ETA
EFFICIENT TECHNOLOGY ACCELERATOR

RTU Market Insights Report: Commercial HVAC Contractors

ACKNOWLEDGMENTS

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The Next Gen RTU Initiative and this report are funded through Minnesota's Efficient Technology Accelerator, a partnership funded by the state's investor-owned utilities (IOUs), administered by the Minnesota Department of Commerce, Division of Energy Resources (DER), and implemented by Center for Energy and Environment (CEE).

We would like to extend our appreciation to all the contractors who participated in this research. We would also like to thank the following CEE staff in assisting with data collection, analysis, and reporting including:

- Leah Guenter
- Ed McGlynn
- Rachel Mitchell
- Ashley Robertson
- Allison Rodriguez
- Katie Wilson

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Executive Summary

Background

The Next Gen RTU initiative is an effort under Minnesota's Efficient Technology Accelerator that promotes more efficient rooftop units (RTUs), which provide heating and cooling to commercial buildings. Specifically, the Next Gen RTU initiative is focused on inclusion of energy recovery ventilators (ERVs) and dual fuel heat pump RTUs. To gain an understanding of market perceptions, track market indicators, and better understand the overall market, an online survey was sent to HVAC contractors identified as having a mechanical bond in Minnesota. Nineteen commercial contractors participated, and key findings are presented throughout this report.

Key findings

The survey asked specific questions about the market for each technology, then asked about overall training preferences that the initiative could incorporate into its training curriculum.

Dual fuel heat pump RTUs

- **Awareness and experience are minimal.** Only 42% of contractors (8 of 19) reported being aware of any dual fuel heat pump RTU products on the market. Of these 8 contractors, no contractor said that they regularly install dual fuel heat pump RTUs, although 3 said they have installed a few.
- **Perceptions are generally favorable or neutral.** Of the 18 contractors who responded, opinions leaned favorable (61%, or n=11), while just over 25% (n=5) held neutral opinions (Figure 3). Contractors noted that it was still early in the market for the technology. Even so, several described positive functional and efficiency benefits, but expressed concerns regarding costs.
- **Sales are minimal and not pervasive.** Only 6 of 16 contractors indicated that they had sold any dual fuel heat pump RTUs, and for all but one, they were less than 5% of their current sales. However, 81% of contractors (n=13) did feel that sales would increase in the next five years.
- **Costs, lack of customer demand, and lack of availability are the biggest concerns.** All but one contractor (94%, n=15) indicated that concerns that heat pump RTUs would cost customers more were at least a small challenge. Similarly, 88% (n=14) indicated that lack of customer demand was a challenge. Product availability was also a challenge; however, several contractors were unsure about availability. Only 3 contractors provided insight into lead times — all 3 said it would take at least 3–6 months to get a heat pump RTU, whereas the majority agreed standard RTUs are available much sooner.

ERVs

- **Most contractors have some experience with ERVs and hold favorable opinions.** Three-quarters of respondents said they have installed a few ERVs or RTUs with ERVs (53%, n=9) or install them regularly (24%, n=4). In general, 71% (n=12) of contractors held

favorable or very favorable opinions of ERVs. Contractors with favorable opinions primarily described positive efficiency benefits, while acknowledging some challenges.

- **Applications are limited.** Despite favorable opinions of the technology overall, opinions differed around applications. When considering different applications, 82% (n=14) said they would be at least somewhat likely to recommend an ERV in buildings with greater than 30% outdoor air requirements. However, only 41% of contractors indicated that they would be at least somewhat likely to recommend an ERV when they are not required by code or in buildings with 30% or less outdoor air requirements.
- **Sales are minimal.** When asked about their current sales, about half (n=9) reported selling ERVs, but for all but one contractor, bolt-on ERVs or RTU products with integrated ERVs comprised <10% of their sales. Most expect small increases (69%, n=11) or no changes to sales (31%, n=5) over the next 5 years.

Training and resources

- **Manufacturers and distributors are primary trusted resources.** Of 16 contractors, 75% (n=12) indicated that they turn to manufacturers and distributors as trusted resources for training or to stay updated in the industry.
- **Contractors prefer morning in-person, half-day training in the winter**. Of training formats offered, 63% (n=10) preferred in-person, half-day training. Half also said webinars were beneficial. All but 2 (88%, n=14) preferred winter trainings, and most preferred early or mid-mornings (50–56%, n=8–9).
- **Contractors are open to a variety of topics.** Just over half of the contractors surveyed indicated wanting more information on energy savings and installation of heat pump RTUs (56%, n=9), but all other training topics were also preferred by 6–7 contractors.

Recommendations

Based on the key findings, the following recommendations could be considered.

1. **Increase awareness of next gen RTU products and provide support to both contractors and customers.** Contractors had limited awareness and experience with next gen RTU technologies, especially dual fuel heat pump options, and are also concerned about customer demand. Continuing to raise awareness with both sets of actors may be beneficial.
2. **Highlight and expand understanding of energy and cost savings opportunities for next gen RTU products**. Contractors want more information about energy savings, and costs are a major concern. Providing additional information through training and other resources could showcase benefits and alleviate concerns.
3. **Work with market actors to reduce lead times.** While many contractors were unaware of lead times, most indicated that both next gen RTU products could take months. Given the replace-on-fail nature of the market, lead times will need to be reduced to make persistent change.

4. **Work with manufacturers and distributors for disseminating information and heed preferences on training formats and timing when possible**. Contractors preferred winter, morning, in-person training, and aligning with that may bolster participation. Additionally, working with distributors and manufacturers as trusted messengers could be beneficial.

BACKGROUND

Next Gen RTU initiative

Rooftop units, or RTUs, are packaged heating and cooling units used primarily on commercial buildings. Advancing the performance of RTUs is crucial to meet the growing demand for energy efficient and sustainable building solutions. Because of the lack of significant changes in the RTU market over the past 30 years, improving their performance remains an often overlooked strategy to reduce energy use. Around 60% of energy consumption in commercial buildings stems from HVAC equipment, highlighting the importance of optimizing RTU efficiency[1]. In Minnesota, 80% of commercial buildings rely on RTUs for heating and cooling, with 97% of these systems utilizing gas heat.[2] Thus, RTUs present a large opportunity for reducing energy consumption and emissions.

In efforts to move Minnesota toward the adoption of more energy efficient RTUs, the Next Gen RTU initiative was launched as a program under Minnesota's Efficient Technology Accelerator (ETA). ETA is a partnership funded by the state's investor-owned utilities, administered by the Minnesota Department of Commerce, Division of Energy Resources, and implemented by Center for Energy and Environment (CEE). Next Gen RTUs, as outlined by the initiative, are energy efficient RTUs, encompassing energy saving technology such as heat pumps and energy recovery ventilators (ERVs). Ultimately, the initiative strives to advance the performance of rooftop units and establish Next Gen RTUs as a preferred choice in the industry to meet the growing demand for energy efficient and sustainable building solutions, driving long-term sustainability in commercial buildings.

Next Gen RTU technology

Currently, the Next Gen RTU initiative is focused on two energy saving technologies: heat pumps, particularly dual fuel heat pumps, and ERVs.

