Commercial Hybrid Heating Solutions for Cold Climates: Lessons from a Utility-Led Pilot

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ABSTRACT

CenterPoint Energy (CPE), acting as the program administrator, in collaboration with Center for Energy and Environment (CEE) acting as the program implementer, are conducting and evaluating a pilot program under Minnesota's Natural Gas Innovation Act (NGIA) to accelerate adoption of hybrid heating technology in commercial buildings, with a focus on dual fuel rooftop units (RTUs). These hybrid systems combine electric heat pumps with gas backup, offering a pathway to decarbonize space heating while maintaining reliability in cold climates. The approach integrates implementation and measurement and verification (M&V) services to streamline customer engagement, optimize system design, and generate actionable performance data.

The pilot leverages CPE's and CEE's deep technical expertise and supply chain relationships to support building owners through targeted outreach, contractor training, and custom savings calculations. M&V activities assess real-world performance, including capacity, efficiency (COP), and control integration across diverse building types. Early findings suggest dual fuel RTUs can deliver significant energy and emissions savings, especially when properly sized and installed with the appropriate switchover temperature.

This presentation will share insights from field deployments, stakeholder engagement, and market transformation efforts. It will also explore how pilot data informs future program design, contractor education, and technology adoption strategies. By embedding innovation into both delivery and evaluation, this pilot offers a replicable model for scaling hybrid heating technologies in commercial buildings.

Introduction

Commercial heat pump technology for cold climates has advanced rapidly in recent years (Amaranth 2024) driven largely by U.S. Department of Energy (DOE) initiatives and improved low-ambient performance strategies. In tandem with these technological improvements, market transformation efforts and early field demonstrations have accelerated commercial readiness. DOE reports that next generation heat pump RTUs can reduce energy use and greenhouse gas emissions by up to 50% compared to conventional natural gas-fired rooftop units (DOE: New Cold-Climate Heat Pumps Ready to Market). Within cold climates, hybrid heat pump rooftop units — which combine an electric heat pump with a gas furnace for extreme conditions — have emerged as a pragmatic solution. Recent pilot results from monitored installations show that hybrid heat pump RTUs can deliver nearly all seasonal heating via the heat pump, reserving

gas only for the coldest hours, and achieving substantial reductions in both HVAC energy usage and emissions (McCaskell 2024)

In Minnesota, the Natural Gas Innovation Act (NGIA 2025) passed by the state legislature in June 2021, created a regulatory framework that enables investor-owned natural gas utilities to invest in renewable energy resources and innovative technologies that reduce statewide greenhouse gas (GHG) emissions, while allowing recovery of reasonable and prudent costs.

In response to this legislation, CPE launched a pilot in late 2025 to provide support for commercial buildings interested in replacing existing heating, ventilation, and air conditioning (HVAC) systems with hybrid systems using electric heat pumps and gas backup. For this Pilot, CEE was selected as the program administrator. This paper will illustrate initial findings, successes, and challenges identified during pilot delivery.

Program Design

This pilot consists of two parts, implementation services and measurement and verification services (M&V), with the following goals.

Table 1. Pilot goals

Implementation	
Number of hybrid heating units installed	135

Metric	Total Measure Lifetime[1]
Net Lifecycle GHG Emissions Reduction (metric tons CO2e over project lifetime)	25,609
Geologic Gas Savings (Dth)	400,950

Measurement and Verification	
Units with detailed monitoring	14
Units with simple monitoring	67

The overall goal of the program is to install 135 units of varying sizes in specified commercial building segments by the end of 2029, with 10% of the installed units receiving detailed monitoring and up to 50% receiving simple monitoring. CPE provides rebates of 40% of equipment cost, up to $100,000 per site. The list below indicates the various building sectors we are attempting to study, with the goal of unit sizing between 2 and 100 tons depending on application and site requirements.

- Restaurant
- Retail

[1] Assumes 15-year measure lifetime and lifecycle emissions factor of 66.14 kg/Dth for natural gas as well as a declining emissions rate for the electric grid; to account for the emissions added from the increased electric consumption.

