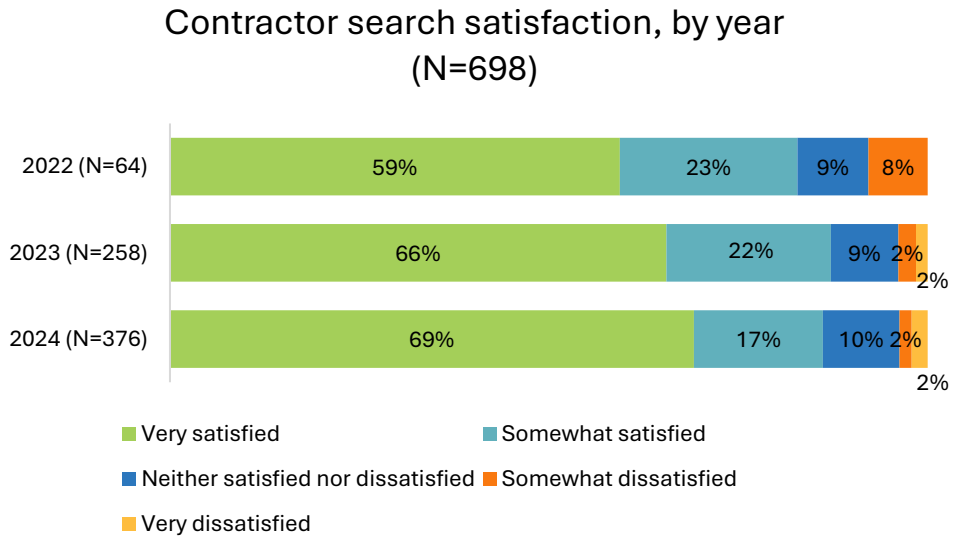
Figure 43. Ease of finding a contractor to install a heat pump, by year



Note: Due to rounding, percentages may not sum to 100 percent.

Additionally, customers are largely satisfied with their contractor search, and the percentage of customers saying they were "very satisfied" has increased over time (Figure 44). Satisfaction with the actual contractor has remained high over time.

Figure 44. Satisfaction with contractor search, by year



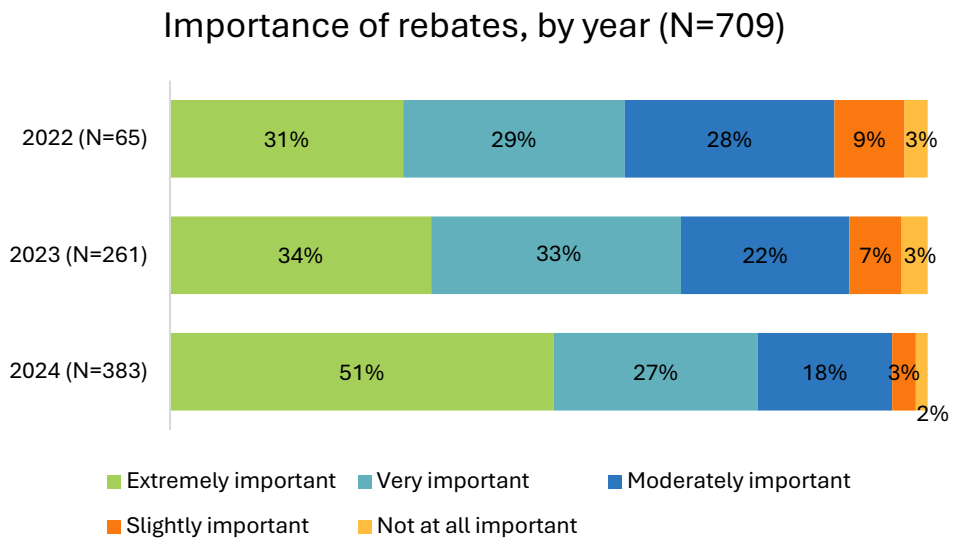
Note: Due to rounding, percentages may not sum to 100 percent.

Cost and cost assistance is increasingly more important

In 2024, implementation of Minnesota's ECO Act began, which allowed electric and gas utilities to offer innovative fuel switching rebate programs to claim savings and offer more incentives

for ASHPs and beneficial electrification. Therefore, several utilities, including Xcel Energy, greatly increased their rebate amounts for ASHPs, reducing costs for customers. These rebates are increasingly important to expanding the accessibility of heat pumps as the percentage of customers saying that the rebate was "extremely important" in their decision to buy a heat pump jumped by more than 15 percentage points in 2024 (Figure 45). Now, more than half said it was extremely important, with another quarter saying it was very important.