A dual fuel heat pump RTU can provide both heating and cooling to a building using the same refrigerant loop. Heat pump RTUs are like a traditional air conditioning RTU but can reverse the flow of refrigerant to move heat from the outside environment into the building. Heat pumps are much more efficient than gas furnaces because they move heat from one location to another

[1] Analysis derived from ComStock database, managed by NREL. https://comstock.nrel.gov/

[2] "Commercial Rooftop Units in Minnesota Characteristics and Energy Performance." Seventhwave and Center for Energy and Environment. Prepared for Minnesota Department of Commerce, Division of Energy Resources. CARD report. March 2017. https://www.mncee.org/sites/default/files/report-files/386204.pdf

instead of generating heat by combusting natural gas. In cold climates this is supplemented by a gas furnace for the coldest day, resulting in a dual fuel system.

RTUs also transfer fresh outdoor air into the building while exhausting indoor air that has collected volatile organic compounds, pollutants, and dirt. While this is necessary, it comes with a significant energy penalty if an ERV is not used. The ERV exchanges heat and moisture between the incoming fresh outdoor air and exhausted indoor air. By conditioning the incoming fresh air, an ERV saves energy by reducing the amount of heating and cooling the building needs.

Next Gen RTU market

ERVs have been in the market for many years, yet their adoption has been limited. Market awareness and interest in the product for RTU applications has remained low, as identified in the ETA's RTU Market Characterization report.[3] The report identified that there is a perception that ERVs are only for 100% outdoor air requirement applications, yet they can be effective in many more applications and have a large energy savings potential.

Dual fuel heat pump RTUs have become more recently available, with new products entering the market in the last few years. Market familiarity and acceptance was previously noted as a barrier in the Market Characterization report, and workforce training around these products was a gap.

While RTU installation processes can follow a few different pathways from manufacturer to building, installations primarily flow through contractors. Given these market perceptions and structure, contractors are critical market actors in better understanding and developing the market for next gen RTUs.

Research goals and scope

This report is intended to provide a snapshot of contractor insights in the next gen RTU market.

The key research goals included:

- Understanding current contractor experiences and perceptions
- Tracking and baselining market progress indicators
- Gaining insights on market trends over time
- And ultimately providing strategic insights for the initiative

Methodology

Contractors were invited to participate in an online survey around their market awareness and perceptions. The survey was developed, managed, and analyzed by CEE. The contractor sample list was derived from the Minnesota Department of Labor and Industry's list of contractors with

[3] "High-Performance RTU Market Characterization." Cadeo. Center for Energy and Environment (CEE). September 8, 2023. https://www.etamn.org/sites/default/files/research-papers/Final%20RTU%20Market%20Characterization.pdf

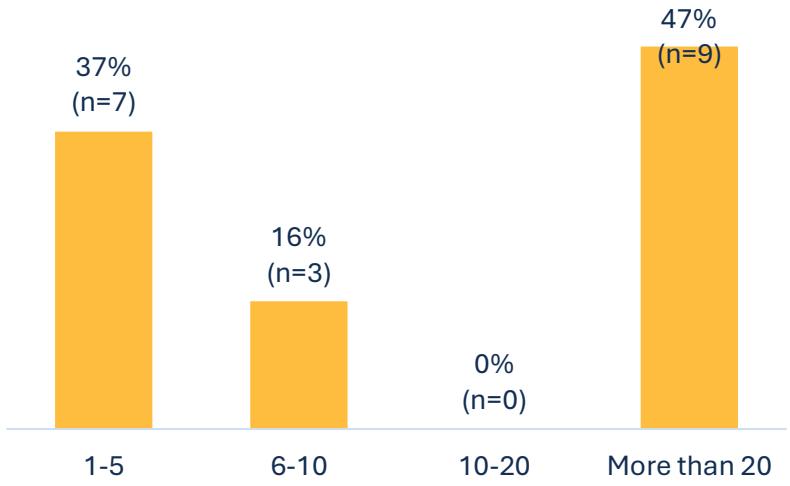
mechanical contractor bonds. This list includes all residentially and commercially focused contractors in the state, though it does not distinguish residential versus commercial contractors. After cleaning the list, we had 1,832 contractors who were emailed the survey link and offered a $50 gift card to Target or Amazon. The survey was formatted to include both residentially and commercially focused question sections. Overall, 110 people completed or partially completed the survey, 19 of whom were primarily commercial contractors. The results of the commercial section are presented in this report; the results of the residential section are reported in the State of the Market: ASHPs report.

Contractor company characteristics

The survey asked questions about each contractor's company, including how many people were employed by the company, where they were primarily located, and what regions they served. This information is intended to provide a snapshot of the types of contractors that participated in the survey.

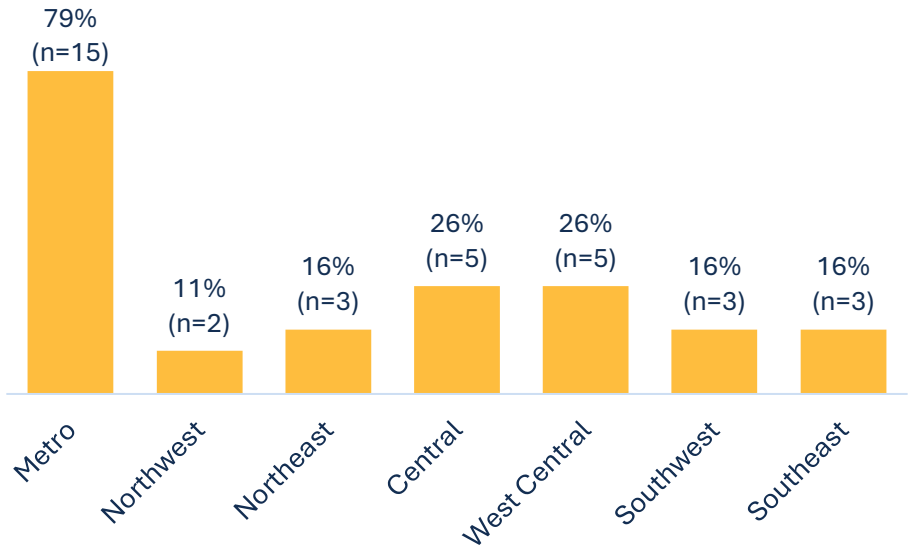
Overall, contractors participating in the survey equally represented both small (≤10) and larger companies (>20, Figure 1). However, no contractors with 10–20 employees participated.

Figure 1. Contractor company number of employees (N=19)



Contractors were primarily located in the metro region — all but 5, or 73%, provided a business zip code within the metro region. However, contractors often served multiple areas and at least two contractors worked in each region of the state (Figure 2).

Figure 2. Regions served by contractor (N=19)



Note: Participants could select multiple responses so percentages do not sum to 100%.

SURVEY FINDINGS

Perspectives on dual fuel heat pump RTUs

Awareness and experience are minimal

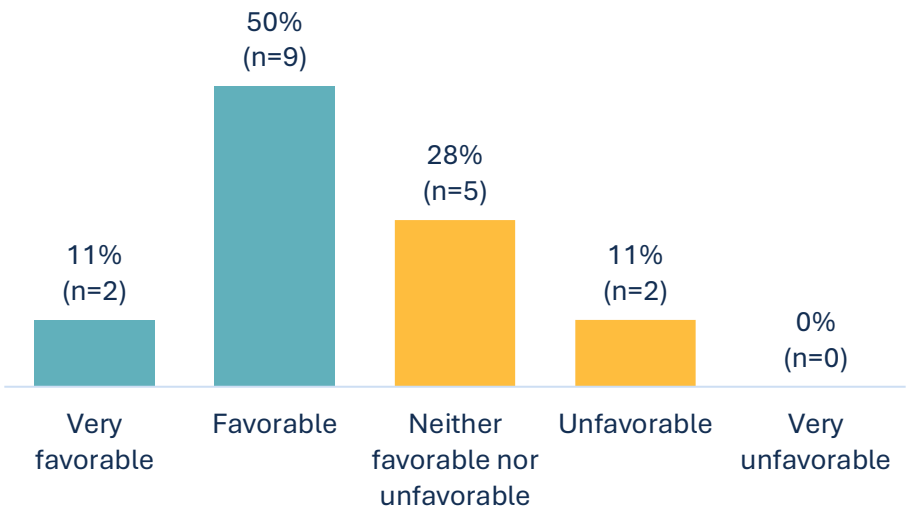
While there are several dual fuel heat pump RTU products available from manufacturers, these are newer products, and we wanted to gauge awareness and experience.