- Municipal
- Education
- Office
- Healthcare

While the focus of the pilot is hybrid heat pump rooftop units, other standalone heat pump equipment with gas back-ups are also eligible on a case-by-case basis. Pilot services include customer outreach, technical support for project sizing and design, custom or deemed savings calculations as appropriate, and contractor training and workforce development.

Measurement and verification services will address the following questions.

- What are the measured capacities and efficiencies of the installed units, and how do they compare to the manufactured listed values?
- How do the controls work on these units, and do they effectively integrate the outputs from both heating sources?
- Do the units perform substantially differently in varying commercial building segments?
    - Are there segments of the commercial building market that are better applications for these systems than others?
    - Are there segments of the commercial building market that better justify the additional up-front cost of cold climate hybrid heating systems?

Current Market Characteristics

While hybrid heat pump units are beginning to gain traction in our region, their use in commercial heating continues to lag in adoption. A few manufacturers are just now bringing these systems to market, and others are looking at release dates for equipment later in 2026.

Table 2. Manufacturer hybrid heat pump products

Manufacturer	Status	Product / Notes
Trane	Available now	Precedent® rooftop heat pumps include Hybrid Dual Fuel option (3–25 tons).
Daikin Applied	Available now	Rebel / Rebel Applied rooftop systems now with heat pump capability; industry resources list gas backup options for HP RTUs
Lennox	Available / emerging	Cold climate HP RTU validated in DOE lab (15- to 25-ton category); dual fuel RTU options noted in market resources
AAON	Available now	Air source heat pumps with all-electric or dual fuel options; packaged rooftop families support HP + gas heat
YORK (Bosch Home Comfort)	Available now	Sun™ Pro & Sun™ Choice Dual Fuel RTUs (6.5–25 tons) announced and launched with automated fuel-source controls

Rheem	Available (select sizes); expanding	Commercial Classic® Series packaged dual fuel unit (RQPW, 2–5 tons); broader commercial HP/packaged lines; Accelerator partner for DOE Commercial HVAC Challenge
Addison	HP + gas heat options; dual fuel RTU not explicitly published	PR/AK DOAS & rooftop platforms with air source heat pump and modulating gas heat; HybridAir™ technology; monitoring for explicit dual fuel RTU release
Carrier	Available now	WeatherMaster 48QE available with heat pump RTU and gas backup
Bryant	Available now	Preferred Series 549Q units are a hybrid heat pump unit
Valent	Available now	RTU available with heat pump and gas backup
Daikin Comfort	Expected release late 2026	Staged release of full-size range announced at AHR 2026
Captive Aire	Available now	Paragon unit available as dual fuel heat pump
Greenheck	Available now	RTU available with heat pump and gas backup

With an increase in manufacturer offerings, we are now able to couple our efforts on individual adoption with a broader array of products, enabling us to increase awareness and adoption of this technology.

As long-term program implementers, CEE has observed that it is common practice within the commercial HVAC industry to replace on fail and avoid new or emerging technology. This is due to a few reasons, including cost, little to no historical efficiency gains available with new products, and contractor preference. By embedding new hybrid heating technologies within an attractive suite of financial, implementation, and M&V services, we can now offer businesses customized and persuasive reasons for considering alternative equipment as existing units reach end of life but prior to emergency end-of-life replacement.

Hybrid heating RTU early adopters tend not to represent typical business customers and therefore do not offer the best dataset for informing widespread implementation. Finding strategies to engage and build trust with contractors and customers when it comes to these units is key to having an impact on market adoption and installation.

Pilot Strategies to Increase Adoption

Our strategies to increase adoption in our market consist of three main fronts, with many smaller local scale strategies within each area.