Figure 45. Importance of rebates to heat pump decision, by year



Note: Due to rounding, percentages may not sum to 100 percent.

Customers now are less enthusiastic about heat pumps

In terms of negative trends, it appears the percentage of people who say their home is much more comfortable or that they like the heat pump system much more is waning over time, though numbers dropped from 2022 to 2023 and stayed relatively consistent in 2024 (Figures 46 and 47).

Figure 46. Comfort over previous system, by year

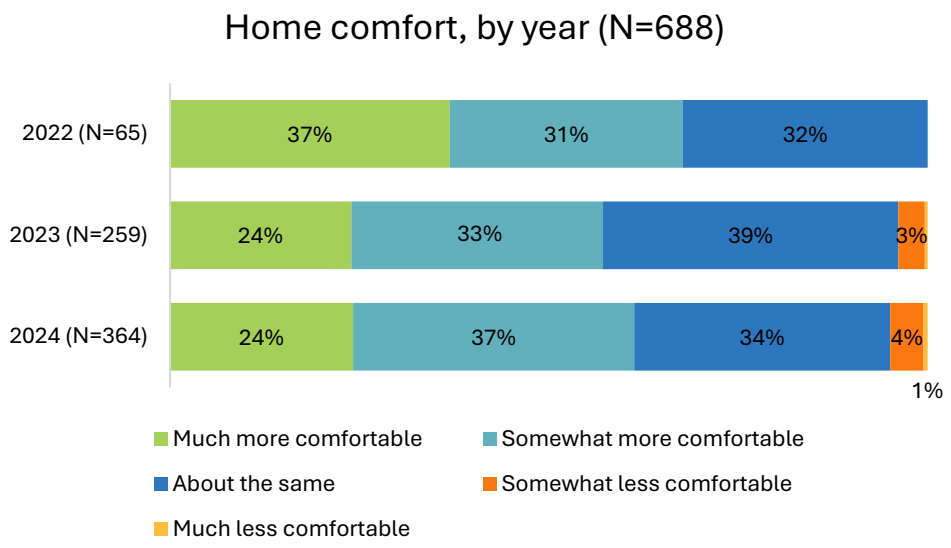
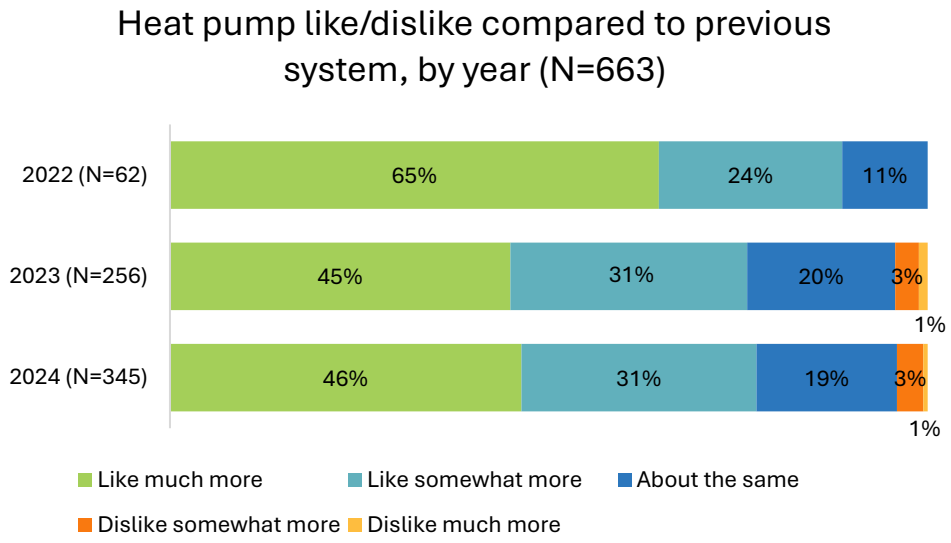


Figure 47. Like or dislike compared to previous system, by year



This was also a trend with a drop in percentage of those who said they were “very likely” to recommend a heat pump to family and friends.