Only 42% of contractors (8 of 19) reported being aware of any dual fuel heat pump RTU products on the market. Of these 8 contractors, no contractor said that they regularly install dual fuel heat pump RTUs, although 3 said they have installed a few. The remaining 5 had no installation experience.

Despite having limited experience with this technology, 3 of the 8 contractors said that they felt very prepared to install dual fuel heat pump RTUs, and 4 felt somewhat prepared, albeit with some questions. The confidence expressed by contractors suggests that those contractors who are aware of dual fuel heat pump RTUs believe that their existing heat pump training and expertise prepares them well to install the technology.

We also asked contractors for their opinion of heat pump technology overall. Of the 18 contractors who responded, opinions leaned favorably (61%, or n=11), while just over 25% (n=5) held neutral opinions (Figure 3).

Figure 3. General opinions of heat pump technology (N=18)



Contractors were asked to describe why they held that opinion. Those with favorable and very favorable opinions of heat pumps acknowledged that they generally work well (n=3), efficiency (n=3), environmental benefits (n=2), and market/customer demands (n=2). One person also noted an increase in rebates for heat pump technology.

> *"If installed correctly and controlled correctly, they work great."*
>
> *"Because a good heat pump paired with a high-efficiency propane/natural gas furnace is the current most efficient way to heat with. This is all because of a good heat pump having a high COP."*

The two contractors with unfavorable opinions were concerned by the technology's high operating cost and perceived unreliability in cold climates. Two contractors with neutral or favorable opinions also noted challenges with cost.

> *Due to the extreme cold climate in the area we live in, there is concerns with reliability."*
>
> *"Electric costs continue to rise faster than other energy sources."*
>
> *"ROI is not there. Operating cost is higher unless you can get off-peak power."*
>
> *"Excluding the additional costs, the benefits to the customer are significant. I wish the industry pricing were less. The tendency seems to assume the market was tolerant of increased margins."*
>
> *"I believe that technology needs more testing in the RTU market."*

"Good tech, still early. Seems to cause more issues post-install than the natural gas ones. Also requires customers to be a bit more knowledgeable about their systems and not panic at small changes."

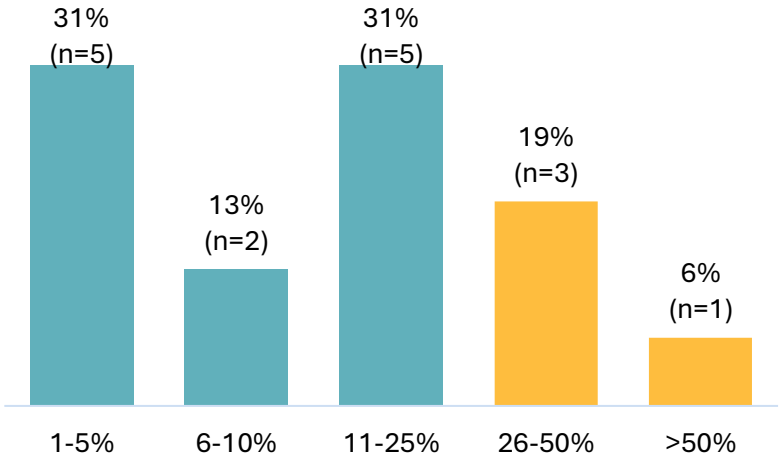
Overall, a third of the contractors (n=6) noted that it was still early for the technology in the market or that they have limited experience to form a strong opinion.

Sales are low, but expected to increase slightly

To assess the state of the RTU market, we asked contractors to estimate their past, present, and projected future sales of all RTU products and dual fuel heat pump RTUs specifically.

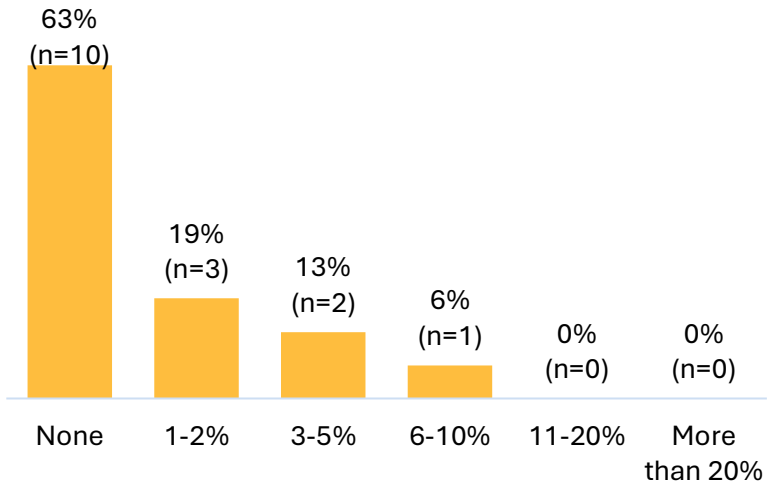
Three-quarters of contractors (12 of 16) reported that RTUs in general make up 1–25% of their current sales (Figure 4). Almost 20% of contractors (n=3) estimated RTUs as being 26–50% of their current sales, while only one contractor reported all RTUs as being more than half their current sales.

Figure 4. Percentage of current sales that are all RTUs (N=16)



When asked specifically about dual fuel heat pump RTUs, 63% of contractors (10 of 16) said that they sell no dual fuel heat pump RTUs, while 37% (n=6) estimated the technology to be only 1–10% of their current RTU sales (Figure 5). No contractor reported dual fuel heat pumps as representing more than 10% of their RTU sales. These data demonstrate the limited reach of dual fuel heat pump RTU sales at present.

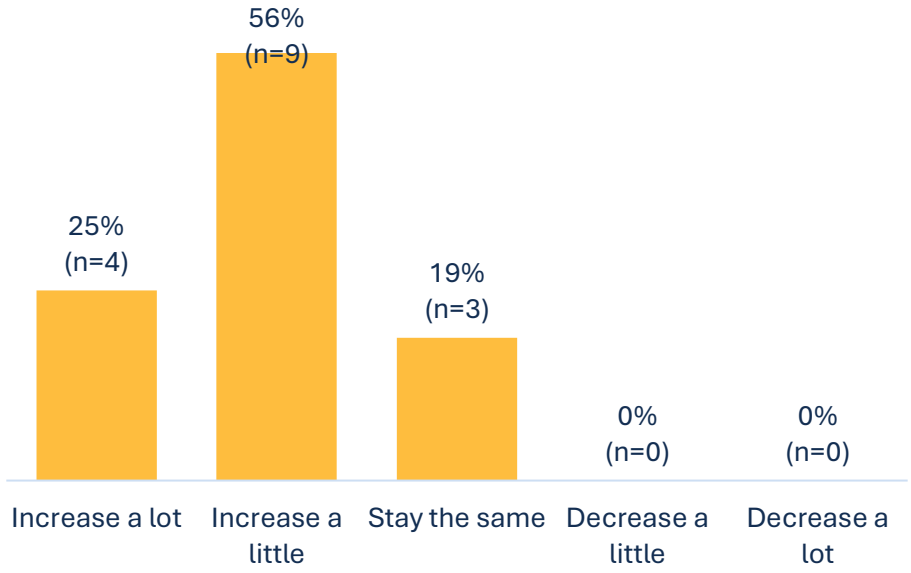
Figure 5. Percentage of dual fuel heat pump RTU sales out of all RTU sales (N=16)