- Contractor outreach and training
- Supply chain coordination
- Targeted market outreach

Contractor Outreach and Workforce Development

One of the biggest challenges when attempting to bring new equipment to market is contractor buy-in. Commercial HVAC contractors are often slow to adopt new technologies. There are many nuances to why this is, including the size of the contracting firm, their background, and the individual appetite for change and risk when it comes to their customers. Many contractors are not willing to risk their reputation with equipment that they are not used to installing and servicing. We have been able to directly leverage contractor relationships that we have built over many years of working with the HVAC industry. This has allowed us to collaborate directly with contractors and explain when and why this pilot/equipment can make sense for specific customers and situations. We also tailor our approach to different contractor needs. Some contractors want our assistance with equipment specifications and sizing; some prefer that we handle technical discussions with customers and others just want confirmation that rebates are legitimate and will materialize at the end of the project. In each case, we are willing and able to provide an approach and touchpoints that match their individual preferences.

Once contractors are on board with the equipment, we also need to ensure they understand the equipment being installed, the set up, and nuance that goes along with a hybrid system. Once again, this is tailored to each individual contractor. Larger contractors may employ an expert on these scenarios already, but the smaller shops may need more hands-on training and guidance. Throughout this pilot, we are tracking individual contractors and ensuring they are comfortable with the installation and initial set up of the equipment. This assistance can come in the form of various heat pump specific trainings, such as Intro to Next Gen RTU's and Getting Comfortable with Next Gen RTU Startup, along with technical assistance during field installation, and facilitating manufacturer contact and relationships to improve understanding and efficiency of installations.

Supply Chain Coordination

The second major player that we are addressing in our attempts to increase adoption is the equipment supply chain in our market. At its most basic, this is an issue of supply versus demand. If contractors are not ordering the equipment, the suppliers are not going to stock it. Typical timelines that we are seeing for standard equipment specs on heat pump hybrid RTUs can be 3–4 months, and while this is an improvement from the 6+ months we were seeing previously, it still does not allow for a quick turnaround for a customer base that typically needs a new unit within a week due to a catastrophic failure. The following bullets highlight some of the ongoing efforts we employ.

- Quarterly meetings with manufacturers to help illuminate market potential

- Quarterly meetings with distributors to support sales, offer training, and keep them apprised of rebate amounts
- Regular meetings with distributors to discuss new market offerings, lead times, and market challenges

CEE has developed relationships with the supply chain to inform them of our efforts. By finding the right personnel within these companies and keeping them informed about what we are doing with the market, they can be better informed on why contractors are ordering and requesting equipment that they may not have used in the past. Keeping surprises to a minimum can go a long way toward fostering a relationship of trust and gaining a sympathetic ear that can influence what is readily available from the supply chain.

Targeted Market Outreach

The third major leg of this pilot is outreach to commercial building owners and operators. Driving audience awareness and confidence in an emerging technology is challenging, even with substantial rebates. To reach our target markets, we have developed outreach strategies based on audience characteristics, like building type and size, and pilot participation goals.

Our marketing plan breaks down specific customer segments based on program goals. Customers typically fall into one of the following five categories with the key characteristics and primary messaging outlined in Table 3.

Table 3. Marketing plan customer segmentation

Customer Segment	Key Characteristics	Primary Messaging / Engagement Strategy
Benchmarking	Motivated by state/local decarbonization requirements; often early adopters; open to planned replacement before end-of-life.	Emphasize sustainability alignment; promote planned replacement; highlight familiar equipment configurations.
Money Savings	Driven by reducing costs; hybrid systems seem more expensive without lifecycle context; require clear financial modeling.	Provide total cost-of-ownership modeling; highlight rebate impact; use engineering support for custom savings estimates.
Energy Savings	Motivated by energy or GHG reductions; strong early adopters; often find the program through referrals.	Highlight energy/GHG performance; share case studies; leverage existing marketplace relationships.
Equipment Flexibility	Value control and customization; drawn to set-point and operational flexibility; rarely adjust controls once installed.	Showcase system controls and operating flexibility; demonstrate ease of use; emphasize reliability.
Corporate Sustainability Goals	Influenced by corporate ESG or GHG requirements; often large national/regional chains; long approval timelines.	Provide early engagement; supply financial plus emissions justification; equip internal champions with decision-ready materials.