Notably, when asked why they like their heat pump more or less, most positive open-ended responses remained consistent with things like comfort and efficiency topping the list. However, those expressing environmental benefits as a reason why they liked their heat pump more decreased from 23% to 8% from 2022 to 2024. Additionally, those indicating cost savings as why they like their heat pump more decreased from 23% to 14%. When asked what they liked most about their heat pump overall, efficiency and flexibility of the system decreased somewhat over time, while reliability and lack of noise increased as top positives. When asked what they liked least, cost remained a high percentage across all years, but thermostat or tech issues rose

from just one person (2%) in 2022 noting a challenge with the thermostat to 12% in 2023 and 2024.

While it may be surprising or invoke a negative connotation, these downward trends are not inherently bad. Altogether, this could indicate that the enthusiastic innovators and early adopters with environmental motivations and those whose HVAC set ups provided very strong value propositions are becoming a smaller portion of the overall number of heat pump customers. Instead, heat pumps may be appealing to a broader audience, including those who were already satisfied with their previous system and those who may not be as enthusiastic about HVAC systems in general. Newer factors, like reliability, that are more hallmark concerns of the early majority and later adopters are rising in prominence when enumerating heat pump benefits, indicating a movement along the market adoption curve.

It should also be noted that 2022 had a smaller sub population in our sample (N=66 compared to N=264 in 2023 and N=386 in 2024), so a drop off after 2022 that did not continue to drop in 2024 may be somewhat influenced by sample variability.

Analysis by interaction with the MN ASHP Collaborative

The MN ASHP Collaborative (the Collaborative) has been training contractors for nearly four years and has made an impact on contractors across the state. Of the respondents in the customer survey, two-thirds of customers had hired a contractor for their HVAC system who was a part of the Collaborative's Preferred Contractor Network (PCN) or had attended a Collaborative training. This indicates a robust presence in the market for those who are installing heat pumps. For the remainder of this section, if a contractor attended a training or was a part of the PCN, we will denote that they were "interacting with the Collaborative."

Most customers, especially customers with natural gas and in Xcel Energy territory, are working with contractors interacting with the Collaborative

Notably, when looking at results across utilities, almost 80% of customers from Xcel Energy's territory had a contractor who was in the PCN or attended a Collaborative training. This proportion was smaller, but still significant, for Otter Tail Power (59%) and GRE-affiliated utilities (55%). Similarly, three-quarters of customers who installed a hybrid system with natural gas supplemental heat had a contractor interacting with the Collaborative (76%). This proportion was smaller for those with all-electric systems (63%) and for those with propane backups (56%), but still the majority of customers.

Given that Xcel Energy covers the metro customers surveyed in this effort, and a large portion of those customers have natural gas, it is evident that the ASHP Collaborative is especially influencing contractors in the metro region who work with natural gas systems. While initially somewhat surprising as the Collaborative has historically had greater emphasis on trainings in Greater MN for electric and propane applications, this finding is significant as the Collaborative has ramped up focus on metro-area trainings and events in the past two years. This also likely indicates that where the value proposition is better (e.g., for electric and propane heat customers), more contractors may be installing those systems without needing additional training or incentives through things like the PCN because they are able to find customers more readily.

Customers who were not specifically looking for a heat pump were more likely to have a contractor interacting with the Collaborative

Customers were asked if they were specifically looking for a contractor to install a heat pump, or if their contractor recommended it. Nearly three-quarters of those who were not specifically looking for a heat pump indicated that they worked with someone interacting with the Collaborative (73%), which was 13 percentage points higher than those who said they were specifically looking for a contractor to install a heat pump (60%, Table 8). This indicates that homeowners who already know they want a heat pump will likely be able to get one from a variety of sources. However, if a homeowner doesn't already know about heat pumps, or are more open to other HVAC systems, the contractor is a critical leverage point for their decision-making, and contractors who are interacting with the Collaborative are more likely to recommend and install heat pumps. This is an important finding as we move along the adoption curve, broadening the appeal beyond those who know about and are already enthusiastic about heat pumps.