Contractors who have sold heat pump RTUs reported that the market has generally remained static or increased over the past few years, with 4 saying their sales have stayed the same and 2 indicating sales have increased, one of whom indicated their sales increased a lot. Four out of the six contractors also indicated that dual fuel heat pump RTUs are very (n=1) or somewhat important (n=3) to their business model, with two saying heat pump RTUs were not important to their business. Additionally, 5 out of 6 contractors said that they only sometimes include the technology in standard bids.

Contractors do expect sales to increase — out of 16 contractors, about 80% (n=13) said that they expect dual fuel heat pump RTU sales to increase over the next five years, and about 20% (n=3) suspect sales to stay the same (Figure 6).

Figure 6. Percentage of dual fuel heat pump RTU sales out of all RTU sales (N=16)

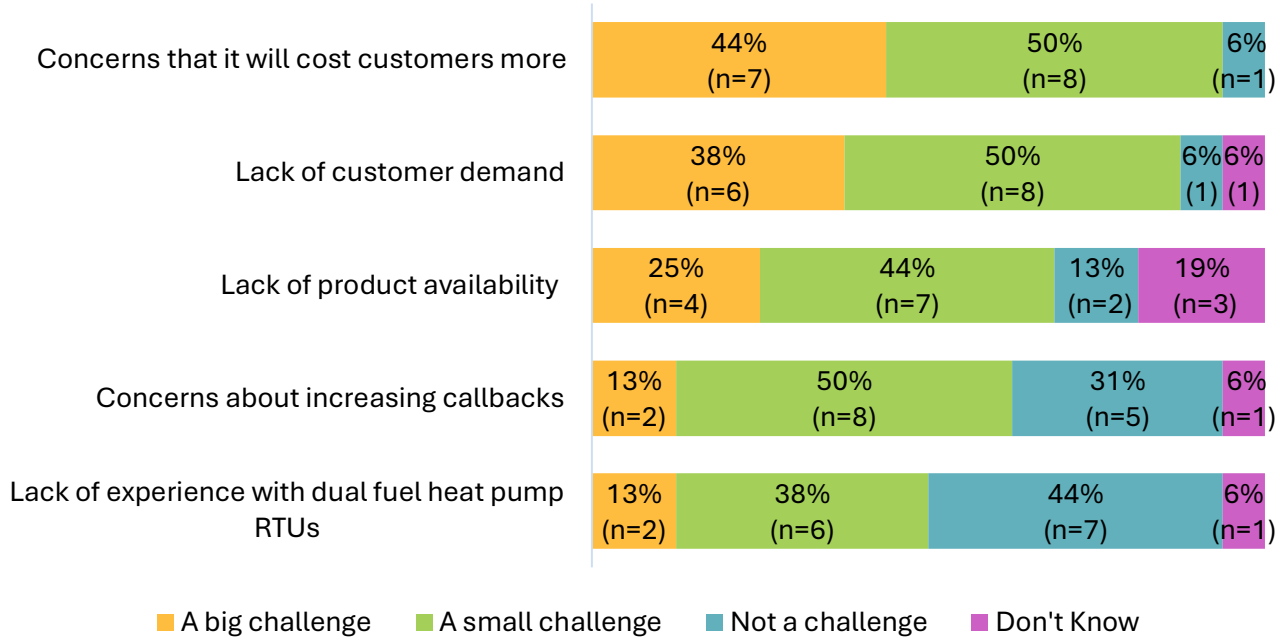


Costs, lack of customer demand, and lack of availability are the biggest concerns

Often, there are several challenges hindering market adoption. To understand the extent of these difficulties, we asked contractors how great a challenge cost, demand, product availability, service callbacks, and experience are to their expansion of dual fuel heat pump RTUs in their business.

Most contractors cited concerns that it will cost customers more and lack of customer demand as challenges (93% or 15 of 16 and 87% or 14 of 16, respectively, Figure 7). Contractors also indicated lack of product availability (68%, n=11) as challenging to their dual fuel heat pump RTU business, and nearly 20% indicated they weren't sure about product availability. Concerns about increasing callbacks and lack of experience with dual fuel heat pump RTUs were lesser concerns, though still mentioned as a challenge for more than half of participants.

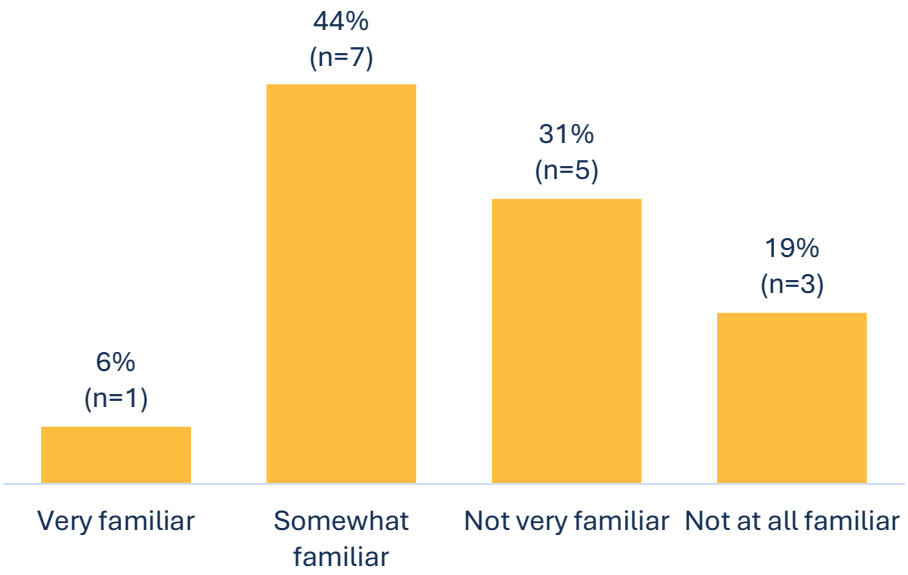
Figure 7. Challenges to incorporating more dual fuel heat pump RTUs into business (N=16)



As cost is a consistent concern, we also asked contractors about their familiarity with their customers' utility rates. Rates can greatly change dual fuel technology value propositions, operating costs, and long-term return on investment. To our knowledge, no utilities in Minnesota have a commercial heat pump or electric heat rate, however rates differ by utility, building size, and rate type. Given their impact on costs, it is important to understand what rates customers are on to suggest optimal systems and setpoints. Contractors were evenly split regarding their awareness of their customers' rates with half saying they were not very or not at all familiar, and the other half indicating they were at least somewhat familiar (Figure 8). Only one contractor