Equipment Types and Usage

The typical pilot participant installs hybrid heat pump RTUs, but the pilot is open to any hybrid heat pump gas/electric system.

Hybrid Heat Pump RTUs

Hybrid heat pump RTUs comprise the bulk of the equipment studied in the pilot, and also the majority of new hybrid systems that manufacturers are bringing to market. Two- to twenty-ton units are typically available for ordering directly from most suppliers and make up the bulk of units that have signed up for the pilot to this point. These units combine an air source heat pump (ASHP) of varying efficiency with a standard 80% gas furnace. Based on customer preference and setpoints, the typical unit will switch over from electric to gas heating when the outdoor air hits a certain temperature. For most units, this is a hard cut-off, but we are starting to see manufacturers that allow for using both heat sources at the same time to improve efficiency and energy usage.

Customers are presented with a broad, and at times overwhelming, set of choices.
The range includes code-minimum equipment to cold climate rated units that can effectively operate the heat pump unit down to 0 degrees or below. Although higher efficiency units generally cost more, the wide range of options enables us to help customers and contractors find a system that best suits their needs.

Rooftop ASHP with Boiler Back-up

Boiler heating is common in both large and small commercial buildings in Minnesota, and the cooling strategy for these buildings can vary based on size, location, and end use. For buildings that employ boiler heat and a rooftop RTU for cooling only, a hybrid heat pump solution can effectively shift a substantial amount of their heating load from gas to electric.

The existing boiler systems in these buildings can vary in their application. Some may have hot water coils that run through the existing RTU and utilize the existing ductwork; others may have radiator heat directly off the boiler making the heating and cooling systems entirely separate; and others can utilize a combination of both scenarios. While this adds complexity to the requirements of the ASHP being specified and installed, it does represent a meaningful percentage of buildings that have not yet been studied in any depth.

These units trend toward larger sizes (50+ tons) and tend to be ordered custom from the manufacturer. While this can increase lead time and cost, it also tailors the units to the specific building, layout, and infrastructure, allowing for a more seamless installation and integration with existing equipment and building controls.

CO2 Heat Pumps

While still rare, CO2 refrigerant heat pumps are also gaining traction in Minnesota. With a local company manufacturing these systems at the upper end of the efficiency spectrum, we can leverage our rebates to expand adoption and perform M&V work to determine real-time efficiencies in typical commercial buildings. With multiple configurations available from the

manufacturer, these systems can meet customers where their needs lie to provide the correct product for their application.

Market Trends and Program Participants

While it is still early in the pilot, we are noticing trends in the market that will better inform our approach to marketing and customer selection. Our average size unit accepted into the program to date is approximately 23 tons; however, large units (50+ tons) tend to skew this data. We are seeing two distinct groupings emerge, customers with 10-ton and under equipment and customers with 40+ ton systems. While we don't yet have enough data to accurately determine the reasons for this, current theories point toward larger buildings being pre-disposed to hybrid heating systems due to corporate and community GHG initiatives, while smaller units tend to go to customers seeking financial assistance (in the form of utility rebates) to reduce the upfront cost of scheduled equipment replacements. Table 4 provides high level detail of projects completed in 2025.

Table 4. Characteristics of hybrid heat pump RTU customers completed in 2025

Building Classification	Equipment Type	Manufacturer	Model #	Size (tons)	IEER	EER	Reduced gas GHG
Manufacturing	DFRTU	Daikin	DHSA053	53	15.5	9.5	288
Manufacturing	DFRTU	Daikin	DHSA040	40	16.3	10	285
Retail	DFRTU	Trane	DHK150A3SBH	12.5	16.5	11.8	130
Retail	DFRTU	Trane	DHKA120A3SBH	10	15.9	11.1	124
Retail	DFRTU	Trane	DHK090A3SBH	7.5	14.6	11.4	103

Energy Savings and Calculation Methodology

Minnesota has implemented a prescriptive calculation for heat pump RTUs that underpins our standard calculations (MN TRM 2025). These calculations allow us to determine kWh heating penalties, Dth gas savings, and net MMBTU savings per year. The prescriptive methodology also attempts to simplify the results by categorizing deemed calculated savings by efficiency tiers or by inserting model specific efficiency numbers when available. These two methods, combined with our M&V efforts, will allow us to compare and improve real world savings estimates as they relate to both GHG reduction and customer cost scenarios.