Table 8. Heat pump contractor search situation by Collaborative interaction

Heat pump contractor search	Interacting with Collab	NOT interacting with Collab
I wanted a heat pump before starting my contractor search and was looking for a contractor to install one (N=275)	60%	40%
I was interested in heat pumps, but did not narrow my search to only contractors who installed heat pumps (N=110)	65%	35%
I was not specifically looking for a heat pump — my contractor suggested a heat pump (N=239)	73%	27%

One additional difference of interest is that customers who had a contractor interacting with the Collaborative were more likely to say they had an older heating system or AC that was nearing the end of its expected life, and they wanted to upgrade to an ASHP (51% to 38% of all situations). All other situations, including if a heating system or AC broke, if they were planning an upgrade with a still functioning system, or if they were adding cooling, remained relatively similar across both groups of contractors. This one difference could corroborate previously discussed findings — if they are in an emergency replacement situation (a system fails), they will likely go with whomever or whatever HVAC system is available, or if they already know they want a heat pump and are willing to replace a fully functioning system with a heat pump, they may be able to get a heat pump from a variety of contractors. However, if they are looking to upgrade an older system but it hasn't yet failed, contractors may be more influential in that decision point and contractors who interact with the Collaborative may be more likely to recommend heat pumps.

Analysis by system fuel type

We expect there to be differences between situations and experiences based on system fuel type given the different value propositions for electric, propane, and natural gas heating

systems. Therefore, we looked at responses by those who have all-electric systems, hybrid systems with supplemental propane heat, and hybrid systems with supplemental natural gas heat. Notably, this reflects the current system with ASHPs, not necessarily the fuel type they had previously — for example, all-electric could include homes that had electric heat previously or it could be for homes with a different fuel type who wanted to go all electric and switched fuels. The value propositions for those two cases are different, but for simplicity, we are including them in one group.

It is also worth noting that most customers with natural gas systems had Xcel Energy as a utility provider (76%), and most homes with propane were served by the co-ops affiliated with GRE (69%). All-electric homes were spread more evenly across all utilities (24–39%). Also, 70% of homes with natural gas were in the metro region, compared to 35% of all-electric homes and 12% of propane homes. Therefore, there may be some conflation with utility provider, geography, and fuel system. Additionally, there was a larger percentage of customers with natural gas who installed heat pumps in 2024 — this is not surprising given Xcel Energy and CenterPoint Energy began offering large rebate amounts for 2024. However, it could also indicate some recency bias in the sample.

Customers with hybrid natural gas systems were more likely to be phasing out older equipment

When considering the circumstances that led to installing heat pumps, the most common experience was that an older heating system or AC unit was nearing the end of its expected life and the customer wanted to upgrade to a heat pump. This was consistently the most common circumstance across all fuel types, but over half of natural gas customers mentioned this was their experience (55%), versus only a third of all-electric customers (32%) and 40% of propane customers. Those with all-electric or propane systems were more likely to say they were looking to add cooling or selected other, where they predominantly said their home was a new construction — this is indicative of different rebate systems across utilities.

Customers with hybrid natural gas systems had different experiences with their contractor search than those with other fuel types, especially propane

Customers across all fuel types indicated that the most common place they looked to find contractors was with a contractor who had done other work for them, but this was lowest for those with natural gas (46%) and higher for those with propane (56%). Customers with hybrid natural gas systems were also more likely to say they looked to Google or other internet searches to find contractors (28% compared to 13% for propane and all-electric).