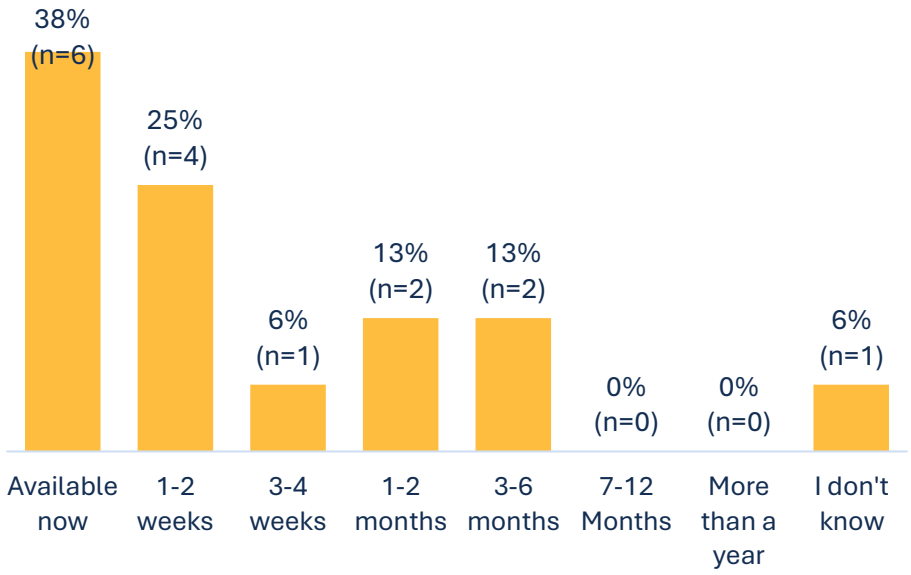
indicated that they were very familiar with rates. This indicates an area where more training and education could be beneficial.

Figure 8. Awareness of customers' rates (N=16)



When asked to estimate current lead times for *standard* RTU products, 63% of contractors (10 of 16) reported that standard RTUs are available within two weeks, and 82% said they were available in less than 3 months (Figure 8). In contrast, all three contractors who provided insight on lead times for *heat pump* RTU products indicated that it would take at least 3–6 months to get a heat pump RTU. While this is a small sample, the findings indicate a potentially significant difference in product availability, with lead times hindering replace-on-fail needs.

Figure 8. Lead times for STANDARD RTUs (N=16)



Perspectives on ERVs

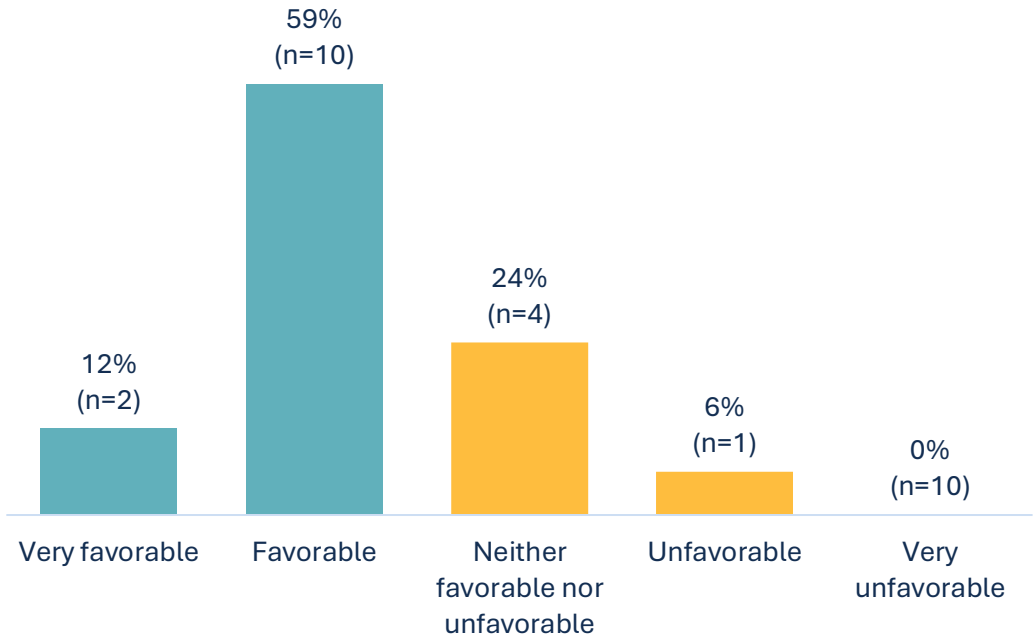
Contractors generally have some experience with ERVs, but they are used in limited applications

In addition to dual fuel heat pump RTUs, we also wanted to learn more about contractors' perceptions of ERV technology, especially RTUs with bolt-on or integrated ERVs.

Whereas no contractors said that they regularly install dual fuel heat pump RTUs, almost a quarter of contractors (24%, 4 of 17) said that they regularly install RTUs with bolt-on or integrated ERVs. Additionally, over half of surveyed contractors (53%, n=9) said they have installed a few ERV RTUs, although not regularly. Four contractors (24%) reported no ERV installation experience.

Favorability of ERVs was similar to favorability of heat pumps with 71% of contractors (12 of 17) reporting favorable (n=10) or very favorable (n=2) perceptions of ERVs (Figure 9).

Figure 9. General opinions of ERV technology (N=17)



Those with favorable opinions of ERVs acknowledged cost (n=2), reliability (n=1), and maintenance or install drawbacks (n=2), but described the technology as good overall, with several (n=5) acknowledging the efficiency benefits.

> *"The concept is simple but useful in terms of efficiency and money-saving potential."*
>
> *"They provide high energy savings, but end users are unaware of the maintenance they require."*
>
> *"Not something they propose when they replace, but it's sometimes spec'ed out by engineers. Don't see that many out there. A few places. Favorable — ERVs have advanced over the last 10–15 years. The ones we've dealt with have performed really well. Anything you can do to reduce energy consumption is good. Biggest drawback when you get into commercial/industrial is the price."*
>
> *"Good tech, tougher to install and more likely for things to go wrong, as per usual. But once it further matures should probably be a standard from an emissions step."*

Of the 4 contractors with neutral opinions, 2 noted they were not yet familiar enough with the technology, and another was skeptical of the costs associated with purchasing and selling ERVs in the Minnesota market. The single respondent with an unfavorable opinion of ERV technology primarily took issue with the technology's real-life performance and humidity

control. This could indicate a need for additional training around humidity control and potentially around delineating ERVs, which do provide humidity control, from heat recovery ventilators (or HRVs), which do not address humidity issues.