For non-standard hybrid heating scenarios (ASHP w/ Boiler, CO2 refrigerant, others), our engineering team will calculate site-specific energy savings based on the equipment being used or deployed. Our hope is that with enough data, we can obtain accurate estimates as to where and when these types of systems are the best choice and provide an accurate assumption of cost and energy use for future installations.

Measurement and Verification for Site-Specific Data

As part of this pilot, CEE is responsible for both implementation and M&V services. Having both in-house greatly enhances our ability to communicate on timelines, expectations,

future work, site selection, and coordination. The pilot's goal is to perform M&V work on approximately half the installed units. Our M&V work falls into two main categories: simple monitoring and detailed monitoring. Simple monitoring encompasses most of the work, with up to 50% of installed units receiving this, and detailed monitoring comprises another 10% of applicable units.

M&V Site selection

Proper site selection is paramount in obtaining useful and accurate data for M&V purposes. There are many competing factors when it comes to determining the right site for M&V. Unit location within a building can play a large part in usage. While a building with a single unit may act in a predictable manner, buildings with multiple units and varied control strategies can have unanticipated run times. In these scenarios, prioritizing units that serve exterior walls with well-placed thermostats or controls is critical to collecting useful data. Discussions are also held with the customers to obtain additional information, such as unusual occupancy rates and times or interior heating/cooling loads that could affect HVAC equipment operation.

As mentioned, pilot goals also consider various building types and sizes. Aligning our M&V efforts to ensure we are collecting data on a wide range of building types allows us to verify the accuracy of assumed savings and operation, better informing future program implementation and savings potential.

The final criterion for site selection is how novel an application is. In the past few years, additional studies and monitoring have been completed on standard dual fuel RTUs (McCaskell 2024), and while more data helps refine the overall picture for these units, we are also interested in other hybrid heating applications. Sites that employ ASHPs with boiler backups are an intriguing new aspect of the commercial landscape — there is little to no data available on how well they operate. Focusing additional time and effort on these systems will improve our understanding of the hybrid heating market as a whole and may provide avenues for future research and development.

M&V Monitoring

M&V sites will be split into two categories for detailed and simple monitoring. Each group will have its own measurement sensor package and analysis approach. The detailed monitoring group will be roughly 10% of the installed units and will include instrumentation that will allow for the capture of coefficient of performance (COP) and capacities of these units across different temperature ranges. The figure below shows the energy delivered and system capacity monitoring used for a similar detailed M&V approach and will be the starting point for this pilot.