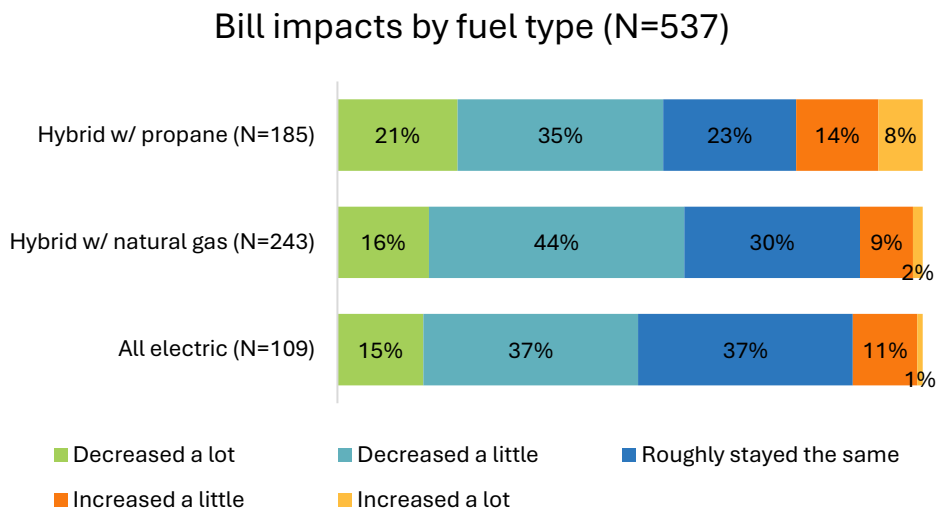
A larger proportion of customers with natural gas systems indicated they were not looking for heat pumps specifically, but that their contractor suggested one (43% compared to 32% with propane and 38% all-electric). However, for those who were looking for a heat pump from the beginning, those with natural gas were less likely to indicate it was very easy to find a contractor to install them (63% compared to 73% with propane, and 70% all electric). Those with natural gas were also more likely to say they shopped around for contractors and received three or more bids (25% compared to 8% for both all-electric and propane) and they were less likely to say all their bids included heat pumps (69% compared to 83% all-electric and 86% propane).

They were also somewhat less likely to indicate they were very satisfied with their contractor search (63% compared to 71% for propane and 69% all-electric) or the bids they received (43% compared to 52% for both propane and all-electric). This is not surprising given the differing value propositions but does indicate it may still be at least somewhat more challenging for those with natural gas to find a contractor to install a heat pump.

Customers perceived bill decreases across all fuel types

Given the varying costs of fuel and value propositions for fuel type, it was somewhat surprising to see that the majority of customers across all fuel types perceived that their bills decreased, and that the largest percentage of customers who saw decreases comparatively were those with natural gas (52% for all electric, 56% for propane, and 60% for natural gas, Figure 48). Interestingly, those with propane were comparatively the most variable with 8% saying their bills increased a lot and 21% saying their bills decreased a lot. Some of these variations in cost experiences could be due to differing AC experiences. For example, if you already had central AC, as many natural gas homes do, an efficient ASHP likely reduced cooling costs, however if you were adding AC, as was noted to be more likely the case for propane or electrically heated homes, this could significantly increase electric bills in the warmer months depending on usage. It should also be noted that these are perceptions in bills rather than true bill comparisons, and other factors like yearly weather fluctuations and recency or confirmation bias may play into customer assessments.

Figure 48. Perceived bill impacts by fuel type



Note: Due to rounding, percentages may not sum to 100 percent.

While not a huge difference, this variability with propane customers carried over to other sentiments where larger percentages of propane customers indicated that they liked their system much more (54% compared to 47% natural gas and 42% all-electric), and that they liked their system less (6% compared to 3% natural gas and 2% all-electric). When asked an open-ended question about what they liked most about their heat pump systems, efficiency or energy

savings was the top benefit mentioned across all fuel types, but those with propane were more likely to offer cost or financial savings specifically (27% compared to 17% natural gas and 21% all-electric). Those with natural gas were more likely to discuss environmental benefits (24% compared to 5% for both all-electric and propane) and relative quiet of the system (22% compared to 14% for both all-electric and propane). Other trends, including trends about what they liked least, were more consistent across fuel types.

CONCLUSIONS AND RECOMMENDATIONS

When taken as a whole, this research indicates several key market trends and opportunities. Nine overarching conclusions and four recommendations are discussed in the following.

Conclusions

1. **The market has experience with and views heat pumps favorably, though there is still some skepticism for certain applications.** Most contractors have some experience with heat pumps, hold a favorable opinion of the technology, agree that heat pumps are a good choice for many applications, and will recommend them in at least some situations. However, there is still some skepticism for heat pumps in natural gas applications, for primary heating, and even a small bit of skepticism in propane applications. The research also suggests that this skepticism is diminished for contractors with more experience or more training.
2. **Heat pumps are more available and reported sales are increasing**. Both distributors and contractors indicate that heat pumps are generally available now or with a short lead time. This suggests some stabilization after volatility with the COVID-19 pandemic. The market also reports that heat pump sales are increasing and are expected to continue to increase, indicating a growing market.
3. **Contractors look to manufacturers and distributors for information, and the ASHP Collaborative is becoming a trusted resource.** Most contractors look to manufacturers and distributors for information about heat pumps. Distributors also indicated they are providing more heat pump trainings and resources. For contractors with more experience, the ASHP Collaborative is becoming a bigger resource, and those who attended training were overwhelmingly satisfied with the training offerings.
4. **Utilities are key influencers in the heat pump market.** Utilities were the primary place customers turned for information about HVAC replacement, and rebates that utilities provide are very important to customers. Few customers, however, looked to utilities to find a contractor to install a heat pump. Contractors also indicated that utilities were a key source of information for their work with heat pumps.
5. **Homeowners generally have low awareness of ASHPs.** The general population homeowner research with BIT indicated that awareness among homeowners was low in Minnesota and suggested that energy providers, contractors, and friends and family would be trusted messengers.
6. **Cost is a major concern, but savings and incentives can be motivating benefits, along with efficiency and comfort.** Contractors and customers alike indicated that cost was the biggest concern or the most important factor for HVAC decision-making. Potential