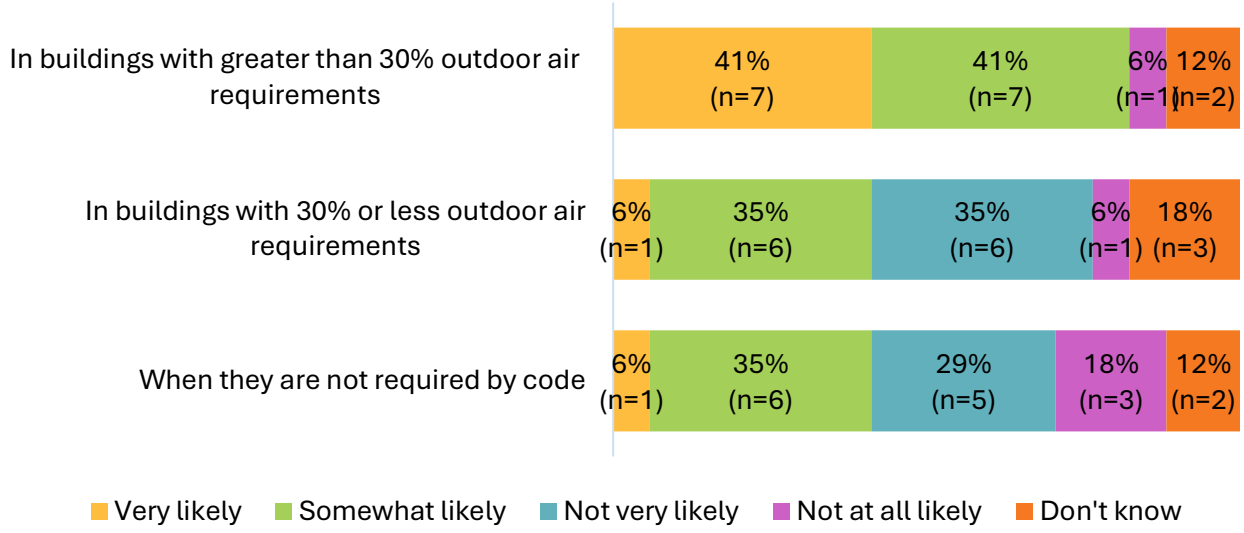
> *"They are code required and the enthalpy parameters, while presumptively consistent are not in real life, leading to occasional periods of higher indoor humidity than is desirable."*

We also asked contractors how likely they were to recommend ERVs bolted on or integrated into RTUs in differing applications. ERVs are required by code when they meet the outdoor air percentage and airflow outlined in Minnesota Commercial Energy Code Table 6.5.6.1.2[4], and the Market Characterization in 2023 indicated that there is a perception that ERVs are only valuable at 100% outdoor air requirements. For this research, the majority were likely to recommend ERVs in buildings with greater than 30% outdoor air requirements, with more than 80% saying they were very (n=7) or somewhat likely (n=7) to recommend the technology (Figure 10).

Roughly 40% of contractors were very (n=1) or somewhat likely (n=7) to recommend ERVs bolted into or integrated into RTUs in buildings with 30% or less outdoor air requirements or in situations where ERVs were not required by code. However, around 45% of contractors (n=7–8) said they were not very or not at all likely to recommend ERVs in these settings. In each application, 2–3 contractors reported that they were unsure if they would recommend the technology. These findings support previous research that most contractors feel confident in ERV applications in buildings with greater outdoor air requirements, but are more skeptical of the technology in buildings with 30% or less outdoor air requirements or when ERVs are not required by code. Further research or case studies to demonstrate ERV effectiveness across all three applications may reduce this doubt or uncertainty.

[4] Minnesota Commercial Energy Code. https://www.dli.mn.gov/sites/default/files/pdf/1323-010524.pdf

Figure 10. Likelihood to recommend ERVs bolted onto or integrated into RTUs (N=17)

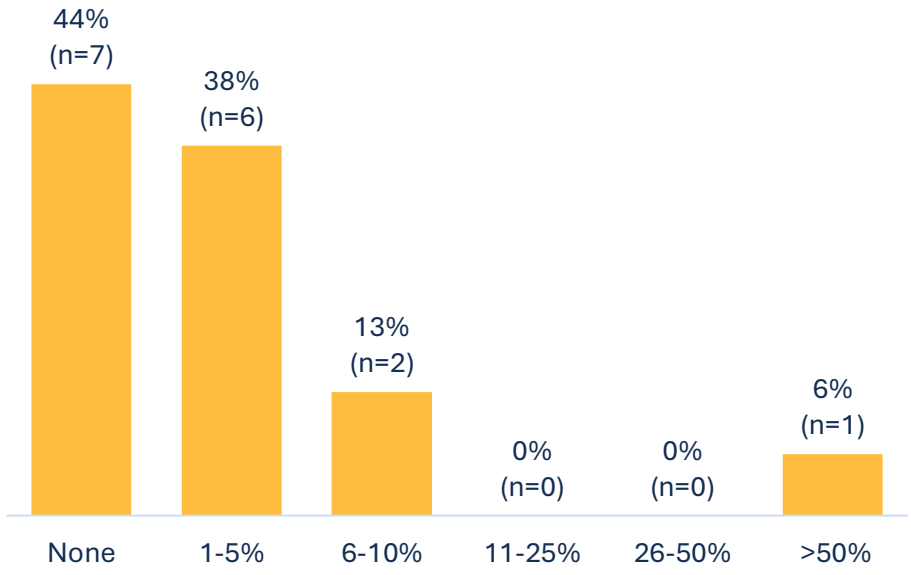


ERV sales are minimal and projected to increase a little

Like dual fuel heat pump RTUs, we also asked contractors about their past, present, and projected future sales of bolt-on ERVs or RTU products with integrated ERVs.

Although both dual fuel heat pump RTUs and bolt-on ERVs or RTU products with integrated ERVs represent small proportions of all RTU sales, more contractors reported selling ERVs (56%, or 9 out of 16) compared to dual fuel heat pumps (37%, or 6 out of 16, Figure 11). However, sales of ERV products remain a small fraction of overall sales with 6 contractors saying that ERVs currently make up 1–5% of their current all RTU sales, and another 2 saying they were 6–10% of sales. Like dual fuel heat pump RTUs, a single contractor reported ERVs as being more than half their current sales.

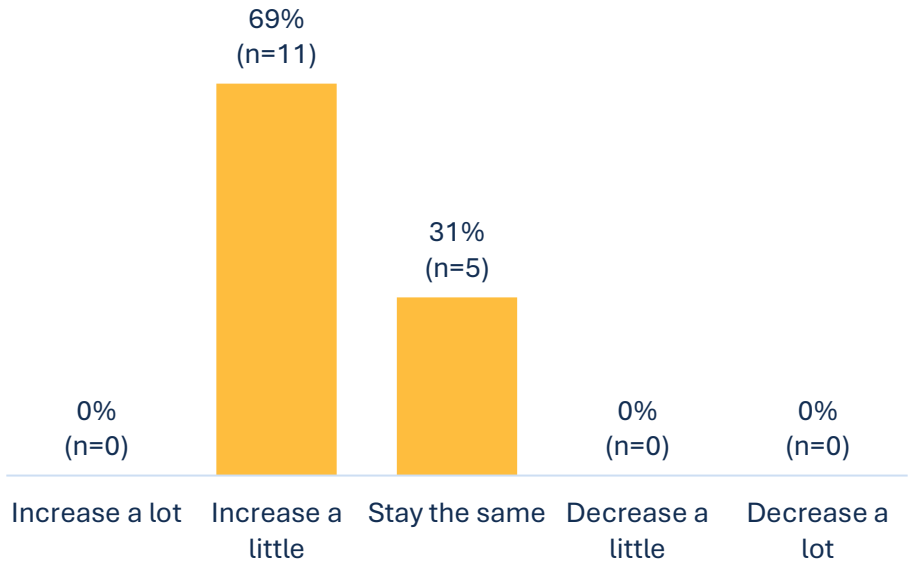
Figure 11. Percentage of current sales from bolt-on ERVs or RTU products with integrated ERVs (N=16)



Contractors who reported selling bolt-on ERVs or RTU products with integrated ERVs were also asked how their sales have changed in the past few years. All 9 contractors said that their sales have either increased a little (n=5) or remained the same (n=4), mirroring previous insights about dual fuel heat pump RTU sales.