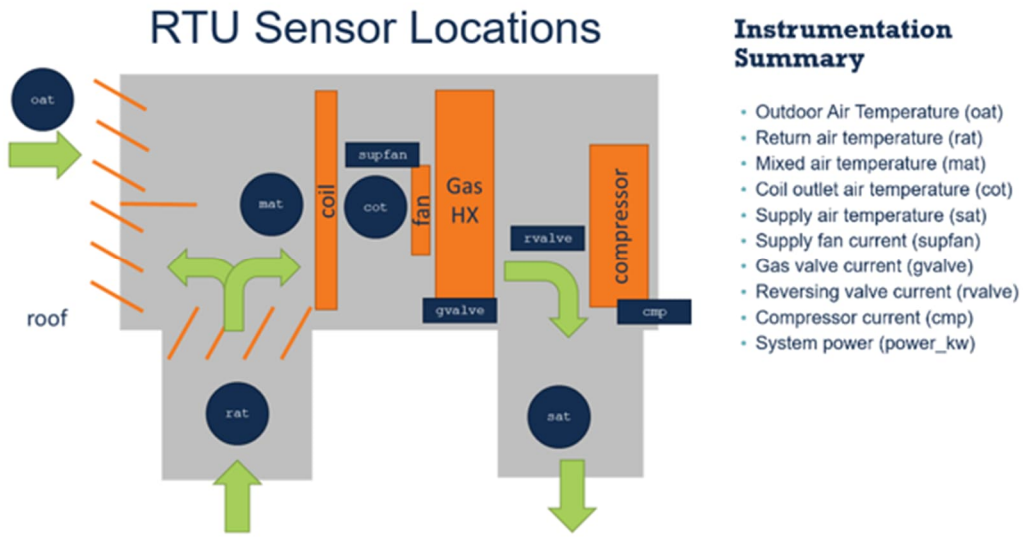

Figure 1. RTU sensor instrumentation summary

The simple monitoring group will consist of roughly 50% of the installed units and will capture the operating mode of the units, how the system is controlled, and estimate the heating load delivered by the system to the building.

M&V Data Collection and Analysis

Data will be collected on each RTU for a full range of seasonal temperatures at the test site and transmitted daily for processing and for quality control on a biweekly basis. Analysis will include runtime by operating mode, energy consumption, and building load estimates. Short-term testing during instrumentation installation will be used to validate measurements and sensor installations, and collect any additional data needed for each site.

At the detailed monitored sites, the instrumentation will be used to assess delivered capacity and coefficient of performance (COP) at various operating conditions. Figure 2 shows an analysis and visualization of RTU operating modes over a range of outdoor operating temperatures, which is similar to the analysis to be completed for buildings with the simple monitoring package. Figure 3shows the heating cycle efficiency for an RTU, which will be the basis for the analysis of the detailed monitoring packages.

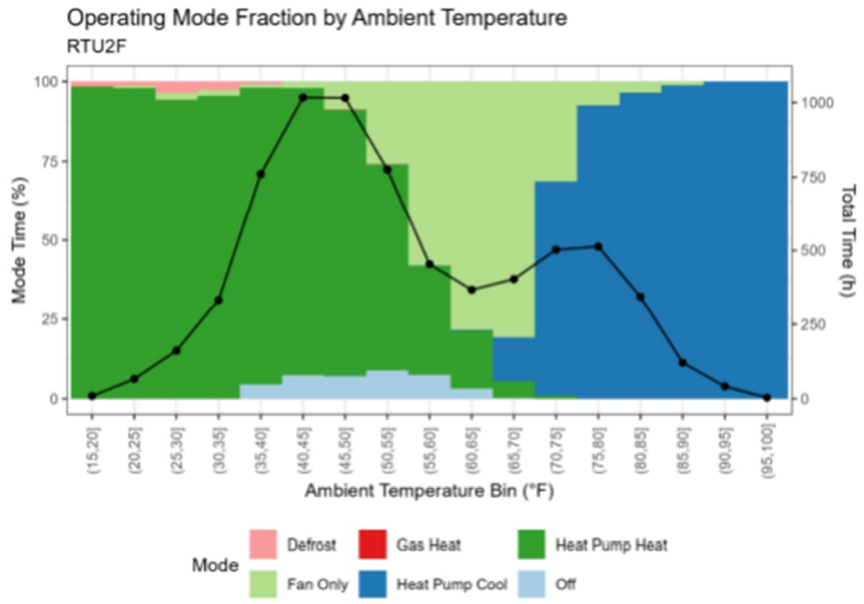

Figure 2. An example of RTU operating mode for a system with the simple monitoring package