cost savings, however, were noted as a major benefit, and most customers across fuel types saw a decrease in energy bills. Customers also indicated that rebates were very important in their decision to install heat pumps. Efficiency and comfort were also key benefits espoused by potential and current ASHP customers.

7. **Customers with heat pumps were satisfied, comfortable, and perceived saving on their energy bills.** Customers were generally satisfied with their heat pumps and heat pump procurement and installation processes. They also indicated they liked their heat pump more, were more comfortable or achieved the same level of comfort, and perceived decreases or parity in their energy bills.
8. **The key customer base may be shifting**. As the BIT general population homeowner research described, there are different segments of consumers, and the eco-conscious innovator segment likely aligns with earlier adopters of ASHPs. Evidence suggests that heat pump enthusiasts or those who were looking to buy heat pumps specifically, and those who found environmental benefits most appealing are becoming a smaller proportion of heat pump owners. Instead, we see other benefits like reliability and noise reduction are bigger drivers for people considering ASHPs. Taken with the perceived increase in sales, this suggests that the customer base may be broadening from initial innovators and early adopters.
9. **Contractors are a key leverage point for customer decision-making.** As the customer base broadens, and a smaller proportion of homeowners know about or explicitly want heat pumps, the contractor becomes a key influence point for decisions about installing heat pumps. The research indicates that people who were not previously considering heat pumps were more likely to have contractors who interacted with the ASHP Collaborative recommend heat pumps, underscoring the importance of training and highlighting success of the ASHP Collaborative.

Recommendations

The following are recommendations specifically for the MN ASHP Collaborative.

1. **Continue and expand contractor education opportunities.** The research indicated that those who attended training were more likely to see the full suite of ASHP applications more favorably. Given high levels of training satisfaction, training is likely already covering key topic areas, however, some specific recommendations include:
    a. Highlight propane and natural gas application value propositions and emphasize cold climate capability.
    b. Emphasize cost resources and incentives.
    c. Expand training around technical information and consider adding advanced training options.
    d. Provide resources around customer education.
    e. Take contractor preferences and recommendations around training methods and timing into account when developing training opportunities.
2. **Continue partnering with distributors, manufacturers, and utilities around contractor training and identify other opportunities.** The Collaborative is already working with distributors, manufacturers, and utilities for their training opportunities, and contractors

indicated these entities were who they looked to the most for information on heat pumps. Maintaining and advancing partnerships with these market actors can enhance contractor visibility and attendance at trainings, as well as add value to these entities by providing additional training topics and opportunities that market actors are interested in but have limited capacity to provide.

3. **Expand potential customer awareness and interest.** The general population has low awareness of ASHP technology and options. There are also indications that the market appeal of ASHPs is expanding to a broader customer base than the early eco-conscious innovators, but the broader population must know about ASHPs to adopt them. Customers indicated that utilities and contractors are trusted resources, so working with these market actors to have cohesive messaging will be beneficial. In addition, contractors are a key leverage point for raising awareness at the moment of customer HVAC decision-making, so creating materials for contractors and training around customer interaction or finding other ways to support contractors at those decision points will be helpful. Finally, highlighting customer success stories, and identifying trusted community messengers to talk about heat pumps may help increase word of mouth and confidence around ASHP technology.
4. **Identify and advocate for opportunities to reduce or offset first cost and ongoing operational costs.** Cost is a major factor for customers and a big concern for contractors in increasing adoption of ASHPs. It will be important to continue lowering costs to expand the market to a broader population base. Utility rebates and other financial incentives are increasingly important and help make heat pumps more attainable for customers. Fuel prices and electric rates for heat pump users are also important in the value proposition for operating costs. Continuing to support and advocate for rebates, incentives, and rates to decrease both upfront and operating costs will be beneficial.