All 16 contractors projected their sales to increase (n=11) or stay the same (n=5) over the next five years (Figure 12). While most contractors said that they anticipate both ERV and dual fuel heat pump RTU sales to increase in the future, 25% of contractors (n=4) said that they expect dual fuel heat pump RTU sales to increase a lot, while no contractors said they expect ERV sales to increase a lot.

Figure 12. Expected sales changes over the next five years (N=16)



For those who sell bolt-on ERVs or RTU products with integrated ERVs, 6 of 9 felt that they were somewhat important to their business, and 3 of 9 felt that they were not very important. Less than half of contractors (4 out of 9) said that they include bolt-on ERVs or RTU products with integrated ERVs in their standard bidding processes very often (n=1) or sometimes (n=3).

Finally, 6 contractors provided insights into bolt-on ERV availability. Of those, responses were varied with one saying they were available now, one indicating it would take 3–4 weeks, two indicating 1–2 months, and two indicating 3–6 months.

Training and resources

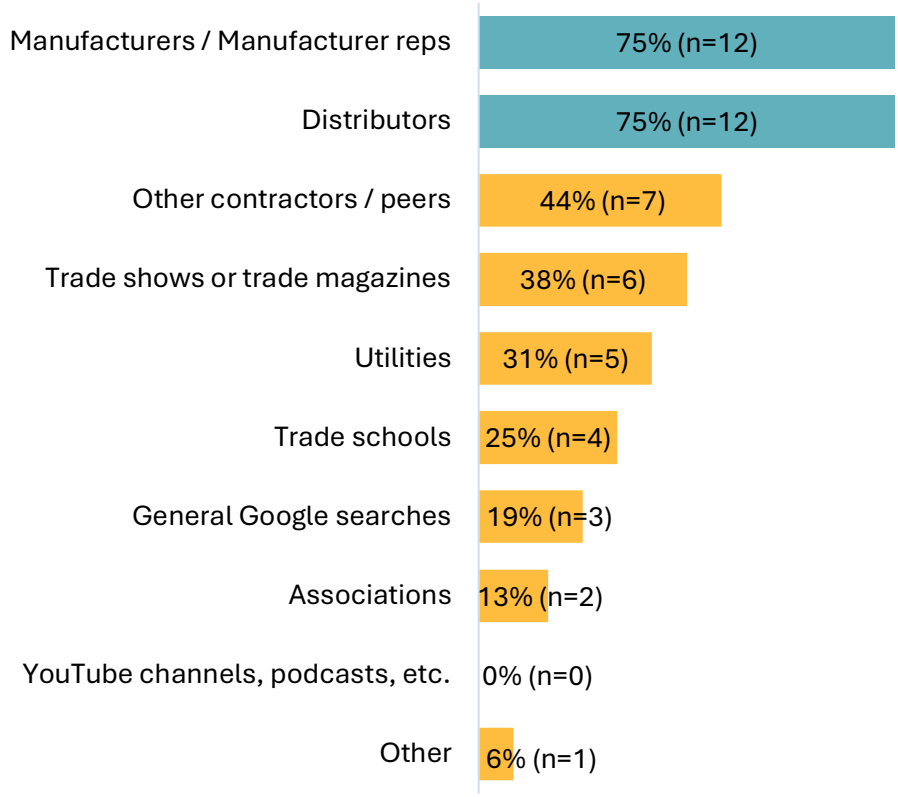
We ended by asking contractors about their current credentials, trusted information sources, and preferred training opportunities.

When asked to list certifications or credentials they maintain for their business, 10 of 15 indicated licensing specifically, with 5 specifying master mechanical licenses such as master gas licensing, and 2 indicating they maintain licenses with cities. Five contractors said they have certifications, with NATE (n=2) and the EPA (n=2) appearing most prominently.

Manufacturers and distributors are primary trusted resources

To assess trusted information sources, we asked contractors who they rely on to stay up to date in the industry. Out of 16 contractors, the majority (75%, n=12) said that they turn to manufacturers and distributors (Figure 13). Additionally, 44% (n=7) said that they turn to other contractors and their peers, around one-third said that they utilize trade shows and trade magazines (n=6) and utilities (n=5), and one-quarter (n=4) reported relying on trade schools.

Figure 13. Trusted resources for training and industry updates (N=16)

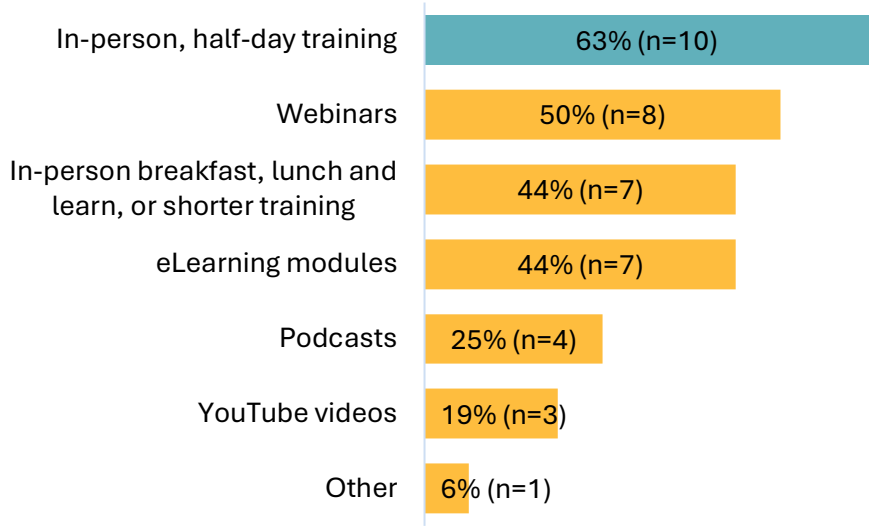


Note: Participants could select multiple responses, so percentages do not sum to 100%.
Other response indicated: local union.

Contractors prefer morning in-person training in the winter

To guide future planning, we asked contractors about their preferred training formats and times. 63% of contractors (10 of 16) said that they found in-person, half-day trainings to be valuable, while 50% (8 of 16) appreciated webinars (Figure 14). Additionally, 44% of contractors (n=7) indicated that they like shorter in-person trainings, like breakfasts or lunch and learns, and the same amount said that they like eLearning modules.

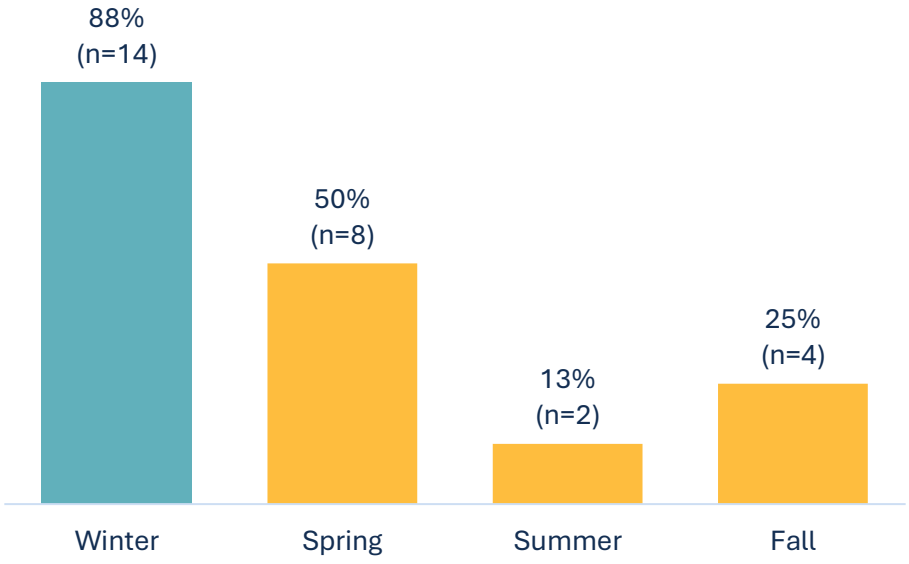
Figure 14. Most valued training formats (N=16)



Note: Participants could select multiple responses, so percentages do not sum to 100%.
Other response indicated: hands-on technical atmosphere — have a machine with ERV and we are in front of it, that's the best way.