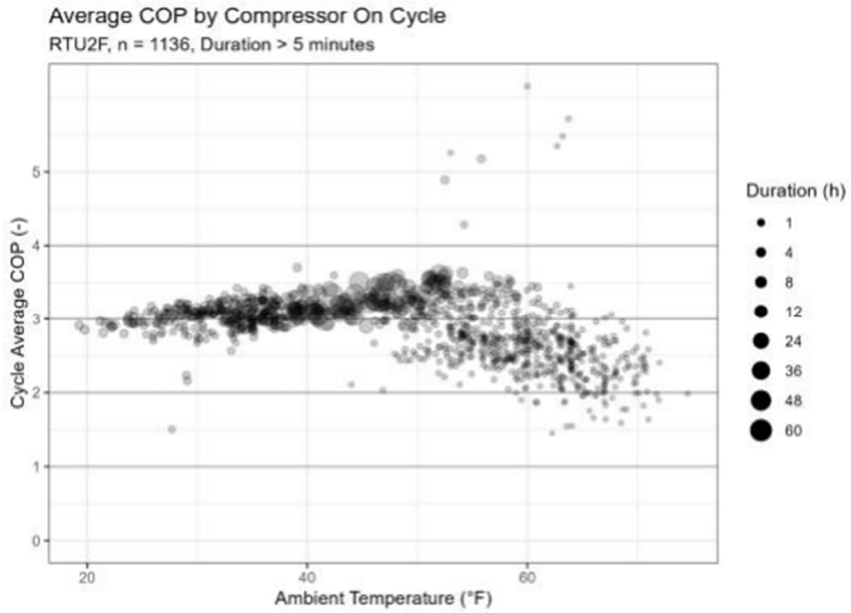

Figure 3. An example figure of RTU cycle COP by outdoor air temperature from data collected by instrumentation specified in the detailed monitoring package

Program Challenges

While still in its first year, the pilot has already identified challenges that we will need to overcome. Some of these challenges were expected and planned for, and others will involve more in-depth methods to address.

Product availability

Product availability was a known issue that we would encounter with this pilot. Hybrid heating systems, whether hybrid heat pump RTUs or otherwise, are a new to market product for our region. Historically, these units have been built to order and are not produced to be available off the shelf like a standard commercial HVAC unit. This requires a customer to plan months ahead of time to work with their contractor to specify a system, have the contractor work with a local supplier to order the system, have the manufacturer slot the system into their build schedule, and work through shipping and installation. This can lead to installation timelines that push out to six months for a small unit and up to 18 months for a large custom unit.

Through this pilot and our other programs at CEE, we have established and maintained good contacts within the manufacturing sector, allowing us to navigate their product timelines, and keep them informed about where we are attempting to move the market. This coordination helps both parties. Manufacturers can plan for new equipment that customers are going to want and contractors can be relatively certain that the equipment they are ordering will be available.

The second issue of product availability typically falls to local suppliers. Once again, CEE has developed and maintained relationships with local supply houses to help them anticipate customer orders and stocking needs. In some cases, these supply houses are also part of the pilot, installing units on their buildings to gain a better understanding of their usage and operation to help support their customers and contractors. This partnership is key in driving down product ordering timelines and moving toward the goal of creating enough demand to justify stocking standard hybrid heating systems for purchase.

Cost

Equipment cost is always a major factor when working in the commercial HVAC realm. Standard RTUs can range widely in cost and represent a significant capital expenditure. The additional cost associated with a hybrid heating unit will only amplify the upfront cost that a customer has to bear. While the final dollar amounts vary by manufacturer, the rough estimate that we are seeing in our market translates to an approximate increase in cost of $1,300 to $2,000 per ton in incremental costs, depending on size.

Rooftop Structural Considerations

As more manufacturers bring products to market, an unexpected speedbump has been a wide variation of unit weight when compared to a standard RTU. Estimates place the median year of construction for commercial buildings at 1981 (EIA 2018). With buildings this age and older, structural issues commonly pose challenges with large rooftop equipment. Increasing the weight of a unit can derail a project if it requires additional costs for structural improvements. As more units come to market and more data is available on unit weight, we will be better able to

recommend the appropriate solution for an individual customer. While data is currently limited, the trends tend to show that the larger custom-ordered hybrid heating units are coming in at higher weights than a comparable gas-fired unit of the same size, while the smaller standard hybrid heating units have more flexibility with options greater than, equal to, or in some instances less than the weight of a comparable gas-fired RTU.