Appendix A. Detailed Methodology

Several methods were used in the compilation of this report. More detailed information on each of the research efforts is included below.

Contractor survey

The contractor survey was conducted by CEE staff. The sample was derived from the Minnesota Department of Labor and Industry's list of contractors with mechanical contractor bonds. This list includes all residentially and commercially focused contractors in the state, though it does not distinguish residential versus commercial contractors. The full list of contractors was downloaded and cleaned to remove any contacts without email addresses and those with any bond disposition other than "issued" (e.g., expired, deceased, voluntary termination). Initially, contractors were stratified by geography and randomly sampled to create batches. However, we ultimately sent the survey to everyone on the list. After removing bounce-back emails, we had 1832 contractors. Contractors were emailed the survey link and were offered a $50 gift card to Target or Amazon.

The survey was formatted to include both residentially and commercially focused sections. The results of the residential section are presented in this report; the results of the commercial section are reported in the Market Insight: Commercial HVAC Contractors report. Overall, 110 people completed or partially completed the survey, 91 of whom were primarily residential contractors. This gave us an overall response rate of about 6%.

Quantitative data analysis was then conducted by Wilder Research via SPSS. Results were sent back to CEE for inclusion in this report.

Customer survey

The customer survey was conducted in partnership with Xcel Energy, Otter Tail Power Company, and Great River Energy (GRE) with its member cooperatives: East Central Energy, Lake Country Power, and Lake Region Electric Cooperative.

Xcel Energy and Otter Tail Power Company were invited to participate as ETA funding utilities; MN Power was also invited but opted not to participate in this effort. Although CenterPoint Energy is also a funding utility who operates a new ASHP rebate program, its customer base and rebate program greatly overlaps with Xcel Energy, so to avoid double surveying the same participants, only electric utilities were invited to participate. GRE, while not an ETA-funding utility, is a MN ASHP Collaborative funder, and was included as their member utilities comprise a large portion of the ASHPs rebates in MN. GRE and CEE worked together to identify partner member cooperatives to participate based on volume of rebates and geography as we could not include all 26 member co-ops based on gift card funding limitations. While many other utilities across the state have ASHP rebates, together these utilities comprise a significant volume of the state's ASHP rebates.

CEE drafted the survey and utilities sent out the survey to their customers on our behalf. Utilities were instructed to send surveys to those who had installed a *ducted* heat pump and received a

rebate in the past two years (though this included 2022 to 2024, so three calendar years were included). While this was primarily the case, limitations of tracking systems meant that some customers who installed ductless heat pumps were initially included in the email distribution. However, email language and screening questions indicated that only those with ducted systems were eligible to participate. Participants were offered a $20–25 Target or Amazon gift card to participate in the survey.

Overall 1,918 customers were sent the survey and 721 people participated, giving a response rate of 38%. Table 9 shows the breakdown of participants by utility.

Table 9. Participants by utility

Utility	Included in sample	Responded	Response rate
Xcel Energy	848	324	38%
Otter Tail Power Company	436	136	31%
East Central Energy*	242	107	44%
Lake Country Power*	150 (estimate)	67	45%
Lake Region Electric Cooperative*	242	85	35%
TOTAL	**1,918**	**719 (+2 who did not specify utility); 721**	**38%**

*These utilities are member cooperatives of Great River Energy.

General population homeowner research

Homeowner focus groups and surveys were conducted by Behavioral Insights Team (BIT) via a panel provider. Ultimately BIT engaged 30 Minnesota homeowners in focus groups, and 4,007 homeowners across the Midwest (MN, IL, MI, and WI – "Align" states in the Midwest Heating and Cooling Collaborative that have robust market development activity for heat pumps), with 1,751 from MN. Participants were excluded if they already had heat pumps.

BIT and the Collaborative compiled a full report on methodology and results entitled "Messaging strategies to drive heat pump adoption in Minnesota." https://www.etamn.org/messaging-strategies-drive-heat-pump-adoption-minnesota