The vast majority of contractors preferred winter training (88%, n=14; Figure 15). Half of contractors also said spring was a good time for training (n=8), while fall and summer were less popular times for training.

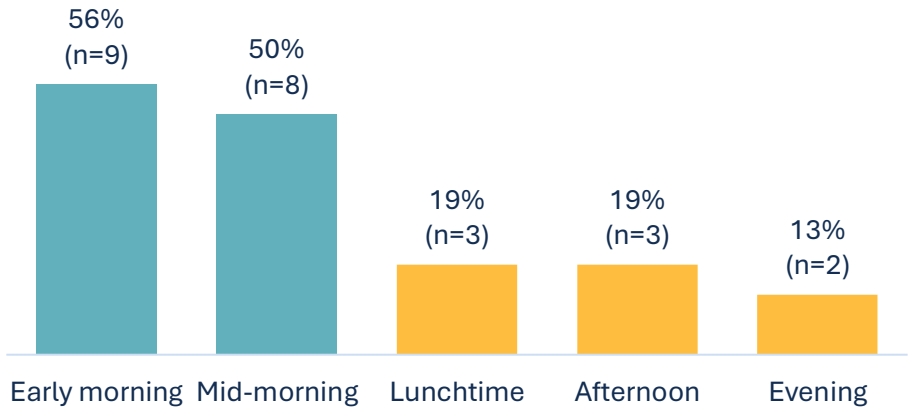
Figure 15. Most valued training formats (N=16)



Note: Participants could select multiple responses, so percentages do not sum to 100%.

Roughly half of contractors preferred trainings to be either early morning (n=9) or mid-morning (n=8), with smaller proportions indicating other times of day (Figure 16).

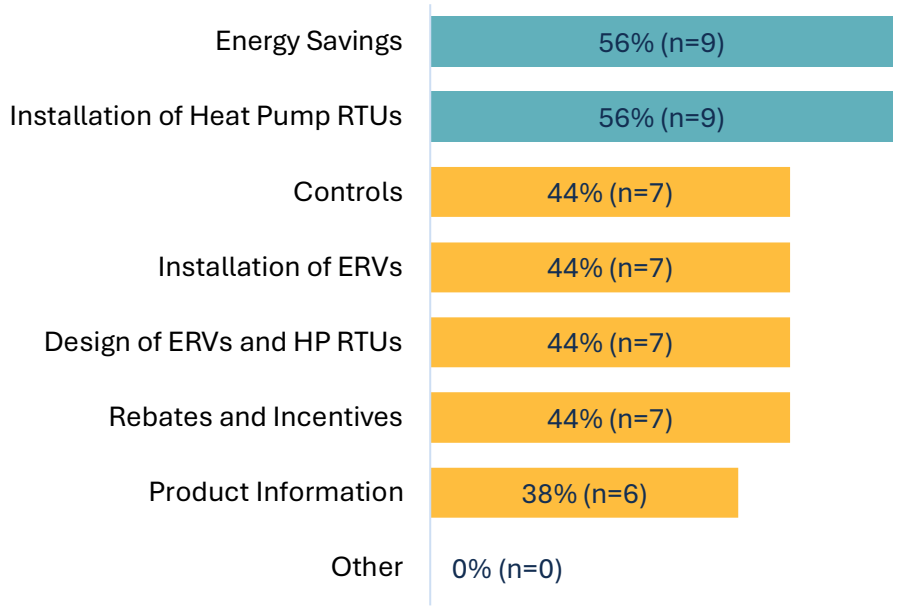
Figure 16. Preferred time for training (N=16)



Note: Participants could select multiple responses, so percentages do not sum to 100%.

Finally, contractors were asked what topics they were most interested in receiving training. Over 50% of contractors (9 out of 16) wanted to learn more about energy savings and how to install heat pump RTUs (Figure 17). All other topics were preferred by 6 to 7 contractors.

Figure 17. Preferred training topics (N=16)



Note: Participants could select multiple responses, so percentages do not sum to 100%.

Conclusions and Recommendations

The final section of this report gathers the overall findings, providing general conclusions and related recommendations.

Overall, contractor data indicates limited awareness and experience with dual fuel heat pump RTUs, though favorable perceptions of the technology in general. Although dual fuel heat pump RTUs represent a small portion of all RTU sales at present, contractors believe these sales could increase in future years. For sales to increase, however, barriers like high upfront and operational costs, customer demand signals, and product availability will need to be addressed.

On the other hand, most contractors had some experience with ERVs and favorable perceptions of the technology. However, they were hesitant to recommend ERVs when they weren't required by code or for buildings with 30% or less outdoor air requirements. Contractors also reported limited sales of ERVs, and most expected a small increase in sales in future years. ERV availability varied, indicating some work could be done to make ERV products available faster.

Finally, contractors trust manufacturers and distributors for information, and clearly preferred in-person, half-day trainings held in the winter and in the morning. More than half would like to know more about energy savings opportunities and heat pump RTU installation, though all other topics were of interest to at least a third of contractors.

Due to the lack of awareness and the barriers presented, CEE could consider the following recommendations:

1. **Increase awareness of next gen RTU products and provide support to both contractors and customers.** Contractors had limited awareness and experience with next gen RTU technologies, especially dual fuel heat pump options. Previous research also indicated that customers aren't necessarily aware of next gen RTU technologies. While contractors often drive decision-making, the customer is the final decision maker, and one of the biggest challenges contractors noted was a lack of customer demand. Therefore, education and raising awareness will likely need to happen among both contractors and potential customers to move the needle on the full market.
2. **Highlight and expand understanding of energy and cost savings opportunities with both heat pump and ERV RTU options**. Contractors want more information about energy savings, and costs are a major concern. Energy savings can directly increase bill savings with ERVs and often with dual fuel heat pump RTUs. When discussing heat pump RTUs, it will be important to also highlight rate structures as those can greatly affect operating costs, and contractors are generally less familiar with current rate structures. Additionally, when talking about ERVs, highlighting energy savings across applications, even when not required by code and with more minimal outdoor air requirements, will be necessary to broaden applications. Trainings and resources like case studies, the Energy Savings Calculator, and other materials showing savings could be valuable.

3. **Work with market actors to reduce lead times.** Previous research indicated that most of the market is replace-on-fail (between 75–95%), with only a small portion of the market doing planned replacements. Lead times are therefore very important, and while many contractors were unaware of lead times, most indicated that both heat pumps RTUs and bolt-on ERVs could take months. Working with manufacturers to reduce lead times and with distributors on stocking practices could help alleviate this barrier.
4. **Work with manufacturers and distributors for disseminating information and heed preferences on training formats and timing when possible**. Manufacturers and distributors are key messengers for information; working with them to hold trainings or distribute resources could be very valuable in gaining a wide audience. Additionally, holding in-person trainings on winter mornings would be preferred by contractors. Be sure to include information about energy savings and installation of heat pump RTUs as appropriate.