Program Successes

In the first year of the pilot, we saw more participation than anticipated. Commercial hybrid heating solutions have advanced rapidly in the last few years, and the market players have been willing to listen and employ strategies at a faster rate than we expected. In 2025, we had 6 contractors that have been involved with the pilot on 12 potential sites accounting for 19 individual RTU's. Due to scheduling and manufacturing timelines, not all of these units were completed within the 2025 calendar year, however these units along with others are still slated for pilot inclusion. The keys to accomplishing this work are as follows:

Contractor and Supply Chain Participation

Contractor participation has always been one of the main reasons for CEE's success when it comes to program implementation. Over the years, CEE has developed solid vendor relationships at every level of the HVAC supply chain. Embedding ourselves in the complete supply chain hierarchy allows us to be a trusted third-party within the ecosystem. We have cultivated contractor relationships that pay dividends for our programs and the contractors' day-to-day operations. By meeting contractors' individual needs, whether that be rebate processing, equipment specifications, training assistance, or customer communication, we have positioned ourselves as a partner that can prepare them for success, instead of as an entity attempting to insert ourselves unnecessarily in their business models.

Rebate Levels

CPE is offering significant customer incentives to support this work, making the business case for hybrid heating units in this pilot much easier to make. With rebate levels at 40% of equipment cost, capping at $100,000 per customer account, we can typically more than offset the added cost to move from a standard gas heating system to a hybrid heating system. Whether a customer is concerned with upfront costs or lifetime costs, the financial analysis favors the hybrid units in almost every scenario.

Sales Oriented HVAC expertise

An often-overlooked area of program implementation is who you have in the field contacting contractors and customers. Over the past 30 years of successful program implementation, CEE has shown that combining a high level of technical expertise with a sales-minded approach is crucial to driving participation in the program. Building owners and contractors have many reasons for implementing or choosing not to implement energy-saving projects. It is important to have technical experts capable of uncovering the unique needs and

concerns of each participant and demonstrating how the features and benefits of the new equipment can meet those needs. Sales aptitude can be as important as technical aptitude when making the case for pilot participation.

GHG savings

An important metric for this pilot is meeting GHG savings goals for CenterPoint Energy. To date, total calculated GHG savings have been 930 tons on 5 units, or 186 per unit. We expect this average to fall due to the small sample size completed in 2025 with a few larger than average units. M&V processes are ongoing to verify the location specific savings of these units, and these numbers will be used to compare and inform future savings estimates and participation requirements to meet GHG savings in the future.

Conclusion

CenterPoint Energy's hybrid heating pilot is an important step in validating the use case and potential of these new-to-market systems in cold climates. While still in the early stages of this pilot, we have had more than 50 Centerpoint customers inquire about inclusion, the appetite is there for this technology, and the reasons for this interest is as varied as the customer bases that we are working with. Whether the motivations are based on cost, emissions goals, or adaptability, we are finding solutions for most customers that are being brought into the pilot.

Early calculations show large potential for lifetime emissions savings on hybrid heating units, and as more data is collected, we will continue to refine these numbers. M&V efforts will continue over the next three years, giving us a high degree of accuracy on claimed savings versus real world application savings.

While there is more work to be done, we have made great strides in market acceptance, equipment availability, and customer interest in hybrid heating technology, with 15+ customers signed up with multiple units of varying size and complexity. Over the next three years, we will continue to refine our focus. Immediate areas of need to address include continuing to bring new and diverse contractors into the pilot to educate and assist them with the details of bidding and specifying these units. We will also focus on making the case to equipment suppliers that stocking these units is a viable option that will not languish in their warehouse but will see consistent turnover as the market and appetite for these units increases.

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